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The English Equivalents of Cantonese Sentence-final Particles: A Contrastive Analysis

by

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CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

_____ (Signed)

_____John C. Wakefield_____ (Name of student)

For Mona and Angie

Abstract

Cantonese has a lexical tone system that severely restricts its ability to manipulate pitch. As a result, many of the speaker-oriented discourse meanings that are expressed through intonation in languages such as English are expressed in the form of sentence-final particles (SFPs) in Cantonese. Although this is widely known and accepted by linguists, apparently no study to date has made a systematic attempt to discover whether any of the more than 30 Cantonese SFPs have English intonational equivalents, and if so, what those equivalents are. To work towards filling this research gap, this study examines the English intonational equivalents of four Cantonese SFPs that divide into the following two pairs: particles of obviousness: *lo1* and *aa1maa3*; question particles: *me1* and *aa4*.

The English equivalent form of each of the four SFPs of this study is identified by examining the pitch contours of Cantonese-to-English audio translations, provided by Cantonese/English native-bilingual participants. A definition using Wierzbicka's (1996) natural semantic metalanguage (NSM) is proposed for each SFP, which is hypothesized to apply equally to its English intonational counterpart. Following proposals of Hirst's (1983a) regarding "emphatic intonation," these pitch contours are proposed to be floating tones that exist as lexical entries in the minds of native-English speakers. Syntactic positions are proposed for the SFPs and their English equivalents adopting Rizzi's (1997) split-CP hypothesis.

The findings of this study have far reaching implications regarding the descriptions and classifications of intonation, as well as regarding the classifications of the various forms of suprasegmentals. This study used segmental discourse

markers to discover their suprasegmental counterparts in English, exploiting a unique window through which to examine the forms and meanings of English discourse intonation, which is one of the least understood and most difficult to study aspects of English. This research has arguably provided the strongest and clearest evidence to date regarding the forms and meanings of the particular forms of English intonation with which it deals.

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František Kratochvíl being a notable example. I hope they are not disappointed by what follows.

I am of course the owner of any mistakes discovered by attentive readers—nobody mentioned above is to blame.

List of abbreviations:

-pl	plural marker
1s	First person singular
2s	Second person singular
3s	Third person singular
Adv-M	Adverbial marker
ASP	Aspect marker
C^0	Head of complementizer phrase
CL	Classifier
CM	Comparative marker
CP	Complementizer phrase
D	Discourse element
DM	Delimitative marker
EST	Extended Standard Theory
EXP	Experiential marker
FinP	Finite phrase
FocP	Focus phrase
GEN	Genitive marker
L1	First language
L2	Second language
MP	Modal particle
NDP	Null discourse particle
NEG	Negation
NSM	Natural Semantic Metalanguage
P	Proposition
PAS	Passive marker
PERF	Perfective marker
PROG	Progressive marker
PRT	Particle
SFP	Sentence-final particle (Cantonese unless otherwise stated)
SPEC	Specifier
T^0	Head of tense phrase
TopP	Topic phrase
TP	Tense phrase
UG	Universal Grammar

Chapter 1: Introduction

1.1 An Overview of the Study

Most studies on Cantonese sentence-final particles (SFPs)[1] say that English intonation and SFPs are, to a significant degree, two forms of the same thing (e.g., Yau, 1980; Kwok, 1984; Cheung, 1986; Matthews and Yip, 1994). It is therefore surprising that, to my knowledge, no attempt has ever been made to systematically discover the English intonational counterparts of SFPs, and only one attempt has ever been made to discover the Mandarin equivalents of English intonation (Chao, 1932). This study is an attempt to begin filling this research gap, and, just as importantly, to propose a methodology that can serve as a tool for conducting further research of this kind in the future.

Significant advances have been made in the study of the syntax and semantics of SFPs (see chapters 2 and 7). The exact nature of the syntax and semantics of English intonation is relatively more complicated and therefore more controversial (see chapters 3 and 7). Intonational forms are more abstract than are the forms of their segmental SFP counterparts, so there is a lack of consensus regarding the forms and meanings of discourse-related intonation, and even less agreement regarding its syntax.

This study attempts to advance our current knowledge of the syntax and semantics of SFPs and English discourse intonation by doing the following: 1) proposing semantic explications (i.e., definitions) of a number of SFPs using Wierzbicka's (1996) natural semantic metalanguage (NSM); 2) matching these SFPs

[1]The term SFP will always refer to Cantonese SFPs unless otherwise specified.

to their "equivalent" forms in English; 3) taking it as a working hypothesis that the definition of each SFP also applies to its English "equivalent"; and 4) examining the extent, if any, to which the claims in the literature about the syntax of SFPs using the generative grammar framework can plausibly apply to syntactic descriptions of their English intonational "equivalents." I adopt a working hypothesis that the SFPs of this study are exactly equivalent in meaning and function to their intonational counterparts in English. From this point onward the term "equivalent" will not be marked with parentheses, but the reader should be aware that this is a working hypothesis, not an assumption.

The choice of Cantonese and English is a logical starting point for this kind of research; Cantonese has perhaps the richest collection of SFPs of any language studied to date (Luke, 1990; Leung, 1992/2005), and the intonation of English has probably been studied to a greater extent than the intonation of any other language. This study translates connotative meaning from one language to another in order to compare forms. It makes sense to start such research with a language that uses SFPs for this purpose to perhaps a greater extent than any other, and to contrast it with a language whose intonation is relatively well studied so that linguists can more readily scrutinize the results against any prior claims that have been made.

In order to discuss some SFPs and their English intonational equivalents with sufficient thoroughness and detail, this research has, by necessity, restricted itself to examining only a small number of them. Law (2004) said that many studies on SFPs have attempted to discuss the entire inventory (e.g., Yau, 1980; Kwok, 1984; Leung, 1992/2005; Matthews and Yip, 1994), and she explained that such studies have "tend[ed] to fall short of giving more elaborate and precise accounts of individual particles" (p. 17). Luke (1990) said that "studying the whole class all in one go… has proved to have undesirable consequences [causing linguists to] come to conclusions

about the properties of individual utterance particles before their range of uses has been properly identified and subjected to detailed analysis" (p. 17). Law (2004) opted for an elaborate account of just two SFPs (*zaa3* and *tim1*) for her doctoral thesis. Luke's (1990) book and Yiu's (2001) master of philosophy thesis each focused on only three SFPs. For this study I have also purposely selected a small number in order to examine each one in sufficient detail. I look at the syntax and semantics of four SFPs and their English equivalents. I could have chosen other particles (and will do so in future studies) but there were good reasons for choosing the four that I did for the present study.

The SFPs I selected divide naturally into two pairs based on their functions and meanings: particles of obviousness (*lo1* and *aa1maa3*); and question particles (*me1* and *aa4*). I discuss and contrast these semantically related pairs in order to show that the explications I propose for each SFP is sufficiently accurate to account for all and only those contexts within which it can be used, distinguishing it, not only from SFPs that are semantically distant, but also from an SFP that has a closely related function and meaning, and which is therefore interchangeable in many (but not all) contexts.

Another good reason for choosing these four particles is that they are relatively well documented in the literature. Referring to the literature was very helpful to developing accurate explications for the particles. Regarding frequency of occurrence, each of the four particles lies in the upper half of the list of 37 particles that I searched for in the corpus. The orders and frequencies were: *lo1*, 5th most frequent with 1,557 occurrences; *me1*, 10th with 404 occurrences; *aa1maa3*, 11th with 375 occurrences; *aa4*, 14th with 313 occurrences. And finally, these pairs both represent semantic and syntactic elements that have been widely studied in many languages: evidential/epistemic mood markers (i.e., *lo1* and *aa1maa3*); question and evaluative mood markers (i.e., *me1* and *aa4*). Contrasting these equivalent forms

between two languages that are as distant from each other as are English and Cantonese should be beneficial and interesting to linguists.

This study is organized as follows. The remainder of this chapter explains the research problems and goals, and talks about the value and usefulness of the research. Chapters 2, 3, and 4 review and discuss SFPs, intonation, and the NSM theory, respectively. Chapter 5 explains the research design and methodology. Chapter 6 proposes NSM explications (i.e., definitions) for the SFPs and their English equivalents, analyzes the phonetic data from the translations, and contrasts the contextual distributions of each SFP pair along with the distributions of their English equivalents. Chapter 7 discusses the extent, if any, to which past syntactic descriptions of the SFPs of this study can plausibly be applied to their English counterparts. Chapter 8 offers a summary and conclusion, and chapter 9 suggests possibilities for further research.

1.2 Research Problems and Goals

The dictionary definitions of SFPs, the descriptions in textbooks, and the explanations throughout the literature, all fall short in two respects: 1) they do not provide precise definitions of SFPs that are independent of the contexts within which the SFPs occur; 2) they do not translate SFPs into their English-equivalent forms.

The problem stated in 1) does not mean that the definitions of SFPs should be free of any references to the discourse context. Most SFPs connect their attached sentences to the discourse in some way. Their definitions should therefore include an accurate representation of this connection. The problem to solve in this regard is how to develop a definition that shows an SFP's semantic relationship to any and all discourse contexts where it does (or could) appear, but at the same time does *not*

include any meanings that are part of specific contexts—it must *only* include meanings that are intrinsic to the SFP itself. A mistake seen frequently in the literature is that definitions of SFPs often include meanings that come from the sentences they attach to or the discourse contexts they appear in, rather than from the SFPs themselves. The first goal of this study is to address problem 1) by providing clear and accurate definitions of SFPs that include only their intrinsic meanings (§§ 2.2 and 4.2 discuss this in detail).

Problem 2) states that the literature has not translated SFPs into their actual English equivalents. The reason for this is not because previous authors have failed, rather it is because this has not been a goal of any Cantonese linguists to date. With only a few minor exceptions the literature has paraphrased the meanings of SFPs in English rather than attempted to describe the forms of English discourse intonation to which the SFPs are equivalent.

One of the rare exceptions came from Chan (2001), who showed two questions that were exactly the same except for their SFPs—one used the interrogative particle *maa3* and the other the question particle *me1*. Chan said that one possible way to convey the difference between the two in English "might be the differential use of intonation. Alternatively,… [the *me1* sentence] could be made into an echo question" (p. 59). This is certainly a step in the direction that I want to take in this study, but it does not go far enough. It does not clearly describe the meaning of *me1*, nor does it describe the form of the "differential use of intonation" that she referred to. And there was no mention of how one might differentiate the form and meaning of *me1* from yet another question particle, *aa4*.

Another exception came from Yip and Matthews (2001), who said that the English form of *zek1* can be rendered as coy intonation. Again this is going in the direction that I want to go here, but describing the English intonational equivalent of

zek1 as “coy” does not make its form very clear, even to native-English speakers. If speakers were told to say a given sentence using “coy intonation,” the resulting intonational forms would almost certainly vary from speaker to speaker, something that was demonstrated by Crystal (1969), who showed that native-English speakers lacked the ability to consistently produce and recognize intonational forms that were labeled with terms that linguists had commonly used for describing intonational meanings (e.g., “bored”, “puzzled”, etc.).

The best exception to problem 2) that I am aware of came from Baker and Ho (2006), who said that the way to express the meaning of the SFP *me1* in English is to “raise your voice almost to a squeak” (p. 40). This is an excellent description and is easily understood by readers. The problem is that they didn’t provide a precise meaning of *me1*, and, like Chan (2001), didn’t contrast it with *aa4*.

The above examples are rare exceptions, even for those authors from whom they came. The second goal of this study is to address problem 2) by discovering and describing the forms of English intonation that are equivalent in function and meaning to the SFPs examined in this study. Yip and Matthews (2001) said that many SFPs “are untranslatable, the ideas being expressed in English by intonation patterns and tone of voice rather than words” (p. 156). This statement can only be considered true if the act of translation excludes the use of intonation. For this study, not only is intonation included as part of the translations, it is placed center stage.

A third research problem that I will address is something that has never been discussed in the SFP literature: linguists still know relatively little about the syntax and semantics of English intonation because its forms and meanings are extremely elusive. This problem has not been addressed in SFP-related research thus far because SFPs have never to my knowledge been considered as a tool that can be exploited for the study of English intonation. The third goal of this study is to

address this problem—first by discovering the forms of the English equivalents of SFPs, second by using the definitions of SFPs to define their equivalent forms in English, and third by looking at what has been said about the syntax of SFPs and determining to what extent, if any, it can apply to the syntax of their English equivalents.

The three research problems can be stated as follows:

1) We lack clear and precise definitions of SFPs.
2) We do not know the English intonational equivalents of SFPs.
3) We know relatively little about the forms, meanings, and syntax of English discourse intonation.

The goal of this research is to address these three problems. The validity of findings related to problem 2) will be strengthened by a satisfactory resolution to problem 1). This is because any claim to have discovered an SFP's English equivalent will be strengthened if native-English speakers agree that that particular form of English intonation has the same meaning as the SFP—and such agreement can only be reached if I can provide an accurate definition of the SFP. Any claims made regarding problem 3) will only be valid to the extent that the claims regarding problems 1) and 2) are considered valid. This is because I will claim that the English intonational equivalents have the same functions and meanings as their SFP counterparts, and will argue that their positions in syntax should therefore be similar. Since any claims made about 3) rely on the strength of claims made about 2), and those of 2) on the strength of 1), these three research problems must be addressed one at a time, and in order, from 1) to 3).

1.3 The Need for this Research

The three research problems just discussed represent gaps in our knowledge about specific aspects of language: 1) the meanings of SFPs; 2) the forms of discourse intonation; and 3) the syntax and semantics of discourse intonation. Although this study focuses on only a few examples of discourse elements in Cantonese and English, it is possible that its findings may apply to other languages. To the extent that the definitions I provide are seen to apply equally to the two different forms (i.e., to both the Cantonese SFP forms and their equivalent English intonational forms), their semantics and grammatical functions can be considered to exist equally in both languages. If this is true for Cantonese and English, which are typologically very different from each other, then it is reasonable to hypothesize that these functions and meanings exist in various forms in many (perhaps all) languages. Further research to test such a hypothesis can use the methodology of this study to match the forms of discourse elements between other pairs of languages, one of which may or may not be English or Cantonese.

This study offers important contributions to linguistic knowledge because SFPs and intonation are major components of natural languages, and therefore must be understood in order to fully understand the nature of language. As a contrastive study, it advances our knowledge about language typology, providing further insight into the two major systems that languages use to express connotative meaning, i.e., mood particles vs. intonation.

The results of this study have potentially far-reaching implications about the grammatical nature of discourse intonation. Does it get a direct semantic interpretation, or is it a subset of the lexicon in the same way that SFPs are? The answer to this question is key to determining the parameters involved when children

acquire the ability to express discourse related meanings.

This research potentially has practical applications for second language acquisition. Chun (2002) said that intonation is one of the most difficult if not impossible things for second language (L2) learners to master, and Yip and Matthews (2001) said that SFPs are perhaps the most difficult aspect of Cantonese for L2 speakers to learn. Yip and Matthews also said that SFPs are probably best learned through use, as opposed to explanation. Perhaps this is true (of both intonation and SFPs) but we cannot determine the usefulness of classroom explanations of SFPs or intonation until we have clear and accurate descriptions of them, and have tested the use of such descriptions in the classroom.

A Cantonese-speaking learner of L2 English, or an English-speaking learner of L2 Cantonese, will only benefit from the linking of a particular SFP to a specific form of English intonation if the meanings and forms of both are described clearly and accurately. And if it is true, as is hypothesized here, that a particular SFP has an equivalent intonational form in English with the same function and meaning, then classroom instruction should be useful. If L2-learners of English or Cantonese know that an SFP (or a form of intonation) is equivalent to a particular form of intonation (or an SFP) in their native language, they would intuitively understand its meaning and function via their native-speaker intuition.

Chapter 2: Cantonese Sentence-final Particles

2.1 The Cantonese Language

Cantonese is a member of the family of Chinese dialects known as the Yue dialects, which are spoken in southeast China. As a result of having been looked up to by the Yue people since at least the Ming dynasty, Cantonese has become the regional standard dialect and *lingua franca* (Ramsey, 1989). Aside from Mandarin, Cantonese enjoys greater use and wider influence than any other Chinese dialect (Matthews and Yip, 1994). It is referred to by its speakers as *Gwong2dung1waa2*, meaning "the language of Guangdong."[1]

Cantonese is referred to as a dialect of Chinese for practical reasons, with Mandarin Chinese considered to be the standard dialect. This is because Cantonese is mainly spoken by people who are considered to be of approximately the same ethnicity and who live within the same nation state as those who speak Mandarin. It should be noted, however, that Mandarin and Cantonese are mutually unintelligible, the difference between them being comparable to the difference between French and Italian (Bauer and Benedict, 1997).

This study is restricted to the variety of Cantonese spoken in Hong Kong. The variety known as Standard Cantonese usually includes the Cantonese as spoken in Hong Kong, Guangzhou and areas around Guangzhou, but there are slight differences in the lexicon and the phonology between Hong Kong speakers and their

[1]All of the Romanized representations of Cantonese are written in Jyutping, which is the system of Cantonese Romanization created by the Linguistic Society of Hong Kong. The numbers 1 to 6 represent the six tones of Cantonese.

northern neighbors in Guangdong province, so I will play it safe and assume that the descriptions of the SFPs in this study only apply to Hong Kong Cantonese.

2.2 Sentence-final Particles

Hong Kong Cantonese is a tonal language with six lexical tones (Bauer & Benedict, 1997). Its tonal contrasts involve both height and orientation, severely restricting the speaker's ability to manipulate pitch within utterances (Cheung, 1986). Changing the tone of a Cantonese word alters its intrinsic meaning rather than merely adding connotative meaning. To compensate for this limiting factor, various types of speech acts, speaker stances, and epistemic modalities that are expressed largely through intonation in English have been segmentalized in Cantonese, resulting in a rich variety of SFPs, which are bound morphemes that attach to the ends of sentences. Consider the following sentences:

(1) 佢喺灣仔番工。
Keoi5 hai2 Waan1zai2 faan1 gung1.
3s at Wanchai return work
"S/he works in Wanchai."
(said with the neutral, canonical intonation of declaratives)

(2) 佢喺灣仔番工喎。
Keoi5 hai2 Waan1zai2 faan1 gung1 wo3.
3s at Wanchai return work SFP
"S/he works in Wanchai."
(said with an intonation that indicates noteworthiness, or sudden realization)

(3) 佢喺灣仔番工咩?
Keoi5 hai2 Waan1zai2 faan1 gung1 me1?
3s at Wanchai return work SFP
"S/he works in Wanchai?!"
(said with a high-rising intonation to indicate surprise, doubt, or disbelief)

(4) 佢喺灣仔番工啩。
Keoi5 hai2 Waan1zai2 faan1 gung1 gwaa3.
3s at Wanchai return work SFP
“I guess/think s/he works in Wanchai.”
(said with an intonation that implies little commitment to the proposition)

(5) 佢喺灣仔番工咋。
Keoi5 hai2 Waan1zai2 faan1 gung1 zaa3.
3s at Wanchai return work SFP
“S/he only works in Wanchai.”
(said with a stress on “works” or “Wanchai” depending on the speakers intended focus)

(6) 佢喺灣仔番工喎。
Keoi5 hai2 Waan1zai2 faan1 gung1 wo5.
3s at Wanchai return work SFP
“(Someone said) S/he works in Wanchai.”
(said with a tone of non-commitment to indicate that someone else said this, not the speaker)

The only difference in sentences (1) to (6) is the SFP in sentence-final position. Sentence (1) has no SFP, and each sentence from (2) to (6) uses a different SFP. This demonstrates that SFPs are often optional and are often interchangeable with other SFPs, depending on whether or not the sentence and the discourse context allow it (for example, it will be explained in chapter 6 that a question particle cannot attach to a sentence whose main clause is an interrogative, and many SFPs cannot be attached to sentences that initiate a conversation).

SFPs are commonly referred to in the literature as “sentence-final particles.” It should be noted, however, that they frequently appear at the ends of utterances or phrases that are debatably not sentences, causing some authors to argue that the term “utterance particle” is more appropriate (Gibbons, 1980; Luke, 1990; Leung 1992/2005). For this study, I adopt a theoretical framework that assumes SFPs lie in

a syntactic position at the uppermost level of a sentence; SFPs are therefore always considered to attach to sentences by theory internal definition (see chapter 7).

The literature includes a wide variety of studies that discuss all or some SFPs. Tang (2002) pointed out that SFPs have been one of the main focuses of Cantonese grammar studies because the language has such a large number of them. There are varying accounts of the actual number that Cantonese has, ranging from 30 or more (Yau, 1965; Kwok, 1984; Law, 1990; Luke, 1990) to 70 (Gibbons, 1980) to more than 80 (Leung, 1992/2005, p. 83). A larger number is arrived at by separating individual particles into two or more polysemous particles. For example, Leung (1992/2005) considered the SFP *lo1* to have more than one meaning, which he referred to as $lo1_1$ and $lo1_2$.

SFPs can combine into clusters of 2 or more particles, forming more than a hundred combinations. Leung (1992/2005, p.87) claimed that an SFP cluster can contain up to at least 5 particles, though most authors dispute this. Tang (1998, 2002) argued that there are only two positions for SFPs, "type one" which is positioned at the head of the tense phrase (TP), and "type two" which is positioned at the head of the complementizer phrase (CP), allowing a cluster of two SFPs maximum. At the same time he argued that the particles *ge3*, *tim1* and *sin1*, which others have called SFPs, are actually located inside VP. Therefore when one or more of the VP-internal particles combine with two SFPs, according to him it is still technically a cluster of only 2 SFPs.

All of the studies on Cantonese SFPs that mention clusters appear to agree that "[t]he meaning of a particle cluster is the sum of the meanings of its component parts" (Kwok, 1984, p. 14). I am not aware of any attempts to demonstrate this to be the case, something that would be very difficult to do, but both logically and intuitively it seems that this should be correct. It is presumably a conclusion that is based on a

combination of native-speaker intuition and assumption.

The abstract nature of SFPs has made it difficult for linguists to come to a clear consensus regarding their precise grammatical, semantic and syntactic properties. Nevertheless, there is general agreement about certain aspects of SFPs. It is agreed, for example, that they encode a wide variety of discourse-related functions and meanings that are normally expressed through the use of intonation in English, including various speech acts, speaker stances, epistemic modalities, etc. Bauer and Benedict (1997, p. 291) said that Cantonese relies on SFPs to:

> perform different kinds of speech-acts, such as requesting, reminding, refusing, advising, asserting, persuading, questioning, etc., and to express the speaker's emotional attitudes of surprise, outrage, passion, blaming, doubt, dissatisfaction, patience, impatience, conceit, hesitation, reluctance, etc., toward situations and his/her interlocutor's utterances.

I agree that SFPs are used to perform various speech acts, but will argue that SFPs do *not* express emotional attitudes.

Another aspect of SFPs that linguists agree on is that they are used primarily in relatively informal colloquial speech, and therefore are rarely found in written Chinese (Gibbons, 1980; Yau, 1980; Luke, 1990; Chan, 2001). The exceptions to this are found in advertisements, comics, and a few novels that use a form of written Cantonese which imitates informal speech (see Bauer (1988) and especially Snow (2005) for discussions on written colloquial Cantonese).

The situation is similar regarding the forms of English intonation that carry connotative information. Formal speech and writing rarely include the supra-segmental linguistic tool that English uses to express many of the same kinds of discourse-related meanings that are expressed by SFPs. This is not surprising if SFPs and English intonation actually are two forms of virtually the same thing, as

most SFP-related studies claim. In informal English writing, authors can, for example, use italics, mark things in bold, or paraphrase speakers' epistemic modalities or levels of commitment to the proposition with phrases such as "of course" or "I guess," but the extent to which writers can accurately represent English intonation is quite limited. Austin (1975) said that the features of spoken language known as tone of voice, cadence, and emphasis "are not reproducible readily in written language. ...Punctuation, italics, and word order may help, but they are rather crude" (p. 74).

The earliest series of SFP descriptions are found in dictionaries (Williams, 1856/2001; Eitel, 1910/2001; Meyer and Wempe, 1947; P. Huang, 1970; Lau, 1977; Chik and Ng-Lam, 1989; Cowles, 1986; Zhang, 1999) and in textbooks (Ball, 1888/1971; Chan, 1955; Chao, 1969; Boyle, 1970a-b; Lau, 1972a-b, 1973, 1976; Huang & Kok, 1973; Binstead, 1978; H. Huang, 1989; Yip and Matthews 2000, 2001; Baker & Ho, 2006). These have primarily supplied definitions and informal descriptions of SFPs that vary in quality and accuracy.

The literature reviews in chapter 6 clearly demonstrate that simple Cantonese-to-English dictionary definitions do not adequately define SFPs or sufficiently describe their English equivalents. Some are helpful as a starting point, but many are inaccurate or misleading, and none are sufficient on their own for language learners, translators, or linguists.

As for textbooks, many of those for beginner-level Cantonese learners do not mention or define SFPs at all. Among the textbooks that do explain SFPs, their treatments range from brief definitions like those seen in dictionaries to slightly more detailed explanations with some examples. A typical example of the former type, picked virtually at random, is Binstead's (1978) definition for *ze1* and *zek1*. She apparently assumed these two SFPs to be the same, defining them together with the

single word “limitation” (p. 19), without giving any examples. The best textbook treatment of SFPs came from Yip and Matthews (2001), who devoted an informative, though unfortunately brief, chapter to SFPs (pp. 156-164).

The next phase of SFP-related literature consisted of studies that used more formal linguistic methodologies (Cheung, 1972; Gibbons, 1980; Gao, 1980; Yau,1965; 1980; Kwok, 1984; Bourgerie, 1987; Luke, 1990; Deng, 1991; Matthews & Yip, 1994; Fung, 2000; Chan, 2001; Fang, 2003; Leung, 1992/2005). Not surprisingly, these academic studies used linguistic terminology and descriptions that were much more detailed and technically precise. They also used more sophisticated frameworks of analysis, applying speech-act theory, as well as conversation, discourse, and sociolinguistic analyses. These studies focused almost exclusively on the meanings and uses of SFPs.

The literature has generally done a much better job than the dictionaries and the textbooks. These formal linguistic studies of SFPs used native Cantonese-speaker intuition, which was either the intuition of participants, of the authors, or both. Most of these studies were written in English, and therefore described the meanings and functions of Cantonese SFPs in English. As one would expect, these English-medium studies included English translations of Cantonese sentences that contained SFPs. The meanings of the SFPs were sometimes represented as paraphrases in the forms of additional sentences, or as additional information in parentheses. This type of literature has been very helpful to understanding the SFPs’ meanings in English (if not their forms) to the extent that the paraphrases have been accurate. But many of the paraphrases have not been. Consider these four paraphrases of SFPs from Kwok (1984), for example:

(7) 兩點半囉。
Loeng5 dim2 bun3 lo1.
two CL half LO
“Two thirty, of course. Don’t you know?”

(8) 讀得唔夠囉。
Duk6 dak1 m4-gau3 lo1.
study Adv-M NEG-enough LO
“You haven’t studied enough, that’s why.”

(9) 本地嘅就平啲，因為佢淆吖嗎。
Bun2dei6 ge3 zau6 peng4-di1, jan1wai6 keoi5 hei1 aa1maa3.
local GEN then cheaper-CM because 3s thin AAMAA
“The local kind is cheaper because it’s thin, don’t you know?”

(10) 嗰日冇咁夜吖嗎。
Go2 jat6 mou5 gam3 je6 aa1maa3.
that day not so late AAMAA
“It wasn’t as late that evening, that’s why.”

(Kwok, 1984, pp. 59, 61-2)

Sentences (7) to (10) come from four different contexts. In the contexts of (7) and (9) the SFP-suffixed sentences are interpreted to be obvious information, and in the contexts of (8) and (10) the sentences are interpreted to be obvious reasons. When either *lo1* or *aa1maa3* was attached to obvious information, Kwok paraphrased each as “don’t you know.” When either was attached to an obvious reason, it was paraphrased as “that’s why.”

If both *lo1* and *aa1maa3* can be paraphrased in either of these two ways depending on the context, the implication is either that 1) neither SFP has any intrinsic meaning of its own, in which case it is difficult to see what if any meaning it contributes to the sentence, or 2) both are polysemous, giving us the two particles $lo1_1$ and $lo1_2$, and the two particles $aa1maa3_1$ and $aa1maa3_2$, and we can conclude

that *lo1*$_1$ has the same (or a very similar) meaning to *aa1maa3*$_1$, while *lo1*$_2$ has the same (or a very similar) meaning to *aa1maa3*$_2$. In section 6.1, I will argue that neither is the case; both *lo1* and *aa1maa3* have intrinsic meanings of their own that are independent of specific contexts, and the meaning of each SFP is distinguishable from the other.

Considering the relatively abstract nature of SFPs, it is not surprising that their meanings have been difficult to pin down. Nevertheless, the literature includes some good, detailed descriptions of the use of SFPs in naturally occurring speech (e.g., Kwok, 1984; Leung, 1992/2005; Fung, 2000; Luke 1990). These studies are very useful to linguists who want to understand the meanings and functions of SFPs. Luke (1990) provided an enormous amount of detail, devoting 79 pages to the single SFP *lo1,* explaining its use within excerpts of conversations (see § 6.1.1.1 for a discussion of Luke's description of *lo1*). Despite such studies, I argue that we still lack precise definitions of SFPs. I explain why this is so in section 4.2, where I propose a new method for developing SFP definitions.

More recently, linguists have applied formal syntactic analyses to SFPs within the framework of generative grammar. Chapter 7 provides a review of those studies.

2.3 Sentence-final Particles and Intonation

Referring to Mandarin, which uses SFPs to a much lesser degree than Cantonese, Chao (1932) said that "the speech element in Chinese which may be equated to English intonation is the use of grammatical particles" (p. 115). Kwok (1984) said that "[a]s a system [SFPs] share many characteristics with intonation" (p. 8). Matthews and Yip (1994) said that "many of [the SFPs'] functions are often conveyed by intonation patterns [in English]" (p. 338). Explaining why Cantonese is

restricted in its use of intonation, Cheung (1986) said:

> Not only is Cantonese a tone language, but it has one of the richest tonal systems in the world. And not only is the number of contrastive tones in Cantonese one of the greatest, but the tonal system exploits both pitch height and pitch orientation at the same time, [The result is a variety of SFPs that] fulfill more or less the same function as intonation (pp. 250-251).

Yau (1980) argued that "there is a mutual compensation between [SFPs] and intonation patterns and that the more a language relies on the use of [SFPs] in expressing sentential connotations, the less significant will be the role played by intonation patterns, and vice versa" (p. 51). Cheung (1986, p. 251) said it is "beyond doubt" that lexical tones, SFPs, and intonation are interrelated; this is because lexical tones and intonation both share the same form (i.e., they are both comprised of pitch patterns), while SFPs and intonation share the same content (i.e., speaker stance, epistemic modality, etc.).

Yau (1980) said that Cantonese and English represent the two extremes of the SFP-intonation continuum, and Luke (1990) and Leung (1992/2005) supported this claim by saying that, as far as they know, Cantonese has more SFPs than any other language studied thus far. If true, then English lies at one end of the continuum along with all the languages that have very few SFPs,[1] while Cantonese lies alone at the other end with the largest known number of SFPs—more than 30 according to the literature.

Many linguists have observed that sentential connotation and speaker attitudes are generally expressed in English through a combination of stress and intonation (e.g., Chun, 2002; Pierrehumbert and Hirschberg, 1990). Cantonese generally uses

[1]English has sentence-final elements that can certainly be considered as something comparable to Cantonese SFPs. There is the question particle 'huh?' used for confirmation, the American restrictive focus marker 'is all' that means "only," the Canadian 'eh,' and others. We therefore cannot say that English has no sentence-final particles.

SFPs for these same purposes, making SFPs the counterpart to English stress and intonation. Although there is strong evidence and general agreement that this is true, it does not mean that every meaning expressed by each SFP is equivalent to some form of English intonation. If we look back at the English translations of sentences (2) to (6) in the previous section, repeated here for convenience as (2') to (6'), we can see that some SFPs translate into something other than (or in addition to) intonation. Only the first two SFPs have what is arguably a one-to-one correspondence with a form of English intonation:

(2') "S/he works in Wanchai." (the SFP *wo3*)
(said with an intonation that indicates noteworthiness, or sudden realization)

(3') "S/he works in Wanchai?!" (the SFP *me1*)
(said with a high-rising intonation to indicate surprise, doubt, or disbelief)

(4') "I guess/think s/he works in Wanchai." (the SFP *gwaa3*)
(said with an intonation that implies little commitment to the proposition)

(5') "S/he only works in Wanchai." (the SFP *zaa3*)
(said with a stress on "works" or "Wanchai" depending on the speakers intended focus)

(6') "(Someone said) S/he works in Wanchai." (the SFP *wo5*)
(said with a tone of non-commitment to indicate that someone else said this, not the speaker)

The English translations and the parenthetical notations indicate that the SFPs in sentences (2') and (3') translate entirely as a form of intonation. However, the translation of the SFP in (4') places the proposition inside an embedded clause, making it the complement of either the verb "guess" or "think," the translation of the SFP in (5') includes the adverb "only," and the translation of the SFP in (6'), as in (4'), places the proposition inside an embedded clause, in this case making it the

complement of “said.” This shows that SFPs are not always entirely equivalent to English intonation, but many SFPs translate at least partially as intonation.

A question that remains is whether or not the SFPs (or portions of SFPs) that translate into some form of English intonation are equivalent to it in function and meaning—or if the functions and meanings of the two are merely similar. Many words seem to translate readily from one language to the next. However, it is almost never the case that a word (or morpheme) from language A, Word-L_A, which translates best as a particular word into language B, Word-L_B, is an exact equivalent. Linguists rarely claim that Word-L_A = Word-L_B. Are SFPs the same as the vast majority of words in this sense, or do they have meanings that are universal, and which are therefore perfectly translatable?

Yau (1980) wondered if perhaps there are “common connotative concepts that will be handled either by means of [SFPs] or by intonation pattern variations in all languages” (p. 51). The lexicons of various languages are filled with words that have culturally specific meanings. Many SFPs and forms of intonation, on the other hand, may have universal functions and meanings (i.e., what Yau called “common connotative concepts”) that are used to facilitate communication. Speakers use them to situate propositions and ideas into the discourse in various ways, and to express their beliefs about these propositions and ideas. This study takes it as a working hypothesis that the four SFPs under examination have intonational forms in English, and that those English forms have exactly the same functions and meanings as their SFP counterparts. If this turns out to be true it will be very surprising, but it is nevertheless useful as a starting point to take this as a working hypothesis.

2.4 Assumptions Applied to this Study

Based on the literature I assume that the meanings and functions of SFPs are closely related to those of English discourse intonation. I assume that SFPs and intonation both express things such as speaker moods, speaker stances, and epistemic knowledge, linking sentences to the discourse. I take it as a working hypothesis that the SFPs of this study have the exact same functions and meanings as their English intonational equivalents. Speculations about the syntactic nature of the English equivalents will be made in chapter 7 based on what is assumed regarding the syntax of their SFP counterparts.

Chapter 3: Intonation

Hirst (1983b) said that "[i]ntonation, what Bolinger has called the 'greasy part of language,' is notoriously difficult to describe" (p. 93). t' Hart, Collier and Cohen (1990) also recognized the slippery nature of intonation, saying that "it is a fairly elusive subject matter [because it has] features [that] are more difficult to observe, transcribe and analyse than are their segmental counterparts" (p. 2). Gussenhoven (2004) explained that intonation is difficult to describe because "[t]here are so many aspects to consider: people use it to express their feelings; it encodes the information structure of the sentence; [and] it appears sensitive to syntactic categories like 'argument' and 'predicate' " (p. 50). This all sounds rather daunting, which is why SFPs are a welcome tool with which to study intonation, enabling us, I argue, to isolate discourse-related pitch contours from syntactically-related ones, as well as from prosody and other paralinguistic features that are used to express emotions—removing some of the grease, so to speak, and helping us to get a firmer grip on the subject at hand.

Intonation is difficult to study primarily for four reasons: 1) what one linguist calls "intonation" (or "prosody") may refer to more (or fewer) suprasegmental features than what another linguist calls "intonation" (Johns-Lewis, 1985); 2) it is not yet and perhaps never will be possible to mechanically record intonation the way that the native-speaker ear hears it. Something that a machine records as a rise in pitch, for example, is not necessarily heard by listeners as a rise, and therefore—even though clearly seen on paper—is *not* linguistically meaningful (Roach, 2009); 3) there is no one-to-one correspondence between form and function (t' Hart et al, 1990; Botinis, Granström and Möbius, 2001; Chun, 2002); and 4) the various subtypes of

suprasegmentals are used simultaneously in speech, one atop another, often making it difficult to isolate one form and its associated function/meaning from another.

Recognizing these complicating factors, Brazil (1997) advised caution when claiming that a particular intonational form has a particular meaning. He said there is a "need for extreme tentativeness in providing phonetic descriptions of the meaningful choices that make up the intonation system" (p. 3). He argued that "the only research procedure available is to make tentative phonetic observations and try to associate them with generalisable meaning categories" (p. 4). I argue that there is another research procedure available to help us study at least some forms of intonation. Sentence-final particles provide an alternative to the complicated procedure of simultaneously searching for the form and meaning of SFP-equivalent intonation in other languages. Exploiting SFPs to study the discourse-related forms of English intonation offers a new research methodology (see chapter 5) that significantly helps to overcome the four complicating factors stated above.

Bartels (1999, p. 4) asked:

> Can we make a plausible case for associating a given tone at some level of abstraction with the same interpretational feature across all occurrences, independent of lexical content and situational context, despite the fact that tunes in different contexts appear to yield highly variable effects?

For similar reasons, Cantonese linguists have debated whether or not the meaning of a given SFP is the same "across all occurrences, independent of lexical content and situational context." This question is harder to address when studying a form of

English intonation, because, unlike the easily identifiable form of a segmental SFP, it is difficult to identify every occurrence of the same form of intonation.

Overcoming the difficulty that Brazil (1997) observed of matching a form to a meaning is a prerequisite to overcoming Bartels's (1999) concern about knowing whether or not the meaning of a particular form is the same from context to context. Once a match has been made between form and meaning, my proposals for overcoming the problem of defining SFPs (see § 4.2) can also be applied to defining forms of English intonation. Brazil's prerequisite problem of matching form to meaning is directly related to overcoming the four complicating factors stated above, repeated here in simplified form:

1) different linguists may define intonation differently;
2) machines cannot record intonation the way native-speakers hear it;
3) there is no one-to-one correspondence between form and function;
4) subtypes of suprasegmentals are used simultaneously, one atop the other

I address problem 1) the same way as in virtually all studies of intonation: by clearly stating a working definition of "intonation" for the study at hand. That is the purpose of sections 3.1 and 3.2, which describe and define the form and function of the subtype of intonation to which this study relates.

Problem 2) was addressed by starting with an intonational meaning (i.e., a meaning assumed to be the same as its SFP counterpart) and then listening to multiple tokens of its translated form. This is much easier than trying to discover both form and meaning simultaneously, a difficult task that is exacerbated by all four of the problems listed above. Starting with a known meaning, and assuming that this meaning would be included in the data if translated accurately, reduced the task to identifying any multiple occurrences of a form of intonation. See section 5.4 for the

methodological details.

Problem 3) was overcome by distinguishing the meanings of the intonational forms of this study from any other intonational meanings that have the same or similar forms. In the case of *lo1*-equivalent intonation, for example, its form is similar to both emphatic and contrastive intonation, but it has a distinct meaning which is clearly spelled out with an NSM explication. Hirst (1983a) argued that emphatic and contrastive intonation are lexical entries that have the same form with different meanings, but that "this point is no more crucial than for any pair of homophonous morphemes" (p. 179). I therefore argue that *lo1*-equivalent intonation is nearly homophonous with emphatic and contrastive stress, but that this does not create any theoretical difficulties. I say "nearly homophonous" because intuitively I have the impression that it is slightly higher in pitch than emphatic and contrastive stress (see § 6.1.1.2). Whether or not this is actually the case is not critical to my arguments and will be left to future study. The relevant point here is that any fine distinctions of form can be more accurately discussed after the meanings of those forms have been clearly identified. Also, knowing the meaning before finding the form has allowed me to identify forms of intonation that, as far as I know, have never before been specifically identified.

Problem 4) was also addressed in this study by starting with an intonational meaning. I adopted a working hypothesis which assumed that the SFPs of this study correspond to a single specific type of intonation (i.e., discourse-related pitch contours). By observing numerous examples of what I assumed to be the same intonational meaning in different contexts, and by assuming that this meaning exists as a pitch contour that does not change its form from context to context, I was able to isolate it from all the other suprasegmentals: grammatical intonation; prosody; and other paralinguistic features.

The next two sections spell out my definition of intonation. I will first describe the functions, and then the forms, of all suprasegmentals, dividing them up according to these two criteria. Based on the descriptions and the divisions that I adopt, I will then identify and define the type of intonation associated with this research.

3.1 The Functions of Suprasegmentals

Botinis et al. (2001) said that "[t]he main functions of intonation are centred round the notions of *prominence, grouping* and *discourse,* which are related to various grammatical components as well as linguistic levels" (p. 267, emphasis in italics theirs). Many authors, regardless of which linguistic theory they adhere to, agree that intonation is a central part of the grammar, working to mark phrasal, clausal, or theme-rheme boundaries, as well as speech act types, such as question vs. statement (Trager, 1972; Pierrehumbert & Hirschberg, 1990; Crystal, 1997a-b; Halliday and Greaves, 2008). Chun (2002) divided the functions of intonation into three categories: 1) grammatical functions; 2) discourse functions; and 3) attitudinal and affective functions. Chun said that "there are no firmly established or universally agreed upon principles for classifying the functions of intonation" (p. 56), which means the method used to delimit the functions, and even what the number and nature of the functions actually are, is somewhat controversial. Nevertheless, it is essential for the purposes of this research that I settle on a particular definition of intonation and a particular description and classification of its forms and functions. I will adopt a division of intonational functions that includes only the first two of the three that Chun included.

Crystal (1997a-b) recognized two key functions of intonation, including the third

function that Chun (2002) listed, which I exclude. Crystal (1997a) said that, in addition to signaling grammatical structure, intonation functions "to express a wide range of attitudinal meanings—excitement, boredom, surprise, friendliness, reserve, and many hundreds more" (p. 173), and in Crystal (1997b) he added to the list some "personal attitude[s]: sarcasm, puzzlement, [and] anger" (p. 202).

Let us consider his examples. First of all attitudes such as "friendliness" and "reserve" have broad, subjective meanings that I don't believe could be expressed through the use of identifiable and consistent forms of intonation. I therefore don't think it is true that any specific forms of intonation can express (i.e., can mean, and therefore be defined as,) things such as "friendliness," or "reserve."

Crystal (1969, pp. 294-308) illustrated this problem himself through an experiment of his which clearly demonstrated the confusion that results from linguists attaching imprecise labels to the attitudinal meanings of suprasegmental features. He selected 20 labels that were in general use in the literature at the time and recorded 6 native English-speaking participants who were asked to say sentences in a "bored," "puzzled," "matter-of-fact," "amused," etc., tone of voice. Some labels were meaningful to the participants, but many were not. When the participants were asked to match the recordings of other participants' sentences to the labels provided, none of them had better than a 60% success rate. And when the same experiment was conducted in which participants were allowed to make up their own labels for the suprasegmental meanings, the success of matching dropped to 20%.

Linguists' thoughtfully considered labels were three times as useful as the layperson's, but still resulted in a mere 60% matching by participants. This clearly demonstrates both a need for accurate and simply-described meanings, and a need for correct matches between intonational forms and meanings—two key goals of this research. The former goal is addressed by using NSM definitions, and the latter by

exploiting SFPs to identify the intonational forms of those meanings.

Three of Crystal's other examples—puzzlement, surprise, and sarcasm—have discourse-related meanings. "Puzzlement" entails the meaning "I don't understand X," and "surprise" entails the meaning "I didn't know/believe X before now," which are discourse-related meanings because they are linked to some element X in the discourse. Intonation that expresses "puzzlement" or "surprise" therefore belongs at least partially in what Chun (2002) referred to as "discourse" intonation , though one could argue that they also belong partially to the category "attitudinal and affective," which I propose is not a function of intonation. The same is true of sarcasm because it entails irony, which can roughly be stated as "I am saying X, but I mean not X." (See Rockwell (2000) for an interesting and creative attempt at discovering the suprasegmental forms of sarcasm).

Attitudinal affective meanings must be separated from discourse meanings, so we should be careful to avoid the use of terms like "puzzled," which will likely cause people to use suprasegmental features of language that are comprised of a combination of both discourse and affective meanings. Crystal (1997a) said that when expressing attitudinal meanings, "intonation works along with other prosodic and paralinguistic features" (p. 173). I propose instead that intonation expresses discourse-related meanings, and that attitudinal meanings are expressed separately—though often simultaneously—by the "other prosodic and paralinguistic features" to which Crystal referred. The meanings "puzzlement" and "surprise" are expressed through a combination of intonational pitch and prosodic and paralinguistic features because they are broad terms that include meanings which are expressed through the use of intonation (i.e., discourse meanings), as well as meanings which are expressed through the use of prosodic and paralinguistic features (i.e., attitudinal meanings). The same is true of sarcasm, which is irony plus some

form of displeasure.

The approach that linguists working on intonation should take is to try and separate the meanings expressed by intonation from those that are expressed by prosodic and paralinguistic features. This presupposes two things that I assume for this study: first, "intonation" and "prosodic and paralinguistic features" are two different things; and second, the meanings that each expresses are mutually exclusive. This is a difficult thing to show since both are regularly used simultaneously, but it is a working hypothesis in this study. I propose that attitudinal and affective meanings are expressed solely by these other prosodic and paralinguistic features, rather than partly by them and partly by intonative pitch, as Crystal (1997a) claimed.

The remaining examples that Crystal gave—"excitement," "boredom," and "anger"—belong in the "attitudinal and affective" category, and, I argue, are therefore expressed entirely by prosodic and paralinguistic features.

Based on some linguists' definitions, the features of intonation and prosody overlap. Johns-Lewis (1985) asked, "Is there a dividing line between intonation and prosody? The answer, as with so many terms, is that it depends on who is using the terms" (p. xix). She concluded that intonation is a subset of prosody, but I instead adopt Crystal's (1997b) distinction between intonation and prosody. He said "intonation" is "the distinctive use of patterns of pitch" (p. 202), and "prosody" is "variations in pitch, loudness, tempo and rhythm" (p. 313). The distinction between "patterns of pitch" and "variations in pitch" will be made clear below.

There is a need to formulate simple, easy-to-understand definitions to represent the meanings of specific intonational forms. It is also necessary to clearly distinguish the different forms of suprasegmentals according to their various functions. If not, then suprasegmentals that are not forms of intonation will often be mistakenly referred to as "intonation," and meanings that are not expressed by intonation will be

incorrectly referred to as “intonational meanings.”

Not only did Crystal (1997b) list “friendliness,” “surprise,” and “anger” together under a single function of intonation (i.e., “the communication of personal attitude”), but he also said these “can all be signaled by contrasts in pitch, along with other prosodic and paralinguistic features” (p. 202). This gives the impression that the suprasegmentals that are used to express the discourse notion entailed in “surprise,” and those used to express an emotion such as “anger,” are of the same type. This is not true based on how I divide up suprasegmentals in this study. I argue that Chun’s (2002) so-called “attitudinal and affective” function of intonation is actually a function of the other prosodic and paralinguistic features that Crystal mentioned. My definition of intonation only includes the other two functions that Chun gave: “grammatical function” and “discourse function.”

Based on this new classification, Crystal’s (1997a, 1997b) list of examples for attitudinal and affective meanings can be divided into three groups: those that express only attitudinal and affective meanings (e.g., “boredom,” “excitement” and “anger”); those that are a combination of discourse and attitudinal and affective meanings (e.g., “surprise,” “puzzlement,” and “sarcasm”), and all the remaining that are probably too broad to classify (e.g. “friendliness” and “reserve”). The first group now lies outside this study’s working definition of intonationally-expressed meanings, and instead belongs to meanings that are expressed through the use of prosodic and paralinguistic features. The labels given to the meanings in the second and third groups should be replaced by simplified labels that can be clearly identified as either discourse meanings or as attitudinal and affective meanings.

I should explain here that I will use the terms “surprise” and “doubt” to describe some of the discourse meanings of this study. This does not conflict with what I have just said about such terms, however, because I use them only in reference to clearer,

fuller definitions; I do not use them to refer directly to the intonational forms themselves.

Gussenhoven (2004) made a firm distinction between two categories of intonation, saying that "intonation is both a form of animal communication... and part of the linguistic structure" (p. 50). He said that human language has the arbitrariness of the sign, and that some aspects of suprasegmentals are clearly non-arbitrary because, across languages:

> [w]hen we are excited, our pitch goes up, and when we are depressed we tend to have a low pitch with few excursions...When we wish to emphasize a word, we may raise our pitch, in addition to raising our voice in the sense of speaking more loudly. When we want to signal—for real, or more probably in jest—that we need the speaker's protection or deserve his mercy, we instinctively raise our pitch, to create a 'small' voice (Gussenhoven, 2004, p. 51).

I divide the suprasegmental features of speech into two main categories: 1) intonation; and 2) prosody and paralinguistic features. Based on the definitions I adopt, category 1) is part of the linguistic structure, and category 2) is a form of animal communication. My definition of intonation is narrower than Gussenhoven's, including only the category that is "part of the linguistic structure."

Couper-Kuhlen (1986, quoted in Chun, 2002, p. 55) said that "we must distinguish an unmonitored, purely physiologically determined externalization of emotional state [i.e., what Gussenhoven (2004) referred to as "a form of animal communication"], presumably universal across linguistic communities, from a 'cognitively' monitored expression of attitude, conventionalized and communicative in purpose." Likewise, Fox (2000) distinguished the "non-linguistic" forms of paralinguistic features that relate to emotions and attitudes from "the pitch features associated with [linguistic functions and intonation patterns that are] by no means

always ‘natural’ and universal, but differ from language to language, and hence reflect an arbitrariness characteristic of linguistic, rather than non-linguistic, phenomena” (p. 270).

The following grid distinguishes between these two types of suprasegmentals, showing my classifications based on the discussion thus far:

Table3.1

<table>
<tr><td colspan="3">Suprasegmental features of speech</td></tr>
<tr><td colspan="2">1. Part of the linguistic structure</td><td>2. A form of animal communication</td></tr>
<tr><td colspan="2">Intonation</td><td>2a. Prosodic features</td><td>2b. Paralinguistic features</td></tr>
<tr><td>1a. Functions to delimit phrasal structures</td><td>1b. Functions to express discourse meanings</td><td colspan="2">Function to express attitudinal affective meanings</td></tr>
</table>

The grid in table 3.1 shows the suprasegmental features of language classified according to function. Those features that are part of the linguist structure are of one type (i.e., intonation), which serves two functions (i.e., 1a and 1b). The function 1b is shown in bold because it is the function that this study is about. Those features that are a form of animal communication are of two types (i.e., 2a and 2b), which both serve the same function. The next section will discuss the various forms of intonation and will show them in a more comprehensive grid below.

3.2 The Forms of Suprasegmentals

It is assumed here that emotional attitudes are expressed through the use of suprasegmental forms that are basically universal across languages, and that these meanings cannot be lexicalized and are not forms of communication which are

entirely unique to human language. This does not imply that the *meanings* thus expressed are not largely unique to humans. The suprasegmentals that we use when we speak are almost certainly used to express uniquely human emotions, and their forms are a unique product of the human vocal tract. However, if they are not part of the syntax or lexicon of human language, it can be concluded that they are merely a form of animal communication that is used by the animal species known as Homo sapiens. Their forms and meanings are naturally rather consistent across the species, but may or may not share many qualities with the forms of communication used by other animal species.

This study does not deal with the English suprasegmentals that are considered to be a type of animal communication, and which are assumed to have similar, though probably not entirely the same, forms and meanings in both English and Cantonese. From language to language there will naturally be slight variations in the forms and meanings that belong to the system of "animal communication." Variations of form occur because the suprasegmentals that are a form of animal communication overlap, and therefore interact with, the unique phonological features of a given language; and alterations of meaning may result from cultural and speaker individual differences that influence the expression and interpretation of human emotions.

This study deals only with the English suprasegmentals that are defined here as "intonation." More specifically it deals only with those forms of intonation that carry the same meanings that SFPs do in Cantonese, which for the most part are discourse meanings, highlighted in bold in table 3.1. SFPs unquestionably have forms that are unique to Cantonese; these forms are therefore language-dependent. It seems likely that when these same meanings are expressed in other languages, they would have language-dependent forms in those languages as well.

In describing the various forms of suprasegmentals, I take Crystal's (1997b) two-part division between "intonation" and "prosodic and paralinguistic features," and make it a three part division as shown in table 3.1. Functionally, "prosody" and "paralinguistic features" can be grouped together as "expressing attitudinal and affective meanings," but they have different forms and are therefore listed separately.

Some evidence for the universality of "paralinguistic features" came from Maekawa (2004), who concluded that "the perception of [paralinguistic information] as voice-quality is language-independent, or universal, like perception of emotion,[1] while the perception of [paralinguistic information] as manifested by the manipulation of the features of phrase-phonology is language-dependent" (p. 8). He came to this conclusion based on his experiment with various forms of suprasegmental information, all of which he termed "paralinguistic information" (PI). His study included meanings such as *admiration, suspicion, disappointment,* and *indifference.*

The participants of Maekawa's study were instructed to record a single sentence several times, each time superimposing a form of PI that was supposed to have one of the meanings listed above. To help his participants, he simplified the various PI meanings by paraphrasing them. For example, he told his participants that the intonation of *admiration* should convey the message "That's great. I love it," and that the intonation of *suspicion* should convey the message "I doubt it and I don't believe it" (p. 1). Note that he addressed the labeling problem that Crystal (1969) discussed by taking terms that were too broad in meaning and rewriting them as

[1]It should be noted that the universality of the perception of emotion through facial expressions has been challenged, e.g., Russell (1994).

speaker-oriented emotional attitudes (“That’s great. I love it.”) or discourse-related speaker-oriented beliefs (“I doubt it and I don’t believe it.”).

Another group of participants in Maekawa’s (2004) study were asked to match each recording to one of the meanings on the list. Some of the participants who conducted this task were native-Japanese speakers, some were L2 Japanese speakers at various levels, and some had no knowledge of Japanese at all. Maekawa’s results showed a connection between: 1) the form of PI; and 2) whether or not that form of PI required knowledge of Japanese. If participants with no knowledge of Japanese were successful at making a particular match between form and meaning, then that form of PI was concluded to be universal, rather than language specific. Although Maekawa’s terminology was different, his conclusions appear to agree with my divisions. We can take his term “paralinguistic information” to be what I am calling here “suprasegmentals.” His saying that “voice quality” is universal and that “phrase-phonology” is language dependent agrees with table3.1, because “voice quality” is a form of “paralinguistic features”, and “phrase-phonology” is a form of “intonation.”

Phrase-phonology is obviously a form of intonation, because one of intonations main functions is to delimit phrasal structures. I would argue, however, that what Maekawa (2004) termed “phrase-phonology” is actually discourse intonation, which is used to express meanings such as “I doubt it and I don’t believe it.” Voice qualities are considered here to be forms of paralinguistic features because they are not forms of intonation (Johns-Lewis, 1985, p. xx), and they are not forms of prosody. Crystal (1969, p. 102) said that “quality” of voice is hard to define, but that one relatively useful definition is a negative one, which says that voice quality is any aspect of tone other than one of the three main ones: pitch, loudness, and length. This agrees with

Johns-Lewis's conclusion that voice qualities are not forms of intonation, because pitch, length and loudness are generally agreed to be the three main aspects of the intonation system. Prosody is also defined in terms that include pitch and loudness (Crystal 1997b, p. 313), so the various forms of "quality of voice" (i.e., things such as *breathy*, *lax*, *whispery*, *husky*, etc.) can all be classified as "paralinguistic features."

The other item listed under "a form of animal communication" in table 3.1 is "prosodic features." Cruttenden (1997) said that "[a]mong those emotions reported as having wide [range] and high [key] are joy, anger, fear, and surprise; among those reported as having narrow [range] and low [key] are boredom and sorrow" (p. 124). These are basically the types of meanings expressed by the attitudinal and affective function of suprasegmentals, which I am arguing belong outside of intonation. They are expressed through "variations in pitch," (i.e., high/low key and wide/narrow range) which, along with "loudness, tempo and rhythm," formed Crystal's (1997b, p. 313) definition of prosody, which I adopt.

Pike (1945) said that "various types of intonation, such as the general pitch of the voice as a whole in contrast to the different pitches occurring within a single sentence, must be studied separately in so far as is possible" (p. 24). I am separating them in this study and giving them different names. Prosody involves the pitch of the voice as a whole (i.e., its range and key), and intonation involves sentence-internal pitch manipulation.

The remaining forms to be discussed are those of intonation. Crystal (1969) said that "scholars in the field have been anxious to restrict the formal definition of intonation to pitch movement alone" (p. 195). This has had a lasting effect. Wells (2006) said that the study of intonation involves studying "how the pitch of the voice

rises and falls, and how speakers use this pitch variation to convey linguistic and pragmatic meaning" (p. 1). This demonstrates the preeminent status that linguists continue to give to pitch over the other, relatively less important features of intonation. It is generally agreed that pitch is the most influential of the three main components that convey intonational meaning, with length being the second, and loudness being the third (Johns-Lewis, 1985; Cruttenden, 1997; Hirst et al, 2000; Chun, 2002). The terms pitch, length and loudness refer to the cognitive, subjective interpretation of their objective physical counterparts, which are, respectively, fundamental frequency (or F_0) measured in hertz, duration measured in seconds, and intensity measured in decibels.

Many scholars have either recognized and/or followed the practical step of analyzing intonation in terms of pitch alone (Brazil, 1997; Crystal, 1997b; Botinis et al., 2001; Chun, 2002; Wells, 2006; t' Hart et al, 1990), and I will adopt this practice for this study (§ 5.4 explains how I recorded and analyzed pitch).

Table 3.2

<table>
<tr><td colspan="4">Suprasegmental features of speech</td></tr>
<tr><td colspan="2">1. Part of the linguistic structure</td><td colspan="2">2. A form of animal communication</td></tr>
<tr><td colspan="2">Intonation</td><td>2a. Prosodic features</td><td>2b. Paralinguistic features</td></tr>
<tr><td colspan="2">Manipulation of pitch (loudness and length)</td><td>Pitch range/key, loudness, tempo and rhythm</td><td>Qualities of voice</td></tr>
<tr><td>1a. Functions to delimit phrasal structures</td><td>1b. Functions to express discourse meanings</td><td colspan="2">Function to express attitudinal affective meanings</td></tr>
</table>

The divisions of the forms and functions of suprasegmentals adopted for this

study are shown here in table 3.2. The grid shows a row of forms with a solid-bold border above a row of functions with a triple-line border. The form and function that are the focus of this study are both shown in bold text and their boxes are shaded. This study specifically looks at manipulations of pitch that function to express discourse meanings, because it is taken as a working hypothesis that the SFPs of this study correspond to this particular form and function in English.

My classifications in table 3.2 are not universally accepted by all linguists who study intonation, but that is not a problem because the data can be reanalyzed according to whatever classifications one cares to adopt. Even if my classifications are accepted, the information in table 3.2 is a simplification of the facts. For example, tempo and rhythm are also used to delimit phrases within the sentence; it is only when they are used at the level of speech utterances as a whole that tempo and rhythm are considered to be outside the linguistic structure. Table 3.2 also gives the impression that suprasegmentals should be much easier to isolate and study than linguists have claimed, which is not the case because of the fourth complicating factor mentioned at the beginning of this chapter, which said that subtypes of suprasegmentals are used simultaneously, one atop the other. The basic classification shown in table 3.2 is sufficient for the purposes of this study.

Complicating factor number four can now be discussed in terms of the classifications drawn up in this chapter: pitch key and pitch range, along with qualities of voice, frequently occur on top of discourse-related pitch contours. This overlapping of forms can cause linguists to interpret overlapping of meanings. Changes of pitch range/key and qualities of voice can represent emotional attitudes that are very compatible with particular discourse meanings, and may therefore often be expressed along with those discourse meanings. Not only does this make it difficult to isolate their individual forms, but it can cause linguists to place the

combination of their meanings under a single definition. The same phenomenon is true for SFPs, which are often given definitions that combine their meanings along with modals and/or forms of prosody and qualities of voice. This mixing up of meanings is something I argue against doing, and is something that this study proposes a method for overcoming (see § 4.2).

Ladd (2008) talked about the extreme difficulty of separating intonation from paralinguistic features, a problem this study attempts to address, even if only partially:

> Intonational features… exclude 'paralinguistic' features, in which continuously variable physical parameters (e.g., tempo and loudness) directly signal continuously variable states of the speaker (e.g., degree of involvement or arousal). … [P]aralinguistic features interact with intonational features [and] paralinguistic aspects of utterances are often exceedingly difficult to distinguish from properly intonational ones, and it is a matter of considerable controversy which aspects are which, or whether such a distinction is even possible (Ladd, 2008, p. 6).

The method used in the study of this thesis is a tool that can help us make this distinction, at least for some forms, providing evidence that such a distinction is indeed possible. By knowing the meaning of a particular form of discourse intonation before hearing tokens of it (i.e., knowing the meaning of an SFP before hearing different examples of it translated into English), we can zero in on the feature that appears in each translation of that same meaning.

Having taken the simplifying step of defining intonation as manipulations of pitch, all that remains to be clarified about the forms and functions of suprasegmentals are the differences between the intonation that functions to delimit phrasal structures and the intonation that functions to express discourse-related meanings. In a study such as this, which adopts the generative syntax framework, it

would seem natural to use Pierrehumbert's (1980) model of phrasal intonation. Her model uses something referred to as the tones and break indices (ToBI) transcription system for transcribing accents (i.e., word prominence within utterances) and phrasing. Botinis et al. (2001) said that Pierrehumbert's model "is widely regarded as the single most influential work in the field of intonational phonology" (p. 280), and Chun (2002) said that "Pierrehumbert's (1980) seminal monograph sets forth the now-standard generative model of intonation" (p. 29). For reasons that follow, I don't believe that ToBI is able to adequately describe the discourse intonation of this study.

ToBI marks the pitch of an utterance as a sequence of high and low tones that are labeled according to their function. Accented syllables are marked with an asterisk. A low-toned or high-tone accented syllable is marked as L* or H*, respectively. Low and high phrase-boundary tones are marked as L% and H%, respectively (for detailed descriptions of ToBI, see Pierrehumbert, 1980; Pierrehumbert & Hirschberg, 1990; MITOpenCourseWare, 2006). This system does not appear adequate for describing the discourse-related intonational forms of this research, which are proposed to be specifically shaped pitch contours (see §3.4). The problem is that ToBI only indicates relative pitch, and thus does not represent the global shape of a pitch contour in sufficient detail.

Kenneth Pike said:

> In order to describe an intonation contour it does not suffice to say that it is rising, or falling, or falling-rising. Even the simplest rise has a complex series of relationships to other contours, and complex internal structure. The size of the interval between beginning and ending points, the height of the beginning point relative to the general pitch level of the sentence, paragraph, conversation, or speaker's norm [are all important]…(Pike, 1945, p. 25)

To measure intervals between beginning and ending time, the measurement must

include “time,” and to measure the height of the beginning point, the measurement must include “frequency.” Related to this Peter Roach said:

> There is something special about a contour, like fall-rise or rise-fall. It is the contour itself. It’s the global shape of it, not the fact that it starts low and then goes to a high point and then goes to a low point. It is a contour, and contours were not part of the basic equipment of [the ToBI] system; a contour was something at a higher level that you made up out of these building blocks—the low tone and the high tone. And more and more I came to feel that the importance of contours was being neglected in ToBI (Roach, 2009, beginning at 2:24).

The ToBI system indicates the high and low points of the F_0 throughout a tune, indicates whether or not a particular H or L tone occurs on the pitch accent of an intermediate phrase, and whether or not it marks the ends of intermediate phrases. As far as I understand it, this appears to be an excellent system for representing phrasal structure intonation, but not for representing the forms of discourse-related intonation that this study is about, because it is “the global shape” of these contours that is meaningful. The ToBI system does not include either time or F_0 in its representations, and therefore does not provide a clear representation of an F_0 curve unless one looks at the actual curve that the H and L tones refer to. ToBI represents relative F_0 as high or low, but not actual F_0 measured in hertz. Just as importantly, it does not appear to account for native-speaker intuitions regarding pitch; it is strictly a mechanical measurement of relative pitch heights (Roach, 2009). (See § 5.4 for my defense of including native-speaker intuition in my analysis).

Hirst (1983b) came up with an idea that is theoretically a better system for representing the global shapes of pitch contours, which is “a sequence of target pitches (t_i, h_i), where t_i represents the time value and h_i the fundamental frequency for each target pitch” (p. 98). There is no limit to the number of target pitches that

can be measured across an F_0 curve, allowing one to mark enough "target pitches" on the curve to show its actual shape. The F_0 curve on paper can be thought of as an infinite number of (t_i, h_i) values, resulting in a solid line. There are problems with this approach as well. One problem is that a long list of numerical values representing a large number of positions along a contour line is virtually impossible to imagine and is impractical for writing down. It therefore makes more sense to simply refer to the F_0 contour on paper. Another problem is that F_0 is not the same thing as pitch (see § 5.4), and the ultimate goal here, as with any study on intonation, is to describe a pitch contour, not an F_0 contour.

The fact that acoustic F_0 is different from auditory pitch means that the F_0 representations of the same pitch contour will vary from one occurrence to the next. This is because other features, such as loudness and length (and perhaps even voice qualities), which are not visible on the F_0 graphs, can influence the perception of pitch. The grid in table 3.2, and my definition of discourse intonation, are of course simplifications, but necessary ones considering the fact that we are unable, at present, to measure all the features that influence pitch perception. Our inability to do so is due to a lack of linguistic understanding regarding exactly what all of the vocal features are that can influence pitch perception, and our lack of technology for accurately and simultaneously measuring all of these features.

Exacerbating the problem is the fact that, even if F_0 contours *were* the same as pitch contours, one would still expect to see variations such as the ones seen for lexical tones in the form of allotones. The pitch shape of a particular discourse meaning will differ from one occurrence to the next. There are many reasons for this, even if we look at a single speaker. Any changes in tempo, pitch range, etc., will result in variations of the (t_i, h_i) values along the curve of an F_0 contour. Although the exact shape of the pitch curve will vary each time it is uttered, the different shapes of

the varying occurrences will each represent the same discourse meaning, just as variations of the same lexical tone, from one occurrence to the next, each represent the same lexical tone.

I assume that Roach was correct about the global shapes of pitch contours being linguistically meaningful. If it is only discourse intonation that uses specific pitch contour shapes, then ToBI is a good system for describing phrasal intonation. But the ToBI system would benefit from having accurate descriptions of discourse-related pitch contour shapes, which it could then account for separately from phrasal intonation, just as ToBI or any system that attempts to describe phrasal intonation must account for lexical tones separately from the pitch manipulations that are related to grammatical phrasing.

Summarizing sections 3.1 and 3.2 in relation to discourse intonation, it is taken as a working hypothesis that suprasegmentals are of two main types: those that are part of the linguistic structure; and those that are a form of animal communication. Suprasegmentals that are part of the linguistic structure either function to delimit syntactic phrasing, or to express discourse related meanings. Those that express discourse related meanings will be described strictly in terms of pitch manipulations as perceived by the mind of the speaker. It is recognized, however, that the perception of pitch is influenced by other suprasegmentals, particularly length and loudness. Brazil (1997) explained that it "seems inherently improbable that a human being can make systematic variations on one physical parameter without its affecting others. Changes in loudness and in speed result from intimately connected adjustments to the same speech mechanism as that which determines pitch" (p. 3). I acknowledge this and, to the extent that other suprasegmentals interact with pitch manipulation and perception, they are indirectly included as part of my definition of

"discourse intonation." My working definition of English discourse intonation is stated as follows:

(11) Discourse intonation:

discourse-related bound morphemes whose forms are specifically shaped pitch contours

3.3 Suprasegmentals in Cantonese

Although the lexical-tone system of Cantonese severely limits the use of intonation, Cantonese is not entirely void of it. Numerous authors have described aspects of Cantonese prosody and intonation. Based on the definition of intonation adopted here, intonation is used in Cantonese to serve the same two functions as in English. One function is the marking of syntactic phrasing (Vance, 1976, cited in Bauer and Benedict, 1997, p. 148; Fox, Luke and Nancarrow, 2008). The other function is the discourse-related function of intonation whose variety of forms is very rich in English, but severely restricted in Cantonese. As far as I know the literature on Cantonese discourse intonation talks about only 2 things: emphatic stress, which is marked by vowel lengthening (Bauer, K. Cheung, P. Cheung and Ng, 2004); and rising declaratives (Kwok, 1984; Cheung, 1986; Wu, 1989; Ma, Ciocca and Whitehill, 2006; Fox et al., 2008). The fact that Cantonese has intonation is obviously a complicating factor for this study, but not overly so.

Cheung (1986) mentioned some forms of "intonation" that Cantonese shares with English. One is the semantically empty declination effect that is observed in Cantonese declarative statements (Bauer and Benedict, 1997; Bauer et al, 2004; Fox

et al, 2008). A decline in pitch results from the relatively smaller amount of air in the lungs at the end of an utterance than at the beginning. This is a universal physiological effect that has been observed in numerous languages and is therefore not relevant here.

Another form of Cantonese "intonation" that Cheung (1986) mentioned is something that I classify as a prosodic feature, a form of animal communication, and which is therefore assumed to have very similar forms and functions in both Cantonese and English (and in all languages in fact). It is the manipulation of the pitch key up or down, or of the pitch's range narrow or wide. According to Cheung (1986) Cantonese speakers are relatively limited in their ability to change an utterance's pitch range or key because of the wide pitch range that is required by its lexical tone system, but I think this limitation is much less severe than Cheung seemed to imply. These prosodic features can be, and often are, used by Cantonese speakers to express the sorts of emotive meanings that such pitch changes carry. They express affective attitudinal meanings, which I argue are not expressed through SFPs. These prosodic features are therefore also irrelevant to this study.

The emotive meanings expressed by changes in pitch key and range, as well as those that are expressed through voice qualities, have been attributed to SFPs, just as they have been attributed to discourse intonation in English. Understanding this, Kwok (1984) argued that emotional attitudes expressed through suprasegmentals are separate from the meanings of SFPs, saying that sometimes "the expression of 'emotions' and 'attitudes' does not depend on the mere presence of the particles, but on the intonation superimposed on them in real contexts" (p. 98).

Bauer and Benedict (1997) gave a partial list of meanings which they said were expressed by SFPs, including the "speaker's emotional attitudes of… outrage,

passion,… dissatisfaction… patience, [and] impatience" (p. 291). I propose that SFPs do not express these emotional attitudes, but that such attitudes are instead expressed through the uses of prosody and/or certain qualities of voice that can lie across the pronunciation of SFPs as well as across the sentences to which the SFPs attach. Because certain emotional attitudes are especially compatible with the meanings of certain SFPs, as well as with the types of contexts in which those SFPs often occur, the supralinguistic forms that express these attitudes are frequently used in conjunction with those particular SFPs. This has resulted in linguists' assuming that these emotional attitudes are an inherent part of the SFPs' meanings. One of the tasks at hand, an admittedly difficult one, is to separate these out, and to define SFPs absent of any emotional attitude.

The form of intonation in Cantonese that is relevant to this study is the kind that forms rising declaratives. Citing Chao's (1932; 1968) division of Mandarin intonation into "utterance body intonation" and "utterance final" intonation, Fox et al (2008) said that Cantonese intonation can also be divided into these two components. They said that within the "utterance body intonation" are phrase declination effects and syntactic phrasal marking, both of which are seen in non-tone languages. They said that the "utterance final" intonation of Cantonese is used primarily to distinguish sentence types, i.e., declarative vs. interrogative (I argue it distinguishes speech acts, i.e., statement vs. question).

Wu (1989) demonstrated that rising declaratives can occur in Cantonese sentences that end with a syllable that has any of the six lexical tones that Cantonese uses. In rising declaratives that end with a syllable that uses a high-rising tone 2, the syllable rises to a greater degree than normal, and in rising declaratives that end with a syllable that uses a high-level tone 1, the final syllable is realized at a higher pitch

level than normal. Both Wu (1989) and Fox et al (2008) observed that the pitch level across the entire sentence also appears to be higher in rising declaratives than in non-rising declaratives.

The fact that Cantonese has rising declaratives is relevant. It means that, according to my assumptions about discourse intonation, Cantonese has at least one morpheme in the form of discourse intonation. Significantly, Cantonese rising declaratives have meanings that are related to the question forming SFPs of this study: *me1* and *aa4*. Ideally, it would be good to discover the English equivalents of Cantonese rising declarative morphemes, and to compare them to the equivalents of *me1* and *aa4*. There are at least two complicating factors. One is the fact that rising declaratives are not marked in the corpus I used. Another more serious complicating factor is that rising declarative morphemes have abstract suprasegmental forms in both languages, so it is very difficult to argue that Cantonese has only a single rising declarative form. I will therefore leave this for future research.

3.4 The Syntax of Intonation

Hirst's (1977) seminal study tried to bring English intonation into the framework of generative syntax. Hirst said that most phoneticians have only worked towards what Chomsky referred to as observational adequacy, being "concerned merely to give an account of the primary data that is the input to the acquisition device" (Chomsky, 1964, p. 29). Hirst (1977) went on to say that even with this relatively easier goal of observational adequacy, there has not been a great deal of success with regard to intonation because, unlike the situation with segmental phonemes, there has not been a lot of agreement about the forms and functions of

intonational features. Sections 3.1 and 3.2 showed that this problem is still a long way from being resolved.

Hirst (1977) said that researchers should aim for a theory of intonation that attains descriptive adequacy, a goal that makes speaker intuition all the more crucial. In Chomsky's words (1964) "a grammar that aims for descriptive adequacy is concerned to give a correct account of the linguistic intuition of the native speaker" (p. 29). According to Hirst (1977), few if any linguists doubt that intonational features contribute information to sentences. The only questions are what kind of information, and whether or not this information is systematic—two questions that are of course key to the present study. Is intonational information comprised of discrete features that are acquired by learners along with the other syntactic, semantic and phonological features of language? If so, we would expect there to be surface differences based on the varying parametric settings of languages with regard to intonation. I assume this to be the case, and therefore assume intonation to be part of the system of language.

If, on the other hand, "we consider intonation as merely a direct, physical manifestation of the speaker's emotions and feelings, [then] we should normally expect different languages to use the resources of intonation in very similar, if not exactly the same, ways" (Hirst, 1977, p. 3). The previous section made it clear that this is not intonation, as defined here, but rather prosodic and paralinguistic features, which are *not* part of the system of language.

Hirst said that intonational features can serve as an input to the lexical, syntactic, or semantic component of the grammar. The following sentence was given to illustrate intonational input into the lexical component (p. 9):

(12) The men can fish.

Even if the word “can” in (12) is pronounced with a full vowel as /kæn/, there is more than one possible interpretation. Hirst (1977) said that, depending on whether or not this word is stressed, it could either be a transitive verb or an emphatically stressed modal auxiliary. At first glance this appears to indicate that the presence or absence of the intonational feature [±stress] can determine a word’s lexical category. Hirst (1983a) later made an argument—explained in detail below—that offers a strikingly different reason as to why (12) can be seen as an example of intonation being an input to the lexical component of the grammar.

Hirst presented the following sentence to illustrate intonation as an input to the syntactic component (p. 9):

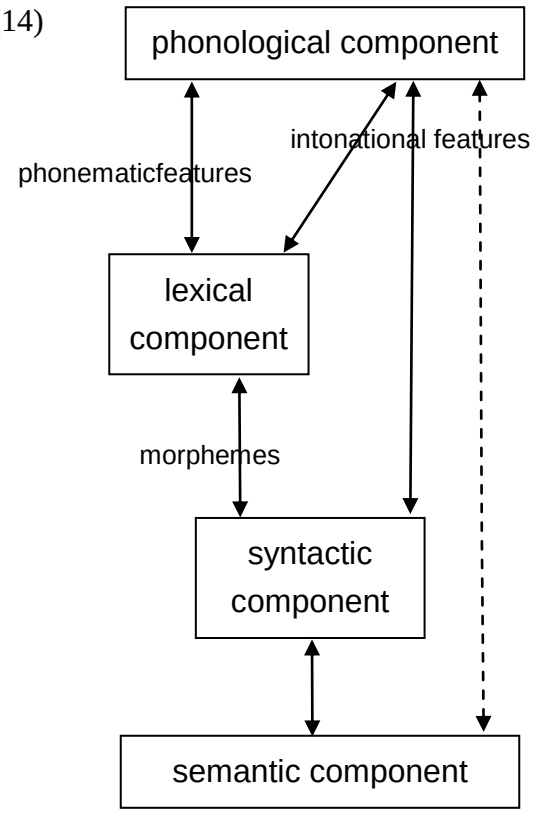
(13) Can you spare me a few minutes.

Changing the intonation of (13) can change its syntactic structure. If the word “minutes” is the only word stressed, then “a few minutes” is interpreted as the direct object of the ditransitive verb “spare.” If, on the other hand, each word of the entire VP “spare me a few minutes” is stressed, then “a few minutes” will be interpreted as an adverbial adjunct, modifying the monotransitive verb “spare.”

Hirst (1977) said that the intonational information contained within sentences is usually not one or the other of the above two types he illustrated, i.e., altering either the lexical or the syntactic category of one of the sentences constituents. He therefore concluded that intonational features are also an input to the semantic component of the grammar. He claimed, however, that there are “a considerable number of ambiguities which [have] always been treated from a semantic, ‘attitudinal’ point of view, but which can be handled very effectively within the framework of

transformational-generative grammar" (p. 44). In other words, a lot of what linguists assumed to be intonational input going directly into the semantic component was actually intonational input going into either the lexical or the syntactic component. The following diagram (slightly modified) is from Hirst (1977, p. 11):

(14)



Hirst did not go so far as to claim that *all* intonational features are direct inputs to either the lexical or syntactic components, thus his diagram indicates that intonational features provide a direct connection between the phonological component and the semantic component (i.e., the dashed line). However, a question worth serious consideration is whether we can reanalyze the dashed line as being comprised solely of prosodic and other paralinguistic features. This would mean that all of the phonological component's direct inputs to the semantic component are a form of animal communication in the sense discussed in sections 3.1 and 3.2. Seen

this way, perhaps it does not make sense to refer to these phonological forms as actually being outputs of the phonological component of language and inputs to the semantic component of language. They merely function to place the linguistic information onto a background of some emotion, such as anger, fear, excitement, etc. In contrast, those suprasegmentals that are intonational forms, according to the definition adopted here, are inputs to the syntax, either directly as illustrated with (13), or via the lexicon in the sense proposed by Hirst (1983a), which is explained below.

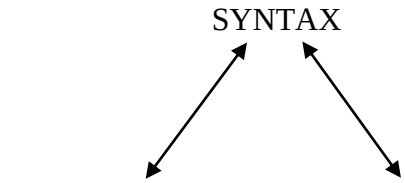
Chapman (1998) said:

> The physical nature and ontological status of utterance accent have been subject to much debate. The protagonists in this debate can be very roughly divided between those who argue that accent is essentially a linguistic, rule-governed phenomenon, derived from syntax, and those who argue that it is entirely non-linguistic, and determined by speaker choice, with no reference to grammar. What is not in dispute is that the placement of accent, whatever its status, can have striking effects on what is communicated by a speaker (p. 9).

One example of accent's striking effect on what is communicated was illustrated by (12).

Hirst (1983a) came down strongly on the side of those who argue that utterance accent (i.e., utterance stress) is part of the grammar. He said it had been argued that intonation is a counterexample to the Extended Standard Theory (EST) of generative grammar. This is because EST theorizes there is no direct interaction between phonology and semantics, both of them interacting directly with syntax, and interacting with each other only indirectly. The same point was also made by Selkirk (1984). This can be illustrated in the following fashion:

(15)



(Hirst, 1983a, p. 172)

Using more recent terms, EST claimed that Phonological Form (PF) and Logical Form (LF) (i.e., the semantic component) interact directly with the computational system (i.e., the syntactic component), but not directly with each other. In a review of the guiding ideas of the Minimalist Program, Chomsky (1995) said, "We thus adopt the (nonobvious) hypothesis that there are no PF-LF interactions relevant to convergence—which is not to deny, of course, that a full theory of performance involves operations that apply to the (π, λ) pair" (p. 220). By "convergence" he meant "fully interpretable," and the "(π, λ) pair" refers to the PF and LF representations of a sentence, respectively. In other words, while some operations might apply to both levels, the two levels still do not interact with each other, and both are considered to be the interfaces that link the computational system to the two performance systems—PF linking it to the articulatory-perceptual (A-P) performance system, which is related to the interpretation and production of sound, and LF linking it to the conceptual-intentional (C-I) performance system, which is related to meaning.

Even if one were to assume a strong derivational approach like that of Epstein et al (1998, cited in Chomsky, 2000b, p. 91), which removes the levels of PF and LF and assumes that the two performance systems (i.e., A-P and C-I) access the computational system directly, then there is still no direct interaction between the

two performance systems. Hirst (1983a) pointed out that if intonation, a phonological element of language, gets a direct semantic interpretation (without any involvement of the computational system), then this would appear to be a counterexample to EST, as well as to the more recent versions of Chomsky's theory. Obviously, voice qualities that express an emotion such as anger will have a direct interpretation (e.g., "I am angry"), but because this is assumed to be a form of animal communication here, it should not be expected to be an input to the computational system of language.

Defending the EST model, Hirst (1983a) argued that intonation does not get a direct semantic interpretation, providing two examples that he referred to as "interrogative intonation" and "emphatic intonation." Following a phonological model that he presented in Hirst (1983b), he argued the following two things in Hirst (1983a):

1) Emphatic (as well as contrastive) intonation is a floating-tone morpheme, and as such it is part of the English lexicon. It is therefore an input into the syntactic component via the lexical component, and subsequently is not a counterexample to EST.

2) Rising interrogative intonation in English is a high tone that is freely applied in the phonology, and it has no semantic interpretation. Because it has no semantic interpretation it is not an example of the phonological component being a direct input into the semantic component, and is therefore not a counterexample to EST.

I assume Hirst (1983a) to be correct about emphatic and contrastive intonation being floating-tone morphemes in the English lexicon. Accordingly [± stress] is no

longer considered to determine the lexical category of “can” in (12). This can account for why placing “stress” on the word “can” does not actually disambiguate the sentence. An unstressed “can” is still interpreted as a transitive verb, but a stressed “can” is ambiguous. Adopting Hirst’s (1983a) arguments, the stress tone is now analyzed as begin one of two homophonous floating-tone morphemes—either emphatic or contrastive intonation. They are realized on top of the phonological segments of “can,” and either one is acceptable to use in (12). Emphatic intonation can only be used in conjunction with the modal auxiliary “can,” and contrastive intonation can only be used with the transitive verb “can,” in contrast to “bottle” for example. According to this analysis, it is in fact the lexical category of “can” that determines the meaning of the intonation, rather than vice versa as previously argued by Hirst (1977).

Hirst (1983a) based his argument for floating tones on the idea that the lexical feature [± tone] determines whether or not floating-tone morphemes are able to lie across the phonological segments of segmental morphemes, resulting in the simultaneous pronunciation of two lexical items. He said that this is allowed in English because its lexical entries all have the feature [- tone].

The implication is that languages with lexical tones cannot have floating tones. This is certainly not the case, however, because languages would then be restricted to using either discourse modals/particles or floating tones, but never both, to express connotative meanings, and Mandarin is an example of a language that uses both (Chao, 1968; Chan, 2001). Chao (1968) explained that lexical tones and discourse intonation can co-exist in Mandarin, comparing lexical tones and “expressive” intonation patterns to “small ripples riding on large waves,” (p. 39), respectively. I argue that even Cantonese is an exception to Hirst’s argument, because I claim that

the rising tone of a Cantonese rising declarative is a floating tone. It is not a prerequisite that a given language's lexical entries must all be [-tone] in order for floating tones to exist in that language.

Regarding what he referred to as interrogative intonation, Hirst (1983a) explained that some languages have an "interrogative morpheme," and argued that there is "an interrogative particle in Basaa [that] is very close to becoming a pure floating tone" (p. 175). He said that a "similar analysis for the rising intonation associated with questions in English would be attractive but this solution cannot be the right one for the simple reason that questions identified only by rising pitch in English can be shown not to be syntactic questions at all" (p. 176). He supported this argument with the following examples:

(16) a. Did he buy something?
b. Did he buy anything?

(17) a. He bought something.
b. *He bought anything.

(18) a. He bought something?
b. *He bought anything?

The question marks all represent rising intonation. Hirst argued that the two ungrammatical sentences (17b) and (18b) pair together because the rising intonation of (18a) and (18b) does not turn them into "syntactic questions," concluding that this demonstrates that English rising intonation is not a "question-morpheme." He went on to say that he was not aware of any languages that syntactically disallow a question with*out* a final high tone, or a statement *with* a final high tone. He concluded from this that, while the rising tone does not affect the syntax of the

sentence, it nevertheless does not provide any evidence that PF interacts directly with LF because the rising intonation provides no semantic interpretation.

I disagree with these conclusions. Hirst was right that rising intonation does not change the clause type, and as such it should *not* be labeled "interrogative intonation." However, rising intonation on a declarative clause *does* provide a semantic interpretation. (17a) and (18a) are both declarative clauses, but they are two different kinds of speech acts; one is a statement and one is a question. They therefore obviously have different meanings. (18a) is the more semantically complex of the two, because it includes the meaning of (17a) as a presupposition, plus it has some additional meaning that can be roughly stated as surprise or doubt. It is better to call this type of sentence a "rising declarative," following Gunlogson (2003), who demonstrated that rising declaratives have different semantic interpretations from falling declaratives (see§ 6.2.3 for a discussion of Gunlogson's arguments).

Although I disagree with Hirst's (1983a) claim that the rising tone of a declarative is semantically empty, I do not consider this to be a counter example to EST. We can look at it in the same way that Hirst analyzed emphatic and contrastive intonation: it is a lexical entry in the form of a floating-tone morpheme that adds meaning to a sentence without changing the clause type.

The forms of English intonation that are equivalent to the SFPs in this study are not only assumed to have the same meaning as their SFP counterparts, but are also considered to be morphemes. If we assume that SFPs are largely intonation in segmental form, then it is reasonable to assume that some combination of phonologically-related parameters causes the meanings that are expressed through intonation in some languages to be expressed via segmental morphemes in languages

that restrict the use of intonation. The working hypothesis adopted here allows us to restate the widely accepted view that SFPs are a "lexical" form of intonation. The hypothesis I adopt states that SFPs and SFP-equivalent intonation are *both* lexical—the key difference begin that the former are segmental and the latter suprasegmental. The definition of discourse intonation in (11) is based on this hypothesis.

This hypothesis stems from the idea that SFPs are most certainly part of the lexicon in Cantonese, and that if the English counterparts to SFPs are concluded to be pitch contours with the same functions and meanings, then it seems reasonable to analyze them as floating tones that are part of the English lexicon. Arguing that some English intonational forms are lexical morphemes is no different from Tang's (2006) argument that the rising tone used to produce intonational questions in Cantonese is an SFP that occupies the same syntactic slot as the question SFP *me1*. Law (1990) also argued that rising declaratives (what she called echo questions)[1] are formed by what she referred to as a floating high-level tone particle. Unlike Tang (2006), however, Law (1990) argued that this floating tone "occur[s] at the boundary of the utterance node" (p. 172), and is therefore not in the syntax. Leung (1992/2005, pp. 80-83) recognized six non-segmental SFPs in the form of pitch contours, and Sybesma and Li (2007) argued that 3 Cantonese tones (i.e., tones 1, 4, and 5) exist as lexical morphemes and even proposed syntactic slots for them. There is nothing to prevent English from also having lexical morphemes in the form of pitch contours. The fact that English has no lexical tones means it has the potential to use an even greater variety of this form of morpheme.

[1]Cantonese echo questions that are equivalent to English *wh-* in situ echo questions are formed with an in situ question word plus the suffixing of the SFP *waa2*.

3.5 Assumptions Applied to this Study

My working hypothesis assumptions can be summarized as follows:

- There are some suprasegmentals that are basically universal in form and meaning, and which English and Cantonese therefore share; these are a form of animal communication and are not included in the syntax. They are not part of the present study.

- Some forms of intonation express discourse- and epistemic-related meanings; these meanings are expressed through language-specific forms of intonation and/or sentence or modal particles.

- Each of the four SFPs of this study is equivalent to a specific form of English discourse intonation;

- Each SFP and its English equivalent share the same meaning;

- This match between an SFP and an English-intonational form and meaning is consistent, i.e., it does not change according to context;

- The SFPs' English-equivalent forms are pitch contours whose global shapes are meaningful;

- These pitch contours are floating tones that exist as morphemes in the English lexicon;

- Because these pitch contours have the same functions and meanings as SFPs (i.e., they express speaker moods, stances, and epistemic knowledge, linking sentences to the discourse), they are located in CP.

These hypotheses are based on a strongly affirmative answer to Bartels's (1999) question as to whether "we [can] make a plausible case for associating a given tone at some level of abstraction with the same interpretational feature across all occurrences, independent of lexical content and situational context" (p. 4). They are

also based on Hirst's (1983a) claim that some forms of intonation are lexical morphemes. Other linguists have made arguments similar to Hirst's. Liberman (1979) referred to O'Connor and Arnold's (1973) list of tones as "the nearest thing available to an adequate intonational lexicon" (Liberman, 1979, p. 94). Speaking about one of O'Connor and Arnold's tones, which is a specifically-shaped pitch contour, Liberman said "there is some real linguistic entity here, whose properties are a fit object of study" (p. 96), and further argued that it "is a sort of *intonational word*, a unit of meaning" (p. 97, emphasis in italics his).

Ladd (1978) reviewed the debate in the literature about whether intonation has context-free meaning. He concluded that no writers had "ever really considered what seems to me to be the simplest hypothesis: that intonational meaning is *like segmental meaning*" (p. 144, emphasis in italics his). He then said the inability to give context-free definitions to intonational forms can be compared to the inability to do the same for Japanese sentence particles. This is an excellent and insightful comparison that is highly relevant to the present study. The way around the difficulty of defining these types of grammatical elements is discussed in section 4.2 in relation to Cantonese SFPs and their English equivalents.

The purpose of this research is to test the working hypothesis assumptions listed above by seeing to what extent we can find evidence to support them. The process will hopefully bring us a step closer to understanding whether or not discourse intonation has context-independent meaning and whether or not it is comprised of morphemes.

Chapter 4: The Natural Semantic Metalanguage

James (2001) proposed a language-neutral method for representing the meanings of SFPs, the purpose of which was to help Cantonese speakers express these meanings in their English writing. He saw a need for this after discovering that his L2-English, L1-Cantonese students were attaching SFPs to the ends of English sentences in their emails to each other. James compared the use of SFPs in English emails to the use of smileys (i.e., emoticons), which he said are used by native-English speakers to do some of the work of English intonation. In an attempt to get his students to think about the meanings of the SFPs that they were typing in their emails, James asked them to explain what they meant. He did so by asking things such as, "What does 'It's my birthday *wo*' mean?" (p. 15). This kind of informal approach with L2-English speakers is not likely to be very fruitful. It is extremely difficult to articulate the meanings conveyed by SFPs, or by their intonational counterparts in English.

James (2001) suggested that a "useful and productive interlude [to helping Cantonese speakers express the intuitively understood meanings of SFPs] can be the replacement of the particles in a selection of text extracts, by smileys" (p. 15). Despite the subjective, informal, and abstract nature of James's data collection and representation, it was nevertheless a creative, language-neutral method for representing the meanings of SFPs, the purpose of which was to work as a bridge to discovering how to express the meanings of SFPs in written English.[1]

[1]According to my arguments about the meanings that are expressed by SFPs, James's method would almost certainly fail. This is because, while smileys may be able to represent some basic emotions, it seems highly unlikely that they could adequately represent discourse/epistemic meanings.

The NSM explications of this study are also an attempt to provide a language-neutral means to link the SFPs to their English equivalents, but in a way that is more formal, precise, and objective.

4.1 The Natural Semantic Metalanguage Theory

The natural semantic metalanguage theory was initiated by Anna Wierzbicka in the early 1960's. It is referred to as Wierzbicka's theory, but it should be noted that the NSM program has received a significant amount of input from Cliff Goddard for more than twenty years. The first tentative list of English semantic primes included a detailed description of 14 "primitives" (Wierzbicka, 1972). More than twenty years later Wierzbicka (1996) provided a description of English's NSM grammar, with an expanded list of 56 semantic primes. The list of primes presently includes a total of 63 according to Goddard (2008a). The number of primes can go up or down as the NSM program evolves. Any prime's inclusion on the list is an empirical matter that is subject to ongoing scrutiny as to whether or not it actually qualifies as a prime. According to the NSM theory, a prime is a morpheme, lexeme or phraseme with an undecomposable meaning that exists in all natural languages (for details of the NSM theory's assumptions, goals, and accomplishments, see Wierzbicka, 1996; Goddard, 1994a; 2004; 2008a; 2008b).

The core assumption of the NSM theory is that "natural languages are adequate to represent their own semantics via language-internal paraphrase" (Goddard, 2008a, p. 3). Goddard (1994a) discussed seven principles that guide the NSM theory:

> 1) "[I]t is impossible to reduce [natural language] meanings to any combination of things which are not themselves [natural language] meanings" (p. 7);

2) “[A]ny complex meaning can be decomposed into a combination of discrete other meanings, without circularity and without residue” (p. 8);

3) “There exists a finite set of undecomposable meanings—semantic primitives” (p. 8);

4) “Semantic primitives and their elementary syntax exist as a minimal subset of ordinary natural language” (p. 10);

5) “Any simple proposition expressible in an NSM based on L_1 [i.e., “language one”] will be expressible in an NSM based on L_2, L_3 and so on” (p. 12);

6) “The simple propositions which can be expressed through the NSMs based on different languages will be fundamentally isomorphic” (p. 12);

7) “Every semantically primitive meaning can be expressed through a distinct word, morpheme or fixed phrase in every language” (p. 13).

The idea behind principles 1), 2), and 3) is that the vast majority of words (all but the 60+ semantic primes) in all languages can be defined using simpler (i.e., semantically less complex) words. Those simpler words can in turn be defined with words that are simpler yet, and on and on until we are left with a set of words (actually morphemes, lexemes, or phrasemes) that cannot be defined. These indefinable meanings are the “semantic primes” that comprise the vocabulary of any given natural language’s “semantic metalanguage.” Principle 4) states that the metalanguage’s primes and their accompanying syntax form a subset of the natural language that they belong to, which is why this metalanguage is called a “natural semantic metalanguage.” This is one of the key differences between this semantic theory and most others, which have designed metalanguages that are separate from the natural languages that they are used to describe.

Principles 5), 6), and 7) “are not advanced as dogma, but as hypotheses” (Goddard, 1994a, p. 13). If these principles are correct, then every language reduces

to a set of irreducible semantic primes, each of which exists as one or more morphemes within that language. These primes and their syntax represent the "innate mini-language of universal semantic primitives" (Wierzbicka, 1996, p. 21). Summarizing, the hypothesis is that all normal humans are endowed with the same set of semantic primes, and that "[e]very semantically primitive meaning can be expressed through a distinct word, morpheme or fixed phrase in every language" (principle 7). Principles 5) and 6) follow naturally from this hypothesis, and an illustration was given by Wierzbicka (1996, p. 20), who presented the example of an English canonical sentence and its Russian equivalent:

I want to do this = ja xoču ètо sdelatʹ

Canonical sentences in NSM are defined as those which are comprised only of primes, and which are formulated according to the universal syntactic rules that apply to the primes in all languages (Wierzbicka, 1996, p. 30). Since each individual word in Wierzbicka's example is a prime in both languages, and both sentences are canonical sentences using the same primes (i.e., "I" = *ja*, "want" =*xoču*, "to do" = *ètо*, "this" = *sdelatʹ*), then both sentences are hypothesized to be perfect equivalents, giving us "complete inter-translatability between NSMs" (Goddard, 1994a, p. 12).

One practical use of the primes is to reverse the process of simplification, using the primes to define semantically complex words. Such words rarely have perfect equivalents in more than one language, but a definition that is written entirely with semantic primes—all of which *do* (theoretically) have perfect equivalents in all languages—can be translated unaltered into any language. Definitions of words using NSM are called *explications*. For this study, I have written an NSM explication, in both Cantonese and English, to define each SFP. Assuming that I have correctly

selected the Cantonese counterparts of the English primes (and assuming that the originally proposed English primes are indeed primes themselves), then, according to the NSM theory, the Cantonese explications I propose in this study are exactly equivalent to the English explications.

There is no need to accept this strong version of the NSM theory in order to agree that the words listed as NSM primes can be practically and usefully applied to this study. The NSM program has, for more than 30 years, searched for a comprehensive list of semantic primes. This search has involved some 30 languages of a wide variety of language types (Goddard, 2004). To the extent that the NSM program has succeeded at discovering semantically simple words that appear to have very close (if not identical) counterparts in most (if not all) languages, it can be taken as empirical evidence in support of the claim that these so-called semantic primes exist in one form or another (whether as morphemes, lexemes, or phrasemes) in most or all languages. Such evidence leads us to assume that such words (whether they are absolute primes or not, and whether they are perfect equivalents or not) will translate more accurately cross-linguistically than will words which are found in only relatively few languages and which are not as semantically simple. This is a good reason to use NSM explications to define SFPs rather than words that are semantically more complex.

What about the metalanguages used in other semantic theories? I argue that it makes sense to use NSM explications if they can define the meanings of SFPs to the same degree of precision as can the metalanguages of other semantic theories. The reason is because NSM explications are accessible to the non-specialist, and their validity can therefore be tested and commented on by any native speaker. The NSM explications of this study are speaker-oriented definitions that can be substituted for the given SFP or its English equivalent. They are easily understood by native

speakers of Cantonese or English, who can use their intuition to accept or reject the proposed definitions.

Of course, if NSM explications are not as precise or as accurate as definitions that use some other method, then those other methods should be used. However, for this study I assume that NSM explications are as adequate, and in fact are preferable to other means, because they are arguably especially well suited to defining SFPs (see following section). Wierzbicka argued that NSM explications are in fact far better at defining words than are the methods used in formal semantics, saying that formal semantics:

> doesn't seek to reveal and describe the meanings encoded in natural language, or to compare meanings across languages and cultures. Rather, it sees its goal as that of translating certain carefully selected types of sentences into a logical calculus. It is interested not in meaning (in the sense of conceptual structures encoded in language) but in the logical properties of sentences such as entailment, contradiction, or logical equivalence, or [informational significance rather than cognitive significance]. (Wierzbicka, 1996, p. 8)

Wierzbicka said semanticists should not assume that everything is definable, and define things in more complicated terms. She gave the example of an author who assigned to the word "if" the meaning of "implication." This is wrong according to Wierzbicka, who claimed that "if" is a semantic prime and is therefore indefinable. If true, then defining it with a semantically complex term such as "implication" is obviously unhelpful. Wierzbicka's ideas are based on those going back to Aristotle, who she quoted (p. 10) as saying that definitions must use terms that are simpler than the term being defined, otherwise it is not a definition.

Wierzbicka's (1996) claim that there are such things as semantic primes that cannot be defined are similar to ideas from the enlightenment period. She quoted (p. 12) Descartes, who said "that there are certain things which we render more obscure

by trying to define them, because, since they are very simple and clear, we cannot know and perceive them better than by themselves," and Pascal, who said "[i]t is clear that there are words which cannot be defined; and if nature hadn't provided for this by giving all people the same idea all our expressions would be obscure," and Arnauld, who said "it is impossible to define all words. … it is necessary to stop at some *primitive words*, which are not defined" (emphasis in italics Wierzbicka's). She uses such quotes to defend her idea that primes are innate, universal, and indefinable.

It is interesting and worthwhile to note some similarities between Wierzbicka's NSM theory and Chomsky's theory of generative grammar. First of all both theories claim to carry on linguistic ideas with origins going as far back as Aristotle, and with ideas developed during the enlightenment period. Both are nativist theories that attempt to describe a "universal grammar" shared by all humans (see Wierzbicka, 1996, chapter 3 for a discussion of the NSM version of UG). It appears that within both theoretical frameworks "the study of language has progressed on the basis of a certain abstraction: namely, we abstract away from conditions of use of language… [adopting] the working hypothesis that we can proceed with the study of 'knowledge of language'—what is often called 'linguistic competence'—in abstraction from the problems of how language is used" (Chomsky, 2006, pp. 98); the NSM program adopts this working hypothesis in principle because its core concern is the representation of linguistic meaning in the minds of speakers.[1]

Both theories are against linking a sentence's semantics to some type of objective reality, or to some mind-independent world that is based on truth conditions, or perhaps on some form of word-object link; instead they assume that semantic

[1]Although this is the core part of the NSM theory, it is not the only concern of linguists working within the NSM framework. The semantic primes and the grammar of NSM are used by NSM linguists in an attempt to explain people's culturally-specific linguistic behavior. "Cultural scripts" are developed by NSM linguists that are meant to represent the subconscious cultural values which strongly influence what people of a given culture say under given circumstances and in various contexts.

representations are entirely in the minds of speakers (Besemeres and Wierzbicka, 2003, p. 3-4; Chomsky 2006, p. 177-8).

The reason that these similarities are interesting is because Wierzbicka criticizes Chomsky for not placing semantics at the core of his linguistic analyses, and for instead giving it, what she considers, a marginal status at best. I am not aware of Chomsky ever having commented on Wierzbicka's work in print, but before the NSM program began, he said "I am not acquainted with any detailed attempt to develop the theory of grammatical structure in partially semantic terms or any specific and rigorous proposal for the use of semantic information in constructing or evaluating grammars" (Chomsky, 1957/2002, p. 93). It appears that NSM is such an attempt.

Although Chomsky has not commented on the NSM theory's own version of UG, I think it is likely that he would consider the NSM version of UG syntax inadequate for describing the "rules" of natural language syntax. I assume this based on Chomsky's (1957/2002, pp. 92-105) critique of other less-detailed and theoretically different attempts to develop a grammar based on semantics, as well as based on his own theory of generative syntax, which differs significantly from the syntax of NSM. Syntax aside, I see no reason why the semantic primes and the explications of the NSM theory cannot be used productively within the framework of generative syntax. I see no conflict with applying both theories in a single study, as I have done here.

Goddard (2004) said that "[e]ven if one does not 'buy' the NSM theory as a whole, it seems to me that it has much to recommend it from a purely practical or heuristic point of view. A plain description couched in reductive paraphrase can be reinterpreted into various formalisms, if one so wishes, or it can be taken as input to more technical theories" (p. 30). For the purposes of this study I could merely say that my use of NSM is a practical move that follows Goddard's suggestion. But I go

beyond that and propose that NSM could be used just as readily as any other semantic theory in generative syntax research, and that in many senses it is even more compatible than other theories. (see appendix 1 for my arguments on the compatibility between the theory of NSM and generative syntax).

Wierzbicka (1996, p. 237) asked, "Why do we need definitions at all?" and then offered the following as a possible answer:

> One of the possible answers to this question is that we need them as a tool for understanding other cultures (and for making ourselves understood). Words are a society's most basic cultural artefacts [sic], and—properly understood—they provide the best key to a culture's values and assumptions. But to avoid misinterpretation, definitions are needed that are free of ethnocentric bias; that is, definitions couched in terms of universal, culture-free, primitive concepts.

I agree with her answer and add to it another of my own: Language-independent "definitions couched in terms of universal, culture-free, primitive concepts" are also needed for linguistic research. NSM explications can theoretically help us understand the nature of lexical items, and the nature of their semantic representation in the mind. An NSM explication can be thought of as an attempt to formulate the clearest possible abstract representation of a lexical item's physical form in our brains. I propose they can be used in place of a list of semantic features, such as [± animate], which Chomsky (2006) said "will hardly be adequate" (p. 109). It is hard to imagine what types and combinations of semantic features of this sort could be used to define an SFP.

I hypothesize that the lexical items under consideration (i.e., SFPs and their English intonational equivalents) share the same definitions across two languages. These common definitions are what link the Cantonese forms to the English forms, and are therefore a cornerstone of this research. The next section explains why NSM

explications are especially well suited for writing the definitions of this study.

4.2 Defining Sentence-final Particles with the Natural Semantic Metalanguage

I said in section 1.2 that the explication of an SFP should not include portions of the sentence to which it is attached, or of the context within which it occurs. Fung (2000) agreed with this line of reasoning, saying that some "researchers are easily tempted to include as part of some specific [S]FP all sorts of meanings that are conveyed by other linguistic or paralinguistic elements" (p. 6). To avoid this, SFP explications should be context-bound rather than context-specific. By this I mean that the explications should include discourse-related deictic elements whose antecedents are the proposition plus one or more elements in the discourse. This is opposed to including portions of the proposition and discourse as part of the explication.

If elements from the proposition and the discourse are included as part of the explication, then the explication of any given SFP will require a large, perhaps infinite, number of variations in order to include all the possible sentences that the SFP could conceivably attach to. Using deictic elements instead will make the explication apply accurately to any and all contexts within which that SFP can be used, as opposed to applying only to a limited number of specific contexts. Fung offered the example of Leung (1992/2005, cited in Fung 2000, p. 6), who proposed that the SFP *laa1* encodes possibility, but only when it is used with modal adverbs such as *waak6ze2* ('perhaps'), *daai6koi3* ('presumably'), or *daai6joek3* ('probably'). Fung correctly pointed out that the 'possibility' meaning came from the modal adverbs rather than from the SFP *laa1*.

Another example of incorporating some of the meaning from the context into the meaning of an SFP is seen in Kwok's (1984) description of the SFP *lo1*. She said that *lo1* "seems to give the reason for something," (p. 58), and illustrated this with the example shown in (8) of a father who attached *lo1* to a sentence that tells his son the reason as to why he performed poorly on a test. We should not conclude that *lo1* is used to "give the reason for something" based merely on the fact that some *lo1* sentences state the reason as to why something happened. There are many *lo1* sentences that do not give reasons for things, and all the *lo1* sentences that do state reasons would still be construed as such if *lo1* were removed. This indicates that it is not *lo1*, but rather the reason-giving sentences and the contexts themselves, that contain the meaning "to give the reason for something."

Although part of its meaning includes the sentence to which it attaches, *lo1* has some meaning distinct from "reason giving." If we were to use an explication of *lo1* that included all or part of the meaning of the sentence to which it attaches, then the explication would include 'reason-giving' when it attached to sentences that give reasons, and it would have other meanings when it attached to other types of sentences. This same logic should in theory apply to the definition of any SFP.

I propose that all SFPs have intrinsic meanings that are independent of the specific contexts in which they appear. Their meanings contain propositional and discourse-related deictic elements, which make their meanings appear to change from context to context. This has caused many authors to conclude—mistakenly in my view—that SFPs have no intrinsic meanings independent of the context. Kwok applied this idea to English intonation as well, saying that "just as in English the same tune carried by different structures have different meanings, the meaning of a particle may vary according to the type of structure to which it is affixed" (pp. 7-8).

Luke (1990) said that one distinctive feature of SFPs that was identified in prior

studies was that “they have no semantic content” (p. 3), and he appeared to agree. Baker and Ho (2006), said that “[p]articles are words which for the most part have no meaning in themselves” (p. 246). Ball (1888/1971) said that “the Final Particles so freely used in Chinese have in most cases no exact meaning as separate words” (p. 112). Schubiger (1965) made the same claim regarding German modal particles, saying “[t]he precise meaning of the particle can in many cases be gathered only from the contents and context of the sentence” (p. 66).

It is easy to understand why many linguists have concluded that SFPs have no intrinsic meanings of their own, because the deictic elements that I argue are part of an SFP’s meaning refer to different things in different contexts. At the same time, the SFPs alter the meaning of the proposition significantly, because the proposition itself is a variable within the meaning of the SFP. Ball (1888/1971) eloquently described his observation of this, saying “[i]t is curious, and most interesting to notice how small and insignificant a word at the end of a sentence will change the meaning of the whole sentence, like the rudder at the stern of the ship governing the motions of the whole vessel” (p. 112).

Luke (1990) gave several descriptions of *lo1* that include portions of the specific contexts within which *lo1* is used (see § 6.1.1.1 for details of Luke’s arguments). He said “it would be a futile exercise to try and define an intrinsic or original meaning of [*lo1*], or even a small number of basic meanings” (p. 191). He concluded that *lo1* is only meaningful in reference to the particular contexts in which it appears, which is something I actually agree with because the discourse-related deictic elements included in my explication of *lo1* depend on the context for their reference. The logic is the same as saying that a pronoun is only meaningful in reference to its antecedent. It is important to recognize that there is a context-independent definition of *lo1* that is consistent and unvarying, and that it is merely the antecedents of its

context-dependent deictic elements that change from context to context.

The same mistake can of course be made regarding intonation. Chun (2002) said "[t]here is no one-to-one correspondence between form and function; rather, intonation must be viewed and interpreted from the context in which it occurs, i.e., is spoken" (p. xvii). Bartels (1999) questioned whether this were actually true, wondering if perhaps we can't associate "a given tone at some level of abstraction with the same interpretational feature across all occurrences" (p. 4). Liberman (1979), and even more strongly Hirst (1983a) (as well as Tang (2006) for Cantonese and Svenonius and Kennedy (2006) for Northern Norwegian), claimed to have identified specific tones that carry the same meaning from context to context. I argue that discourse-related forms of intonation *do* have forms and meanings that are independent of context, and that the forms of intonation discovered in this research are of that type, i.e., they are floating-tone morphemes similar to what was proposed by Hirst (1983a). They can therefore be defined in the same way that SFPs can be defined.

The difference between my approach to defining SFPs (and discourse intonation) and the approach of many other authors can be illustrated by considering two possible definitions of the plural morpheme 's.' We could say that 's' in the word 'cats' means "more than one cat," but this is not desirable because "cat" is included as part of the definition of 's.' We should instead say that the 's' in 'cats' means "more than one X," and that in this case X = 'cat.' Linguists all agree that SFPs are bound morphemes that attach to the ends of sentences (or what some prefer to call utterances). Defining an SFP can therefore be equated with defining a bound morpheme of the type just described, i.e., those whose meanings include a variable that refers to the element to which it attaches. In the example just given, X replaced the count noun that 's' attaches to; for an SFP, I will use the semantic prime THIS to

replace the proposition that the SFP attaches to.

By replacing the proposition and all of its contents with the deictic THIS, we avoid something akin to saying that ‘s’ means “more than one cat,” which is a definition that would force us to conclude that the meaning of ‘s’ changes depending on the context—it can also mean, for example, “more than one pint” or “more than one bathroom.” For the same reason, the meaning of a given SFP should not include a specific type of speech act (or proposition) if the SFP can attach to more than one type. If the speech act were included in the definition, then it would not accurately define the SFP whenever it attached to another type. Various descriptions of the SFP *aa1maa3,* for example, have said that it is used to ‘give (obvious) reason/excuse,’ (Boyle, 1970; Kwok, 1984; Leung, 1992/2005; Matthews & Yip, 1994; Yip & Matthews, 2001) to ‘remind,’ (Law, 2002; Yip & Matthews, 2001) or to ‘elaborate,’ (Lee and Law, 2000; 2001). Either *aa1maa3* has multiple definitions, or it has a single definition with elements that refer to different antecedents in different contexts. I propose it is the latter.

Taking the simple step of replacing the proposition with THIS can help to overcome this problem of multiple definitions. A single deictic element is not enough for the SFPs of this study, however, because they connect their attached propositions to at least one element in the discourse. My explications for them will therefore also include a deictic element whose antecedent comes from the discourse, and in the case of *aa1maa3,* two such elements. This makes it possible to define the SFPs in a way that remains consistent for each of their occurrences.

NSM explications have been used by other linguists to define discourse particles (Chappell, 1991; Goddard, 1994b; Wong, 1994, 2004; Besemeres & Wierzbicka, 2003). The particular goal being discussed here was the same goal that Besemeres and Wierzbicka (2003) had for defining the sentence particle *lah* in Singapore

English. Their aim was to "come up with a formula which would make sense in all the contexts in which *lah* can occur, and which could also explain why in some contexts... *lah* cannot be used at all" (p. 19). To accomplish this goal they said "we will be trying to enter the speakers' minds; and we will test our hypothesis against a wide range of examples of the particle's use (as well as against native speakers' intuitions)" (p. 7). For my NSM explications, I adopt their basic methodology, which they offered as "a general model for the investigation of discourse markers" (p. 3). I modify their model slightly, however, by proposing that deictic elements whose antecedents are the proposition and a discourse element should be included in any NSM explication of a discourse marker.

Besemeres and Wierzbicka's explication of *lah* was "I think you can know what I want to say" (p. 21). The proposition is not included. They make it clear from their examples that the "what" of their explication does not represent the proposition, but rather something else that the speaker is thinking about, which, using my methodology, would be represented as "I think you can know I want to say this (D)." The D indicates that the antecedent of "this" is some discourse element D. I am not qualified to discuss the meaning of Singapore English's *lah*, so I cannot propose a reformulation of their explication. I can only suggest that it could be improved if it included an element to represent the proposition P as well as D for the reasons given above related to SFPs being bound morphemes. I believe that the D (i.e., the "what") of their explication must be related to P, and their explication should therefore indicate the nature of this relationship.

NSM explications are good for defining discourse particles because they are written from the speaker's point of view. The NSM theory's use of deictic elements in its explications is particularly well suited to defining SFPs and their English equivalents, because this can theoretically provide an accurate and precise

articulation of the links between the SFP (or English equivalent), the proposition, and the discourse.

4.3 Cantonese Semantic Primes

I had to decide on the Cantonese equivalents of the primes used in my English explication in order to translate the explications into Cantonese. There were some helpful resources that facilitated the process. A list of the Cantonese primes related to time and space was proposed by Tong et al (1997), and a list of NSM primes for Mandarin was proposed by Chappell (1994), who later revised her list and proposed a treatment of their syntactic combinations (Chappell, 2002), using Wierzbicka (1996) as a guide.

The method I used for deciding which morphemes/lexemes in Cantonese are primes was as follows. The primes used for this study that are related to time, i.e., NOW (*ji4gaa1*), BEFORE (*zi1cin4*) and AFTER (*zi1hau4*), were adopted from Tong et al (1997). For the remaining primes, Cappell's (2002) proposed primes for Mandarin were translated into Cantonese using the same Chinese character. If the Cantonese version appeared natural, and if it appeared to have the same meaning and syntactic valiancy (i.e., if it took the same types of complements) as the Mandarin version, then it was used. Otherwise, I used what I considered to be a better candidate for that particular prime. The list of primes and my motivations for selecting them are shown in appendix 2.

Chapter 5: Research Design and Methodology

Ball (1888/1971) said, “It will be seen that [SFPs] are very difficult, or impossible even of translation into English where accent and emphasis alone do their work to a great extent” (p. 112). I agree that it is very difficult to translate SFPs into English, which is why it was so important for me to adopt the methodology that I used for this study.

There are only two studies I know of that had goals and methodologies comparable to this one: Chao’s (1932) seminal study on the Mandarin Chinese equivalents of English intonation; and Schubiger’s (1965) comparison of German modal particles (MPs) to English intonation. There are several ways in which the present study’s methodology improves on both Chao’s and Schubiger’s. First, this study translated from the direction of segmental morpheme to suprasegmental morpheme instead of vice versa. Second, this study used the intuition of native-bilingual participants rather than that of the author him- or herself. Third, an audio corpus of naturally-occurring speech was used rather than written data. Fourth, the pitch contours and the F_0 contours—which are two different things—of the English intonation in the data were analyzed. And fifth, this study provided a semantic description that is proposed to apply equally to both the SFP and its English intonational counterpart. These differences will be discussed in more detail below.

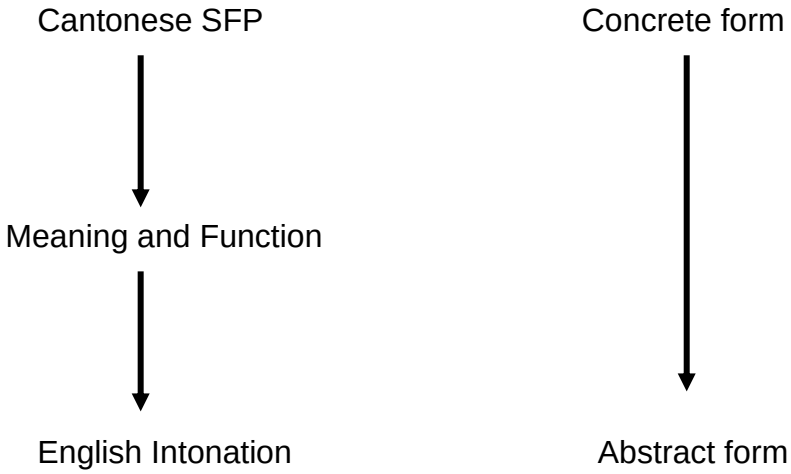
Lee and Law (2001) pointed out that SFPs represent a lexicalized form of a variety of knowledge states, and therefore provide a good window through which to observe epistemic notions. I agree with this and further argue that SFPs provide a good window through which to study the forms of these epistemic notions in languages such as English, which manifest such notions in a more abstract,

hard-to-pinpoint form. Examining a concrete, segmental form (i.e., SFPs) through a relatively more abstract window (i.e., pitch contours) seems to be going in the wrong direction, and is therefore not the best methodology. If we are going to assume that some SFPs and some forms of English intonation are indeed equivalent to each other, then it makes sense to start with the forms that are phonologically more concrete and easier to identify, and then attempt to identify their more abstract counterparts. In other words, it is better to translate from an SFP language to an intonational one, rather than vice versa. Starting with SFPs allows the linguist to easily identify those sentences within a corpus, and only those sentences, that have a particular SFP attached.

Even if it were possible to design computer software that could consistently find all occurrences of a particular form of English intonation, our current knowledge about English intonation would not enable linguists to program the software in a meaningful way. And even when linguists rely on their ears and linguistic intuition for the data analysis—which are far more sophisticated instruments than is the current technology for recording and analyzing acoustic data—they are still unable to reach enough agreement about the list of meaningful forms of intonation. With SFPs, on the other hand, linguists can readily use computer software to search corpuses for occurrences of a given SFP, as well as record constructed examples to get translations or acceptability judgments, which are both things that I did for this study. If we assume that the meaning of a given SFP is the same as its intonational counterpart in English, then examining exactly how the SFP connects a proposition to the discourse in Cantonese can tell us a great deal about the meaning (perhaps even the exact meaning) of the equivalent intonational form in English. And once the English-equivalent form and meaning of a given SFP is identified, described, and defined, native English-speaker intuition is then able to recognize and distinguish it

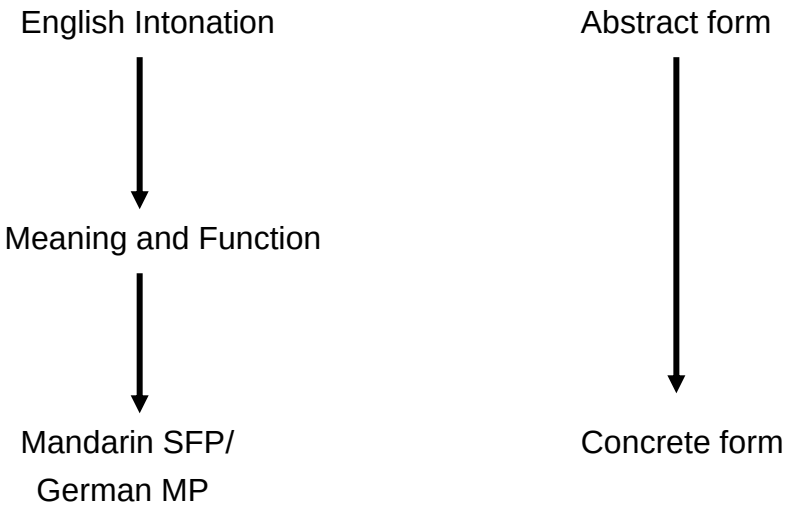
from other forms of intonation.

An abstract discourse-related pitch contour is identified by linking it to its concrete SFP equivalent. This can be represented as follows, where the item at the top can be considered as a lens through which the item at the bottom is identified. The meaning and function of the SFP are assumed to "carry over" to its equivalent form in English:



My choice of languages and direction of translation have two advantages over those in Chao's (1932) study. First he translated connotative meaning from a non-SFP language into an SFP language, which was an attempt to find an equivalent form of something that is itself hard to identify and describe. Second he looked at Mandarin, which is a language that uses a combination of SFPs and intonation to a much larger extent than Cantonese does. The direction that Chao's study took was of identifying a less abstract element (i.e., Mandarin SFPs) by first looking at its more abstract equivalent (i.e., English intonation). Schubiger's (1965) direction was mostly English to German. Her method was therefore comparable to Chao's because it attempted to identify something phonologically concrete (i.e., German MPs) by looking at its more abstract equivalent in English. Their methodologies can be

represented as follows, where again the item at the top can be seen as a lens through which the item at the bottom was examined:



The abstract "lens" is not a very precise instrument with which to identify a concrete counterpart in another language. It could be argued that the forms of discourse meanings are equally abstract in all three languages because Mandarin and German may also use intonation as a component of the connotative meaning's form. Either way, this is more complicated than identifying abstract forms based on concrete counterparts. Cantonese is therefore one of the best possible language to use for beginning this type of research, because it has perhaps the greatest number of SFPs of any language studied thus far, which implies that it may use SFPs to express connotative meaning more than any other language does, and uses intonation to express such meanings to a lesser extent than any other language (Yau, 1980).

5.1 The Participants

Using native-speaker intuition as a source of data has obvious limitations, but it is nevertheless a widely used and accepted source for determining meaning and/or acceptability in linguistic research. The tokens of SFP-suffixed sentences used for the

translations of this study were assumed to be grammatical because they were taken from an audio corpus of naturally-occurring conversations. I was therefore not so much interested in the participants' judgments of acceptability (though I did confirm that the sentences were acceptable) as in their judgments of meaning, and in their ability to accurately translate the linguistic representation of this meaning from its segmental Cantonese form to its pitch contour form in English.

I assumed the literature to be correct in saying that intonation is, to a significant degree, the English counterpart to SFPs. I therefore concluded that native English-speaking participants were required, because intonation is one of the most difficult if not impossible things for L2 learners to master (Chun 2002). If we assume that SFPs are the Cantonese equivalent of English discourse intonation, it follows that the intuition of native-Cantonese speakers would be required as well, in order to fully grasp the intuitive meanings of the SFPs. Therefore, the best participants that could be used for this study were native-bilingual speakers of L1 Cantonese and L1 English. In contrast, Chao (1932) provided his own translations for his study. He was a native speaker of the translations' target language only. He did not go to the United States until 1910, when he was 17 or 18 years old, so it is unlikely that he possessed a native-speaker level of intuition for English intonation.[1] Likewise, Schubiger (1965) provided some of her own translations, with others coming from professional translations of German and English works of literature. I do not know whether Schubiger or any of the translators were native-bilingual speakers of both English and German.

The four participants who helped with this study are of Hong Kong Chinese

[1]The following quote from Chao (1932) indicates that he did not consider himself to have a native speaker intuition of English intonation: "no attempt was made in constructing a complete and very systematic treatment of English intonation, as if to supersede the authorities in their own national subject" (p. 106).

origin. One was a male, aged 40+, who went to America at the end of primary school and returned to Hong Kong after graduating from university. While in America he spoke English with everyone in the surrounding community, and spoke Cantonese at home with his family. Another was a female, aged 20+, who spoke Cantonese at home growing up in Hong Kong while attending English-medium primary and secondary schools. She later attended university in Canada. The other two, one male and one female, were aged 17. Both attended English-medium primary and secondary schools, and therefore spoke English at school and with their friends, and spoke Cantonese with their families and members of the surrounding community. The participants' status as native bilinguals was based on English-medium conversations with me, a native-English speaker, and on Cantonese-medium conversations with native-Cantonese speakers.

Using interviews to determine their status as native bilinguals is admittedly impressionistic, but I am not aware of any more reliable method for determining whether or not someone is a native speaker. Guthrie's (1983) research study involved a participant that he referred to as a native Cantonese-English bilingual, and I will adopt his simple "definition" of native bilingual by saying that "both [their] Cantonese and English were native-like." By the term "native-like," I do not mean what is frequently meant in the L2 literature, i.e., "similar to" or "nearly" native. I mean that their language sounds as if it is that of a native speaker.

If the participants of this study are not 100% native speakers of both languages (however one defines "native"), it does not damage the validity of the results. I am claiming that it is more likely that native bilinguals will succeed at the task, and that the closer they are to being native speakers of both languages, the more likely they are to succeed. Nevertheless, the critical test of validity is not the linguistic status of the participants, but whether or not they have produced consistent

translations of intonational forms that native-English monolinguals recognize and identify as meaning what the NSM explications say they mean.

5.2 The Corpus and the Mini Dialogues

When choosing which type of linguistic data to use for an SFP-related study, arguments can be made for using either naturally-occurring data, constructed data, or a combination of the two. The choice will depend on the needs of the study. The Cantonese data discussed in this section was needed for the elicitation of accurate English translations in order to discover if the SFPs under investigation have English counterparts, and if so, what they are. SFPs are found primarily in casual colloquial speech, so I concluded that the most ideal source for collecting tokens of SFPs was a corpus of naturally-occurring casual speech. Luke and Nancarrow (1997) said that SFPs "are best studied in contexts where they are most commonly used, i.e., in spontaneous colloquial conversation" (p. 19).

Unlike English intonation, SFPs have clearly recognizable written forms. It would have been possible, therefore, to have the participants translate from written Cantonese that was transcribed from either actual or constructed dialogues. However, the participants were required to orally "mimic" the target sentences' "tones of voice," which would have been quite difficult if the source had been in written form. It would have complicated their task considerably, and would have increased the likelihood that the mimic translations would differ among the four participants, because they would have almost certainly imagined the written dialogue being said in different ways. An intermediate alternative is to record native-speaker participants acting out constructed mini-dialogues in as natural a manner as they are capable, and then to play these recordings to the native-bilingual informants for translation. Such

dialogues, though much better than written dialogues, are still not as natural as dialogues from a naturally-occurring audio corpus. I therefore used this technique only as a follow-up procedure (see the end of §6.2.2.2 for the discussion of how and why I used this procedure).

The majority of the data is translated from a naturally occurring audio corpus, and the portion that is not is translated from audio dialogues that were acted out. This contrasts with Chao (1932), who translated from two sources: written lines from stage plays that included intonational markings; and written sentences from the literature on English intonation. Schubiger's (1965) sources were similar, translating her own sentences from examples provided in the literature on English intonation, and collecting examples from German-to-English and English-to-German translations of literature. Austin (1975) pointed out the inherent problem with using such sources, saying that intonation is "not reproducible readily in written language. ...Punctuation, italics, and word order may help, but they are rather crude" (p. 74). Certainly the intonational markings used in the literature on intonation are more sophisticated, but they are still inferior to the spoken form.

For the data collection, audio files of mini dialogues were extracted from a searchable audio corpus called the Hong Kong Cantonese Corpus (HKCanCor—http://www.hku.hk/hkcancor/), which was created by K.K. Luke and O.T. Nancarrow. The corpus consists of 180,000 words of naturally occurring oral Cantonese. Some of the corpus is comprised of radio talk shows (34 conversations), and some is comprised of spontaneous speech (44 conversations) in ordinary settings among family members, friends, and colleagues.

The entire corpus has been word-segmented and annotated, and the words have all been marked for parts of speech. The corpus can be searched for all occurrences of any particular word, which allowed me to locate and isolate mini

dialogues within the corpus that contained a token of a particular SFP. Five or six mini dialogues were extracted from the corpus for each SFP. Each extracted audio dialogue included enough dialogue from the preceding discourse to allow the participants to understand the context within which the given SFP was used.

5.3 Data Collection

The data consists of Cantonese-to-English oral translations of utterances which had tokens of the targeted SFPs attached to them. The target utterances were all part of the mini audio dialogues described in the previous section. All of the translations were provided by the four native-bilingual participants. The dialogues were played for the participants from my desktop computer using good sound quality audio speakers. The quality of the corpus's audio was not always good, but the participants were able to hear the target utterances and the surrounding contexts sufficiently well for the task. The participants' translations were recorded directly into my notebook computer using Audacity® , a free, open source software for recording and editing sounds.

The participants were given the following instructions to read:

> Pretend you are the person who says the phrase that you are going to translate. Imagine that all of the people conversing are perfectly bilingual, just like you, and that they will therefore completely understand your English translation. With this in mind, mimic the speaker, including attitude, tone-of-voice, intonation, mood, etc. Imagine your English version of the phrase being inserted in place of the Cantonese phrase in such a way that the conversation would continue along exactly as it does on the audio.

Although this experiment was an attempt to tap into the participants' subconscious linguistic intuition, there was no reason to assume that allowing them

to consciously think about the task would be detrimental to the results. I concluded that conscious consideration would in fact increase the likelihood of their succeeding at the task. They were essentially required to mimic, which is similar to acting. I therefore let the participants take as much time as they needed. They were allowed to listen to the audio as many times as it took for them to get it clear in their minds. They were allowed to listen to their own translations and were allowed to redo any that they felt that they could improve on. They were of course *not* allowed to listen to each others' translations and therefore all of the participants translated separately from each other.

Because the participants were instructed to mimic the speakers in the corpus, I refer to the data as "mimic translations." After recording the mimic translations, another free software called Praat, which is a scientific software for acoustic analysis, was used to get a visual graphic representation of the F_0 of each English translation.

5.4 Data Analysis

Discourse intonation was defined in (11) at the end of section 3.2 as being pitch contours that have specific global shapes. In addition to the commonly used practice of analyzing intonation in terms of pitch alone, pitch is very often defined in terms of F_0 (t' Hart et al, 1990; Pierrehumbert & Hirschberg, 1990; Botinis et al., 2001; Chun, 2002). It is important to understand, however, that the two are not the same. Chun (2002) said that "[w]hile fundamental frequency involves acoustic measurement of what is produced physiologically by speakers, pitch usually refers to how fundamental frequency is perceived by listeners" (p. 4). Roach (2009) said, "Fundamental frequency is not intonation. Fundamental frequency is a physical counterpart to intonation, but intonation really is in your head, and in your ears. It is

not what a computer measures" (starting at 4:23). Hirst, Di Cristo and Espesser (2000, p. 52) explained that "linguistic representations" (e.g., pitch) refer to how information is represented in the minds of speakers, while "physical representations" (e.g., F_0) refer to the ways in which scientists choose to analyze data. For practical reasons linguists often refer to pitch and F_0 interchangeably, but, to the extent possible, researchers should still allow the native-speaker ear to be the ultimate judge of pitch analysis. Doing so increases the validity of a linguist's claims about intonation.

Hirst (1977) speculated that perhaps the advances of speech analysis technology have actually had a negative effect on the study of intonation, because they have caused researchers to describe intonation in terms of enormous quantities of data that the phonetician must put in some kind of order. In the past, phoneticians relied on their intuition, which Hirst claimed is still a vital component of intonational data analysis:

> …even such a fairly simple thing as stress, turns out to be an enormously complex affair, depending not only on the by now fairly classic parameters of fundamental frequency, intensity, duration and vowel-quality, but also on the linguist's knowledge of the language as a system. The problem is a fundamental one, and one it seems which no amount of machine analysis can solve. However much we refine our techniques, and improve our apparatus, there remains the basic fact that *the final judge is the human ear*… (pp. 1-2, emphasis in italics mine)

Even after another quarter century of advances in technology, Gussenhoven (2004) still agreed with Hirst's assertion that the human ear is the final judge, saying that "[b]y definition, the best source for obtaining a record [of the pitch of utterances] is the listeners' perception, since pitch is a perceptual sensation. Unfortunately,

listeners lack appropriate conceptualizations and vocabulary to report their sensations... ” (p. 3). In other words, while humans are not as good as machines at reliably and consistently recording accurate physical representations of what they perceive, machines have not yet been (and perhaps never can be) designed to perceive linguistic audio input in the same way that the speakers of a given language do.

Pike (1945) said that the results of instrumental and auditory analysis are very different. The former works with objective, accurately measured data, and the latter works with subjective units of language that mechanical acoustic analysis seems unable to record. The instrumental method can precisely measure data that may or may not be linguistically significant, and the auditory method refers to linguistically significant data without necessarily being able to record it precisely or consistently. Pike said “[t]he question must be raised whether there is justification for both types of analysis, or whether one of them should be abandoned” (p. 16). He concluded that “[e]ach method has its innate strengths and weaknesses:”

> From the point of view of actually describing and measuring characteristics of the sound waves, auditory analysis is helpless whereas instrumental analysis is highly efficient.
>
> On the other hand, no investigator can determine from a physical record what certain sound waves mean or whether they have any meaning, whereas in auditory analysis an investigator by questioning the native speaker may discover—even if vaguely—the meaning of the linguistic signals.
> (Pike, 1945, p. 16)

Using Praat, graphic representations of the pitch contours of the Cantonese-to-English oral translations were created as F_0 across time, measured in hertz and seconds, respectively. Such mechanical data is extremely helpful to

phonologists, perhaps essential, but linguists appear to agree that the native-speaker ear is still far and away the best instrument for recognizing pitch contours and/or changes in pitch that are linguistically meaningful. I will therefore also discuss the physical representations of the F_0 contours in respect to how I, and other native-English speakers consulted, heard them.

The F_0 graphs of the collection of translations for each SFP were examined, and their pitch contours were compared to see if any discernable pattern(s) emerged. Differences among the four participants' F_0 readings with regard to pitch key and range were considered irrelevant, especially considering the fact that two of the participants were male and two were female. The type of data considered relevant regarding the F_0 readings were any signs of consistency in pitch contour shapes that lied within the pitch range of each individual participant.

Based on the prediction that the SFPs of this study have intonational equivalents in English that are in the form of specifically shaped pitch contours, I state the following null hypothesis:

(19) When multiple tokens of an SFP, along with the utterances that it is attached to, are translated into English by the native-bilingual participants:

(i) no linguistically meaningful discernable pitch contour will appear in any of the translations produced by any of the participants;

(ii) if (i) is false, then this same pitch contour will not appear in more than one of a single participant's translations;

(iii) if both (i) and (ii) are false, then this same pitch contour will not appear in any of the other participants' translations.

The null hypothesis will be considered false if the data shows (19.iii) to be false. If shown to be false, I will argue that this is a form of empirical evidence supporting the claim that a given SFP has an English equivalent, and that the form of its English equivalent is equal to the global pitch contour shape that falsified the null hypothesis stated in (19.i-iii). I listened for consistencies in pitch patterns that my native-speaker intuition told me were linguistically meaningful. When I detected a consistency, I additionally looked for consistencies in the shapes of the F_0 contours at the relevant position along the F_0 contour line. The presence of a discernable shape that I could match with my intuition was counted as an appearance of a "linguistically meaningful, discernable pitch contour," as stated in (19.i). If the shape of the F_0 contour did not appear consistent among participants' own translations, as well as among those of other participants, native-speaker intuition was allowed to determine whether any two translations sounded as if they had the same floating tone, even though the F_0 shape only appeared to be a rough approximation of the same shape. Variations in shape are to be expected. As explained in section 3.2, variations in form should be expected for a floating tone to at least the same extent that there are variations in the form of a given lexical tone from one occurrence to the next.

5.5 The Semantic Descriptions

The development of the semantic explication for each SFP relied on two key sources. One was a thorough examination of what the literature has said about each SFP. Another was discussions with native-Cantonese speakers about the SFPs' meanings, as well as their acceptability judgments regarding various constructed sentences and contexts in order to discover all and only the acceptable contexts within which the SFPs can occur. In order to get such judgments I had to construct

both acceptable and unacceptable contexts. The entire process was greatly facilitated by my having advanced L2 intuition related to the SFPs, but native speakers were always consulted—none of the judgments of Cantonese data, actual or constructed, are mine alone.

Linguistic studies have benefited greatly from the use of constructed data, both grammatical and ungrammatical, and SFP-related studies are no exception. For example, unacceptable combinations and orderings in SFP clusters have told us much about the semantic and syntactic properties of SFPs. These ungrammatical orderings and combinations had to be constructed because they cannot be found in corpus data. Another form of constructed linguistic data that has been used in SFP-related studies is minimal pairs (e.g., Fung, 2000; Law, 2004; Li, 2006). Minimal pairs enable the linguist to compare sentences with identical underlying propositions, differing only with regard to which SFP is attached to them. An example of this method comes from Li (2006), who modified the following example sentence (originally from Fang, 2003) by adding the SFPs *ge3 gaa3*, and *gaak3*:

(20) a. 我點都會幫你嘅。
Ngo3 dim2 dou1 wui5 bong1 lei5 ge3.
1s how all will help 2s SFP
"I will surely help you under all circumstances!"

b. 我點都會幫你㗎。
Ngo3 dim2 dou1 wui5 bong1 lei5 gaa3.
1s how all will help 2s SFP
"(You know,) I will surely help you under all circumstances!"

c. 我點都會幫你嘅。
Ngo3 dim2 dou1 wui5 bong1 lei5 gaak3.
1s how all will help 2s SFP
"I will surely help you under all circumstances! – (contrary to what you seem to think)." (Li, 2006, p. 79, translations hers)

These SFPs were all attached to the same proposition, so the differences among the three sentences—represented by the additional parenthetical paraphrases in Li's translations—were assumed to be equal to the differences among the SFPs. There is a potential problem with this assumption, however, because most SFPs are discourse or epistemic particles, and as such have meanings that are defined partly in terms of the prior discourse or in terms of the speaker's beliefs. The examples in (20a-c) are therefore equivalent environments only to the extent that the discourse context is assumed to be identical. Examples of SFP-suffixed sentences should always include the discourse context.

This method of contrasting minimal pairs is useful for distinguishing the precise difference between two SFPs that are semantically related. It can tell us which contexts allow both, and which contexts allow only one or the other. This study includes 2 pairs of SFPs with similar or overlapping meanings. I constructed minimal pair environments (i.e., the same propositions in the same discourse contexts) in order to test and refine my NSM explications. Constructed data of this type is certainly unnatural compared to naturally-occurring conversation, but it is justified because it would be virtually impossible to find intuitively acceptable minimal pairs of this kind within a corpus of natural discourse, and entirely impossible to find minimal pairs of sentences for which one of the SFPs is intuitively unacceptable.

The format I adopt for writing the explications begins with a formula written as "P + SFP =", were P refers to the proposition to which the SFP is attached. In each case the particular SFP that is being defined will replace "SFP" in this formula.

5.6 Limitations and Complicating Factors

There are inherent complications associated with using these kinds of translations as the main source of data. Hirst (1983b) said, “It is a remarkable thing in itself that many (though not all) untrained speakers are capable of reproducing the intonation of a sentence on a meaningless sequence of syllables” (p. 97, footnote). The participants of this study were not mimicking intonation onto a meaningless sequence of syllables, rather they were attempting the arguably even tougher task of “mimicking” the intonation based on input from a language that expresses the intonation through the use of a segmental particle. This is obviously not actually a mimic; it is an interpretation and re-expression of a particular meaning in a very different form. Not only is the form of the element itself different, but the form of the sentence to which it is attached is also very different.

If the ability to reproduce a sentence’s intonation on a meaningless sequence of syllables is “a remarkable thing,” then doing what the participants of this study were asked to do was a *very* remarkable thing. And this high degree of remarkability justifies a degree of skepticism whenever someone claims that two sentences of different languages share the same connotative meaning. This is why I used native-bilingual participants, why I used more than one participant, why I searched for mini dialogues with SFPs that were attached to simply-worded and relatively culturally-neutral propositions, and why I formulated the null hypothesis in (19) as I did. The null hypothesis required that at least one participant show some consistency among his or her own translations coming from different contexts, as well as consistency between his or her translations and at least one of another participant’s. My methodology aimed to increase the validity of this research to the maximum degree possible. Of course the validity of the results increases when there is more

consistency than what is minimally required to falsify the null hypothesis.

Another potential complication was isolating the meaning of the SFP from any of the non-linguistic emotions related to suprasegmentals that may have been present in the mini dialogues. This may not be as serious of a problem as it seems because, according to the analysis of suprasegmentals adopted here, it is assumed that the SFP translates as a pitch contour while the non-linguistic features would translate as other forms of suprasegmentals and would be similar in both English and Cantonese. The use of multiple translations from different contexts would also reduce the likelihood that the same suprasegmentals would influence each occurrence of the same pitch contour.

Two other complicating factors were discovered while analyzing the data, and these are discussed in section 6.1.1.2.

Chapter 6: The Results and Analysis

The discussion of each particle includes four subsections. The first subsection develops an NSM explication for the SFP based on the literature and consultations with native-speaker informants as was described in sections 4.2 and 5.5. The second subsection presents the English-equivalent data, which is comprised of the participants' mimic translations and the F_0 representations of the translations' pitch contours as was described in section 5.4. The target utterances that were translated by the participants are shown in **bold**. The English translations of everything other than the target utterances are my own.

The third subsection demonstrates that the NSM explication of each SFP is able to accurately describe the context-specific uses of the SFP *and* its English equivalent in all of the mini-dialogues. The fourth subsection does the same for each example sentence that was cited from the literature in the first subsection. The purpose of subsections 3 and 4 is to demonstrate that a single definition accounts for what, on the surface, appears to be multiple meanings and functions. These two subsections are also used to demonstrate that each SFP's English equivalent, along with its NSM explication, can be applied naturally to the English translation of each of the Cantonese examples. This is what we would expect if the SFP and its English intonational counterpart are equivalents, sharing the same function and meaning; an accurate translation of the discourse context and the sentence should result in the NSM explication being able to accurately account for the use of both the SFP and the pitch contour in that particular context in both Cantonese and English, respectively.

After the discussion of each semantically-related pair of particles, there is a summary and analysis section that contrasts the two particles of the pair (i.e., §§

6.1.3 and 6.2.3). The purpose of these two sections is to demonstrate that the NSM explications can account for those contexts that allow either particle of a pair, only one or the other particle, or neither particle.

6.1 Particles of Obviousness

Both *lo1* and *aa1maa3* are listener-oriented SFPs that express epistemic and/or evidential modality, depending on how these notions are defined. Many linguists have written about these two particles but neither *lo1* nor *aa1maa3* has been given a definition that can account for all and only the contexts within which it can acceptably occur. The SFP *lo1* has been said to mark a sentence: as a reason (Kwok, 1984; Deng, 1991); as being obvious (Kwok, 1984; Lee and Law, 2001; Yip and Matthews, 2001; Yiu, 2001); as having epistemic modality (Luke, 1990; Lee and Law, 2001); as having a backward-looking (or discourse-linking) feature (Luke, 1990; Fung, 2000); and more. The SFP *aa1maa3* has been said to mark a sentence as: a(n) (obvious) reason/excuse (Boyle, 1970b; Kwok 1984; Leung 1992/2005; Matthews and Yip, 1994; Lee and Law, 2000); a reminder (Kwok, 1984; A. Law, 2002); an elaboration of information (Lee and Law, 2001); and more.

There is obvious overlap in these descriptions, but the precise nature of the two particles' relationship to each other has never been made clear. Both particles appear to have multiple functions, and I earlier quoted Luke's (1990) conclusion that "it would be a futile exercise to try and define an intrinsic or original meaning of [*lo1*]" (p. 191), and that it is only meaningful in relation to the context, which is something that has also been argued for forms of intonation. Ladd (1978) said that "the idea of context-free intonational meanings is hard for many linguists to accept" (p. 142), but

that this “unfavorable reaction… must be seen as part of the larger debate over how to account for context-dependence in general [and] that the problems of accounting for intonational meaning are in this respect no different from the large number of other problems of ‘pragmatics’ ” (p. 143). I propose that my method successfully overcomes the problem of context-dependence that Luke (1990) observed, by treating SFPs as bound morphemes with definitions that include deictic elements that represent the proposition and a portion of the context.

6.1.1 The Particle lo1

6.1.1.1 The NSM Explication of *lo1*

Leung (1992/2005, p. 75) said *lo1* appears in sentences in which the speaker considers the matter (or stated truth) to be obvious and indisputable. Fung (2000) explained where the idea of obviousness comes from, saying that *lo1* encodes the assumption that the hearer has a high level of knowledge about the proposition. She said that “[i]n general, conclusions deduced by logical reasoning are regarded as highly objective, and knowledge derived in this way should be readily shared by everyone in the community since the expectation is that any rational human being should be able to derive valid conclusions from the premises given” (p. 116). Based on this, it can be said that *lo1* expresses evidential modality.

Yip and Matthews (2001) said that *lo1* “is often used together with *mai6* ‘then’ which suggests that what follows [i.e., what comes between *mai6* and *lo1*] is an obvious conclusion” (p. 157). They provided this example:

(21) 你做得唔開心咪搵第二份工囉。
Lei5 zou6 dak1 m4-hoi1sam1 mai6 wan2 dai6ji6 fan6 gung1 lo1.
2s do Adv-M NEG-happy then find second CL job LO
"If you're not happy in your work, then find another job."

Yip and Matthews' description of *lo1*, combined with the good English translation that they provided, would perhaps cause English speakers to use a form of intonation that is equivalent to *lo1*. However, a great deal of help comes from the "If…then…" structure of the sentence in and of itself, which provides a big clue as to what the correct intonation should be. Nevertheless, it is still not guaranteed that native-English speakers would use the correct intonation, and non-native-English speakers would be much less likely to intone this sentence correctly. When *lo1* is not used in an "If…then…" structure, the likelihood of using *lo1*-equivalent intonation would drop dramatically for both native- and non-native-English speakers. When *lo1* is attached to a single-word or single-phrase answer to a question, for example, then the English translation will consist only of the single word or phrase that precedes *lo1*. In such cases, there are no syntactic clues available as to which form of intonation should be used.

There appear to be only two types of sentences that provide clues for using the form of English intonation that is equivalent to *lo1*. One is "If X, then Y" and the other is "X, so Y." Interestingly, both the *then* and the *so* of these two constructions are translated from the Cantonese adverb *mai6*, which is closely linked to *lo1* both semantically and syntactically (Lee and Man, 1997; Tang, 2008). The interpretation of Y in these two sentence patterns is dependent on X. This is one of the core features of *lo1*; it links the clause Y, to which is it attached, to some element X in the prior discourse. These two sentence patterns include the discourse element X that is required for the interpretation of either *lo1* or its English equivalent. This is why

these two sentence patterns are so compatible with *lo1* and its English equivalent.

Deng (1991) showed three "If X, then Y" sentences with *lo1* attached and claimed that *lo1* "expresses the idea that, under certain conditions, the outcome will be different" (p. 127, translation mine). I think he incorrectly attributed the meaning of a conditional sentence to *lo1*, because *lo1* can be removed from each of his examples and the meaning he attributed to *lo1* remains intact. Deng's interpretation of what *lo1* means was probably influenced by the fact that it is especially compatible with "If X, then Y" sentences. The reason for this compatibility will be made clear below.

Kwok (1984, pp. 58-59) translated *lo1* in the following way:

(22) A: 幾時開場啊？
Gei2si4 hoi1 coeng4 aa3?
When open CL(film) SFP
"When does the film start?"

B: 兩點半囉。
Loeng5 dim2 bun3 lo1
two CL(time) half LO
"Two thirty, of course. Don't you know?"

The English translation of (22B) without *lo1* would be "two thirty," nothing more. This means that the preposition phrase adjunct "of course" and the additional question "Don't you know?" combine to form Kwok's translation of *lo1*. This translation seems to capture the general meaning of *lo1*, but it does not capture it precisely, and it is of course not its English equivalent, which, according to both the literature and the results of this study, is a form of English intonation.

The translation of (22B) is a typical example of what the English-medium literature on SFPs has done throughout, i.e., it has translated an informal colloquial

form of Cantonese into a written form of English. This is akin to paraphrasing the meaning of English intonation in writing. Saying “Two thirty” with different forms of intonation results in different connotative meanings, and each of these meanings could be paraphrased. The result of writing such paraphrases would be the same as removing an SFP from a Cantonese sentence and replacing it with a paraphrase that conveys a similar meaning.

In another example Kwok (1984) translated *lo1* into English as “that’s why” (p. 59). It was a father’s reply to his son, who wondered why he did poorly on a history test:

(23) 讀得唔夠囉。
duk6 dak2 m4-gau3 lo1.
study ADV-M NEG-enough LO
“You haven’t studied enough, that’s why.”

Kwok said that *lo1* “seems to give the reason for something, or to point out what is obvious” (p. 58). Example (23) seems to demonstrate the former, and example (22) the latter. I agree that *lo1* does “point out what is obvious,” but argue that it never “give[s] the reason for something,” and that (23) would therefore translate more accurately if “that’s why” were changed to “of course.” Similar to Kwok’s claim, Deng (1991, p. 127, translation mine) said that *lo1* “expresses an explanatory mood” when it is attached to an answer to a question. I think the answer itself is what provides all of the explanatory information, not *lo1*, and that *lo1* presents this explanation as something that is “obvious.” This idea of obviousness has been repeated throughout the literature, and it is the core of the NSM explication I propose for *lo1* at the end of this section.

Luke (1990) said more about *lo1* than any other author, devoting 79-pages to it. Within the framework of conversation analysis, he discussed a variety of examples

taken from an audio corpus of casual conversations, interviews, and radio programs. Luke said that *lo1* "makes available to conversational participants a means with which they can indicate to each other that the full sense and interactional import of what is being said is to be determined by reading the current utterance in such a way as to link it up with something else" (p. 191). This quote from Luke can be paraphrased as follows: speakers say "P *lo1*" (P being a proposition) to indicate to listeners that P is linked to, and determined by, some discourse element D. Luke explains later that this "something else," (i.e., the D) is either shared knowledge or is something in the prior discourse, either linguistic or pragmatic.

Luke did not consider his description to be a semantic definition of *lo1*; rather he concluded that *lo1* "provides nothing more than a loose index, pointing to ways of reading and interpreting," with no "intrinsic or original meaning" (p. 191). He discussed a wide variety of what he considered to be context dependent functions, uses and properties of *lo1*. I will discuss the functions he listed that I think are the most helpful to understanding the meaning of *lo1*:

- it contains an epistemology feature;
- it contains a backward-looking feature;
- it confirms an expectation;
- it report events that follow naturally under given circumstances;
- it formulates suggestions and advice.

Referring to the *epistemology* feature, Luke said that "states-of-affairs are presented as simply and unproblematically known, i.e., having a good sound common sense epistemological basis" (p. 123). Other linguists have also noted this principle feature of *lo1*. Lee and Law (2001) said that *lo1* was one of the SFPs that expresses epistemic modality. Fung (2000) said that it functions to mark the realization of an epistemic state, and Li (2006) said it is both epistemic and discourse

related.

Closely related to this epistemology feature is the next feature that Luke (1990) mentioned, which is related to Fung's (2000) observation that *lo1* ties the proposition to the discourse. Luke called this the *backward-looking* feature, and I think it could also be termed an evidential feature. He gave (24) as an example, which was taken from a radio call-in program in which a boy and a girl called in and were both put on the air at the same time. The DJ talked to the girl first and then addressed the boy. When the boy, Kei, heard the DJ say "And the boy?" Kei took it as a cue to say his name. The DJ didn't hear Kei say his name, however, because it was drowned out by laughter, so he asked Kei for his name after Kei had already said it:

(24) DJ: 男仔呢？
Laam4zai2 le1?
boy SFP
"And the boy?"

Kei: 阿 Kei。
Aa3-kei4.
PRT-kei
"Kei."

DJ: 係。你叫乜名啊？
Hai6. Lei4 giu3 mat1 meng2 aa3?
be 2s call what name SFP
"Yes. What's your name?"

Kei: 阿 Kei 囉。
Aa3-kei4 lo1!
PRT-kei LO
"Kei!"

DJ: 阿Kei囉::: 我都未知道。
Aa3-kei4 lo1!::: Ngo5 dou1 mei6 zi1dou3.
PRT-kei LO::: 1s also not-yet know
"Kei! I didn't know (your name) yet." (Luke, 1990, p. 128)

Kei apparently assumed that the DJ should have heard him say his name the first time, not realizing that it was drowned out by the laughter. As a result, when the DJ asked for his name, Kei repeated it with *lo1* attached. Luke (1990) said this shows that "the particle invites the recipient to look backward in the discourse for some feature in the context in order to establish a link between the present utterance and something that has been said before (in this case the giving of his name the first time round)" (p. 129). Luke also pointed out that the DJ expressed an understanding of this meaning of *lo1* by repeating Kei's reply (*Aa3-kei4 lo1*:::), and stressing *lo1* by lengthening its rime considerably (represented as :::). The DJ then said, "I didn't know (your name) yet," clearly showing the DJ's understanding that Kei expected him to know his name.

Luke said this backward-looking feature not only points back to prior utterances of the exact information that the listener seeks, it may also point to prior information in the discourse, or to "a known state of affairs," through which the listener can get the answer "by means of an inference" (p. 131). This backward-looking feature could be considered a form of evidential modality, which can be seen as the source of the "common sense" epistemic knowledge that Luke referred to. Aikhenvald (2004) said that "evidentials are part of the encoding of epistemology in the sense of how one knows what one knows" (p. 186). Looked at in this way, the backward-looking feature is not a separate feature from the epistemology feature, but rather is subsumed within it.

Another property of *lo1* that Luke mentioned is to *confirm an expectation*.

The following exchange is an example. Speaker A believes that speaker B's girlfriend left him for a reason other than simply knowing that he had been a cook before.

(25) A: 噉，你地當時分手係為咩原因？
Gam2, lei5dei6 dong1si4 fan1sau2 hai6 wai4 me1 jyun4jan1?
thus 2s-pl that-time separate be for what reason
"Well, what was the reason you separated at the time?"

B: 佢…
Keoi5
3s
"She…"

A: 啫，為淨係知道你做過廚師噉樣啊？
Ze1, wai4 zing6hai6 zi1dou3 lei5 zou6-gwo3 ceoi4si1 gam2joeng2 aa3?
PRT for only know 2s do-EXP cook thusly SFP
"I mean, was it only because she knew you had been a cook?"

B: 係啊。
Hai6 aa3.
be SFP
"Yes."

A: 相信唔淨係噉嘅。
Soeng1seon3 m4 zing6hai6 gam2 ge3.
believe NEG only thus SFP
"I believe that's not all it was."

B: 啫，佢話我好唔細心啦。
Ze1, keoi5 waa6 ngo5 hou2 m4-sai3sam1 laa1.
PRT3s say 1s very NEG-small-heart SFP
"I mean, she said I wasn't caring."

A: 係囉。
Hai6 lo1!
be LO
"Yeah!" (Luke, 1990, pp. 131-2)

By saying *Hai6 lo1*! "Yeah!," the speaker conveys the idea that the listener's immediately-preceding utterance confirms an expectation; in this case it is speaker A's expectation that there was an additional reason for B's separation from his girlfriend. This property of *lo1* that "confirms an expectation," as Luke (1990, p. 131) put it, entails both obviousness and the backward-looking feature. This is because expectations are obvious in the minds of those who hold them, and they stem from prior knowledge. This feature is therefore closely related to the two preceding features.

The next use of *lo1* that Luke cites is that of "reporting." He said *lo1* is attached to reports of events that can be expected to happen naturally as a result of certain events, or under certain circumstances. This too entails the backward-looking feature since the report P in the sentence "P *lo1*" follows naturally from some event or circumstance D that exists in the prior discourse (or perhaps pragmatic information). Luke gave the following example of a report:

(26) 啱啱有架的士，咪接咗的士出嚟囉。
Aam1aam1 jau5 gaa3 dik1si2, mai6 zit3-zo2 dik1si2 ceot1lei4 lo1.
just have CL taxi so catch-PERF taxi out-come LO
"There just happened to be a taxi, so we caught a taxi."

In (26), the report "we came by taxi" follows naturally from the circumstance "there just happened to be a taxi." This is obviously backward looking because the report gets its interpretation of being natural and obvious by looking back in the discourse at the circumstance within which it occurs, namely there just happening to be a taxi.

The final property I will mention of those that Luke listed for *lo1* is that of giving suggestions or advice (Luke, 1990, pp. 155-162). For an example of this, we can use (21), cited above from Yip and Matthews (2001). Luke (1990) said that "*lo1*-suffixing is a regular feature in advice-givings for it provides a means of

establishing a link between a problem or a set of circumstances on the one hand, and a recommended solution on the other" (p. 162). Taking what has been said about *lo1* thus far, it makes sense that it would be used for suggestions and advice giving. It presents the suggestion or advice as something that is obvious and directs the listener to look back at something in the prior discourse for the evidence which shows it to be so.

Based on the explication I give of *lo1* below, this particle could be used in a large number of ways, which is why Luke was able to come up with a long list of functions and uses, all of which seem to be correct (except for the "completion proposal," discussed at the end of section 6.1.1.4). As a result, he appears to have concluded that it would be impossible to come up with a definition for *lo1* that would explain and unify its various functions and uses. Nevertheless, right after saying this he provided a useful and accurate description of its meaning, saying that *lo1* "invite[s] co-participants to assign a dependency reading to the utterance. In addition, it displays the speaker's assumption that the co-participant can be relied on to assign those links and connections that are needed for the utterance's interpretation" (p. 192). In other words, when a speaker says "P *lo1*," he or she assumes that the listener can link P to some discourse variable D, and thereby interpret P.

Li (2006) gave an example of *lo1*, taken from Fung (2000), and she consulted native-Cantonese speakers who told her that "[w]ith *lo1* the speaker seems surprised by the questioner's ignorance of the reason, i.e., the speaker thinks that the questioner should have known the answer" (Li, 2006, p. 90). In other words, when a speaker answers a question with "P *lo1*" he or she is surprised that the listener is ignorant of P. I argue that this is because the speaker believes it follows naturally, logically, obviously from knowing the discourse variable D—the proposition P can be known from knowing D, and the speaker assumes that the listener knows D.

Along these lines, Fung (2000, p. 112) said that "*lo1* assumes the hearer should have a high level of knowledge of the proposition." This assumed "high level of knowledge" about P stems from an assumed *full* knowledge of D, which provides, or can lead to, the full knowledge of P. This description of what seems to be going on in the mind of the speaker is in line with the majority of what the literature says, and this type of description, which is based on speaker-oriented thoughts, formulates my explication of *lo1*.

Based on what the literature says about *lo1*, and drawing on my native-English intuition regarding its English equivalent (see next section), I propose the following speaker-oriented explication:

(27) "P + *lo1*" =

a. 你能夠知道呢樣嘢（P）
lei5 lang4gau3 zi1-dou3 lei1 joeng6 je5 (P)
2s can know this CL thing
"you can know this (P)"

b. 因為你知道另外一樣嘢（D）
jan1wai6 lei5 zi1dou3 ling6ngoi6 jat1 joeng6 je5 (D)
because 2s know another one CL thing
"because you know something else (D)"

This explication theoretically has an exact English equivalent, which is equal to the English translation of (27), and which I propose as an explication for the English equivalent of *lo1* as follows:

(28) "P + *lo1*-equivalent intonation" =

a. you can know this (P)
b. because you know something else (D)

This bilingual explication of *lo1* and its English equivalent captures everything that is said about *lo1* in the literature except for the statements that I argue are incorrect. For example, it captures Kwok's (1984) claim that *lo1* points out what is obvious, but not her claim that it gives the reason for something, because that is not something that *lo1* does.

Fung (2000) said that a statement "P *lo1*" cannot begin a conversation, but must be preceded by something linguistic or non-linguistic. My explication accounts for this because *lo1* is uninterpretable unless there is some prior discourse element D that can function as the antecedent of "something else." Fung (2000) said that "[t]he exact logical relationship [between D and P] is not easily captured and needs to be resolved through context" (p. 113). This is basically true, but there may not be any real world logic involved, because the meaning of *lo1* is speaker oriented; its connection to the real world is filtered through the mind of the speaker, which may or may not behave in a logical manner. John may very well expect Mary to know something she couldn't possibly know, i.e., John may expect Mary to be able to know P, based on knowing D, even if Mary doesn't actually know D, and/or even if there is no real logical connection between D and P.

There *is* always a logical connection between D and P, but the logic is in the mind of the speaker. Consider a delusional man who thinks everyone can read his mind. He could attach *lo1* (or its English equivalent) to virtually everything he says because he would assume that listeners *hear* what he says before he says it. In this case, the D of (27) and (28) would be the thought form of the P to which *lo1* (or the intonation) is attached. This is comparable to example (24) in which the boy, Kei, assumed that the DJ should have heard his name once already. The DJ is similar to a person listening to the delusional man. He doesn't understand why the speaker should use

lo1-attachment, but from the speaker's perspective it is perfectly logical.

In my made-up scenario of the delusional man, we know what the D of the explication is and how it leads to P, because I created the mind of the speaker. In section 6.1.1.3 the explications in (27) and (28) will be applied to actual corpus-based occurrences of *lo1*. Unlike the fictitious delusional man, we cannot see into the minds of these real-life speakers. Nevertheless, based on the contexts of each dialogue, it is possible to determine what is likely to be the discourse element D, which the speaker believes leads to the knowledge of P.

The explications in (27) and (28) can be considered correct to the extent that native speakers of English or Cantonese intuitively sense them to accurately describe the use of *lo1* in the data, or the use of its English equivalent in the translations, as well as readers' own uses of *lo1* or its English equivalent in their daily lives.

6.1.1.2 The English Equivalent of *lo1* Based on the Data

This section discusses the form of the English pitch contour that is proposed to be equivalent in function and meaning to *lo1*. The method I used for determining its form is described in section 5.4, based on arguments laid out in section 3.2. The *lo1*-suffixed sentences that were targeted for translation are shown in **bold** in each of the dialogues that follow. The meaning of *lo1* and its English equivalent in relation to these dialogues will be discussed in the next section.

In this first mini dialogue, the only portion that was translated was speaker A's second utterance, which was translated as "yeah" with high-falling intonation, represented by the curved line that immediately precedes it:

(29) A: Maths 考 A 至少要九十五分以上喎。
Maths haau2 A zi3 siu2 jiu3 gau2sap6 fan1 ji5soeng6 wo3.
test most few need ninety point above SFP
"To get an A in Maths, you need at least ninety-five points."

B: 你頂窿錯兩題咋，只可以。
Lei5 ding2lung2 co3 loeng5 tai4 zaa3, zi2 ho2ji5.
2s most wrong two CL (question) SFP only can
"At the most, all you can get wrong is two questions."

A: **係囉。**
Hai6 lo1
be LO
"◠**Yeah.**"

Figures 1 to 4 below show the F_0s for the four participants' mimic translations. To my native-speaker ear, as well as the ears of other native-English speakers consulted, there is a high-falling pitch that sounds meaningful, and which, more importantly, is recognized as being the same for all 4 participants' translations. Only the high-falling portion of each F_0 contour, which I have highlighted with a circle in each of the figures, sounds prominent to an English-speaker's ear.

Figure 1: female a

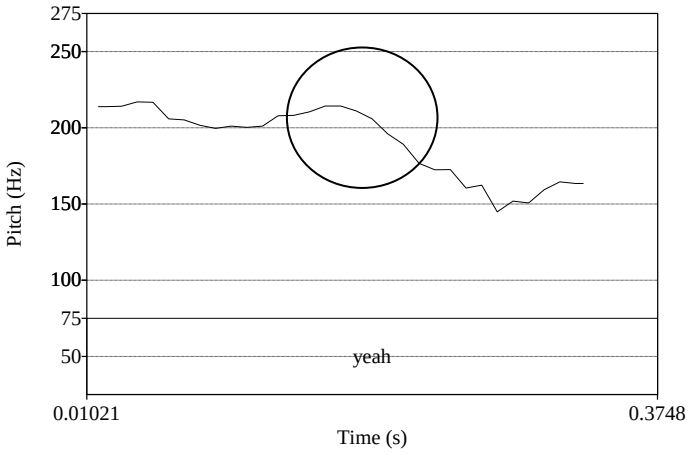


Figure 2: male a

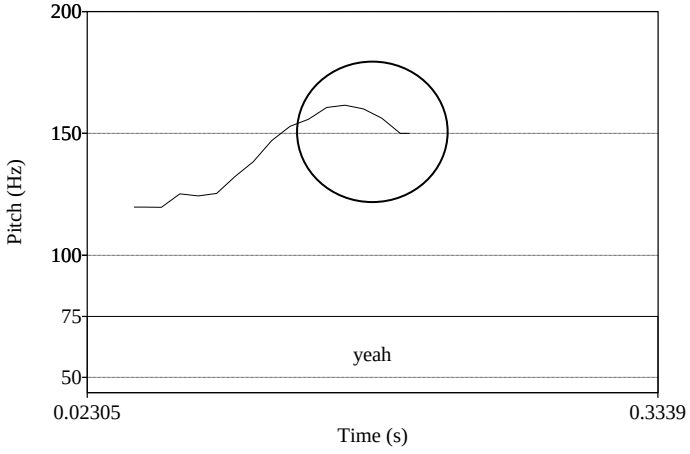


Figure 3: female b

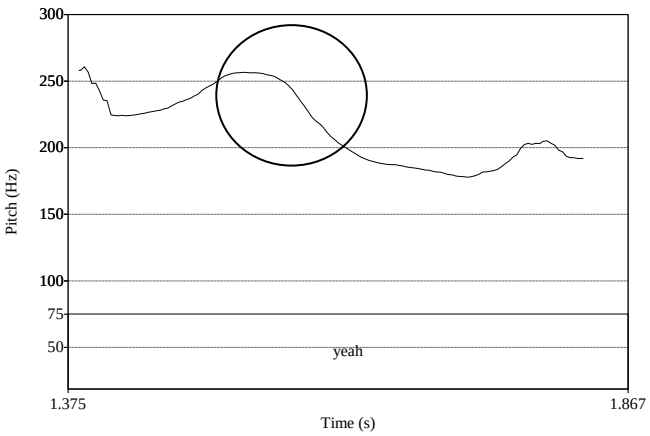
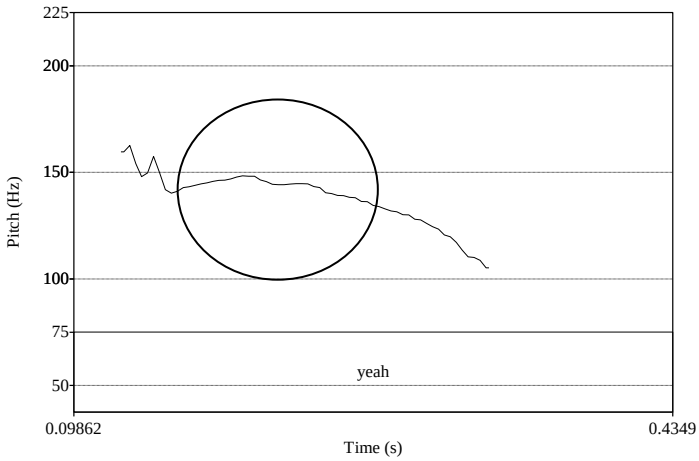


Figure 4: male b



It is interesting to note that it is highly unlikely that these four F_0 curves would be considered as four occurrences of the same form of intonation based on visual evidence alone. There is an obvious rise before the fall in the F_0 contour of the translation from male-a (figure 2), and the fall in the contour from male-b's translation (figure 4) is much more gradual than the others. These differences are not judged to be linguistically meaningful by native-speaker listeners. By this I mean that, at the very least, these differences do not prevent listeners from judging them all to contain some element of meaningful intonation that is the same.

The translation from male-b was noticeably softer spoken than the translations from the other participants, which is why it does not show the high-falling contour as clearly as the other translations do. Male-b's translations were all said with less conviction, which caused his F_0 contours to be less pronounced, but his utterances sounded like they carried the same connotative meanings, expressed in the same (though muted) forms, as the other participants' translations. His translations were therefore counted as instances of the same pitch contour. This does not seem to be a dialectal difference, but rather a difference in personal speaking style related to personality, which is a complicating factor that I had not considered before analyzing

the data.

The dialogue in (30) involves two people who were talking about some piece of equipment. Speaker B said that if everything was ready, then she was going to "pull it," Speaker A did not know what it was that speaker B wanted to pull, so he asked:

(30) A: 你拉乜嘢啊？
Lei5 laai1 mat1je5 aa3?
2s pull what SFP
"What are you going to pull?"

B: **拉呢粒嘢囉。**
Laai1 li1 lap1 je5 lo1.
pull this CL thing LO
"(Pull)⌒this thing."

The target sentence (in bold) shows the participants' English translations: "(Pull) this thing." A vertical line within a graph indicates the beginning of the syllable over which the *lo1*-equivalent floating tone lies. If the tone lies across the first syllable of the utterance, then no vertical line is necessary.

Figure 5: female a

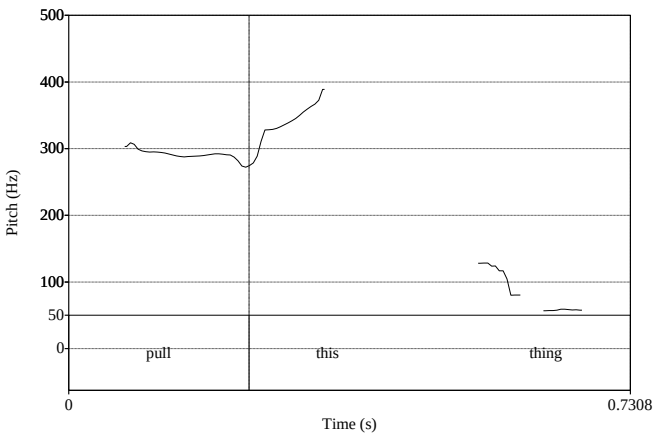


Figure 6: male a

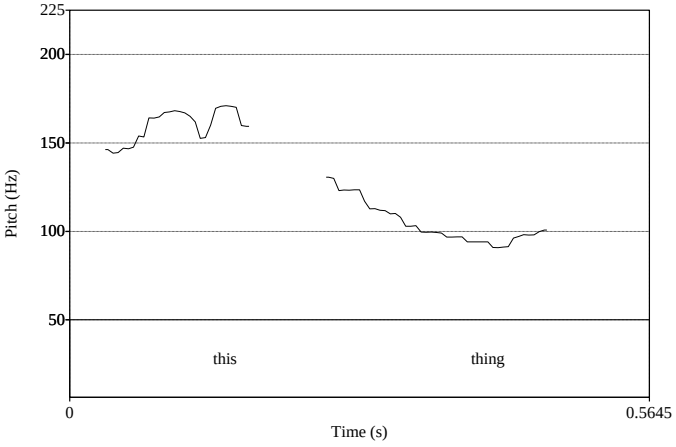


Figure 7: female b

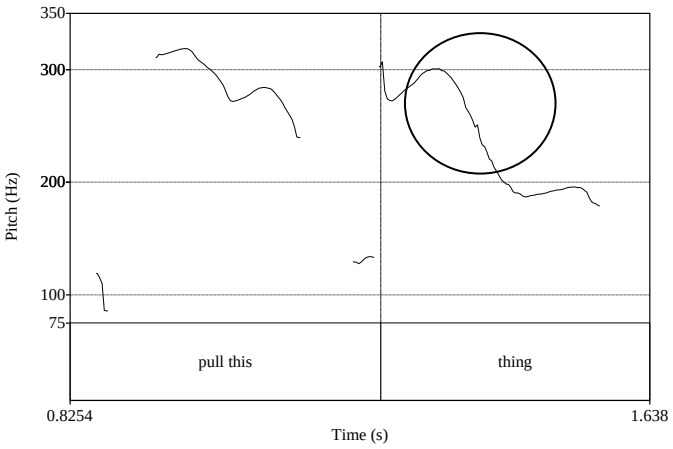
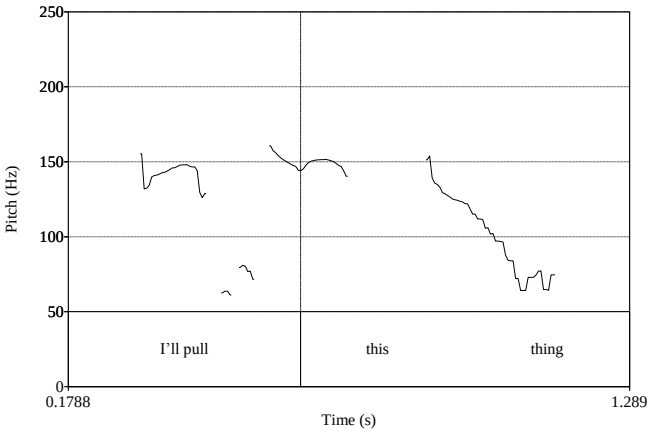


Figure 8: male b



The intonational form used by three of the participants (figures 5, 6, and 8) was a high-falling tone on "this." Female-b was the only one who used a high-falling tone on "thing" rather than on "this" (figure 7). This positioning of the pitch contour sounds unnatural to me and the other native-English speakers consulted. For us, it is more natural for *lo1*-equivalent intonation to lie over "this," which is where all the other participants placed it. It is hard to determine why this position seems more natural to us, because there is no contrastive meaning here, so technically the floating tone does not need to be positioned on "this."

The F_0 contour for each translation of "this thing" in figures 5, 6, and 8 breaks between the two vowels of the two words. This is because the coda of the syllable /ðɪs/ and the onset of the syllable /θɪŋ/ are both unvoiced consonants. Hirst (1983b) explained that one problem with using an acoustic representation of pitch is that F_0 "is not a continuously observable parameter of the sound wave, its presence or absence being dependent on the segmental feature of voicing" (p. 96). He demonstrated that when someone uses a series of syllables containing only voiced segments (e.g., a series of "ma" syllables) to mimic the intonation of an utterance, all

of the unvoiced-consonant breaks that appear along the F_0 line of the original utterance disappear. The result is a graphic depiction of an F_0 contour that has a shape similar to that of the original utterance's, but with the breaks filled in. The F_0 of a mimic with phonemic segments that are all voiced provides a visual representation that more accurately represents the linguistically meaningful pitch contour that a native-English speaker's ear hears and interprets. But of course such an F_0 curve is still not equal to the utterances pitch.

Following this idea, I mimicked the intonation of "this thing," as said by the two participants female-a and male-a. The F_0 curve of the all-voiced mimic ("thiz ding") that I made of female-a's intonation of "this thing" is shown below in figure 9, with figure 5 repeated next to it for convenient comparison:

Figure 9: my all-voiced mimic

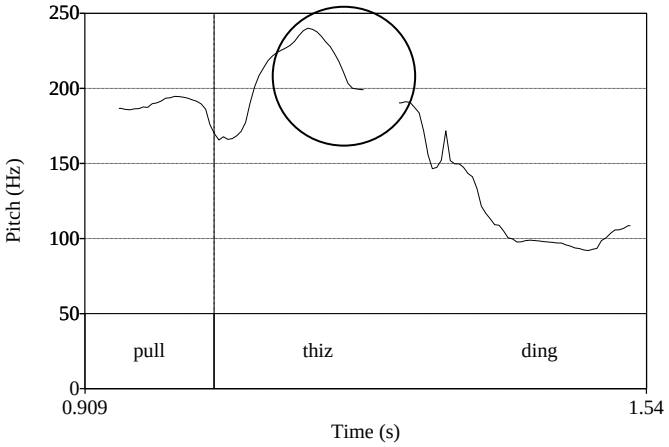
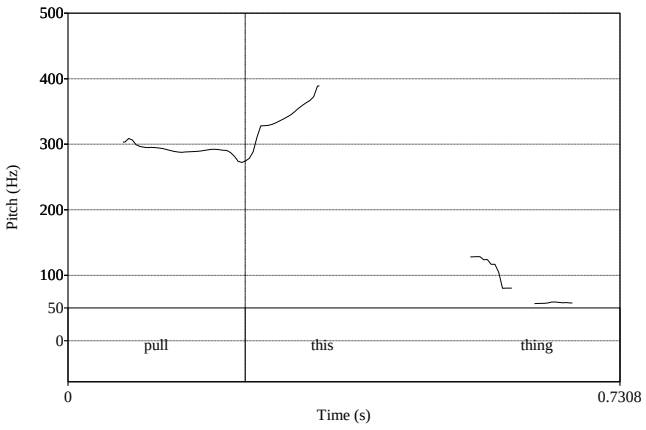


Figure 5 (repeated from above)



My mimic does not have the same key or range as female-a's original translation, so it could be argued that this is not an accurate replication of female-a's sentence. Nevertheless the intonation of both recordings sounds virtually the same to me and to the native speakers I consulted, which indicates that figure 9 should be a fairly accurate representation of what the F_0 of figure 5 would look like if none of its parts were missing.

My mimic of male-a's translation from figure 6 is shown here in figure 10, with figure 6 repeated next to it:

Figure 10: my all-voiced mimic

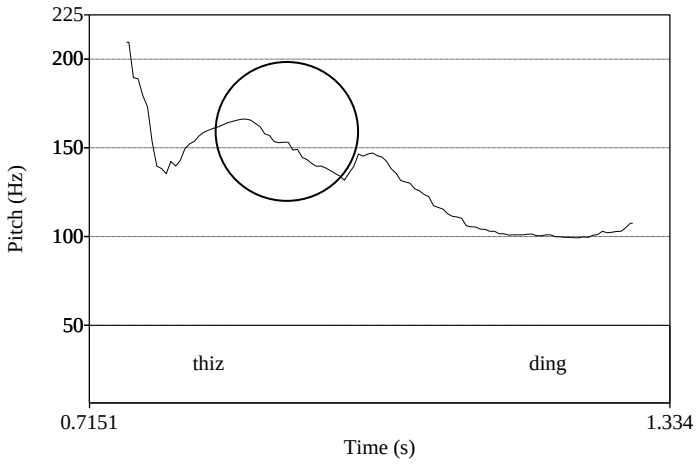
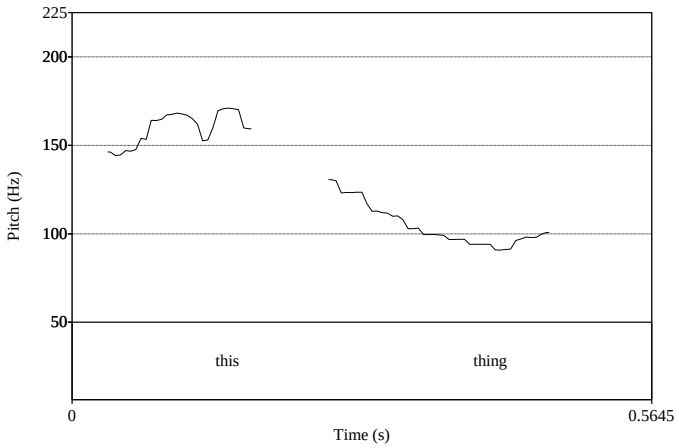


Figure 6 (repeated from above)



Here I was able to mimic the pitch range of male-a's translation. The result again is a contour shape of a high-falling tone. The native-English speakers consulted concluded that all the translations of the target sentence in dialogue (30) sound like the same form of intonation, though all agreed that the placement of female-b's intonation did not sound natural to them.

In the next dialogue, speaker A described eating "hot pot" in a way that speaker B did not understand. This caused speaker B to ask for clarification about what speaker A was going to eat.

(31) A: 今晚我哋去一人一鍋啊，正唔正？
Gam1maan5 ngo5dei6 heoi3 jat1 jan4 jat1 wo1 wo3, zeng3-m4-zeng3.
tonight 1s-pl go one person one pot SFP correct-NEG-correct
"Tonight we're going to have a pot a person—nice huh?"

B: 一人一鍋？食咩啊？
Jat1 jan4 jat1 wo1? Sik6 me1 aa3?
one person one pot eat what SFP
"A pot a person? What are you eating?"

A：**打邊爐囉。**

Daa2 bin1lou4 lo1.

hit side-stove LO

“⌒Hot pot.”

The target sentence was translated as “hot pot” by all four participants. For all of them again, the translation of *lo1* was a high-falling tone.

Figure 11: female a

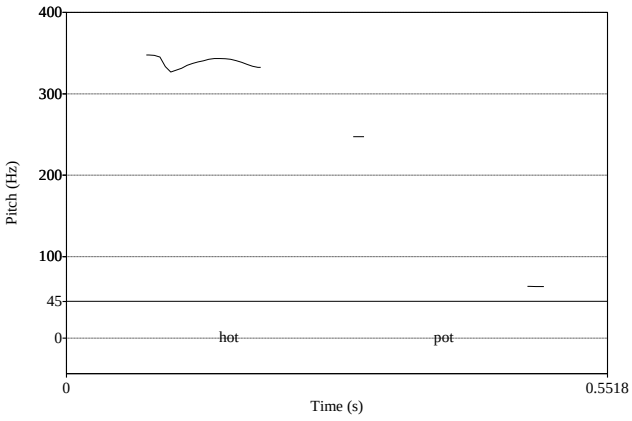


Figure 12: male a

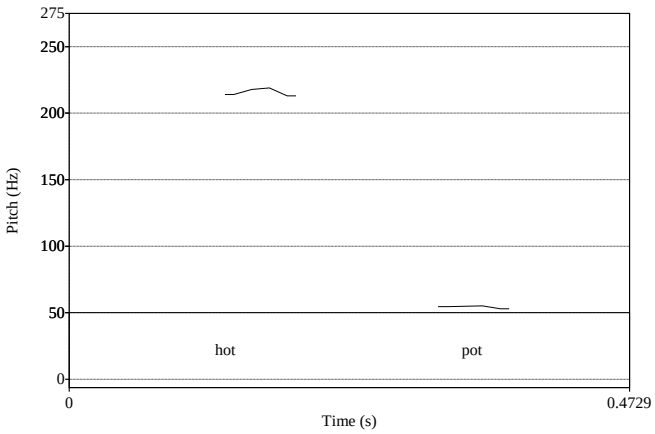


Figure 13: female b

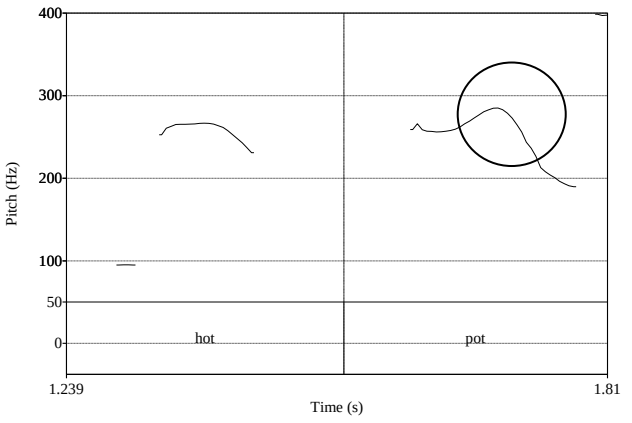
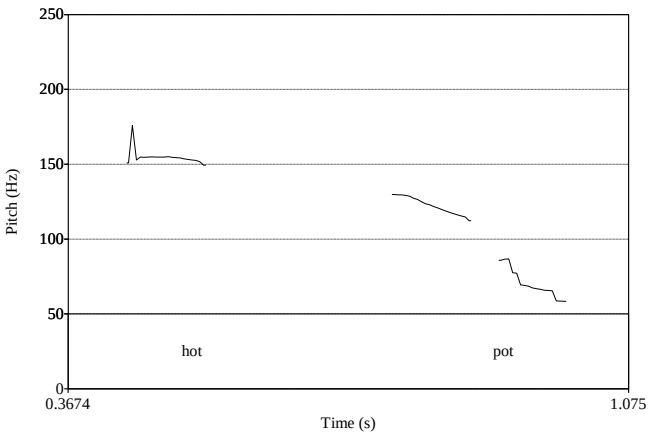


Figure 14: male b



The F_0 curve of female-b’s high-falling tone is not broken apart because it was realized over the vowel of pot. It is shown inside the circle of figure 13.

Interestingly, in this translation female-b also placed the tone on a different syllable than did the other participants, which indicates that this may be dialectal (or individual-speaker) variation, causing her intonation to differ in this way from the other participants. The *lo*-equivalent intonation in her (perhaps dialectal) variation has the same form (i.e., a high-falling pitch contour), but it is manifest at a different position within the intonational phrase—appearing on the final syllable of the intonational phrase as opposed to the syllable that would be the nuclear stress if the phrase were neutrally intoned. This is another complicating factor that I did not consider.

The position of the tone seen in figure 13 is especially unusual because the accented syllable of this word is "hot," and it would seem natural for the *lo1*-equivalent tone to be placed over an accented syllable. In order to confirm that female-b's English intonation was not fundamentally different from other native speakers, I constructed two dialogues to elicit her pronunciations of the utterences "pull this thing" and "hot pot" using both neutral and contrastive intonation. For both types of intonation, her nuclear stress was unambiguously placed on "this" and "hot," respectively. This is exactly what would be expected from a native-English speaker. The fact that her *lo1*-equivalent tone was placed on the final syllable of the utterance is perhaps evidence that her mind is treating it as a morpheme bound to the sentence as a whole—which is what SFPs are—allowing it the flexibility to evolve into a different positioning inside the intonation phrase. This is not possible for contrastive intonation because it functions to contrast one word with another, and therefore must mark the word by stressing its accented syllable.

The F_0 contours of the *lo1*-equivalent intonation is broken up in figures 11, 12, and 14. This is because the coda of /hot/ and the onset of /pot/ are both voiceless. Following the same procedure used for the previous translation, I recorded my own

all-voiced mimic (“hod bod”) of the intonation used in the translation that corresponds to male-a’s translation shown in figure 12. I chose to mimic male-a’s translation because my natural pitch range is closest to his.

Figure 15: my all-voiced mimic

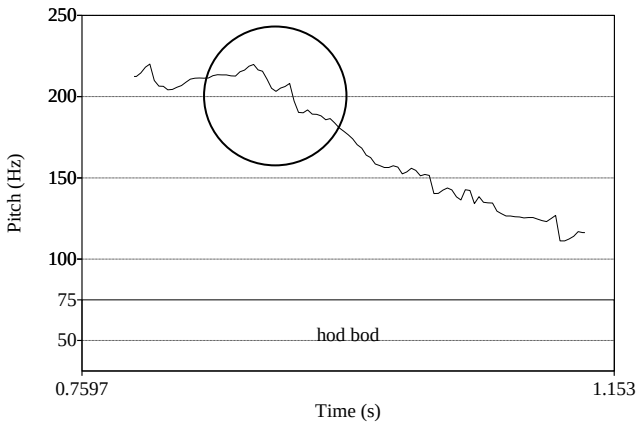
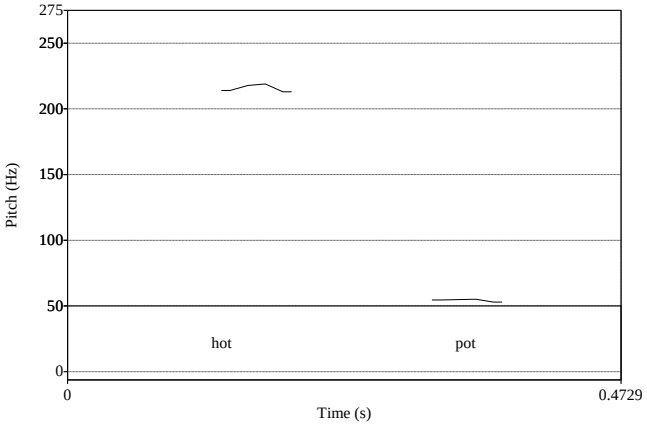


Figure 12 (repeated from above)



According to the native-English speakers’ judgments and the shape of my all-voiced mimic’s F_0 curve, the result of translating *lo1* into English in this dialogue is a high-falling pitch contour.

The next mini-dialogue involves two speakers who were looking at a picture of several people. One of the people in the picture was a person named Ricky, and speaker A asked which one it was.

(32) A: 邊個 Ricky？
Bin1-go3 Ricky?
which-CL
“Which one’s Ricky?”

B: 呢個囉。
Lei1 go lo1.
this CL LO
“↷This one.”

The translation of *Lei1go3 lo1* from three of the participants was “This one,” and from female-b was “This.” All four used the same form of intonation used in the previous translations according to me and my native English-speaking informants.

Figure 16: female a

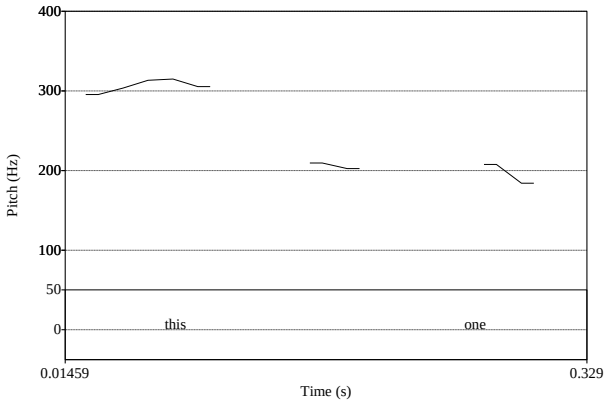


Figure 17: male a

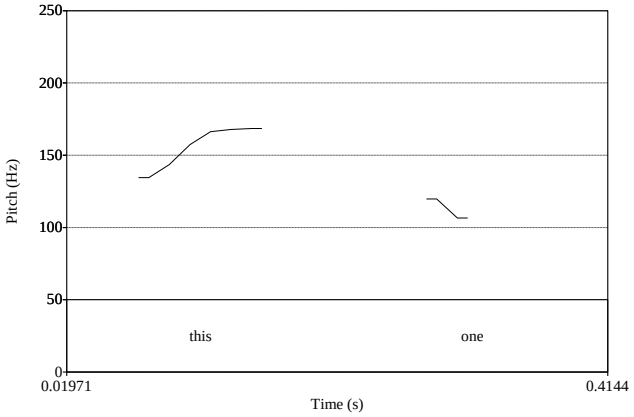


Figure 18: female b

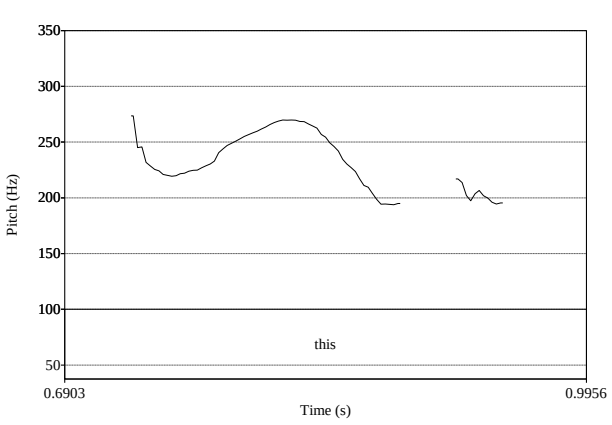
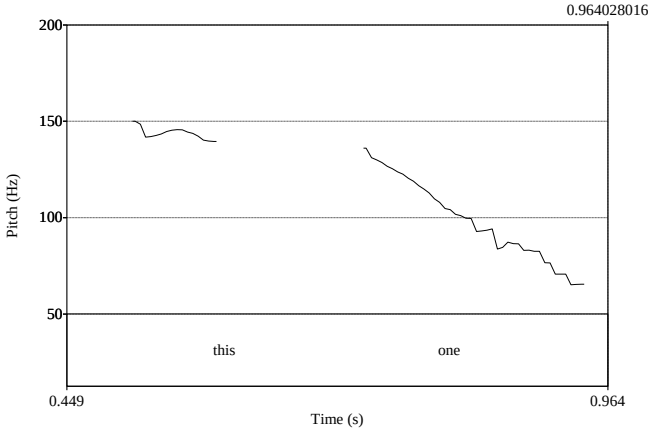


Figure 19: male b



Female-b’s translation was again different, not because she chose an unusual location for the stress, but because her translation only consisted of one word. Figure 20 shows my all-voiced mimic (“thiz one”) of the intonation used in the translation that corresponds to male-a’s translation shown in figure 17:

Figure 20: my all-voiced mimic

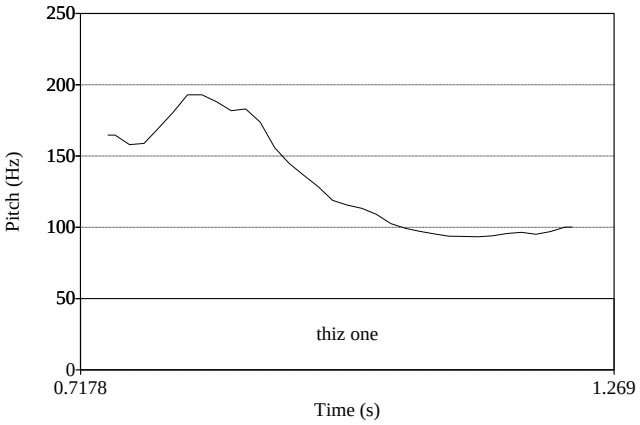
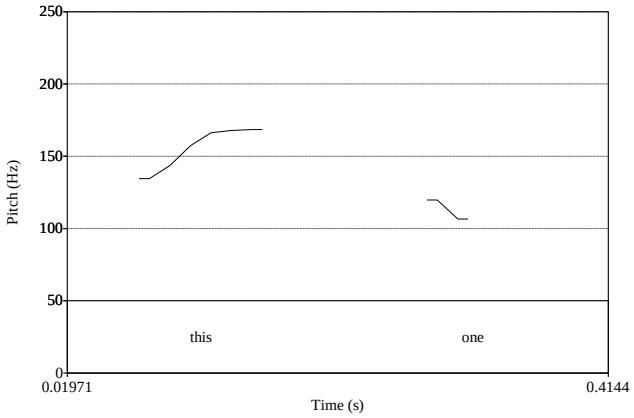


Figure 17 (repeated from above)



There is a slight rise before the high-falling tone, as well as in female-b's translation in figure 18, but these do not affect these tones being heard as "high-falling." I concluded that all of the visual rises in F_0 in the translations of *lo1* are not linguistically meaningful. Seeing a rise or fall of an F_0 contour on paper that is not linguistically meaningful is not uncommon (Roach, 2009). Though the pitch rises that appear before the falls in the above translations are not meaningful in and of themselves, they are most likely related to the pitch falls. In her comments as an examiner of this thesis, Virginia Yip pointed out that it could be "a matter of raising one's pitch sufficiently in order to 'launch' a high falling contour."

Based on the data, I conclude that all 3 portions of the null hypothesis have been falsified. Regarding part i) there was a discernable intonation pattern (i.e., a high-falling pitch contour); regarding part ii) this pattern occurred in more than one of an individual participant's translations; and regarding part iii) the same pattern occurred in another participant's translations. This is true even if we do not count male-b's translation of (29) because it was "weak," and if we don't count female-b's translations of (30) and (31) because the tone was placed in a position different from

where the other participants placed it. I therefore take this as evidence that *lo1* has an intonational equivalent in English, which is the high-falling tone that appears in the data. I propose that it is a floating tone that exists as a bound morpheme in English.

I, along with other native-English speakers consulted, recognize the form and meaning of this form of intonation as something that we use. According to my intuition *lo1*-equivalent intonation is normally higher than that of contrastive stress, which is also a lexical, high-falling floating tone according to Hirst (1983a). To illustrate the difference, consider the following constructed dialogue containing both contrastive and *lo1*-equivalent intonation. Imagine that John and Mary are co-workers who have been asked by their boss to write a notice about something or other and pin it up on their office's notice board. John and Mary have agreed that Mary will write the notice, and the following dialogue ensues:

(33) John: Here, use the red pen.

Mary: I don't want to use the red pen. I want to use the◝◟blue one.

John gets distracted by a phone call and forgets which pen Mary wants to use.

John: Which pen do you want to use?

Mary (thinking: *I just told you!*): The◝◟blue one.

Just prior to John's receiving a phone call, Mary had said which pen she wanted to use, and she therefore thought that John should know the answer to his own question. This influences the way that Mary intones her response. In (33) both of Mary's utterances include the noun phrase "the blue one." The first instance of this NP includes an example of contrastive stress, and the second, which would naturally be said with a higher pitch than the first, is an example of *lo1*-equivalent intonation.

The English equivalent of *lo1* is concluded to be the type of high-falling floating tone that is used in contexts such as (33). The contexts in which this intonation is used are ones in which the speaker assumes that the listener knows some information D, which logically leads to knowledge of the proposition P to which the intonation is applied. P is therefore something that the speaker thinks should not have to be said, since the listener assumedly already has access to this information. Using the explication in (28) the *lo1*-equivalent floating tone in this context means: you can know this (P: *I want to use the blue one*) because you know something else (D: *I said I want to use the blue one*).

6.1.1.3 Applying the NSM Explication to the Examples of *lo1* from the Data

Based on the bilingual explication in (27) and (28), this and the next section identify the "something else" (i.e., the discourse variable D) for each dialogue, and discusses how it leads to knowing P in the mind of the speaker. For each example of *lo1* that will be discussed, it is assumed that, to the extent that the context and dialogue were translated fully and accurately into English, then D and P are the same for the English and Cantonese, and *lo1*-equivalent intonation has the same meaning and performs the same function in English as *lo1*-attachment does in Cantonese. It is further predicted that they will have the same distributional properties with regard to acceptable contexts.

One of the speakers in dialogue (29), repeated below as (29'), said *hai6 lo1* (be LO) "yeah," which was also said by a speaker in dialogue (25). Dialogue (25) came from Luke (1990), who said that that particular example of *hai lo1* expressed

the speaker's "recognition that the answer [given just prior by the listener] has provided evidence which confirms an expectation" (p. 131). I agree with his explanation for that sentence, and the use of *lo1* in example (25) will be discussed in the next section. The use of *hai6 lo1* in (29), however, cannot be described as confirming an expectation.

Lee and Law (2001) said that *hai6 lo1* is a "formulaic expression… which indicates the speaker's agreement with an earlier comment made by the hearer," referring to this as an "agreement formula" (p. 83). Lee and Law's description of *hai6 lo1* can explain (29) better than Luke's explanation, which only explains examples such as (25). Speaker A's reply to B in (29) essentially expresses the idea that speaker A agrees with what B just said, also that speaker B's comment was obvious because it follows naturally and logically from what speaker A said just prior to that. All four of the native-bilingual participants translated the target sentence *hai6 lo1* as "yeah" with high-falling intonation. I propose that we can construe *lo1* as being attached to an elided TP, which is the proposition P of our explication. One way to analyze this *hai6* + *lo1* structure is with an ellipsis of the proposition as shown in (29'):

(29') A: Maths 考 A 至少要九十五分以上喎。
Maths haau2 A zi3 siu2 jiu3 gau2sap6 fan1 ji5soeng6.
test most few need ninety point above
"To get an A in Maths, you need at least ninety-five points."

B: 你頂窿錯兩題咋，只可以。
Lei5 ding2lung2 co3 loeng5 tai4 zaa3, zi2 ho2ji5.
2s most wrong two CL(question) SFP only can
"At the most, all you can get wrong is two questions."

A：係[P]囉。
Hai6 [P] lo1.
be LO
“↗Yeah, [P].”

P is the elided element, and D is speaker A’s first utterance. What speaker A conveys with *hai6 lo1* here is that speaker B’s immediately-preceding utterance can be known as a result of knowing D (i.e., speaker A’s first utterance). In other words, in speaker A’s mind, speaker B can know this (P: *at the most, all you can get wrong is two questions*) because speaker B knows something else (D: *to get an A in Maths, you need at least ninety-five points*). It is not necessary for our purposes here to state the precise syntactic properties of the elided element, but it is assumed to have the same meaning as what speaker B said just prior. Regardless of how it is described syntactically, it is phonetically null and therefore provides no place for the floating tone to appear, which is why the tone must be placed over “yeah,” the only remaining overt word in the sentence.

Luke’s (1990) description of *hai6 lo1* as the confirmation of an expectation in (25) does not work to explain the use of *hai6 lo1* in (29), because B’s utterance did not confirm an expectation of A’s. At the same time, Lee and Law’s (2001) description of *hai6 lo1* as an expression of agreement with something the listener has said does not explain the use of *hai6 lo1* in (25), because the speaker was not agreeing with something that the listener said. Furthermore, neither Luke’s nor Lee and Law’s explanations can account for why *hai6 lo1* can be used as a reply to a question. For example, consider a scenario in which two co-workers anxiously arrive 10 minutes late to a room where they thought a company meeting had been scheduled to take place, and, to their surprise, the room is empty. If speaker A asks, *Dim2gaai2 mou5 jan4 ge2?* (why NEG person SFP) “Why isn’t anybody here?” then

it would be perfectly natural for speaker B to respond by saying *hai6 lo1* "⌒yeah."

A description of *hai6 lo1* "⌒yeah" that works in all three of these contexts is one that construes it as having an ellipse that includes a phonetically null P: *hai6* [P] *lo1* "⌒yeah [P]." When it is used as an agreement formula, then P is semantically equivalent to what the listener just said. When it is used to confirm an expectation, then P is most likely equal to something that was said previously by the speaker herself or himself (see the discussion of example (25) in the next section). In the scenario I constructed in the preceding paragraph, P is something like: "that's a good question," and D is: "a meeting should be taking place in this room; there is nobody in this room." In this case it would be very natural to follow either *hai6 lo1* or "⌒yeah" with a repeat of the question: "Why isn't anybody here?"

In the next dialogue, repeated as (30') below, speaker B believed that the answer to speaker A's question should have already been known to A. All four of the participants' translations expressed this same type of evidential/epistemic knowledge in English by using the *lo1*-equivalent tone.

(30') A: 你拉乜嘢啊？
Lei5 laai1 mat1je5 aa3?
2s pull what SFP
"What are you going to pull?"

B: 拉呢粒嘢囉。
Laai1 li1 lap1 je5 lo1.
pull this CL thing LO
"(Pull)⌒this thing."

In this dialogue, we need to speculate about exactly what the "something else" (D) is, because it was not evident from the audio recording. It seems very likely that D is one of two things in speaker B's mind: 1) it is something that she assumed to be

commonly known information regarding the particular piece of machinery they were talking about; or 2) it is pragmatic information, perhaps in the form of having previously pulled (or pointed to) that "thing" in the presence of the listener. Speaker B assumed that speaker A had access to the information D (in the form of 1) or 2) as just stated), and that speaker A could therefore know that it was "this thing" that speaker B was going to pull.

In dialogue (31'), speaker A appears to have assumed that "having a pot a person" should have been understood by the listener to mean "eating hot pot," and that clarification should therefore not have been required. This meaning was conveyed through the use of *lo1*-attachment.

(31') 打邊爐囉。
Daa2 bin1lou4 lo1.
hit side-stove LO
"⌒Hot pot."

This example is straight forward. P is "hot pot," and the D that leads obviously to this knowledge in the mind of the speaker (though apparently not in the mind of the listener) was having just told the listener that they would be having "a pot a person."

Speaker B in (32') apparently thought that speaker A should have already known which person in the picture was Ricky, and indicated so by attaching *lo1* to his reply:

(32') 呢個囉。
Lei1 go lo1.
this CL LO
"⌒This one."

As was the case for (30') we need to speculate as to exactly what D is in (32') because, again, it was not verbalized. In this case, the D in the speakers mind could

be that he had just pointed out which person in the picture was Ricky, or it could be the assumption that the listener should have been able to figure out which person in the picture was Ricky because Ricky was a mutual acquaintance that the listener had seen before, and therefore should have recognized.

6.1.1.4 Applying the English Equivalent of *lo1* and the NSM Explication to the Examples of *lo1* in the Literature

The assumptions at this point are that the English equivalent of *lo1* has been discovered, that it is a high-falling floating tone, and that it is the English-equivalent form for any and all occurrences of *lo1*. For the data discussed in the preceding section, the translations were provided by the participants. In this section, I use my native English-speaker intuition to apply *lo1*'s equivalent to all the English translations. In most cases I have modified the wordings of the translations.

The first example is (21), from Yip and Matthews (2001). It demonstrates using *lo1* to give a suggestion or give advice, which was one of the properties of *lo1* that Luke (1990) discussed. In this example, the discourse element D and proposition P are both contained in a single conditional sentence, if D, then P:

(21') 你做得唔開心咪搵第二份工囉。
Lei5 zou6 dak1 m4-hoi1sam1 mai6 wan2 dai6ji6 fan6 gung1 lo1.
2s do Adv-M NEG-happy then find second CL job LO
"If you're not happy in your work, then find another⁀job."

Here, the D is "you're not happy in your work," and the obvious solution to this problem is P: "to find another job." Applying high-falling intonation to "job" sounds very natural and is perfectly suitable to the context, and it provides the meaning of (28), just as the *lo1*-attachment of the Cantonese provides the meaning of (27).

Example (22) from Kwok (1984) shows the question “When does the film start?” and the accompanying response “Two thirty” with *lo1* attached. Kwok translated the response into English as “Two thirty, of course. Don’t you know?” I translate it as follows:

(22’) 兩點半囉。
Loeng5 dim2 bun3 lo1
two CL(time) half LO
“Two⌒thirty.”

In (22’), the floating tone lies over the first syllable of “thirty.” In this conversation, we know that P is “[It starts at] two thirty,” but we have to speculate as to what D is because Kwok did not provide any context. It is easy to imagine some likely possibilities. Perhaps the speaker, or a third party, had said what time the film was going to start in the prior discourse, in which case D = “I/someone said the film starts at two thirty.” Another possibility is that the speaker assumed the listener must have seen the time when they bought the tickets, in which case perhaps D = “the ticket counter showed that the film starts at two thirty.” In either case, P ([*it starts at*] *two thirty*) could be known from knowing D.

In example (23) Kwok translated *lo1* into English by attaching “that’s why” to the end of the sentence. This was the father’s reply to his son, who wondered why he did poorly on a history test:

(23’) 讀得唔夠囉。
Duk6 dak2 m4-gau3 lo1.
study ADV-M NEG-enough LO
“You didn’t⌒study enough.”

The most natural position for the *lo1*-equivalent tone is over the first syllable of “study.” As for its meaning based on (28), D most likely comes from the father’s

assumption that his son possessed a particular type of common knowledge. Specifically, the father probably thought that his son knew D, which can be stated roughly as: “poor test performances result from not studying enough; you performed poorly on this test.” If the father assumed that his son, who got a poor test score, knew D, then he would have assumed that his son could know P, which is that he didn’t study enough. The use of *lo1* here did not give the reason for doing poorly on the test, as Kwok suggested, because the father had assumed that his son already knew the reason, or could have known if he had thought about it.

The D in example (24) is straightforward. The boy Kei had said his name, but because the DJ did not hear his name over the sound of the laughter, he asked Kei what his name was. Kei then repeated his name with *lo1* attached.

(24’) 阿 Kei 囉。
Aa3-Kei1 lo1
PRT-Kei LO
“ˆKei.”

In this case *lo1* and its English equivalent mean: you can know this (P: [*my name is*] *Kei*) because you know something else (D: *I just said ‘Kei’*). The English translation of (24’) is a single-syllable utterance, and in such cases the floating tone has no place to appear other than on that single syllable.

Dialogue (25) is an example of what Luke (1990) referred to as the confirmation of an expectation. Speaker A said that he or she believed there was a reason that speaker B separated from his girlfriend in addition to the reason speaker B had already given. Speaker B confirmed this expectation of speaker A’s by stating another reason. Speaker A then responded by saying, *hai6 lo1* “ˆyeah,” which indicated that his expectation had just been confirmed.

(25’) A: 相信唔淨係嘅嘅。
Soeng1seon3 m4 zing6hai6 gam2 ge3.
believe NEG only thus SFP
“I believe that’s not all it was.”

B: 啫，佢話我好唔細心啦。
Ze1, keoi5 waa6 ngo5 hou2 m4-sai3sam1 laa1.
PRT 3s say 1s very NEG-small-heart SFP
“I mean, she said I wasn’t caring.”

A: 係[P]囉。
Hai6 [P] lo1.
be LO
“⁀Yeah, [P].”

As was the case for (29’), the P of (25’) is construed as an ellipse. In this example, however, the ellipse is not the proposition of the immediately-preceding utterance from the listener—as is almost always the case for the agreement formula. Instead speaker A himself had provided P earlier in the discourse when he had said “I believe that’s not all it was.” Speaker A’s thought process in relation to speaker B can be stated in this way: in addition to your girlfriend knowing that you used to be a cook, you know D (*some other reason that she left you*). When speaker B stated an additional reason (i.e., that his ex-girlfriend had said he was not caring), this proved to speaker A that speaker B knew D. By saying *hai6* [P] *lo1*, speaker A was saying to speaker B: you can know this (P: *knowing you’d been a cook wasn’t all it was*) because you know something else (D: *she said you weren’t caring*).

Some so-called deviant examples

I have demonstrated that the explication of (27) and (28) succeeds at describing the meaning of *lo1* and its English equivalent in all of the examples from this study’s

data, as well as in all of the examples of *lo1* that I quoted from the literature. I will now look at examples of *lo1* that, according to some authors, have a different meaning from the examples we've looked at thus far. Fung (2000) said that the perception of the older generation of Hong Kong speakers towards the younger generation is that "*lo1* may be found in almost every clause in [the younger generation's] speech," frequently causing people to say that "*lo1* is being 'abused' by the younger generation in Hong Kong" (p. 118). She quoted a portion of the following illustration from Leung (1992/2005), which comes from an interview of a famous movie star:

(34) 初初唔慣囉。乜都唔識囉。
Co1co1 m4-gwaan3 lo1. Mat1 dou1 m4-sik1 lo1.
beginning NEG-used-to LO what all NEG-know LO
"At first I wasn't⌒used to it. I didn't⌒know anything."

樣樣都要人提囉。猛咁 NG 囉。
Joeng6joeng6 dou1 jiu3 jan4 tai4 lo1. Maang5 gam3 NG lo1.
CL-CL(thing) all need person remind LO frequently thus N.G. LO
"People had to re-⌒mind about everything. I kept getting N⌒Gs ["NG" is a movie industry abbreviation for "no good"]."

成日被導演話囉… 而家呀?
Seng4jat6bei2 dou6jin2 waa6 lo1. … Ji4gaa1 aa4?
alwaysPAS director say LO now SFP
"I always got told off by the di-⌒rector. … Now?"

而家慣咗囉。熟咗囉。
Ji4gaa1 gwaan3-zo2 lo1. Suk6-zo2 lo1.
now used-to-PERF LO accustomed-PERF LO.
"Now I'm⌒used to it."

識得執生囉。冇乜被人話囉。
Sik1 dak1 zap1saang1 lo1. Mou5 mat1 bei2 jan4 waa6 lo1.
know ADV-M adjust LO NEG what PAS person say LO
"I know how to ad-⌒just. I rarely get told⌒off by anyone."

Fung speculated that this may not be a case of abuse, but rather of language change in the form of a "bleaching of emotional attitude in utterances containing *lo1*" (p. 119). One suggestion is that the *lo1* of (34) has "a listing function rather than an evaluative one" (Leung, 1992/2005, cited in Fung, 2000, p. 119).[1] If so, the older generation apparently does not realize that *lo1* has undergone any change. Fung (p. 118) said that the older generation always interprets *lo1* with its epistemic use, and therefore "blames the younger generation for being irresponsible, uncooperative, and impatient" because it uses *lo1* in such ways as illustrated in (34). Leung (1992/2005) argued that *lo1* is polysemous. He referred to the meaning that I have discussed thus far as $lo1_1$, and to this other meaning as $lo1_2$, essentially analyzing them as two distinct SFPs. To support his claim, he cited example (34) plus the following two examples:

(35) 對唔住囉。 最多下次醒目啲囉。
Deoi3-m4-zyu6 lo1. Zeoi3 do1 haa6 ci3 sing2muk6-di1 lo1.
sorry LO most many next time smart-CM LO
"I'm⌒sorry. I'll be⌒smarter next time."

(36) 我呀? 讀緊書囉。Form 3 囉。
Ngo5 aa4? Duk6-gan2 syu1 lo1. Form 3 lo1.
1s SFP study-PROG book LO LO
"Me? I'm going to⌒school. I'm in Form⌒three."

Leung said that $lo1_2$ is used much more frequently by younger speakers, and that

[1] I was unable to find this claim attributed to Leung (1992/2005), but it is easy to see how the use of *lo1* in (34) could be construed as functioning to mark listed items, though this analysis seems unlikely to me.

it is used when the speaker has a reluctant, passive, or reserved attitude. Luke (1990) also mentioned these complaints from the older generation about young people's "overuse" of *lo1*, which shows them to be "uncooperative." He claimed that his analysis of *lo1* accounts for this phenomenon, and therefore did not conclude that there were two *lo1* particles, or that *lo1* had undergone any change. Luke (1990) said that:

> A basis for the 'reluctant' and 'uncommunicative' readings can be found in the particle's conversation organizational properties: it is a completion proposal, marking the talk up to that point as the whole contribution, and a means of passing on to the co-participant the responsibility of providing a direction for further talk. (p. 195)

I don't agree that *lo1* functions as a "completion proposal," and therefore don't think that Luke's analysis adequately explains the cause of people's negative perceptions towards speakers who frequently use *lo1*. Luke (1990) did not conclude that these judgments stemmed from atypical uses of *lo1*, and therefore, unlike Leung (1992/2005) and Fung (2000), he did not provide any specific examples of *lo1* that spark negative judgment. If we look at the three examples in (34) to (36), however, we can see that they include more than one occurrence of *lo1*. It is therefore hard to see how the first *lo1* could be analyzed as having a "completion proposal" function since the speaker continued speaking. Example (34) with numerous occurrences of *lo1* is especially problematic for Luke's analysis.

People therefore must judge certain uses of *lo1* to be uncooperative for a reason other than the one given by Luke. Of all the adjectives used to describe the attitude of speakers who "overuse" *lo1*, I think *uncooperative* is the most fitting. I propose that the explication in (27) may explain why listeners judge certain uses of *lo1* to be impolite, uncooperative, irresponsible, impatient, and to indicate a reluctance to

communicate. Whenever listeners consider it unreasonable for a speaker to expect that they should already know the content of what is being said, then they will judge the use of *lo1* negatively. This can be illustrated by applying the explication of (27) and (28) to Leung's (1992/2005) examples, and to the English translations of those examples.

In example (34), we can guess that the interviewer had asked the actress some question about what it was like being an actress when she first started, whether it was difficult, etc. The actress could very well have expected that the interviewer should have known D, which she had determined to be common knowledge that can roughly be stated as: "when a person first starts doing something, everything related to it is difficult; after a person does something for a long time, everything related to it becomes easy." Taking this as D, we can see why the actress would be able to list a string of P's that all belong to the set of things that can be known from knowing D. First a string of P's related to when she first started acting, then a string of P's related to her experiences now as a seasoned actress. This use of *lo1* is not very cooperative or polite, and would be judged accordingly.

In example (35) there are 2 P's. The first P is "I'm sorry" which the speaker could believe follows from knowing D, which can be paraphrased as: "I am a person who is sorry whenever I do something such as the thing that I am saying sorry about," or more generically, "people are sorry whenever they do something such as the thing I am saying sorry about." This of course does not sound sincere or polite, because it expresses the assumption that the listener should already know that the speaker is sorry and that the speaker should therefore not have to say it at all. The second P is "I'll be smarter next time" and D is perhaps something like: "I am the type of person who learns from mistakes and would not do the same thing again."

In example (36) there are also 2 P's. The first P is "I'm going to school" and the

second P is “I’m in form 3.” Both can be construed to follow from a single D. One possibility for D is: “I am a form 3 student.” We don’t have any context here, and can therefore only guess as to why the speaker would assume that the listener knows D. Perhaps the speaker assumed that the listener had been told D some time prior. This would be similar to some of the examples discussed above and therefore would be a typical use of *lo1*. Another possibility is that D is pragmatic information in the form of *seeing* how old the speaker is and *knowing* that students that age attend form 3. In this case, the listener would understandably judge the speaker to be a rather uncooperative communicator for leaving it to the listener to figure out P based on the unreasonable expectation that she or he can *see* the speaker’s age and thereby know which school form the speaker is attending.

I believe that my explication of *lo1* can account for its use in examples (34) to (36), and furthermore believe that each instance of *lo1* in (34) to (36) can be translated into English as a high-falling floating tone, and that this provides further evidence that these are probably the same *lo1* particle. The resulting translations sound natural, and produce the same meanings if we assume the same D’s and P’s in the minds of the speakers. I think the older generation of English speakers would probably react to this “over use” of *lo1*-equivalent intonation in the same negative manner that the older generation in Hong Kong has reacted to the “over use” of *lo1*.[1]

[1]Another possibility is that there is a separate polysemous particle $lo1_2$. In addition to those who have written about $lo1_2$, I have talked personally to a few Cantonese linguists who believe there is a $lo1_2$ SFP. I must yield to their native-speaker intuition and therefore consider this to be an open question in need of further research.

6.1.2 The Particle aa1maa3

6.1.2.1 The NSM Explication of*aa1maa3*

The SFP *aa1maa3* has not been written about as much as *lo1* has. I found no definitions for *aa1maa3* in any dictionaries, and saw it mentioned in only two textbooks. Boyle (1970b) said that *aa1maa3* means " 'that's why' in a response sentence which gives [an] explanation of why something occurred, [and that] *aa1maa3* adds the connotation (cheerfully without impatience) that the whole thing is pretty obvious" (p. 327). She gave the following dialogue as an example:

(37) A: 因為傷風，佢唔嚟得。
Jan1wai6 soeng1fung1, keoi5 m4 lai4 dak1.
because cold 3s NEG come can
"She has a cold, so she can't come."

B: 點解佢唔嚟得？
Dim2gaai2 keoi5 m4 lai4 dak1?
why 3s NEG come can
"Why isn't she coming?"

A: 佢傷風吖嗎。
Keoi5 soeng1fung1 aa1maa3.
3s cold AA-MAA
"She has a cold, that's why."

In the final line of (37), *aa1maa3* is translated as "that's why," which, according to Boyle's (1970b) definition, includes the connotation that it is obvious. Kwok (1984) claimed that the particle *lo1* either "seems to give the reason for something, or to point out what is obvious" (p. 58); Boyle implied that *aa1maa3* does both of these

things at the same time. I argued against Kwok's claim that *lo1* can be used to give the reason for something, saying that it only points out what is obvious. I think Boyle's description of *aa1maa3* represents the key difference between these two particles: *lo1* is used to point out the obvious, while *aa1maa3* is used to point out the obvious *and* to do something else, which often appears to be "reason giving," though I will argue that this is not precisely what it is.

Boyle's (1970b) claim that *aa1maa3* entails the connotation of cheerfulness and patience cannot be accurate because, although *aa1maa3* is compatible with these attitudes, it is also compatible with opposing attitudes. When a speaker lengthens the rime of the second syllable of *aa1maa3*, and especially when nasally and breathy qualities of voice are used, an attitude of impatience and displeasure is implied. It is more accurate to say that *aa1maa3* is neutral regarding these attitudes, and that such attitudes are expressed through suprasegmentals that are said across the utterance, including the segments of *aa1maa3*; such attitudes (i.e., cheerful vs. not cheerful; patient vs. impatient) are not part of its inherent meaning. It is important to remember that the NSM explications, and the forms of their English-equivalent pitch contours, are proposed to correspond to the SFP when said with a neutral, or canonical, quality of voice.

Yip and Matthews (2001) said that "*aa1maa3* draws attention to something which should be known, typically in response to a question" (p. 157). They gave the following example:

(38) A: 點解咁遲重未返嚟啊？
Dim2gaai2 gam3 ci4 zung6 mei6 faan1 lai4 aa3?
why so late still not-yet return come SFP
"How come she's still not back?"

B: 重開緊會吖嗎。
Zung6 hoi1-gan2 wui2 aa1maa3.
still open-PROG meeting AA-MAA
"Because she's still in the meeting (of course)."

Saying that *aa1maa3* "draws attention to something which should be known" explains why it is compatible with answers, and therefore why it often attaches to them. At the same time, such a description does not restrict it to appearing with "reasons" or to always meaning "that's why." This is a good example of separating the meaning of a particle from the meanings of the sentences that they attach to. The particle *aa1maa3* often attaches to sentences that are "reasons," or "responses to questions," but it will be seen in some examples below that this is not always the case.

Yip and Matthews (2001) listed the following three examples of "other common uses" of *aa1maa3*:

- Teaching or reminding people of rules and facts which may or may not be obvious, as when a parent is teaching her child the social expectation that one greets (giu3) a person using the relevant kinship term:

(39) 你要叫人吖嗎。
Lei5 jiu3 giu3 jan4 aa1maa3.
2s need call person AAMAA
"You should address people, you know."

- To make an excuse, as when a parent tries to explain why a child is acting inappropriately:

(40) 佢重細吖嗎，點識咁多嘢啊？
Keoi5 zung6 sai3 aa1maa3. Dim2 sik1 gam3 do1 je5 aa3?
3s still small AAMAA how know so much thing SFP
"S/he's still young. How could s/he know much?"

- To correct a mistake or faulty information, as when one gets on the wrong bus and the bus driver says:

(41) 唔係十號啊，應該搭一號吖嗎。
M4-hai6 sap6 hou6 aa3, jing1goi1 daap3 jat1 hou6 aa1maa3.
NEG-be ten number SFP should ride one number AAMAA
"You should take number one, not number ten."
(Yip and Matthews, 2001, p. 158)

It is evident from the examples seen thus far that Yip and Matthews's definition, which says that *aa1maa3* draws attention to something that should be known, is better able to explain the use of this particle than Boyles's (1970b) definition, which says it means "that's why." We could add "that's why" to the English translations of (37) and (38), and to that of (40) if it were a response to a question, but not to the English translations of (39) or (41). The *aa1maa3*-suffixed sentences in (39) and (41) do not explain why something occurred, so Boyles's definition does not work for those examples. Presumably in (39) the child is being reprimanded for not addressing an elder. The proposition "you should address people" is not an explanation as to why the child did not address the person. And in (41) the proposition "you should take number one" is not an explanation as to why the passenger mistakenly got on the number ten bus instead.

In addition to Boyle (1970b), several other authors said that *aa1maa3* means (or indicates) an obvious reason. Matthews and Yip (1994, p. 340) said *aa1maa3* is an SFP "indicating obvious reason, excuse, etc.," Leung (1992/2005, p. 76) said that it points out an obvious reason that is based on a subjective view of the speaker, and Kwok (1984, p. 61) said that both *aa1maa3* and *lo1* are "used to point out the reason for something," and that *aa1maa3* "perhaps [has] the additional meaning of 'you

should be aware of it' or 'I have already told you the reason'." Examples (39) and (41) clearly show that *aa1maa3* sentences can be things other than "reasons." Nevertheless it is so compatible with obvious reasons that it has caused numerous authors to define it as such. This suggests that, though the explication of *aa1maa3* must not define it as "an obvious reason," it must account for the fact that it so readily attaches to what can be construed as obvious reasons.

A. Law (2002) classified *aa1maa3* as a "reminder" particle. Examples (37) and (39) could be construed as reminders, as well as perhaps (41). However, examples (38) and (40) cannot reasonably be analyzed as reminders. In example (38), the listener could be reminded that the woman being spoken of had needed to attend a meeting, but not that she was *still in* a meeting. In this scenario, the speaker could assume that the listener should know the woman is still in the meeting, but the speaker would assume the listener to have acquired this knowledge pragmatically (i.e., that the listener would have used his or her assumed knowledge related to the woman's attending a meeting and not having returned yet, and then come to the conclusion that she was still in the meeting); this is different from assuming that the listener knew, sometime prior to the speech time, that the woman was still in the meeting, but had forgotten and therefore needed to be "reminded" of this. In example (40), the speaker said something that s/he certainly must have assumed the listener(s) knew at the time of speaking, rather than something they had known prior and had since forgotten. It is very unlikely that the speaker would assume the listeners to have forgotten the fact that his or her child was young.

It is clear from the examples that it is insufficient—and therefore inaccurate—to define *aa1maa3* as being (or attaching to) a "reason" and/or a "reminder," but its definition must account for the fact that it so readily attaches to these types of

sentences. I will now consider whether or not *aa1maa3* can be defined as "obvious," a word that shows up frequently in the literature.

Yip and Matthews (2001) said that *aa1maa3* can be used for "[t]eaching or reminding people of rules and facts which may or *may not be* obvious" (p. 158), and Lee and Law (2001) similarly said that it "draws the hearer's attention to information that may or *may not be* obvious" (p. 84) (emphasis in italics mine for both quotes). I disagree with this, and argue that the speaker assumes that the information *aa1maa3* attaches to *is* obvious, in the same sense that the information *lo1* attaches to is obvious.

Both *lo1* and *aa1maa3* are discourse-bound particles. Fung (2000) pointed out that a conversation cannot begin with a *lo1* sentence, and the same is true of *aa1maa3*. My explication for *lo1* accounts for this because it includes a deictic element whose interpretation comes from an antecedent in the prior discourse, and I propose that the same is true for *aa1maa3*. The SFP *aa1maa3*, like *lo1*, can only attach to a proposition P that the speaker assumes the listener can know because s/he knows something else that can lead to knowing P. It is not acceptable to attach *aa1maa3* to a proposition that the speaker believes is not something the listener could either know or figure out. This is my definition of *lo1*, and my explication of *aa1maa3* therefore entails the meaning of *lo1*.

The SFP *aa1maa3* relates P to the discourse in the same way that *lo1* does, but it also relates P to the discourse in an additional way. Lee and Law (2001) said that *aa1maa3* must satisfy "a minimal level of informativeness" (p. 84), and, concluding this to be its core function, they referred to it as an "informativeness and elaboration marker" (p. 82). They gave the following as an example:

(42) A: 點解佢咁開心啊?
Dim2gaai2 keoi5 gam3 hoi1sam1 aa3?
why 3s so happy SFP
"Why is s/he so happy?"

B: 佢贏咗馬吖嗎。
Keoi5 jeng4-zo2 maa5 aa1maa3.
3s win-PERF horse AAMAA
"(Because) s/he won a bet on a horse."

In (42), speaker B elaborates and provides information, giving the reason as to why the person is so happy. Contrary to Lee and Law's (2001) implication that the proposition need not be obvious, this context is suitable for *aa1maa3*-attachment if and only if speaker B in (42) assumes that speaker A, the listener, has some knowledge about the proposition (i.e., about her having won a bet on a horse). If not, then *aa1maa3* is unacceptable in this context. It appears that this is always true for *aa1maa3*-attachment, just as it always is for *lo1*-attachment.

That is all there is to the meaning of *lo1*, but there is more to the meaning of *aa1maa3* than just this; it connects P back to something in the discourse that is different from the D that is included in the explication of *lo1*—I will call this other discourse element D_2. It is *aa1maa3*'s linking of P to D_2 that caused Lee and Law to conclude that P must have a "minimal level of informativeness" in order for it to allow *aa1maa3* to attach to it. This means that *aa1maa3* is only acceptable in contexts that include a discourse element D_2 to which P refers.

Lee and Law (2001) said that *aa1maa3* typically marks a proposition that elaborates a reason, as in (42), but that it is not restricted to this. It can also "be used to elaborate on *the event* by specifying the action, participant, time, place, manner or

cause of the event" (p. 85, emphasis in italics mine). What they refer to as "the event" is what I refer to as D_2, but, contrary to their analysis, I think that P does more than merely "elaborate" on D_2. I propose that *aa1maa3* marks P as something that the speaker hopes will influence the listener's beliefs about D_2.

These are some of the examples that Lee and Law (2001) gave to demonstrate their point:

(43) A: 你琴日去咗邊度啊?
Lei5 kam4jat6 heoi3-zo2 bin1dou6 aa3?
2s yesterday go-PERF where SFP
"Where did you go yesterday?"

B: 我琴日返咗學校吖嗎。
Ngo5 kam4jat6 faan1-zo2 hok6haau6 aa1maa3.
1s yesterday return-PERF school AAMAA
"I went to school yesterday."

(44) A: 邊個贏咗六合彩啊?
Bin1go3 jeng4-zo2 luk6hap6coi2 aa3?
who win-PERF six-together-wealth SFP
"Who won the Mark-six (lottery)?"

B: Mary 贏咗吖嗎。
Mary jeng4-zo2 aa1maa3.
Mary win-PERF AAMAA
"Mary won."

(45) A: 爹啲放咗啲乜嘢喺書架上面啊?
De1di6 fong3-zo2 di1 mat1je5 hai2 syu1gaa2 soeng6min6 aa3?
daddy put-PERF CL(pl) what on bookcase top SFP
"What did daddy put on the bookcase?"

B: 佢放咗個花樽吖嗎。
Keoi5 fong3-zo2 go3 faa1zeon1 aa1maa3.
3s put-PERF CL vase AAMAA
"He put a vase (on it)."

Lee and Law (2001) said that "the exact interpretation [of the elaboration] is contextually determined" (p. 85). This is surely correct, because the explication of *aa1maa3*, like other SFPs, includes one or more deictic elements whose reference comes from the context. Their analysis is not sufficient, however, because it doesn't explain how the interpretation of an *aa1maa3* sentence is contextually determined; it merely states that this is so. We could perhaps look at their analysis as an expansion of Boyle's (1970b) description, saying that *aa1maa3* cannot only mean "that's why," but can also mean "that's where," "that's who," "that's what," etc. In contrast, an NSM explication can show precisely how the interpretation is contextually determined.

Lee and Law's (2001) description also does not explain why *aa1maa3* is compatible with their example sentences. It just demonstrates that it is. It should also be pointed out that, in each of the answers in (42-51B), we could replace *aa1maa3* with *lo1* (or with another SFP, or no SFP) and the sentences would still be acceptable. We would not want to conclude from this that *lo1* or some other SFP are also "informativeness and elaboration markers" simply because they appear to "mark" propositions that provide elaborating information in relation to an event in the prior discourse. Lee and Law's description does not help us to understand the difference in interpretation if we were to exchange *aa1maa3* for *lo1* in each of those sentences. An accurate NSM explication, on the other hand, can account for why *aa1maa3* and *lo1* attach to certain types of propositions, but not others, as well as account for the difference in meaning when one is exchanged for the other.

Lee and Law (2001) said that "[t]he proposition expressed by the utterance [that *aa1maa3* attaches to] must have some level of propositional complexity or informativeness" (p. 86). They claimed that, for this reason, it cannot attach to the answer of an A-not-A question or a disjunctive question, giving these two examples:

(46) A: 你一陣間開唔開會啊?
Lei5 jat1-zan6 gaan3 hoi1-m4-hoi1 wui2 aa3?
2s one-CL time open-NEG-open meeting SFP
"Are you going to the meeting in a little while?"

B: *開吖嗎/*唔開吖嗎
*hoi1 aa1maa3/*m4-hoi1 aa1maa3
open AAMAA/Neg-open AAMAA
"Yes" / "No"

(47) A: 你一陣間去開會啶返屋企?
Lei5 jat1zan6gaan1 heoi3 hoi1 wui2 ding6 faan1 uk1kei2?
2s one-CL-moment go open meeting or return home
"Are you coming to the meeting later, or going home?"

B: *去開會吖嗎/*返屋企吖嗎
*heoi3 hoi1 wui2 aa1maa3 / *faan1 uk1kei2 aa1maa3
go open meeting AAMAA / return home AAMAA
"I'm coming to the meeting" / "I'm going home."

I, along with the native-Cantonese speakers I consulted, disagree with these judgments if speaker B believes that the listener, speaker A, has been given this information already. If speaker B in either (46) or (47) had already provided this information to speaker A earlier, then attaching *aa1maa3* to those propositions used as answers to those questions is acceptable, especially if followed by a *lo1*-suffixed "I just⌒told you.":

(46') 唔/開吖嗎。我頭先咪講咗囉。
M4/Hoi1 aa1maa3. Ngo5 tau4sin1 mai6 gong2-zo2 lo1.
Neg/open AA-MAA 1s just MAI say-PERF LO
"Yes/No. I just⌒\told you."

(47') a. 去開會吖嗎。我頭先咪講咗囉。
Heoi3 hoi1 wui2 aa1maa3. Ngo5 tau4sin1 mai6 gong2-zo2 lo1.
go open meeting AAMAA 1s just MAI say-PERF LO
"I'm going to the meeting. I just⌒\told you."

b. 返屋企吖嗎。我頭先咪講咗囉。
Faan1 uk1kei2 aa1maa3. Ngo5 tau4sin1 mai6 gong2-zo2 lo1.
return home AAMAA 1s just MAI say-PERF LO
"I'm going home. I just⌒\told you."

In these two modified examples, *aa1maa3* is attached to the exact same propositions, which are answering the exact same questions. The only difference is that a suitable context is provided within which *aa1maa3* can be used. Lee and Law's "level of propositional complexity" argument does not explain why the *aa1maa3* sentences can be "saved" in this way. This is an example of attaching *aa1maa3* to information that the listener has heard before—something that works to trigger the listener's memory of it—and is probably the use of *aa1maa3* that caused A. Law (2002) and others to classify it as a "reminder."

Despite the fact that *aa1maa3*-attachment actually *can* be used to answer an A-not-A or choice-type question, there is still something to Lee and Law's (2001) "level of propositional complexity" argument. They said that *aa1maa3* "is discourse-bound in that it must be a response to an antecedent event, given in the immediately preceding context, either linguistically or non-linguistically" (p. 84). Here they are referring to D_2, which P "elaborates" on. However, I think their judgments of (46) and (47) are related to there being no D (i.e., the D from the

explication of *lo1*) rather than their being no D_2. I showed that if D is added to the context, which in this case is "I just told you P," then *aa1maa3*-attachment becomes acceptable. However, Lee and Law are correct about the need for a D_2 as well—what they referred to as the "antecedent event."

I propose that *aa1maa3* refers back to a discourse item D_2, and presents the information in the attached proposition P to the listener in an attempt to influence the listener's beliefs in relation to D_2. I take Lee and Law's (2001) quote in the previous paragraph to mean that *aa1maa3* can only be used when the proposition is related to some D_2 which is in the mind of the speaker, and which the speaker believes is also in the mind of the listener. I do not agree with Lee and Law (2001) that this antecedent event must necessarily have been "given in the immediately preceding context." The antecedent event in (39), for example, is listener-based knowledge that comes from the long term habitual practice of telling the child to address people, not something in the immediately preceding context. Another example is the question in (44), which could be changed to "Who won the lottery last year?" The answer to that could still use *aa1maa3*-suffixing so long as the speaker assumes that the listener should remember something that happened a year ago, or perhaps remember the long term consequences of that year-old event, e.g., Mary having bought a new house and car.

Lee and Law (2001) constructed an example where the antecedent (i.e., D_2) is a non-linguistic event—a teacher sees a student working on a math problem and says:

(48) 證明呢一部分先吖嗎。
Zing3ming4 lei1 jat1-bou6 fan6 sin1 aa1maa3.
Prove this one-Cl part first AAMAA
"Prove this part first."

Lee and Law (2001) interpreted (48) to be a response to an implicit 'how' question, which licenses the particles use. They said the "fact that the particle can be used in responses to implicit questions lends its use to problem solving situations or ones in which an effective course of action is recommended, as if in answer to a[n] implicit 'what to do' question" (p. 87).

I agree with much of their analysis on this. First of all it demonstrates that the meanings of SFPs are in the minds of the speakers, who provide their own antecedents from the discourse. This means there is not always going to be a match between speaker and listener, which I argued may be the cause of confusion regarding the younger generation's "overuse" of *lo1*. Secondly, their example showed that *aa1maa3* can only be used when the speaker has some discourse element D_2 in mind to which the listener's knowing P is relevant. The teacher could only attach *aa1maa3* to the proposition "prove this part first" if s/he assumed some D_2 to which it was related; in this case it was the assumption that the student wanted or needed to know how to do the problem. However, this is not the whole story. It is only acceptable to use *aa1maa3* if there is also some discourse element D that the teacher believes the student knows and which can lead to the student's knowledge of P (i.e., the definition of *lo1* subsumed within *aa1maa3*). It is only appropriate for the teacher to attach *aa1maa3* to "prove this part first" if s/he assumes that the student has been taught this before.

Speakers use *aa1maa3*-attachment when they want the listener to think the same thing about D_2 that the speaker her- or himself does. This is why it attaches so appropriately to reasons, excuses, suggestions, and advice. It is also why it attaches to reminders, but, crucially, only to reminders that include information which the speaker believes will influence the listener's thoughts about some discourse element D_2. It would be inappropriate to attach *aa1maa3* to an out-of-the-blue reminder such

as, for example, “You need to pick up your jacket from the dry cleaners.” In sum, *aa1maa3* only attaches to a proposition P that the speaker believes the listener can know from knowing D; and, at the same time, it only attaches to a P that the speaker believes contains information that can influence the listener to hold the same beliefs about D_2 that the speaker does.

The NSM explication I propose for *aa1maa3* is as follows:

(49) “P + *aa1maa3*” =

a. 你能夠知道呢樣嘢（P）
lei5 lang4gau3 zi1dou3 lei1 joeng6 je5 (P)
2s can know this CL thing
“you can know this (P)”

b. 因為你知道另外一樣嘢（D）
jan1wai6 lei5 zi1dou3 ling6ngoi6 jat1 joeng6 je5 (D)
because 2s know another one CL thing
“because you know something else (D)”

c. 我要你而家諗吓呢樣嘢（P）
Ngo5 jiu3 lei5 ji4gaa1 lam2-haa5 lei1 joeng6 je5 (P)
1s want 2s now think-DM this CL thing
“I want you to think about this (P) now”

d. 之後, 你唔會諗呢樣嘢（D_2）
Zi1hau4, lei5 m4-wui5 lam2 lei1 joeng6 je5 (D_2)
after 2s NEG-will think this CL thing
“after this, you will not think this (D_2)”

e. 你會諗另外一樣嘢（P_2）
Lei5 wui5 lam2 ling6ngoi6 jat1 joeng6 je5 (P_2)
2s will think another one CL thing
“you will think something else (P_2)”

The discourse element D_2 is a particular belief or stance that the speaker

assumes the listener to hold based on some prior evidence, linguistic or non-linguistic. P_2 is a belief or stance that the speaker holds, and *aa1maa3* is used in an attempt to get the listener to change his or her belief/stance form D_2 to P_2. All of the Ps and Ds of these explications are propositional in nature, and all of them are in the mind of the speaker. The key difference between them is that a D stems from something in the discourse, while a P originates in the mind of the speaker.

The English version, which defines the English-equivalent rise-fall tone is shown here in (50). The data that provides evidence of the form of the tone is presented in the following section:

(50) "P + *aa1maa3*-equivalent intonation" =

a. you can know this (P)
b. because you know something else (D)
c. I want you to think about this (P) now
d. after this, you will not think this (D_2)
e. you will think something else (P_2)

This explication is more complex than the explication for *lo1* because the latter is contained within the former as lines a. and b. The first occurrence of THIS in line d. refers to line c. The preposition "about" is included, even though it is not listed as a prime. I use it here because it is shown in Goddard's (2004) list of "complementation options" for SAY and THINK: "X says something about something" and "X thinks something good/bad about Y" (p. 16). It would not be natural to use the Cantonese preposition *gwaan1jyu1* ("about") here, and the delimitative marker *haa5* is used instead.

Superficially, since the meaning of *lo1* is embedded in *aa1maa3*, it seems as though *lo1*-attachment should be allowed in every context where

aa1maa3-attachment is allowed, and that *aa1maa3* has a more restrictive use than *lo1*. It is not quite that simple, however, and the acceptable uses of the two will be compared and contrasted in section 6.1.3.

6.1.2.2 The English Equivalent of *aa1maa3* Based on the Data

This section discusses the form of the English pitch contour that is proposed to be equivalent in function and meaning to *aa1maa3*. The method I used for determining its form is described in section 5.4, based on arguments laid out in section 3.2. The *aa1maa3*-suffixed sentences that were targeted for translation are shown in **bold** in each of the dialogues that follow. The meaning of *aa1maa3* and its English equivalent in relation to these dialogues will be discussed in the next section.

In this first dialogue, speaker A explained that as soon as he looks at something he's bought, he can tell whether it's fake or not. Speaker B thought this was odd because it seemed to imply that speaker A bought something even though he knew that it was a fake. Speaker B therefore asked, "You still bought it?" People sometimes buy things before looking at them, and this is what speaker A was implying he did. Speaker A explained, "I didn't know (that it was fake) when I bought it."

(51) A: 一望已經知道係假嘅。
Jat1 mong6 ji5ging1 zi1dou3 hai6 gaa2 ge3.
one look already know be fake SFP
"As soon as I look (at something) I know it's fake."

我買過啲假嘢就係。
Ngo5 maai5-gwo3 di1 gaa2 je5 zau6 hai6.
1s buy-EXP CL(pl) fake thing then be
"That's how it is when I buy something that's fake."

B: 你都買？
Lei5 dou1 maai5?
2s also buy
“You still bought it?”

A: **我唔知吖嗎,** 買嘅時候。
Ngo5 m4-zi1 aa1maa3, maai5 ge3 si4hau6.
1s **NEG-know** AAMAA buy PRT time
“I didn’t⋀know… when I bought it.”

In three of the mimic translations there is a prominent rise-fall pitch contour that lies over the nuclear stress of the intonational phrase, shown inside the circles. Each of these sounded to be the same tone to me and the native English-speaker informants. Male-b phrased his translation as a hypothetical question and placed the floating tone over the word “I” rather than the word “know.” The fourth translation from male-b did not sound the same, and therefore was not counted as a token of this form of intonation.

Figure 21: female a

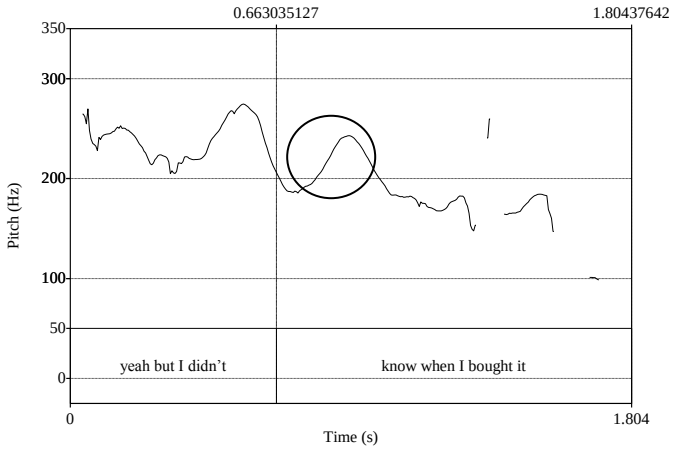


Figure 22: male a

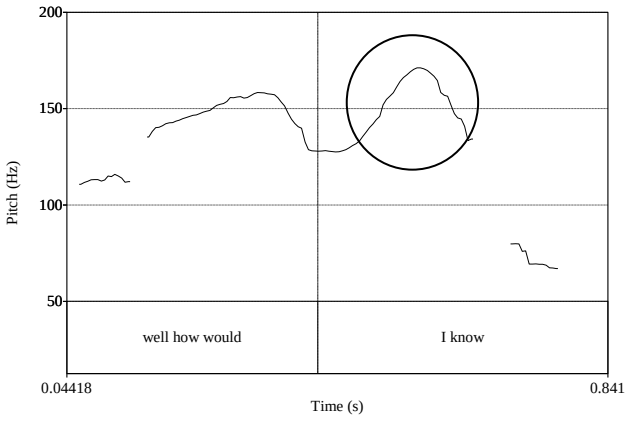


Figure 23: female b

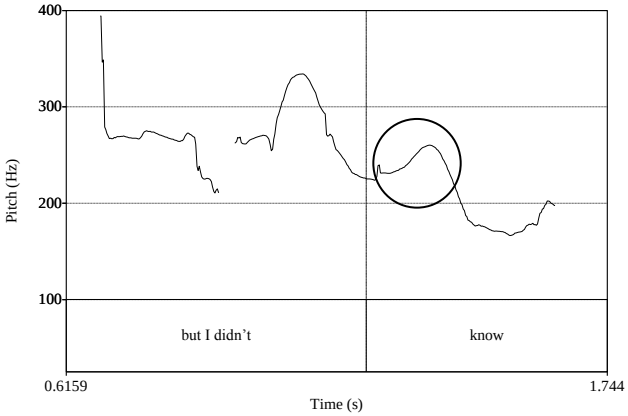
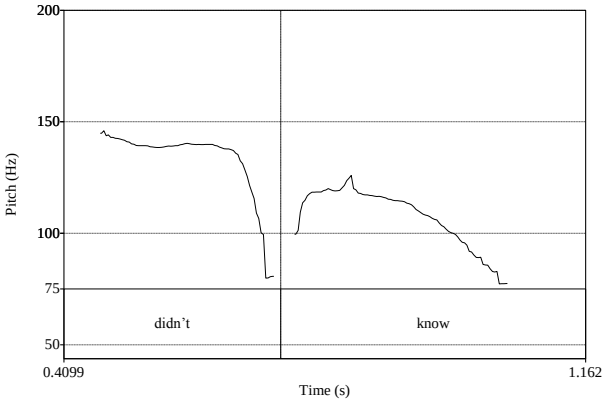


Figure 24: male b



In this next dialogue, speaker B talks about a boat tour out of Australia that takes tourists to see whales. This doesn't sound like a good tour to speaker A, who is not interested in seeing whales.

(52) A: 我對鯨魚冇乜興趣。
Ngo5 deoi3 king4jyu5 mou5 mat1 hing3ceoi3.
1s towards whale NEG any interest
"I've no interest in whales."

B: 阿，我想睇下喎。
Aa3, ngo5 soeng2 tai2-haa5 wo3.
PRT 1s want look-DM SFP
"Oh, I'd like to see them."

A: 係咩？
Hai6 me1?
be SFP
"Really?"

B: 係啊。
Hai6 aa3.
be SFP
"Yeah."

因為未見過咁大條鯨魚吖嗎。
Jan1wai6 mei6 gin3-gwo3 gam3 daai6 tiu4 king4jyu4 aa1maa3.
because never see-EXP so big CL whale AAMAA
“Because I’ve never seen a／whale that big.”

A: 咬唔咬人㗎?
Ngaau5-m4-ngaau5 jan4 gaa3?
bite-NEG-bite person SFP
“Do they bite?”

The intonations are again similar for the two females and male-a, and they are recognizably the same as were the intonations for the translations of (51). In these three participants’ translations, the intonation on the nuclear stress placed over “whale” sounds like a rise-fall pitch contour, and the F_0 curves all show this shape. Once again male-b’s translation did not sound the same, and his F_0 contour was quite different from the other participants’. His intonation here sounded quite neutral, i.e., like the canonical intonation of a declarative clause used to make a statement, or what Stockwell (1972) referred to as the “ ‘neutral’ or ‘normal’ or ‘colorless’ intonation contour for any sentence, serving as a baseline against which all other possible contours are contrastable, and thereby meaningful” (pp. 87-88).

Figure 25: female a

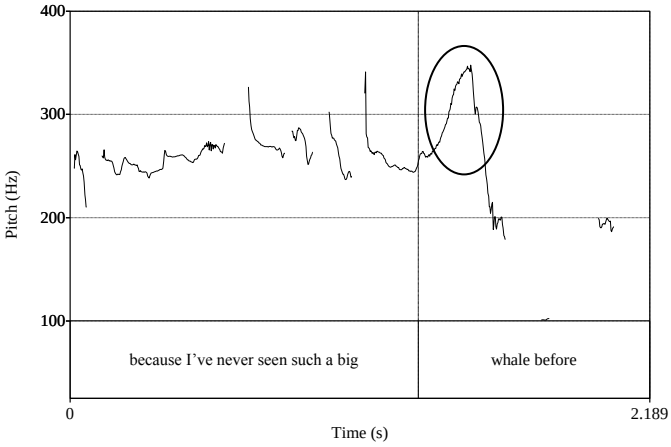


Figure 26: male a

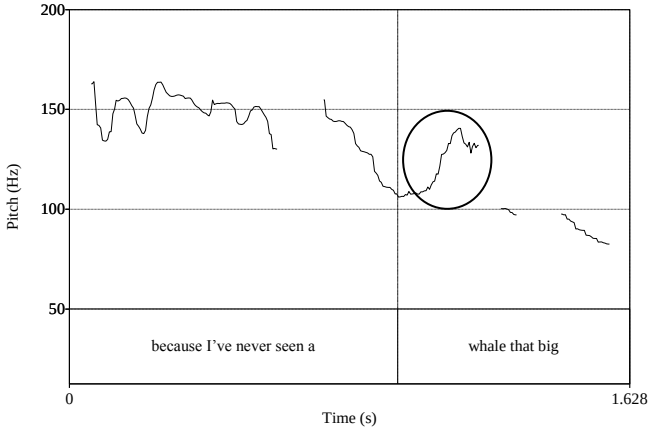


Figure 27: female b

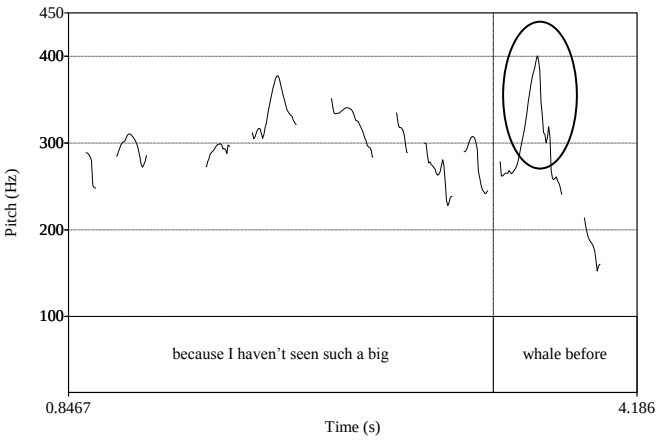
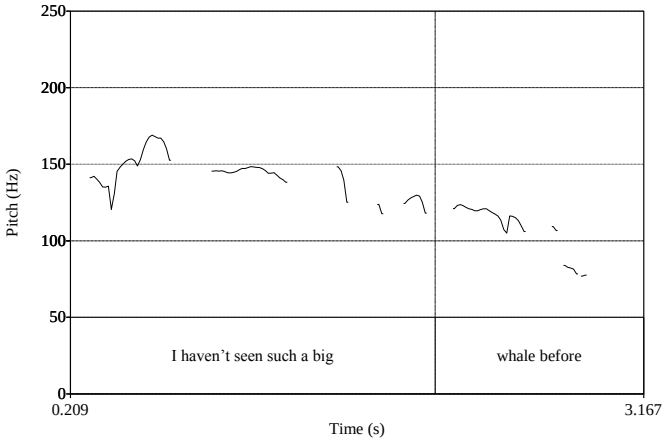


Figure 28: male b



In the next dialogue, two people are talking about a former classmate. Speaker B has just told speaker A that the former classmate plans to quit his job as a marketing assistant. Speaker A asks why, and speaker B then gives the reason:

(53) A: 點解啊?
Dim2gaai2 aa3?
why SFP
"Why?"

B: **佢搵到學校請佢吖嗎。**
Keoi5 wan2 dou2 hok6haau6 ceng2 keoi5 aa1maa3.
3s find achieve school hire 3s AAMAA
"He found a school that's gonna ∧ hire him."

Yet again male-b's (figure 32) translation did not sound the same as the others. It again sounded like canonical declarative intonation. Perhaps for these translations, male-b was not as good at "acting" as the other participants. Perhaps he failed to accurately "mimic" the Cantonese sentences. It seems unlikely that this is a dialectal difference since his translations sound void of any connotative meaning.

The other 3 participants produced the same rise-fall pitch contour as in the

preceding translations, so all three of their translations were counted as tokens of this form of discourse intonation.

Figure 29: female a

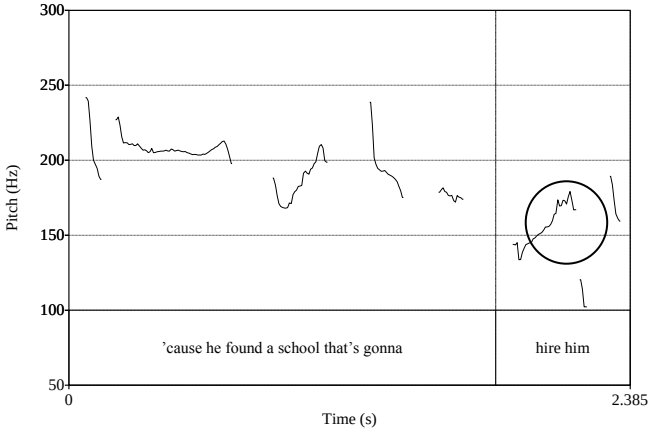


Figure 30: male a

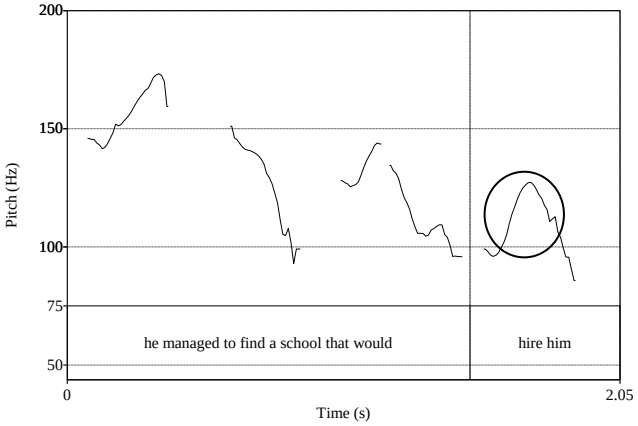


Figure 31: female b

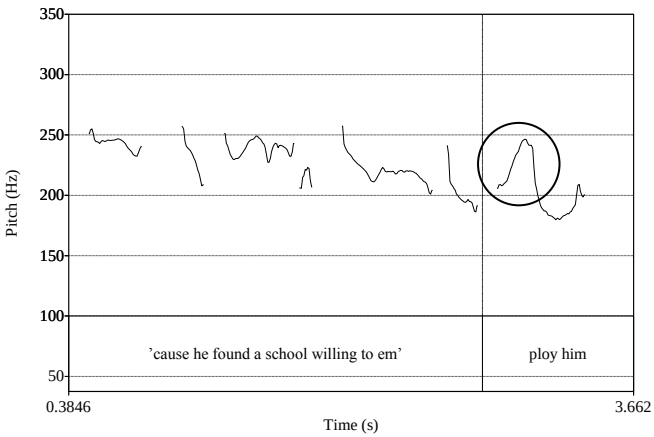
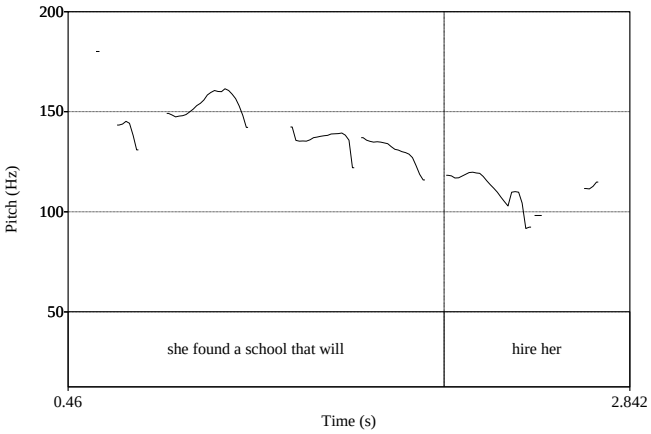


Figure 32: male b



In this fourth and final example, the speaker has just told the listener that some of the books he uses for his research were borrowed for him by his supervisor from another university. He then uses *aa1maa3* when he explains why:

(54) Hong Kong U 嗰啲呢, **我而家冇圖書證叫嗎，因為。**
Hong Kong U go2-di1 ne1, **ngo5 ji4gaa1 mou5 tou4syu1zing3**
that-CL(pl) PRT, **1s now no library card**
aa1maa3, jan1wai6.
AAMAA, because.
"I can't borrow HKU books **because I don't have a∧library card now."**

Interestingly, the tone appeared in three different places among the participants translations. Female-a (figure 33) placed it on the first syllable of "library," male-a (figure 34) on "have," and female-b (figure 35) on "now." The most natural place to put the floating tone in this context, according to my judgment, would be on the first syllable of "library," or on "have," which is where female-a and male-a placed it, respectively. The rise of the F_0 curve for the tone in female-a's translation is very small—so small, in fact, that on paper it does not appear to be an example of the same floating tone. However, the rise is very distinct and sounds very much like an example of the *aa1maa3*-equivalent tone, so it is counted here as such.

Figure 33: female a

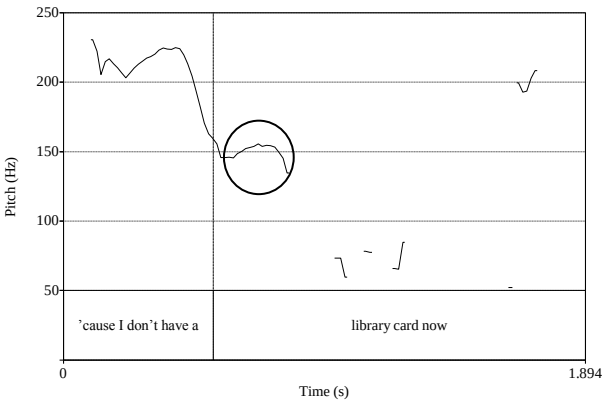


Figure 34: male a

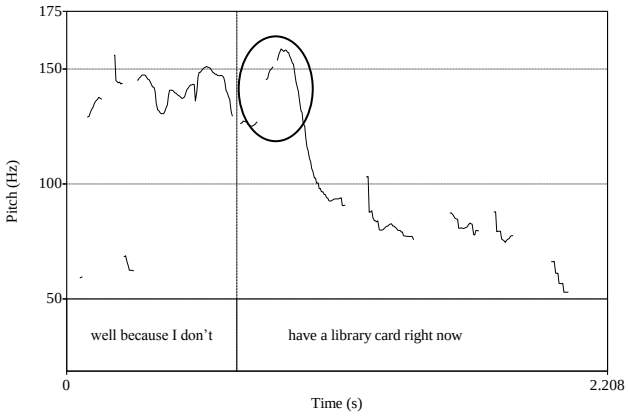


Figure 35: female b

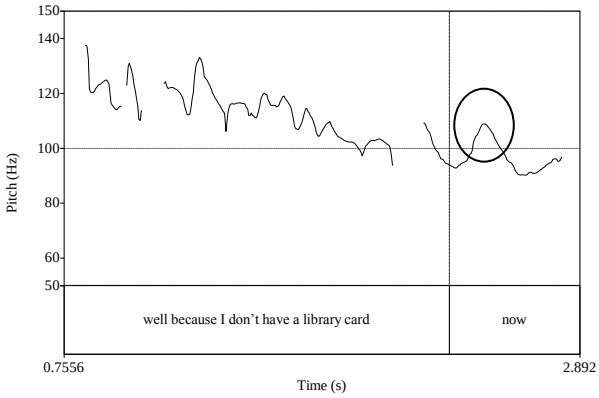
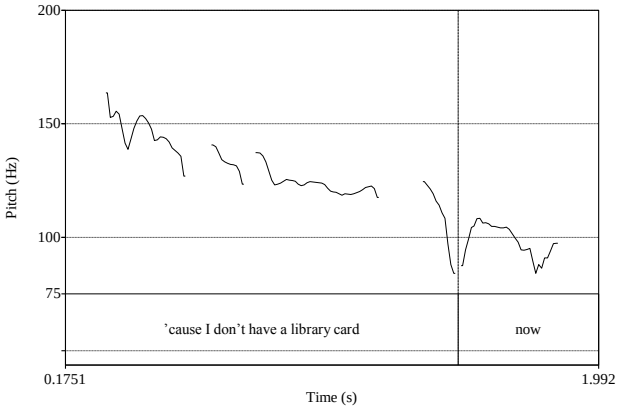


Figure 36: male b



Although the tone on "now" in female-b's translation (figure 35) sounds clearly like an example of this tone, it sounds odd to hear it in that position. This appears to be another example of female-b's dialectal variation. On paper, male-b's translation (figure 36) looks more like the *aa1maa3*-equivalent floating tone than does female-a's translation (figure 33). However, unlike in female-b's translation (figure 35), male-b's tone on "now" does not sound similar enough to me or the other native-English speakers, so I do not count it as an example of this same tone.

Based on the data, I conclude that all 3 portions of the null hypothesis were falsified. Regarding part i) there was a discernable intonation pattern (i.e., a rise-fall tone); regarding part ii) this pattern occurred in more than one of an individual participant's translations; and regarding part iii) the same pattern occurred in at least one of another participant's translations. I therefore conclude that *aa1maa3* has an intonational equivalent in English, which is the rise-fall tone that appears in the data. It is concluded to be a floating-tone morpheme with the definition shown in (50) in the immediately preceding section.

6.1.2.3 Applying the NSM Explication to the Examples of *aa1maa3* from the Data

This section proposes the antecedents of P, P_2, D, and D_2 of the explications given in (49) and (50) for each of the dialogues and their translations. In the first example excerpted from (51), P is "I didn't know (that it was fake)." The speaker assumes this can be known from knowing D, which is something like "I (the speaker) wouldn't buy something if I knew it was fake." The speaker thinks that if the listener thinks about P, then he will no longer think this (D_2: *I was stupid enough to buy something that I knew was fake*); the listener will now think something else (P_2: *my having bought it is understandable because I didn't know at the time that it was fake*). The D_2 of this discourse stems from the listener having asked incredulously, "You still bought it (even though it was fake)?" The use of *aa1maa3* here was an appeal for understanding.

(51') 我唔知吖嗎，買嘅時候。
Ngo5 m4-zi1 aa1maa3, maai5 ge3 si4hau6.
1s NEG-know AAMAA buy PRT time
"I didn't↗know… when I bought it."

In the next example the listener has just said that she has no interest in whales. The speaker then expressed interest in going on a tour to see whales and wanted the listener to understand why. Here P is "I've never seen a whale that big," which can be known from knowing D, which is that the speaker just said she would like to see some whales.

(52') 因為未見過咁大條鯨魚吖嗎。
Jan1wai6 mei6 gin3-gwo3 gam3 daai6 tiu4 king4jyu5 aa1maa3.
because never see-PERF so big CL whale AAMAA
"Because I've never seen a∧whale that big."

As with example (51), the use of *aa1maa3* in (52) is an appeal for understanding. In this case, however, the speaker doesn't want the listener to understand why she *did* something that seems stupid, but rather why she wishes to do something towards which the listener has just expressed a lack of interest. The speaker thinks if the listener thinks about her never having seen a whale that big (i.e., P), then she (the listener) will no longer think this (D_2: *going on such a tour is a bad idea*). Instead she will think something else (P_2: *going on such a tour is a* good *idea*). The D_2 of this discourse comes from the listener having said she had no interest in whales.

In this third example from the data, the speaker has just told the listener that a former classmate of theirs plans to change jobs. The speaker wants the listener to understand that the former classmate had a good reason for doing so, which is this (P: *he found a school that's gonna hire him*). We have to speculate as to what the D is that leads to knowing P, but it is probably something like: "our classmates commonly get hired by schools." Choosing this to represent D is supported by the fact that after the speaker said P, the listener said, *Go3-go3 dou1 gaau3 syu1* (CL-CL all teach book) "Everybody's teaching." (The acceptable degree of "looseness" for the connection between D and P appears to be greater than for *lo1*-suffixed sentences, perhaps because this is not the focus of the meaning of *aa1maa3*.) D_2 is perhaps "he may have quit his job for no reason," and what the speaker expects the listener to think after thinking about P is P_2, which is something like: "He had a good reason for quitting his job."

(53') 佢搵到學校請佢吖嗎。
Keoi5 wan2 dou2 hok6haau6 ceng2 keoi5 aa1maa3.
3s find achieve school hire 3s AAMAA
"He found a school that's gonna↗hire him."

It is easier to understand when P, P_2, D, and D_2 are inserted into the explication:

you can know this (P: *he found a school that's going to hire him*)
because you know something else
(D: *our classmates regularly get hired by schools*)
I want you to think about this (P) now
after this, you will not think this
(D_2: *he may have quit his job for no reason*)
you will think something else
(P_2: *he had a good reason for quitting his job*)

In the last dialogue for *aa1maa3*, P is "I don't have a library card now." Either the listener already knew the speaker did not have an HKU library card, which would then be D, or the speaker assumed that the listener could know P based on the fact that the speaker's supervisor was borrowing books for him. D_2 here is perhaps: "It is surprising that my supervisor borrows books for me."

(54') 我而家冇圖書證吖嗎，因為。
Ngo5 ji4gaa1 mou5 tou4syu1 zing3 aa1maa3, jan1wai6.
1s now no library card AAMAA, because.
"Because I don't have a↗library card now."

It looks like this after the variables are inserted into the explication:

you can know this (P: *I don't have a library card now*)
because you know something else
(D: *I said I don't have a library card*)
I want you to think about this (P) now
after this, you will not think this
(D_2: *it is surprising that my supervisor borrows books for me*)
you will think something else
(P_2: *it is understandable that my supervisor borrows books for me*)

6.1.2.4 Applying the English Equivalent of *aa1maa3* and the NSM Explication to the Examples of *aa1maa3* in the Literature

In this section the explication of *aa1maa3* and its English equivalent is applied to each of the examples from the literature discussed in section 6.1.2.1. The first example came from Boyle (1970b), with a simple context that she most likely constructed herself. In Boyle's dialogue, the speaker has just told the listener that some person ("she") cannot come because she has a cold. Then the listener asks why she can't come, and the speaker repeats the reason with *aa1maa3* attached:

(37') 佢傷風吖嗎。
Keoi5 soeng1fung1 aa1maa3.
3s cold AAMAA
"She has a ∧cold."

Here P is "She has a cold," and D is "I just said she can't come because she has a cold." By asking "Why can't she come," the listener expressed a lack of knowledge as to why this person ("she") cannot come. This is the source of D_2, which, written from the speaker's perspective is: "you don't know why she can't come." The

speaker thinks that, after thinking about P, the listener will think something else (P_2: *you know she can't come because she has a cold*). The *aa1maa3*-equivalent tone on "cold" sounds natural and expresses the equivalent (or nearly equivalent) meaning.

The next four examples are all from Yip and Matthews (2001). The context of the first one is a response to the question "How come she's still not back?":

(38') 重開緊會吖嗎。
Zung6 hoi1-gan2 wui2 aa1maa3.
still open-PROG meeting AAMAA
"She's still in the∧meeting."

For this and some of the remaining examples in this section, I will not say what P is, which is always equal to the sentence to which *aa1maa3* or its English equivalent is attached. There was not enough context given for (38) to know what D is. A likely possibility is that the listener had previously been told about the meeting. Using the adverb "still" implies that the speaker assumed the listener to have knowledge about the meeting. D could be something like: "You know she's been attending a meeting and that she hasn't yet returned." D_2 is: "You don't know why she's still not back," which derives from the listener's question. P_2 is: "Still being in the meeting is the reason she's not back."

The context of the next example is apparently just after a child has refused or neglected to address an older person using the appropriate kinship term.

(39') 你要叫人吖嗎。
Lei5 jiu3 giu3 jan4 aa1maa3.
2s need call person AAMAA
"You need to a-∧ddress people/this person."

In (39), D is straight forward based on what is known about Hong Kong

Chinese parents' child-rearing behavior. It is something like: "I have told you many times to address people." There are two possible contexts, which will be contrasted in the next section. For now, let us assume that the adult to be addressed is still present. Since the child did not address the adult, D_2 is likely to be: "You don't need to address this person." Yip and Matthews presented (39) as an example of *aa1maa3* being used to teach or remind people of rules and facts. Based on the explication in (49) *aa1maa3*-attachment works as an appeal to get the listener not to think D_2, but instead to think P_2—in this case to get the child to think what the parent thinks: "You need to address this person." This is something more than just teaching or reminding. It is an attempt to influence the child's beliefs.

The context in (40) is one in which a parent is trying to excuse their child's behavior.

(40') 佢重細吖嗎，點識咁多嘢啊？
Keoi5 zung6 sai3 aa1maa3. Dim2 sik1 gam3 do1 je5 aa3?
3s still small AAMAA how know so much thing SFP
"S/he's still ^young. How could s/he know much?"

The listener can know P ("S/he's still young") from knowing D, which is either having been told the age of the child and/or seeing that the child is young. D_2 is something like: "It is bad for a child to behave this way." The speaker wants the listener to think something else (P_2: *it is acceptable for this child to behave this way because s/he's still young*).

The next example is a bus driver telling a passenger that s/he has gotten on the wrong bus; it is a different bus from the one that goes to where s/he wants to go.

(41') 唔係十號啊，應該搭一號吖嗎。
M4-hai6 sap6 hou6 aa3, jing1goi1 daap3 jat1 hou6 aa1maa3.
NEG-be ten number SFP should ride one number AAMAA
"You should take number ∧one, not number ten."

In (41) P is "You should take number one," and D could either be "This is common knowledge," or something like "It says this on the bus signs." The speaker said "not number ten," making it obvious that D_2 is "You should take number ten," and the speaker wants the listener to think something else (P_2: *you should take number one*).

The remaining examples are all from Lee and Law (2001). All of the *aa1maa3*-suffixed sentences in (42) to (47) are responses to questions, as were examples (37) and (38). In such a context D_2 comes from the question, i.e., its expression of a lack of knowledge. For *wh*- questions, D_2 is "You don't know why/where/who/etc. …" For polar questions, D_2 is "You don't know if …" By using *aa1maa3* or its English equivalent, the speaker is saying to the listener: "If you think about this (P), you will no longer think you don't know the answer to your question."

The first of Lee and Law's examples that I discussed is a response to the question, "Why is s/he so happy?"

(42') 佢贏咗馬吖嗎。
Keoi5 jeng4-zo2 maa5 aa1maa3.
3s win-PERF horse AAMAA
"S/he won a bet on a ∧horse."

Here D is perhaps: "Someone said that s/he won a bet on a horse." The listener's question creates D_2 in the mind of the speaker: "You don't know why s/he's so happy." The speaker wants the listener to think something else: (P_2: *winning the horse bet is the reason s/he is so happy*).

Example (43) was said in response to the question, “Where did you go yesterday?” D is perhaps: “I told you this before,” or “I go there every day.” D_2 is “you don’t know where I went yesterday,” and P_2 is “I went to school yesterday.”

(43’) 我琴日返咗學校吖嗎。
Ngo5 kam4jat6 faan1-zo2 hok6haau6 aa1maa3.
1s yesterday return-PERF school AAMAA
“I went to／school yesterday.”

Example (44) is an answer to “Who won the Mark-six (lottery)?” D is something like: “I/Someone said Mary won.” D_2 is “You don’t know who won the Mark-six,” and P_2 is “Mary won.”

(44’) Mary 贏咗吖嗎。
Mary jeng4-zo2 aa1maa3.
Mary win-PERF AAMAA
“／Mary won.”

Example (45) is an answer to “What did daddy put on the bookcase?” D is probably “You saw him put a vase on it.” D_2 is “You don’t know what daddy put on the bookcase,” and P_2 is “He put a vase on it.”

(45’) 佢放咗個花樽吖嗎。
Keoi5 fong3-zo2 go3 faa1zeon1 aa1maa3.
3s put-PERF CL vase AAMAA
“He put a／vase (on it).”

Example (46) is the answer to the question “Are you going to the meeting in a little while?” D is what I show in parentheses: “I just told you.” D_2 is “You don’t know if I am going to the meeting,” and P_2 is “I am/am not going to the meeting.”

(46') 唔/開吖嗎。(我頭先咪講咗囉。)
M4/Hoi1 aa1maa3. (Ngo5 tau4sin1 mai6 gong2-zo2 lo1.)
NEG/open AAMAA 1s just MAI say-PERF LO
"∧Yes/No.(I just⌒told you.)"

The two responses in (47) are the two possible replies to the choice type question "Are you coming to the meeting later or going home?" For both a and b, D is the same as it was for (46): "I just told you." D_2 is "You don't know whether I am coming to the meeting later or going home," and P_2 is "I am going to the meeting" and "I am going home," respectively for a and b.

(47') a. 去開會吖嗎。(我頭先咪講咗囉。)
Heoi3 hoi1 wui2 aa1maa3. (Ngo5 tau4sin1 mai6 gong2-zo2 lo1.)
go open meeting AAMAA 1s just MAI say-PERF LO
"I'm going to the∧meeting. (I just⌒told you.)"

b. 返屋企吖嗎。(我頭先咪講咗囉。)
Faan1 uk1kei2 aa1maa3. (Ngo5 tau4sin1 mai6 gong2-zo2 lo1.)
return home AAMAA 1s just MAI say-PERF LO
"I'm going∧home.(I just⌒told you.)"

In this last example in (48), I added the generic subject "you" in the translation because I think the hypothetical teacher would more likely be providing information than issuing a command, which means the sentence is more likely to be a declarative clause than an imperative.

(48') 證明呢一部份先吖嗎。
Zing3ming4 li1 jat1 bou6fan6 sin1 aa1maa3.
Prove this one part first AAMAA
"You prove this part∧first."

Here D is "I taught you to prove this part first." D_2 is something like "You don't know how to do/approach/start this problem," and P_2 is "You prove this part first."

6.1.3 Summary and Analysis

It is important and significant to note that I, along with other native-English speakers consulted, clearly recognize both of the *lo1*- and *aa1maa3*-equivalent floating tones that were used by the informants in their mimic translations. I use these tones regularly, and believe that they have the meanings expressed in the NMS explications that I developed for them in (28) and (50). It is certainly possible that these are not exact equivalents between English and Cantonese, but rather that they are merely very close approximations. Either way, it is an interesting discovery.

The accuracy of the explications, and the degree to which they are the same in both languages, can be determined by their ability to explain the linguistic facts in both Cantonese and English. The explications of *lo1* and *aa1maa3* given in (27) and (49), respectively, appear to succeed at accounting for the contexts where these two SFPs can and cannot be used. The acceptability of attaching one or the other of these SFPs to a sentence is determined by the status of P, P_2, D, and D_2. If no D exists in the context, then neither *lo1* nor *aa1maa3* is acceptable because neither is interpretable without this antecedent. This relates to the observation that *lo1* cannot attach to a sentence that begins a conversation (e.g., Fung, 2000). I agree with this and argue the same is true of *aa1maa3*.

If D exists in the context, but not D_2, then only *lo1* is acceptable because *aa1maa3* requires the discourse element D_2 as an antecedent. When a D_2 *does* appear in the context, then both *lo1* and *aa1maa3* are technically usable. However, if P_2 is significantly different from P, and if there is no reason why the speaker would merely point out that the listener can know P in the given context, then *lo1* is not very

appropriate, and *aa1maa3* should be used. If P and P_2 are approximately the same, on the other hand, then both *lo1* and *aa1maa3* are acceptable—which one the speaker chooses to use in such cases depends on whether s/he simply wants to point out that the listener can know P (i.e., *lo1*), or whether s/he wants to persuade the listener to think that P_2, in which case *aa1maa3* is required. The greater the difference between P and P_2, the less appropriate *lo1* sounds.

The following predictions can be made based on the explications in (27) and (49):

(55)	a.	??*lo1*/??*aa1maa3*	if there is no D
	b.	*lo1*/*aa1maa3*	if P and P_2 are approximately the same
	c.	?*lo1*/*aa1maa3*	if P and P_2 differ significantly
	d.	*lo1*/??*aa1maa3*	if there is no D_2

And the same predictions can be made based on the explications of their English equivalents in (28) and (50):

(56)	a.	??◠/??◿	if there is no D
	b.	◠/◿	if P and P_2 are approximately the same
	c.	?◠/◿	if P and P_2 differ significantly
	d.	◠/??◿	if there is no D_2

I use question marks rather than asterisks because these minimal pair distributions are semantically based. These distributions are obviously not due to the syntactic structures of the sentences because both SFPs are always sentence final, both SFPs attach to the same types of clauses, and none of the examples include any other SFPs, which means there are no potential co-occurability problems in relation to other SFPs inside a split CP (see chapter 7). There is only one question mark in front of *lo1* and its English equivalent in (55c) and (56c) because, having a D in the context, they are technically allowed. However, when the P_2 of the context is

different from P, and when it seems natural that the speaker should want to change the listener's belief from D_2 to P_2, then it is odd to merely say: "You can know P." This is illustrated with examples below.

Starting with contexts that have no D, consider examples (46) and (47). These are the examples that Lee and Law (2001) used to demonstrate that *aa1maa3* cannot attach to the answer of an A-not-A or choice-type question. Their conclusion was most likely based on the idea that speakers use A-not-A questions when they have no knowledge as to whether the answer is "A" or "not-A," and that they use choice-type questions when they have no knowledge as to which of the choices provided in the question is correct. If the speaker believes that the listener indeed has no knowledge of anything that can lead to knowing the answer to the question, then there is no D, and neither *lo1* nor *aa1maa3* can be attached to the answer. However, if the speaker believes the listener *does* have some knowledge that can lead to knowing the answer, then either *lo1* or *aa1maa3* can be attached to the answer. In (46') and (47') I demonstrated that *aa1maa3* can be used in Lee and Law's examples if the speaker thinks s/he has previously told the listener what the answer is—and in both of those examples, *aa1maa3* could be replaced by *lo1*. These examples probably require the addition of "I just told you" in order to allow the use of *aa1maa3* or *lo1*, but this is not surprising since the listener had just used a question that indicated a lack of knowledge about P.

Consider the following choice-type question in (57) that can be answered very naturally using either *lo1*-or *aa1maa3*-attachment. In this example it is easier to think of a D than it was in Lee and Law's example. This is because it is natural for a speaker to assume that a listener should possess some knowledge related to what day of the week it is—D could be "Yesterday was Thursday," for example.

(57) A: 今日星期四定星期五啊？
Gam1jat6 sing1kei4sei3 ding6 sing1kei4ng5 aa3?
today Thursday or Friday SFP
“Is today Thursday or Friday?”

B: 星期五囉/吖嗎。
sing1kei4ng5 lo1/aa1maa3.
Friday LO/AAMAA
“It’s ⁀╲/⁀╱ Friday.”

Contrast (57) with a context in which two friends are driving somewhere and get lost. They stop just before a T-intersection, not knowing whether to turn right or left. The passenger gets out of the car and asks a store owner for some directions to their destination. After getting back into the car, the following question-answer dialogue takes place:

(58) Driver: 轉左定右啊?
Zyun3 zo2 ding6 jau6 aa3?
turn left or right SFP
“Do we turn right or left?”

Passenger: 轉左??囉/??吖嗎.
Zyun3 zo2 ??lo1/??aa1maa3
turn left LO AAMAA
“We turn ??⁀╲/??⁀╱left.”

It is inappropriate for the passenger to attach either *lo1* or *aa1maa3* to her answer because she knows that her friend the driver, who stayed in the car, did not hear the store owner’s directions. The passenger therefore knows that the driver has no knowledge of any D that could lead to knowing P: “we turn left.” The same is true of the two SFPs’ English equivalents in the English version of this dialogue; using either of those floating tones on the word “left” sounds inappropriate.

It is probably because both SFPs require the existence of a D that caused Lee and Law (2001) to conclude that *aa1maa3* cannot attach to the answers of certain types of questions. Rather than being related to the question type, however, I propose that it instead depends on whether or not the speaker assumes that the listener knows some D that can lead to the knowledge of P.

It is difficult to find examples that have no D, because it is something that exists in the mind of the speaker, and therefore can potentially be part of almost any context. However, when the listener cannot understand why s/he is expected to know anything which can lead to the knowledge of P, then s/he will consider it inappropriate for the speaker to use either *lo1* or *aa1maa3*. We saw an example of this for *lo1* with the DJ in dialogue (24), who didn't know why he should be expected to have any knowledge related to the name of the boy. We also see this in Lee and Law's conclusion regarding A-not-A and choice-type questions, because listeners who ask such questions probably will not think they should be expected to know anything that can lead to knowing the answer—otherwise they would not ask the question.

Perhaps the easiest way to demonstrate the need for a D is to construct a context that uses *lo1*, *aa1maa3*, or either of their English equivalents to start a conversation. Fung (2000) said that a statement "P *lo1*" cannot begin a conversation, but must be preceded by something linguistic or non-linguistic. This is also true for *aalmaa3*, as well as for the English equivalents of *lo1* and *aa1maa3*. This supports my claim that a discourse element D is required to license the use of either particle, as well as to license the use of their counterparts in English.

Next I will discuss the contexts of (55b) and (56b), where P and P_2 are approximately the same. The dialogues of (37), (38), and (41) through (48) are each examples of this. As predicted it would be acceptable to replace *aa1maa3* with *lo1* in

each of those dialogues. It is up to the speaker to determine which meaning s/he prefers to express. It should be noted that *lo1* and its English equivalent often sound more abrupt than *aa1maa3* and its English equivalent, and may therefore sound more rude in comparison. This makes sense, since *lo1*'s meaning is similar to matter-of-factly saying "you should know this," while *aa1maa3*'s meaning is more like saying, "if you think about this, you'll agree that it's right."

In the contexts of (55c) and (56c), there is an obvious D_2 in the context, which can only be addressed by a P_2 that is different from P. When this is the case, it sounds odd, rude, or even unacceptable to simply say "You can know P," and therefore it seems inappropriate to replace *aa1maa3* with *lo1*. Dialogue's (39) and (40) are examples of this. Dialogue (39) is an especially interesting example, because it can be construed with a P_2 that is either different from or the same as P, depending on whether or not the person to be addressed by the child is still present.

In (39) P is "You need to address people/this person." When the adult to be addressed is still present, P can be interpreted as an instruction to address this person now, and suffixing *lo1* to P in this context is acceptable, though less polite than suffixing *aa1maa3*. Using the two SFPs in (39) would mean the following, with *lo1*-suffixing represented in the first two lines only:

you can know this (P: *you need to address this person*)
because you know something else
(D: *I have told you many times to address people*)
I want you to think about this (P) now
after this, you will not think this
(D_2: *you don't need to address this person*)
you will think something else
(P_2: *you need to address this person*)

The P and P_2 in this context are the same, which is why both particles are allowed.

Using *lo1* after the person to be addressed has left is not appropriate. In this case P can only mean "You need to address people (in general)." Now there is an obvious D_2 in the context that is related to the child not having addressed someone just prior to the parent's making this utterance. It is not really possible in this situation to tell the child that s/he needs to address people without thinking of it as being linked to this obvious D_2, and the P_2 that is related to this D_2 is different from P:

I want you to think about this (P) now
(P: *you need to address people (in general)*)
after this, you will not think this
(D_2: *you did not need to address that person*)
you will think something else
(P_2: *you needed to address that person; it is bad that you did not do so*)

Even if the additional portion of this proposed P_2 (i.e., "it is bad that you did not do so") is not included as part of P_2, this P_2 is still different from P, and therefore *lo1* sounds inappropriate in this context.

For the English equivalents of these two SFPs, consider a comparable context that is more appropriate to an English-speaking culture. A parent and child arrive at a restaurant and run into some friends who are just leaving the restaurant. The friends give the child a piece of candy and the parent says to the child, "You need to say thank you." Just as in our Chinese example, it seems that both *lo1*- and *aa1maa3*-equivalent tones can be used on the "thank" of this sentence if the people are still present, with the *aa1maa3*-equivalent tone sounding more polite. If, on the other hand, the parent said this after the people left, then using *aa1maa3*-equivalent intonation sounds appropriate, while *lo1*-equivalent intonation sounds odd.

The other dialogue with a P_2 that is different from P is (40'). After saying P ("S/he's still young"), the speaker says "How can s/he know so much," which indicates that P was said for the purpose of influencing the listener's views about the child's behavior. It does not make sense for P_2 to be approximately the same as P in this context, and I proposed that P_2 is something like: "It is acceptable for this child to behave this way because s/he is still young." Since P_2 is significantly different from P, *lo1* is not as appropriate as *aa1maa3* in this context. According to my intuition, the same is true of *lo1*-equivalent intonation for the English translation of this dialogue. (Note that *lo1* and its English equivalent are appropriate if "S/he's still young" is said in response to a question like "Why did s/he do that?" In this case P and P_2 would be the same.)

The following constructed dialogue further illustrates the contrast between a context in which P is the same as P_2, and a context in which P is different from P_2. Consider a bilingual husband and wife who are each native-speakers of the other's L2. They have the practice of alternating the language that they speak in order to keep each other proficient in their L2s; Mondays, Wednesdays and Fridays are Cantonese day, and Tuesdays, Thursdays and Saturdays are English day. They have been doing this for a while and sometimes one or the other forgets which language they are supposed to speak on a given day. One Friday morning, the first thing the husband says is, "Do we speak Chinese or English today?" The wife responds in one of two ways:

(59) A: 今日講中文定講英文啊?
Gam1jat6 gong2 Zung1man4 ding6 gong2 Jing1man4 aa3?
today speak Chinese or speak English SFP
"Do we speak Chinese or English today?"

B: a. 中文囉/吖嗎。
Zung1man4 lo1/aa1maa3.
Chinese LO/AAMAA
“Chi ↘/↗nese.”

b. 今日星期五 ?囉/吖嗎。
Gam1jat6 sing1kei4ng5 ?lo1/aa1maa3.
today Friday LO/AAMAA
“Today’s ?↘/↗ Friday.”

In (59Ba) P_2 is the same as P, but in (59Bb) it is different. In (59Bb), the use of *aa1maa3* roughly means: “after you think about this (P: *today is Friday*), you will not think this (D_2: *you don't know whether we speak Chinese or English today*); you will think something else (P_2: *you know we speak Chinese today*).” If *lo1* is used in (59Bb), then it means: “You can know this (P: *today is Friday*) because you know something else (D: *yesterday was Thursday*).” This does not directly address the husband’s question and is therefore not as appropriate. If as in dialogue (57) he had asked “What day of the week is it?” then attaching *lo1* to the answer “Today’s Friday” would be fine because P and P_2 would be the same. According to my judgment, the same distribution applies to the English equivalents of *lo1* and *aa1maa3* in this dialogue. Pragmatically, *lo1*-suffixing works here because the wife knows the husband should be able to make a connection between the day of the week and which language they are to speak, but the effort required to make this connection makes *lo1* less appropriate than *aa1maa3*.

The following constructed example in (60) also demonstrates a context in which there is an obvious D_2 related to a P_2 that is different from P. It again shows that *lo1*-attachement, though logically possible, does not fit into such dialogues very well. The context is right after someone drops some food onto the table at a restaurant and then picks it up to eat it. This person’s friend says, “You’re still gonna eat that?” and

the person gives a reply using either *lo1*- or *aa1maa3*-attachment:

(60) A: 你重食?
Lei5 zung6 sik?
2s still eat
"You're still gonna eat that?"

B: 將檯乾淨?囉/吖嗎。
Zoeng1 toi2 gon1zeng6 lo1/aa1maa3.
CL table clean LO/AAMAA
"The table's ?⌒\//⌒clean."

In speaker B's reply to speaker A's question, *lo1*-attachment is technically logical, because it is easy to think of a D, which could be something like: "You see that the table is clean." However, using *lo1* sounds odd because it only expresses that the table is *obviously* clean without connecting this to speaker A's question. Speaker A's question implied that s/he thinks it is bad to eat food that has been on the table. This creates an obvious D_2 in the mind of the speaker. It therefore makes sense for the speaker to use *aa1maa3*, which means: "After you think about this (P: *the table is clean*), you will not think this (D_2: *the table is dirty and food that has been on it shouldn't be eaten*); you will think something else (P_2: *it is reasonable to eat something that has dropped onto the table*)."

I indicate in the English translation of (60B) that the English equivalent of *lo1* also sounds odd. This is not as obvious as it is in Cantonese, however, because it can easily be mistaken for emphatic intonation, which is acceptable in this context, and which has a very similar form. Emphatic meaning takes a different form in Cantonese, however, being expressed by lengthening (Bauer et al., 2004). While *lo1* sounds odd, it is acceptable to use emphatic lengthening on *gon1zeng6* ("clean") in (60B). I argue that a high-falling tone on clean sounds acceptable in the English

translation because it is interpreted to be emphatic intonation. It is only after having discovered *lo1*-equivalent intonation that such a distinction can be argued for.

In the next constructed example in (61), both the father's and the daughter's replies have the same structure as what Lee and Law (2001) referred to as the "agreement formula," (*hai6 lo1*). Interestingly, the daughter's reply can acceptably use either *lo1* or *aa1maa3*, although the expressed meaning of one vs. the other is drastically different, but the father's reply can only use *aa1maa3*:

(61) Father: 嘩, 你越嚟越肥啊。
(to daughter) Waa4, Lei5 jyut6 lei4 jyut6 fei4 aa3.
PRT 2s more come more fat SFP
"Wow, you're getting fat."

Mother: 你做咩話佢肥啊?
(to father) Lei5 zou6 me1 waa6 keoi5 fei4 aa3?
2s do what say 3s fat SFP
"Why'd you say she's fat?"

Daughter: 係[P_A]囉/[P_B]吖嗎。
Hai6 [P_A] lo1/ [P_B] aa1maa3.
be LO AAMAA
"⌒Yeah, [P_A]." / "I∧am (getting fat)."

Father: 係[P_A] ??囉/[P_B]吖嗎。
Hai6 [P_A] ??lo1/[P_B] aa1maa3
be LO AAMAA
"??⌒Yeah, [P_A] " / "She∧is (getting fat)."

Only the daughter's response—and not the father's—can be construed as being the agreement formula. When *hai6 lo1* is said in response to a question, the null P will always be interpreted as "That's a good question." The father made the statement that triggered the mother's question, committing himself to a stance that prevents

him from agreeing that the mother's question, which challenged his statement, is "a good question" (this is the elided proposition [P_A] shown in (61)). This is why *lo1* is preceded by two question marks on the father's response.[1] The D in the mind of the daughter in (61) is either something like: "I don't look fat," or, if she believes she *does* look fat, then it could be something like: "It is not nice to say someone looks fat; you shouldn't say I look fat."

When *lo1*-attachment is used in the "agreement formula," there is no D_2 about which the speaker wants to influence the listener's beliefs. Therefore *aa1maa3* makes no sense because—there being no D_2 in the context—it is uninterpretable. It is nonsensical for the father or daughter to respond to the mother's question with the meaning: "I want you to think about this (P) now (*that is a good question*); after this you will not think this (D_2: ?)" I cannot think of anything from this context that could function as D_2 here if P is considered to be "That's a good question." This explains why *aa1maa3* can never be used to express agreement.

If the father or daughter uses *aa1maa3* instead of *lo1*, then P changes and becomes what I show as P_B in (61), which is something like "She is/I am getting fat." Now the interpretation of the elided proposition is based on the father's original statement, and is knowable from a different D, which is related to a perceived change in the daughter's physical appearance. This is no longer an agreement formula and, stemming from the mother's question, there is now a D_2: "You (the mother) think she is/I am not getting fat." ("She is" vs. "I am" represent the father's and daughter's perspectives, respectively.) With *aa1maa3* attachment, the daughter is saying, "I want you to think about this (P) now (*I'm getting fat*); after this, you will not think

[1]The father could use *lo1* attachment in a joking manner, but would need to immediately restate the mother's question addressing himself: "⁀Yeah, [P_A]. Why did I say she's getting fat?" The proposition P is still "that's a good question," and this is in fact a conceivable tactic that a quick-thinking father could use in a humorous attempt to retract his initial statement.

this (D_2: *I'm not getting fat*), you will think something else (P_2: *I'm getting fat*). The father can also say the same thing from his perspective, replacing "I" with "She."

It is beyond question that in a context such as this, changing *hai6 lo1* (be LO1) to *hai6 aa1maa3* (be AA1MAA3) changes the meaning from an expression of agreement to one of persuading the listener to believe something—in this case to believe that the daughter is getting fat. This is clear evidence that there is a null proposition present in "*hai6* + SFP" sentences, and that changing one SFP for another can change the interpretation of the null proposition's semantic content.

The fourth and final situation is (55d) and (56d), which is a context that has no D_2. In this case, *aa1maa3*-attachment should not be allowed because its explication requires a D_2 in order to be interpretable. It was just demonstrated that what Lee and Law (2001) referred to as the "agreement formula" is an example of this, resulting in the following distribution: *hai6 + lo1*/??*aa1maa3*(⁀\ /??/⁀ yeah).

It is interesting to note that Schubiger (1965) used something comparable to an NSM explication to define German modal particles and English discourse intonation. Her definition was written this way: "rejoinders with the connotation 'by the way you talk (or act) one would think you didn't know' " (p. 68). This definition is listener-oriented, expressing the speaker's beliefs. It also includes something about the discourse context, i.e., a rejoinder said after the listener said or did something to cause the speaker to believe this. And it includes the proposition in the form of an elided clause complement of the verb "know." Presumably this null clause complement is the proposition that the English intonation, or the German modal particle, was a part of, and Schubiger's definition could be rewritten as: "by the way you talk (or act) one would think you didn't know this (P)." My explication of *lo1* could be rewritten to incorporate this:

(62) a. I/people will think you don't know this (P)
b. because you said/did something
c. you can know this (P)
d. because you know something else (D)

Lines a and b are Schubiger's definition rewritten as an NSM explication, and lines c and d are my explication for *lo1*, which is part of the explication for *aa1maa3*. It is possible that this formulation of Schubiger's definition, i.e., (62a-b), are able to accurately define some form of connotative meaning in one or more languages. However, it is probably too broad of a definition to clearly describe a specific discourse meaning. Schubiger claimed that it describes 2 different German modal particles (*doch* and *eben*) and 6 different pitch contour shapes in English. And she is perhaps right in the sense that her definition is a pragmatically understood meaning (actually a situation) that precedes the use of various connotative meanings.

In other words, these connotative meanings are used when the speaker thinks the listener is behaving as if s/he doesn't know P. It appears to be a meaning that is understood in many of the contexts in which *lo1* or *aa1maa3* are used. In fact some of Schubiger's (1965) examples appeared to be a description of *lo1*-equivalent intonation. One, for example, was described as something said to someone "who seems to have missed our previous remark," and the sentence was "That's just what I said," with a "nuclear fall" on the word "said" (pp. 68-69).

It appears at first glance that Schubiger's definition could be added to the beginning of my explications for these two SFPs. However, this meaning is not always there. For example, *lo1* is used in the "agreement formula" (i.e., *hai6 lo1*, "◝◟yeah") when the listener has just said something that shows the speaker that s/he (the listener) knows P, rather than that s/he does *not* know P. Although Schubiger was on the right track by using a definition formulated in this way, the various examples

that she looked at very likely represent a variety of different meanings, all of which probably mean something more than what was written in her definition.

O'connor and Arnold (1973) defined a number of tones, but their definitions were even more general than Schubiger's, and were assumed to change according to whether the tone attached to a statement, a *wh*-question, a yes/no question, a command, or an interjection. Even if we assume that O'connor and Arnold were describing floating tones, their conclusions do not conflict with the results of this study because my definitions result in a different meaning for each context within which a floating tone appears. In other words, I describe and account for the tones' semantic interaction with the discourse, but O'connor and Arnold did not. As a result, unlike what I've done here, O'connor and Arnold did not assign to their tones any core meanings that remain unchanged regardless of context.

6.2 Question particles

The two terms "question" and "interrogative" have often been used interchangeably in the literature, implying that question particles have the syntactic feature [+Q], which is not necessarily the case. (Even the notation [+Q] combines the two terms, because "Q" obviously stands for "question," but [+Q] is almost always used to indicate "interrogative." Kwok (1984) referred to some SFPs as "interrogative particles which when suffixed to a declarative stem change it into a question" (p. 41). Wu (1989) cited Kwok (1984) on this, saying that interrogative particles "change [a declarative] into an interrogative sentence" (p. 113). Another example of blending the two terms came from A. Law (2004), who said that "question particles are only those which can clause-type a question [and if an SFP] does not fulfill this requirement [it] is therefore not 'interrogative' " (p. 96). She

concluded that the SFPs *me1*, *maa3* and *aa4* all fulfill this requirement.

I distinguish the two terms, using "question" to refer to a speech act (i.e., a request for information), and "interrogative" to refer to a type of clause, which is strictly a syntactic notion. "Interrogative" and "question" often do not coexist, which is why the terms should be separated for any study that refers specifically to both notions. An interrogative is not always a question (e.g., "Could you open the window"), and a question is not always an interrogative (e.g., "You want me to open the window?").

Interrogative *maa3* has often been defined as a question particle, but Cantonese linguists all seem to agree that the particle *maa3* is an SFP with the syntactic feature [+Q], changing declarative clauses into interrogative clauses, so I refer to it as an interrogative particle rather than a question particle. This is to distinguish it from the question particles *me1* and *aa4*. In contrast to *maa3*, the question SFPs *me1* and *aa4* are not considered here to be interrogative particles. They are considered to be semantically and syntactically comparable to rising declaratives in English. The SFPs *me1* and *aa4* express connotative, discourse-related meanings, while *maa3* merely has the grammatical function of changing a declarative to an interrogative. For this reason *maa3* is not relevant to this study and will not be discussed further.

6.2.1 The Particle me1

6.2.1.1 The NSM Explication of *me1*

Most dictionaries use the words "surprise" and/or "doubt" to define *me1*. Meyer and Wempe (1947, p. 375) said that *me1* is an "[i]nterrogative expressing surprise." P.

Huang (1970, p. 421) defined *me1* as "indicating surprise, doubt, etc." Ball (1888/1971, p. 114) said it is "interrogative, or expressing some surprise as well, as –'Is it so?' " Lau (1977, p. 558) said that it "transforms statements into questions that indicate doubt or surprise." Zhang (1999) said that *me1* questions the validity of something, which is a form of doubt. Several authors defined *me1* in ways similar to the dictionaries quoted in the preceding paragraph (e.g., Chan, 1955, p. 283; Huang & Kok, 1973, p. 94; Lau, 1973, p. 71; Yip & Matthews, 2000, p. 130).

Boyle (1970a) said "*me1* is an interrogative sentence suffix indicating [a] surprised question," and then paraphrased its meaning by saying that it turned a statement into a question "with the force of 'What?! I can hardly believe it!' " (p. 64). Paraphrases of this sort are a step in the direction of an NSM explication, and are very useful to non-native speakers. Boyle gave an example, the context of which was a question addressed to a listener who had just claimed to know what dialect of Chinese some people were speaking. The speaker understood this to mean that the listener was claiming to know Shanghai dialect and said the following:

(63) 你識講上海話咩?
Lei5 sik1 gong2 soeng6hoi2waa2 me1?!
2s know speak Shanghai dialect ME
"You can speak Shanghai dialect?!"

Boyle used an exclamation mark in addition to a question mark. This is a good way to distinguish this type of rising declarative from others, and I will use this convention for all of the English translations of *me1* that follow.

Baker and Ho (2006) gave an excellent description of the form of the English equivalent of *me1*, which is the only one of its kind for any SFP throughout the literature as far as I know. What makes their description so unique is the fact that it

describes an English intonational equivalent of an SFP in terms of its pitch, though it does so in informal, laymen terms: “If you want to express great incredulity in a question in English (*You can speak 57 languages fluently?!*) you raise your voice almost to a squeak at the end of the question” (p. 40). To be more precise, *me1*-equivalent English intonation is a rise in pitch at the end of a declarative clause, changing it from a statement into a question with a particular connotative meaning. This connotative meaning that is expressed by “rais[ing] your voice almost to a squeak” is not compatible with a sentence that has undergone subject-auxiliary inversion, and which carries no presuppositions; similarly, if *me1* is attached to an A-not-A question or a question-word question, it is not acceptable to native-Cantonese speakers.

Baker and Ho (2006) went on to explain and paraphrase the meaning of *me1*, saying that it “indicates great surprise, astonishment, near disbelief, *surely that's not the case, is it?, do you mean to say that...?*” (p. 40).

Matthews and Yip (1994) said that *me1* “denot[es] surprise and [is] used to check the truth of an unexpected state of affairs” (p. 310), and gave this example:

(64) 乜你唔知嘅咩?
Mat1 lei5 m4-zi1 ge3 me1?
What 2s NEG-know PRT ME
“What, you don’t know?!” (p. 311)

Chan (2001, p. 59) contrasted *me1* with *maa3* by citing the following minimal pair sentences originally from Deng (1991):

(65) a) 你識佢嗎？
Lei5 sik1 keoi5 maa3?
2s know 3s MAA
“Do you know her?”

b) 你識佢咩？
Lei5 sik1 keoi5 me1?
2s know 3s ME
“You know her?!”

Chan said the following about (65a-b):

> [S]entence [(65a)] is a fairly neutral, information-seeking question… In changing the particle to *me1*, sentence [(65b)] conveys the speaker’s startled reaction or surprise. The context in which it is uttered is not neutral; the speaker is seeking some kind of confirmation. It might, for instance, be asked by a young woman with a hint of jealousy to her boyfriend upon seeing an attractive stranger wave to them.

The functions and meanings of *me1* that linguists seem to be in virtually unanimous agreement on can be summarized as: 1) it is question forming; 2) it expresses surprise and/or doubt. What is missing from this is a connection of the proposition P to some element D in the discourse. Unlike the interrogative particle *maa3*, which forms neutral questions, *me1* is not neutral, as explained by Chan (2001) with the examples (65a-b). The SFP *me1* is used when the speaker has a particular belief (i.e., a presupposition) about the proposition (Kwok, 1984). Capturing a good portion of the meaning expressed in my proposed explication for *me1* below, Leung (1992/2005) said that it “attaches to sentences which state the opposite of what the

speaker knows or assumes, and the speaker is asking for confirmation" (p. 78, translation mine).

The use of *me1* implies that the speaker formerly believed (i.e., presupposed) that proposition P "is not the case." If the speaker is doubtful of the proposition at the time of speech, then his or her stance has been challenged, and has changed from disbelief to doubt. If the speaker is surprised about the proposition, this implies that his or her stance has been changed from disbelief to belief (or at least to doubting the validity of his or her former stance), and the speaker is thus surprised. The definition of *me1* must include a discourse element D that acts as potential evidence to change the speaker's mind about the proposition that the speaker believed to be false. The definition must be written in a way that D is considered to be *potential* evidence in the mind of the speaker rather than *conclusive* evidence. Those speakers who are "surprised" are more convinced by the evidence D than are those speakers who are "doubtful."

The explication I propose for *me1* is as follows, where P is the proposition to which *me1* attaches, and D is a discourse element that functions as a form of evidence that challenges the validity of P:

(66) P + *me1* =

a) 我諗可能係噉樣(P)
ngo5 lam2 ho2lang4 hai6 gam2joeng2 (P)
1s think maybe be this way
"I think maybe it's like this (P)"

b) 因為有嘢發生(D)
jan1wai6 jau5 je5 faat3sang1
because have thing happen
"because something happened (D)"

c) 呢樣嘢發生(D)之前, 我諗:唔係噉樣(P)
lei1 joeng6 je5 faat3sang1 (D) zi1cin4, ngo5 lam2: m4-hai6
this CL thing happen before 1s think NEG-be
gam2joeng2 (P)
this way
"before this happened (D), I thought it wasn't like this (P)"

d) 我要知道
ngo5 jiu3 zi1dou3
1s want know
"I want to know"

e) 因為呢樣嘢, 我要你講啲嘢
jan1wai6 lei1 joeng6 je5, ngo5 jiu3 lei5 gong2 di1 je5
because this CL thing 1s want 2s say CL thing
"I want you to say something because of this"

The degree of possibility expressed by the prime MAYBE in line a) will vary. It depends on the degree to which the SOMETHING that HAPPENED in line b) is taken as evidence to indicate that IT IS LIKE THIS. As a result *me1* may express anything from extreme surprise to extreme doubt. Which stance the speaker maintains will be determined by the context, as well as by the speaker's preconceived beliefs in relation to both D and P. It also appears that changes in voice or pitch qualities, as well as facial expressions, are used with *me1* to express the degree of the speaker's stance change. My impression is that small stance changes, which maintain doubt in the proposition, are accompanied by a lower pitch range and a scowl, while large stance changes, which express surprise that the proposition is likely to be the case, are accompanied by a higher pitch range, a raising of the eyebrows, and a widening of the eyes. Whether or not this is actually the case will be left for future research to determine.

Line e) is what makes *me1* a question particle. The speaker is requesting information. *Me1*-suffixed questions are usually answered with either a positive or negative form of the verb, and their English equivalents are normally answered with "yes' or "no."

The English version of the explication in (66) defines its English-equivalent tone, shown here in (67). The data that provides evidence of its equivalent form in English is presented in the following section:

(67) P + *me1*-equivalent intonation =

a) I think maybe it's like this (P)
b) because something happened (D)
c) before this happened (D), I thought it wasn't like this (P)
d) I want to know
e) I want you to say something because of this[1]

1It is interesting to compare this explication with one that Wong (2004, p. 782) proposed for the Singapore English particle *meh*:

a) at a time before now, I thought something
b) something happened now
c) because of this,
d) I think I can't think like this anymore
e) I think I have to think like this (P)
f) I don't know
g) I want to know
h) because of this, I want you to say something about it to me now

Wong's explication for *meh* is notably similar to my explication of *me1*. This is not surprising since it has been proposed that *meh* was borrowed from Cantonese "as a package," including its form, tone and meaning (Lim, 2007, p. 463). I argue that my explication in (66) better captures the meaning of *me1* than does Wong's (2004) explication for *meh*, but this could of course be because the two particles do not have precisely the same meaning.

There is only one significant difference between Wong's (2004) explication for *meh* and mine for *me1*; it relates to the stance change of the speaker. Wong's line a) says "before now I thought

In addition to "doubt" and "surprise," some authors have said that *me1* can also express "disbelief" (Kwok, 1984, p. 88; Bourgerie, 1987, p. 74; S. Law, 1990, p. 18). The explications (66) and (67) obviously do not have this meaning. Line c) expresses disbelief but as a *prior* stance only. The current stance expressed by *me1* and its English equivalent is line a), which is not disbelief. If the speaker still maintains disbelief at the time of speech, then his or her stance has not changed from c) to a), and therefore does not mean what the explication says. In order to account for this I propose that *me1* is polysemous, with an additional meaning that I will call $me1_2$ and tentatively define as: "it is not like this (P)."

H. Huang (1989) suggested that intonation can affect the meaning of *me1*, saying that "[w]hen it expresses a typical question, it is pronounced with a high level tone; when it is used to express a retort, then a high-falling tone is used" (p. 414-5, translation mine). There is a clear difference between the pronunciations of *me1* and $me1_2$. In addition to having a high-falling tone, the vowel of $me1_2$ is significantly lengthened. A typical example of how $me1_2$ is used could be a classmate's response to a student who is afraid to ask the teacher a question: *Keoi5 wui5 ngaau5 lei5* $me1_2$! (3s will bite 1s ME_2) "It's not as if he's going to bite you!"

---

something" and his lines d) and e) say "I think I can't think this ("something") anymore; I think I have to think like this (P)." This is comparable to my lines (67c) and (67a), which indicate that the speaker started out with the stance "I thought it wasn't like this" and ends up with the stance "I think maybe it's like this." Wong's explication, in essence, articulates a stance change from "I thought X" to "now I can't think X; I must think Y." My explication, on the other hand, expresses a stance change related to a single proposition, going from "I thought not X" to "now I think maybe X." The key differences are that my explication: 1) refers only to a single proposition; 2) starts with a belief that this proposition is false, and 3) ends with a belief that it is "maybe" true.

6.2.1.2 The English Equivalent of *me1* Based on the Data

This section discusses the form of the English pitch contour that is proposed to be equivalent in function and meaning to *me1* (but not $me1_2$). The method I used for determining its form is described in section 5.4, based on arguments laid out in section 3.2. The *me1*-suffixed sentences that were targeted for translation are shown in **bold** in each of the dialogues that follow. The meaning of *me1* and its English equivalent in relation to these dialogues will be discussed in the next section.

In the first dialogue with a *me1*-suffixed sentence, two speakers are talking about what a third person has chosen to study at university. Speaker B has just told speaker A that this person will study physiotherapy.

(68) A: 邊間U啊, 諗住揀?
Bin1gaan1 U aa3, lam2-zyu6 gaan2?
which-CL SFP think-ASP choose
"Which university is he planning to choose?"

B: Poly 啫嗎, 得.
Poly ze1maa3, dak1.
SFP only
"PolyU is the only choice."

A: **係咩?** 得 Poly 有得讀?
Hai6 me1? Dak1 Poly jau5 dak1 duk6?
be ME only have can study
"ノ<u>Really</u>?! PolyU is the only place you can study that?"

For this and every dialogue that follows, all of the informants translated *me1* as a rising pitch contour. In each case, the contour begins on the nucleus of the sentence's

final intonational phrase, and continues upward across the remaining syllables to the end of the phrase/sentence. This is represented by underlining all the syllables over which the pitch contour is realized.

Figure 37: female a

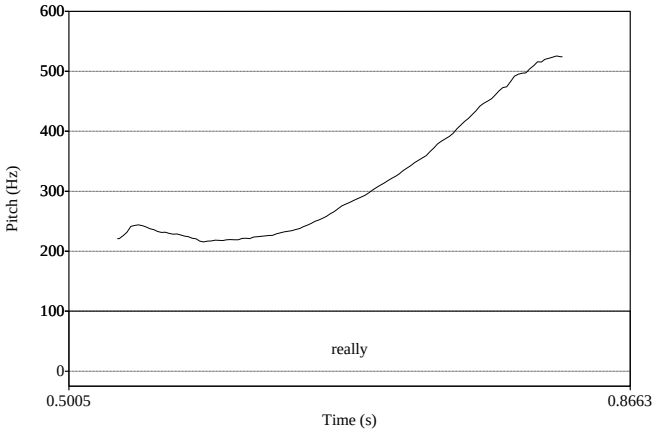


Figure 38: male a

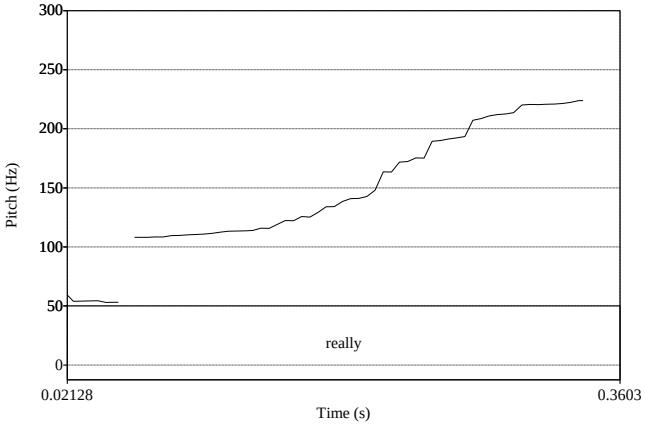


Figure 39: female b

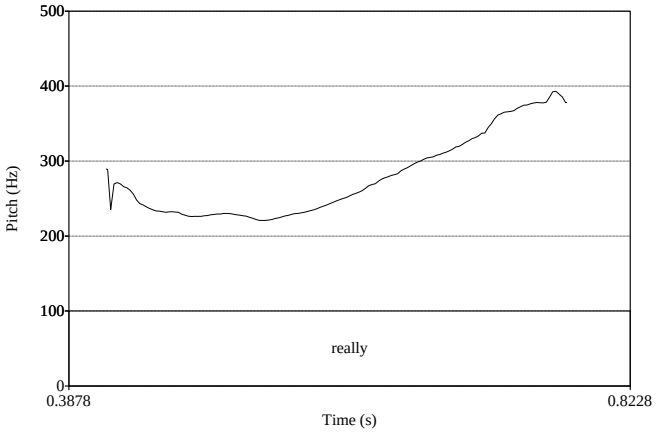
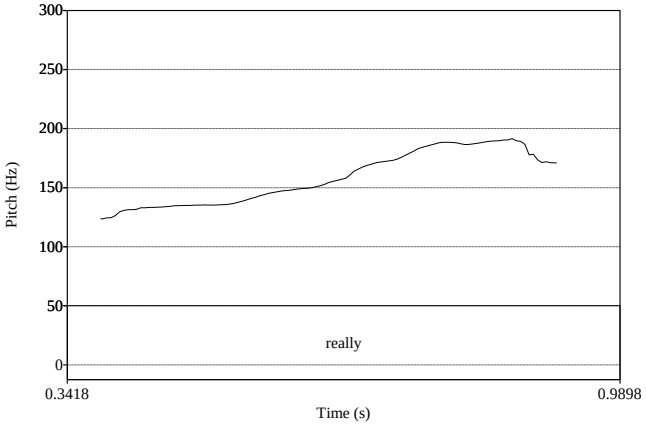


Figure 40: male b



As was the case for the translations of *lo1* and *aa1maa3*, male-b's translations were closer to a canonical form of neutral, declarative-like intonation than were those of the other informants. Nevertheless, male-b's translations were recognizably rising declaratives that clearly sounded like questions, and were therefore considered to be tokens of the same form of intonation as those of the other informants.

In the next dialogue, speaker B is surprised to hear that speaker A has never been to Australia.

(69) A: 我最想去澳洲紐西蘭嗰邊。
Ngo5 zeoi3 soeng2 heoi3 Ou3zau1 Lau2sai1laan4 go2-bin6.
1-s most want go Australia New Zealand there
"I want to go to Australia and New Zealand the most."

因為都未去過。
Jan1wai6 dou1 mei6 heoi3-gwo.
because all not-yet go-PERF
"Because I haven't been yet."

B: 係呀?
Hai6 aa4?
be SFP
"Really?"

澳洲你都未去過咩?
Ou3zau1 lei5 dou1 mei6 heoi3-gwo3 me1?
Australia 1-s also not-yet go-PERF ME
"You've never been to Aust／<u>ralia</u>?!"

A: 未啊。
Mei6 aa3.
not-yet SFP
"Not yet."

B: 我以為你淨係紐西蘭未去過添。
Ngo5 ji5wai4 lei5 zing6hai6 Nau2sai1laan4 mei6 heoi3-gwo3 tim1.
1-s think 2-s only New Zealand not-yet go-PERF PRT
"I thought it was only New Zealand that you hadn't been to before."

The tone placed over “-ralia” (or “either”) rises significantly:

Figure 41: female a

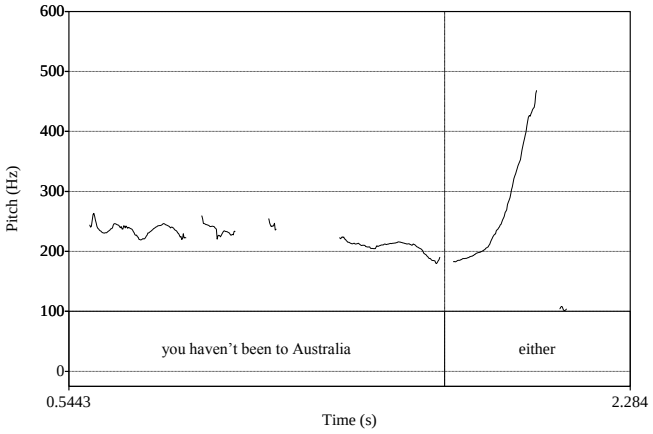


Figure 42: male a

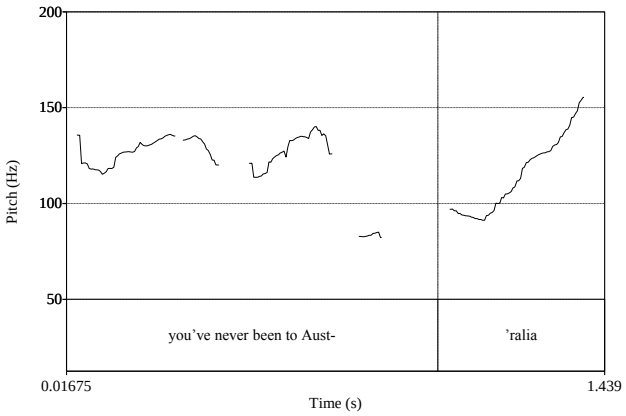


Figure 43: female b

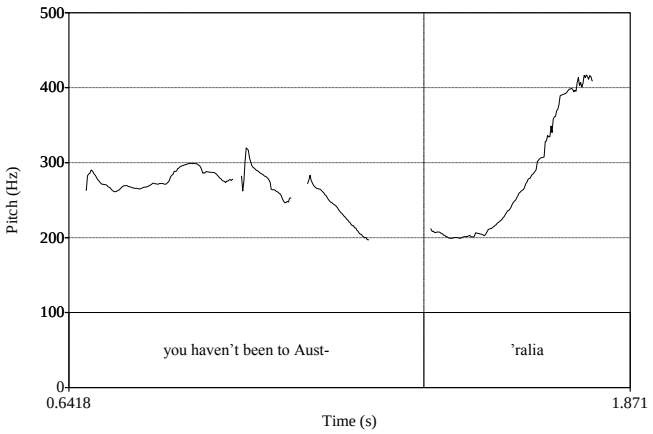
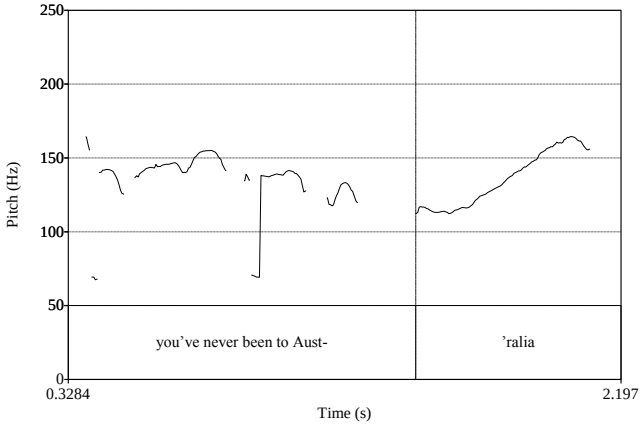


Figure 44: male b



In the next dialogue, speaker B had told speaker A about two mutual acquaintances going to dinner together. Speaker A wants to hear the rest of the story, but speaker B says he can’t say any more about it.

(70) A: 你繼續講埋落去，不如。
Lei5 gai3zuk6 gong2 maai4 lok6heoi3, bat1jyu4.
2-s continue speak finish descend how-about
“Why don’t you finish telling me (your story about the dinner).”

B: 唔得嘅。
M4-dak1 ge3.
NEG-can SFP
"I can't."

A: **唔講得㗎咩?**
M4-gong2 dak1 gaa3 me1?
NEG-speak can SFP ME
"You can't／<u>talk about it</u>?!"

Again the translations consistently use a rising tone:

Figure 45: female a

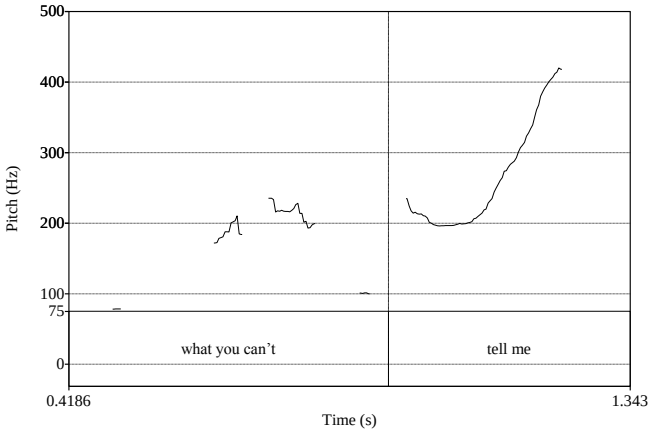


Figure 46: male a

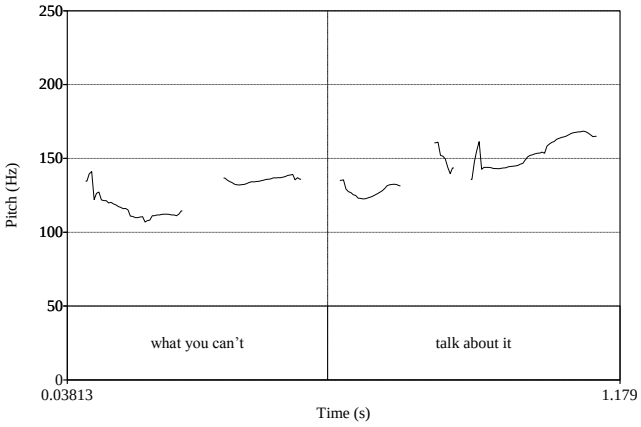


Figure 47: female b

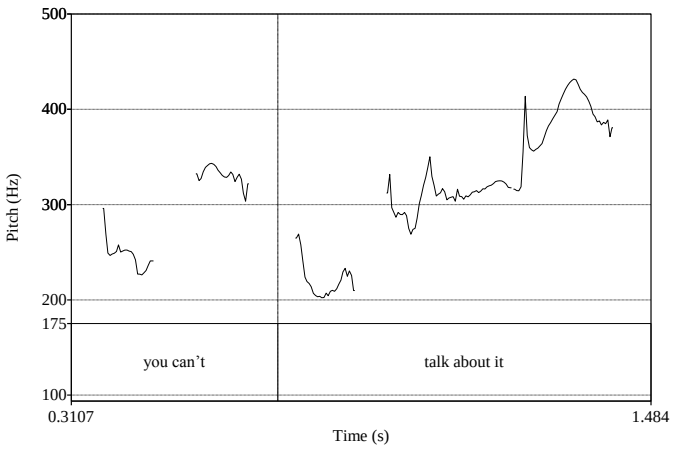
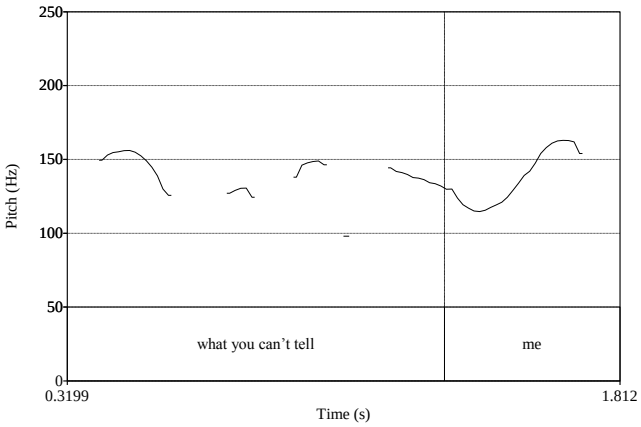


Figure 48: male b



In the next dialogue, the speaker is talking about another person and the listener expresses recognition, indicating that she knows who the speaker is talking about.

The speaker doubts that the listener actually knows who he is talking about and questions the listener in order to confirm:

(71) 你知邊個咩?
Lei5 zi1 bin1go3 me1?
2s know who ME
"You know who he↗is?!"

This final translation gets the same results:

Figure 49: female a

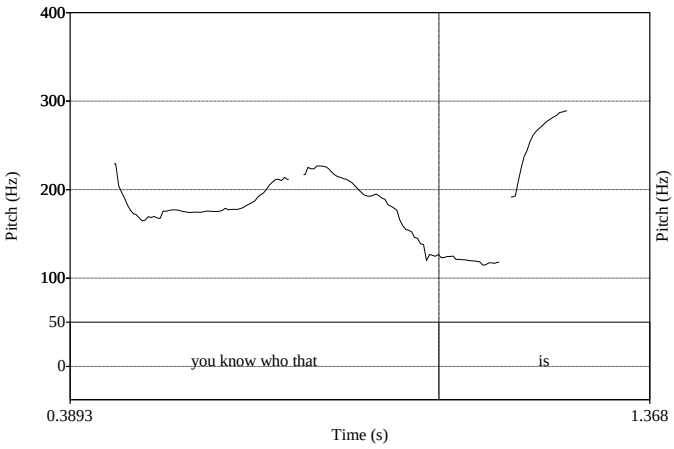


Figure 50: male a

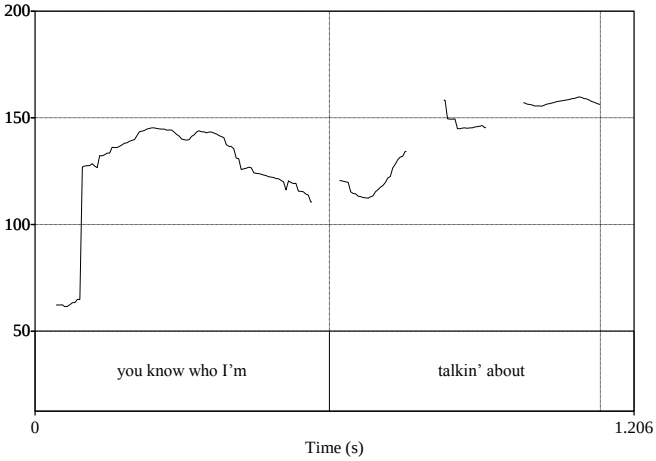


Figure 51: female b

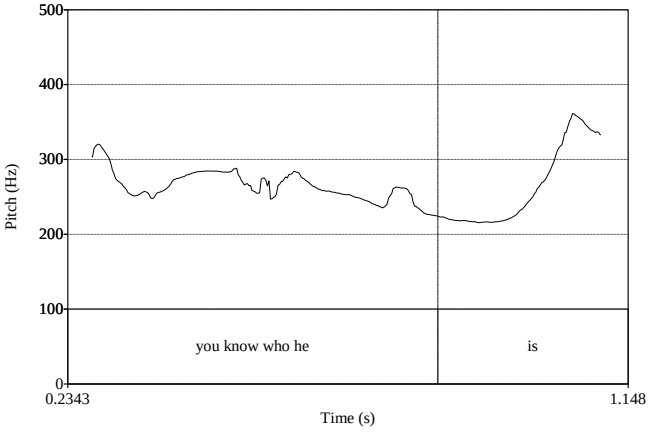
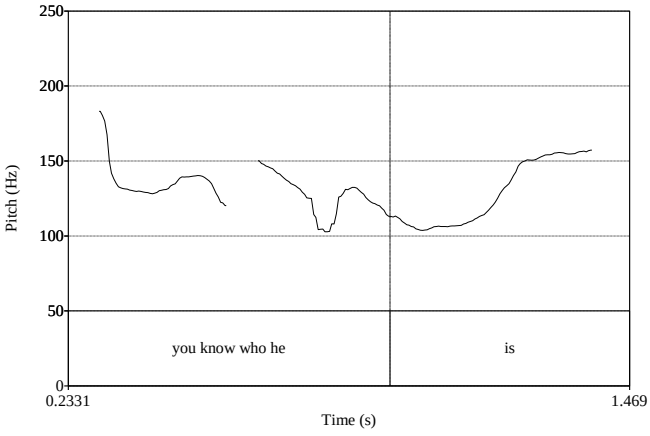


Figure 52: male b



Based on the data, I conclude that all 3 portions of the null hypothesis have been falsified. Regarding part i) there was a discernable intonation pattern (i.e., a

high-rising tone); regarding part ii) this pattern occurred in more than one of an individual participant's translations; and regarding part iii) the same pattern occurred in at least one of another participant's translations. I therefore conclude that *me1* has an intonational equivalent in English, which is the high-rising tone that appears in the data. It is concluded to be a floating-tone morpheme with the definition shown in (67) in the immediately preceding section.

6.2.1.3 Applying the NSM Explication to the Examples of *me1* from the Data

For each of the following examples, I will write out the explication of *me1*, inserting the antecedents of P and D. Based merely on looking at the limited contexts provided in the literature, it is not always possible to determine whether the speaker is doubtful or surprised that P might be the case. Regardless the explication remains the same.

(68') 係[P]咩? 得 Poly 有得讀?
Hai6 [P] me1? Dak1 Poly jau5 dak1 duk6?
be **ME** only have can study
"ノ**Really** **[P]?!** PolyU is the only place you can study that?"

This first example illustrates a relationship between P and D that is often the case, namely where P is embedded in D as the complement of the verb "say." In other words, D is "you said P":

I think maybe it's like this (P: *PolyU is the only place you can study that*)
because something happened (D: *you said PolyU is the only choice [for studying that]*)
before this happened, I thought it wasn't like this (P)

I want to know
I want you to say something because of this

In example (69) the context indicates that the speaker is probably surprised rather than doubtful.

(69') 澳洲你都未去過咩?
Ou3zau1 lei5 dou1 mei6 heoi3-gwo3 me1?
Australia 2s also not-yet go-EXP ME
"You've never been to Aust／ralia?!"

Under normal circumstances, there is usually no reason to doubt someone's claim about never having been to a certain place before. Therefore the speaker probably had no reason to doubt the validity of D (*you said you haven't been [to Australia] yet*) as a source of evidence regarding P (*you've never been to Australia*). Another reason to assume that the speaker is surprised is because she precedes her question in (69) with *hai6 aa4* ("Really?"), which is a question that uses the question particle *aa4*, which, I will argue in section 6.2.2.1, can indicate surprise, but not doubt. Another clue from the context is the fact that the listener followed up her *me1*-suffixed question with a statement that indicated she fully believed the listener had never been to Australia: "I thought it was only New Zealand that you hadn't been to before." Here is how the explication explains this particular example of *me1*-suffixing:

I think maybe it's like this (P: *you've never been to Australia*)
because something happened (D: *you said you haven't been yet*)
before this happened, I thought it wasn't like this (P)
I want to know
I want you to say something because of this

In the next example in (70) it is not possible to know for sure where the

meaning of this use of *me1* lies along the continuum from surprise to doubt. There is not enough known about the "dinner story" that the listener said he cannot talk about, such as whether it might contain potentially embarrassing information about the participants involved. We also don't know what the speaker thinks about this, i.e., the degree to which she thinks it might contain sensitive information.

(70') 唔講得㗎咩?
M4-gong2 dak1 gaa3 me1?
NEG-speak can SFP ME
"You can't↗talk about it?!"

The use of *me1* in this context means:

I think maybe it's like this (P: *you can't talk about it*)
because something happened (D: *you said you can't [talk about it]*)
before this happened, I thought it wasn't like this (P)
I want to know
I want you to say something because of this

In the final example from the data the speaker is probably more doubtful than surprised. He is asking the listener to say whether or not she knows who he is talking about.

(71') 你知邊個咩?
Lei5 zi1 bin1go3 me1?
2s know who ME
"You know who he↗is?!"

The use of *me1* in (71) means this:

I think maybe it's like this (P: *you know who he is*)
because something happened (D: *you responded as if you know who I'm talking about*)
before this happened, I thought it wasn't like this (P)

I want to know
I want you to say something because of this

6.2.1.4 Applying the English Equivalent of *me1* and the NSM Explication to the Examples of *me1* in the Literature

None of the examples from the literature include enough context to know for sure whether *me1* is being used to express surprise, doubt, or something in between. Which meaning is expressed in this first example, for instance, depends on the speaker's original stance regarding the listener's ability to speak Shanghai dialect.

(63') 你識講上海話咩?
Lei5 sik1 gong2 soeng6hoi2waa2 me1?!
2s know speak Shanghai dialect ME
"You can speak Shanghai／dialect?!"

This example can be inserted into the explication as follows:

I think maybe it's like this (P: *you can speak Shanghai dialect*)
because something happened (D: *you said those people are speaking Shanghai dialect*)
before this happened, I thought it wasn't like this (P)
I want to know
I want you to say something because of this

Matthews and Yip (1994) said this next example demonstrated that *me1* expresses "surprise," but it could also express doubt depending on the speaker's original stance. No context was given, so I construct my own D, which is that the

listener asked about the thing that the speaker is surprised to hear s/he (the listener) doesn't know.

(64') 乜你唔知嘅咩?
Mat1 lei5 m4-zi1 ge3 me1?
What 2s NEG-know PRT ME
"What, you don't ↗ know?!"

Based on the explication it means this:

I think maybe it's like this (P: *you don't know [this]*)
because something happened (D: *you asked about it*)
before this happened, I thought it wasn't like this (P)
I want to know
I want you to say something because of this

In the last example that I cited from the literature, Chan (2001) constructed a context in which a girl, who is standing next to her boyfriend, sees an attractive girl wave to them. The jealous girl then asks her boyfriend this question:

(65') 你識佢咩?
Lei5 sik1 keoi5 me1?
2s know 3s ME
"You ↗know her?!"

I will assume that the jealous girlfriend (i.e., the speaker) considers the attractive girl's wave to be sufficient evidence to conclude that her boyfriend knows this attractive girl, causing the speaker's knowledge to change from disbelief to belief, resulting in surprise:

I think maybe it's like this (P: *you know her*)
because something happened (D: *that girl waved to us*)
before this happened, I thought it wasn't like this (P)
I want to know
I want you to say something because of this

In (65), D is based on something that is seen rather than something that the listener has said. In this case the relationship between D and P is entirely pragmatic, but this poses no problem for the application of the explication.

6.2.2 The Particle aa4

6.2.2.1 The NSM Explication of *aa4*

S. Law (1990), Leung (1992/2005), and Sybesma and Li (2007) all said that *aa4*-attachment does not always result in question formation, which means there are apparently two *aa4* particles, one that is question-forming and one that is not question-forming. Leung (1992/2005) said that the vowel of the non-question-forming *aa4* is often realized as a schwa, and that this non-question version is used to express dissatisfaction or feelings of resentment. All following references to *aa4* refer to the question-forming version of this SFP.

Dictionary definitions and literature descriptions of *aa4* are quite similar to those of *me1*, saying that *aa4*, like *me1*, forms questions, expresses surprise, and seeks confirmation. Huang and Kok (1973), for example, said that *aa4* is a "sentence particle making [a] statement into [a] yes/no question; [it] expresses surprise or disbelief, [and] asks for confirmation of [a] surprising statement" (p. 2).

Some authors concluded that the core function of *aa4* is to seek confirmation.

Luke and Nancarrow (1997) said that *aa4* is used to form "confirmation seeking questions" (p. 6). Likewise Leung (1992/2005) said that *aa4* is used by the speaker to request confirmation of the information in the sentence to which it attaches. Similarly S. Law (1990) said that *aa4* "has as its core function confirmation seeking" (p. 19).

Chao (1969) said that "[t]he difference between *me1* and *aa4*, both of which change a preceding statement into a question, is that the former asks, 'Is it true, do you mean to say that....?,' while the latter merely asks, 'Do I hear you right? am I repeating your statement correctly?' " (p. 102). This implies that *me1* challenges the truthfulness of something while *aa4* merely seeks to confirm it.

Matthews and Yip (1994) said, "The question particle *aa4* indicating surprise or disapproval may form a question" (p. 310), and they gave this example:

(72) 你下個禮拜放假呀?
Lei5 haa6 go3 lai5baai3 fong3gaa3 aa4?
2s next CL week take-leave AA
"You're going on leave next week?"

Matthews and Yip said the form of question in (72) "tends to presuppose a positive answer, being used to check the validity of an assumption" (p. 310). This expresses the key difference between *aa4*, which "presuppose[s] a positive answer," and *me1*, which expresses the speaker's presupposition that P is not the case, and is therefore "used to check the truth of [P]" (ibid). Their observation that *aa4* presupposes a positive answer, while *me1* does not, indicates a difference in the epistemic stance of the speaker. I propose that *me1*, but not *aa4*, entails the meaning that "before something happened (D)," the speaker thought "it is not like this (P)."

Yip & Matthews (2001) said that "*me1* and *aa4* turn a statement into a question of a particularly loaded kind. *Me1* indicates surprise that something should be the case ('How can this be true?'), [while] *aa4* suggests surprise and often an element of disapproval ('If this is true I don't think much of it')" (p. 114). Their paraphrase "How can this be true" for *me1* indicates an element of doubt, while their paraphrase "If this is true…" for *aa4* does not. They gave the following two examples of *aa4*-suffixing:

(73) 咁淺嘅道理你都唔明呀？
Gam3 cin2 ge3 dou6lei5 dou1 m4-ming4 aa4?
so shallow PRT principle even NEG-understand AA
"You can't even understand such a simple principle?"

(74) 佢到而家都唔肯原諒你呀？
Keoi5 dou3 ji4gaa1 dou1 m4-hang2 jyun4loeng4 lei5 aa4?
3s up to now even NEG-willing forgive 2s AA
"He's still unwilling to forgive you even now?"

Based on the observations in the literature and consultations with native-Cantonese speakers, I propose this explication for *aa4*:

(75) P + *aa4* =

a) 我諗可能係噉樣(P)
ngo5 lam2 ho2lang4 hai6 gam2joeng2 (P)
1s think maybe be this way
"I think maybe it's like this (P)"

b) 因為有樣嘢發生(D)
jan1wai6 jau5 joeng6 je5 faat3sang1 (D)
because have CL thing happen
"because something happened (D)"

c) 我要知道
ngo5 jiu3 zi1dou3
1s want know
“I want to know”

d) 因為呢樣嘢, 我要你講啲嘢
jan1wai6 lei1 joeng6 je5, ngo5 jiu3 lei5 gong2 di1 je5
because this CL thing 1s want 2s say CL thing
“I want you to say something because of this”

According to this, the only difference between the meanings of *aa4* and *me1* is reflected in the fact that the explication of *aa4* does not contain line c) of the explication of *me1*: “before this happened (D), I thought it wasn’t like this (P).” In other words, unlike *me1*, the SFP *aa4* does not include a prior stance that P was not the case. This accounts for Kwok’s (1984) observation that *aa4* conveys a lesser degree of surprise than *me1*. A change of one’s beliefs about something (i.e., when *me1* is used), as opposed to one’s merely being made aware of something, will naturally result in a greater degree of surprise.

The English version of the explication in (75) defines its English-equivalent tone, shown here in (76). The data that provides evidence of its English-equivalent form is presented in the following section:

(76) P + *aa4*-equivalent intonation =

a) I think maybe it’s like this (P)
b) because something happened (D)
c) I want to know
d) I want you to say something because of this

6.2.2.2 The English Equivalent of *aa4* Based on the Data

This section discusses the form of the English pitch contour that is proposed to be equivalent in function and meaning to *aa4*. The method I used for determining its form is described in section 5.4, based on arguments laid out in section 3.2. The *aa4*-suffixed sentences that were targeted for translation are shown in **bold** in each of the dialogues that follow. The meaning of *aa4* and its English equivalent in relation to these dialogues will be discussed in the next section.

In this first dialogue, two people are talking about Disneyland. Speaker B said that when she went in July and August, she had to wait about half an hour at each of the attractions. In the first line shown in (77), speaker A said that it was the same for her in mid-September, which is not considered to be the peak season. In line 2 speaker B expresses her surprise about this.

(77) A: 差唔多咋喎，我上次去都係…
Caa1 m4-do1 zaa3 wo3, ngo5 soeng6 ci3 heoi3 dou1 hai6…
differ NEG-much SFP SFP 1s last time go also be…
"It was about the same the last time I went. ..."

…九月中。
…gau2jyut6 zung1.
…September middle
"…in mid-September."

B: **九月中都咁多人去呀?**
Gau2 jyut6 zung1 dou1 gam3 do1 jan4 heoi3 aa4?
nine month middle also so many people go AA
"That many people go even in mid-Sep-ノ <u>tember</u>?"

Each participant translated this with a rising tone that begins on the second syllable

of September, which is the nucleus of the intonational phrase. As with the intonational equivalent of *me1*, the rising pitch contour of the equivalent of *aa4* is realized across all the remaining syllables of the intonational phrase, indicated by the underline:

Figure 53: female a

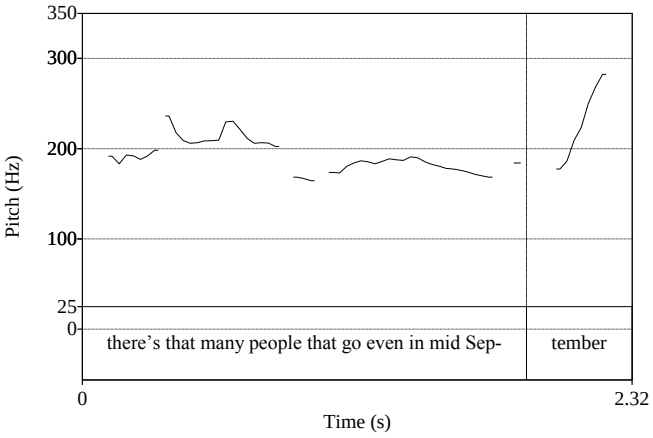


Figure 54: male a

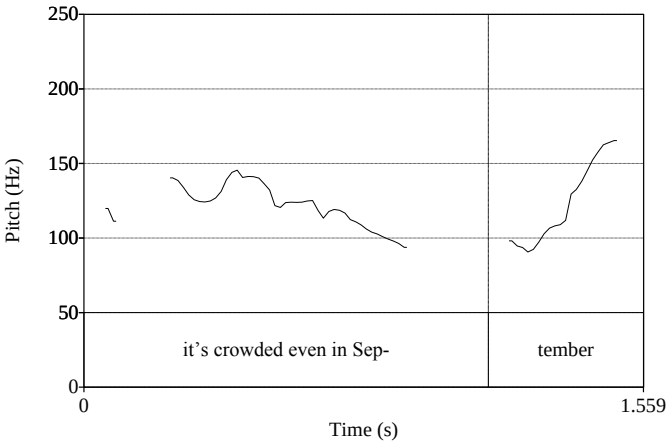


Figure 55: female b

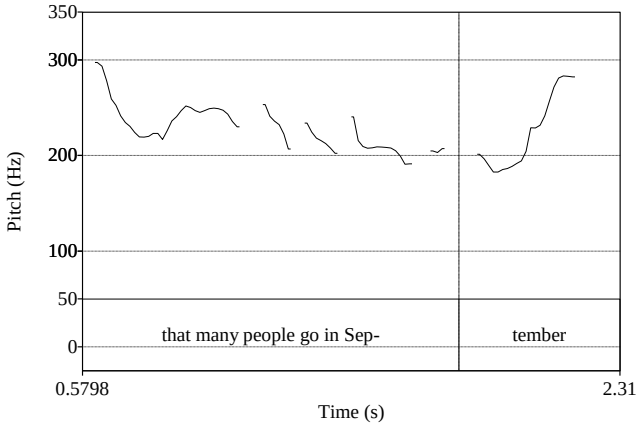
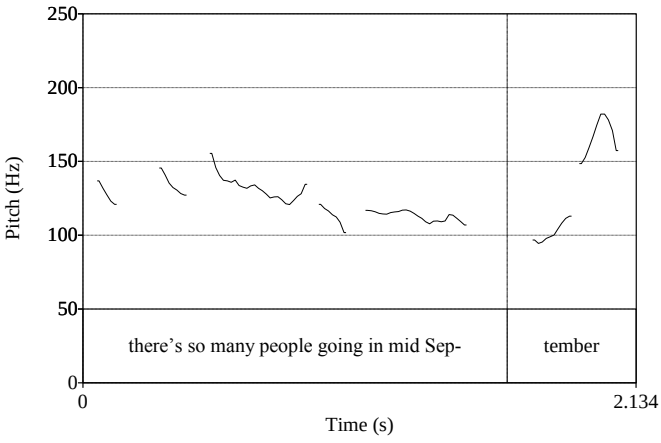


Figure 56: male b



In the next dialogue, the speaker was talking to the listener about someone who they hoped would help them with a task. The listener had just told the speaker that this person had said "okay," and the speaker replied as follows:

(78) 佢話 okay 呀?
Keoi5 waa6 okay aa4?
3s say AA
"He said o-ノkay?"

Again this translated as a rising tone on the nucleus of the intonational phrase:

Figure 57: female a

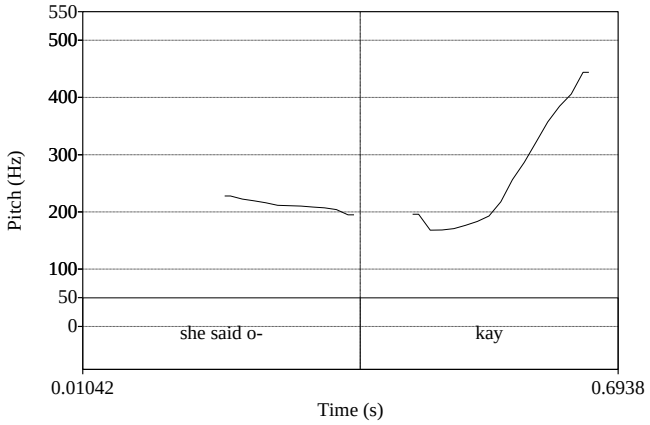


Figure 58: male a

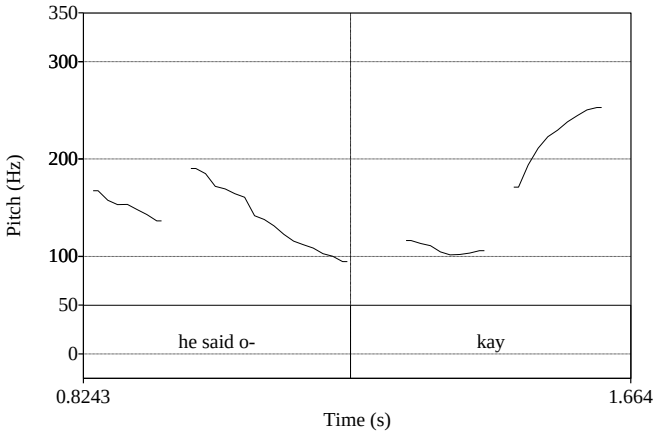


Figure 59: female b

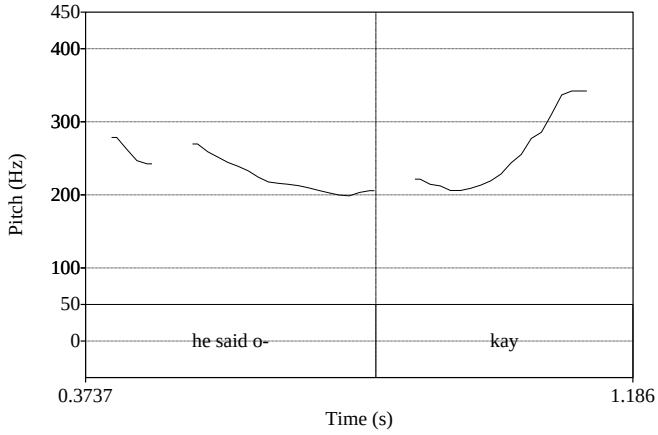
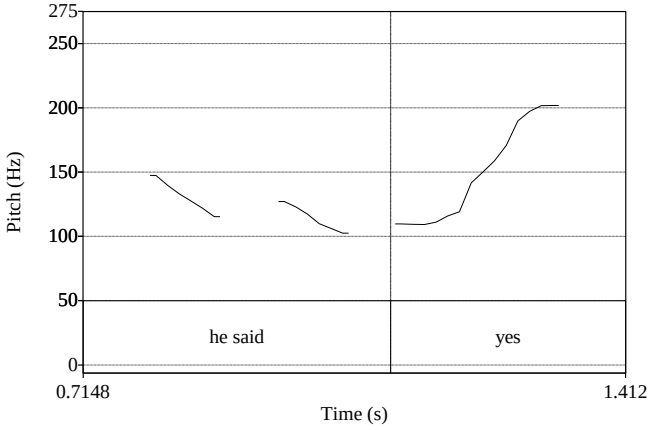


Figure 60: male b



In this next example, speaker A said that someone got sick after eating and threw up repeatedly. Speaker B doesn't know for sure who A is talking about but thinks it is probably Tom. Speaker B therefore asks, "Who (threw up)? Tom threw up?":

(79) A: 跟住走去廁所係嘅嘔吖嗎。
Gan1zyu6 zau2 heoi3 ci3so2 hai6 gam2 au2 aa1maa3.
following run go bathroom be thus vomit SFP
"He ran into the bathroom afterwards and just kept throwing up."

B: **邊個?阿 Tom 嘔呀?**
Bin1go3? Aa3-Tom au2 aa4?
who PRT vomit AA
"Who? ノ<u>Tom threw up</u>?"

The results are similar. Interestingly, for this translation, the two older participants who had both lived in North America for several years began the rising tone on "Tom," while the two younger participants who were still studying at an English-medium secondary school in Hong Kong began the rise on "threw." This is perhaps a dialectal variation, but why a difference appears on this sentence but no others is hard to explain. Female-b's and male-b's translations are probably instances of the same floating tone, but even if we do not consider them to be, it will not prevent the falsification of the null hypothesis. To me it sounds more natural to begin the rise on Tom since this is what the speaker was questioning. It is to be expected that the floating tones would tend to appear in positions that complement, rather than clash with, such things as syntactic phrasing, focused elements, etc.

Figure 61: female a

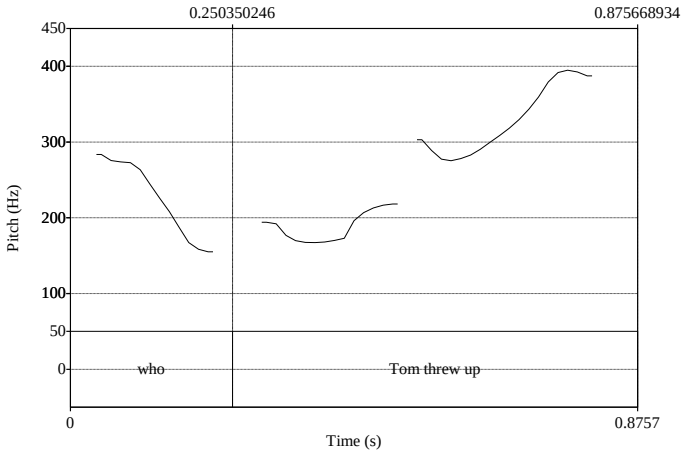


Figure 62: male a

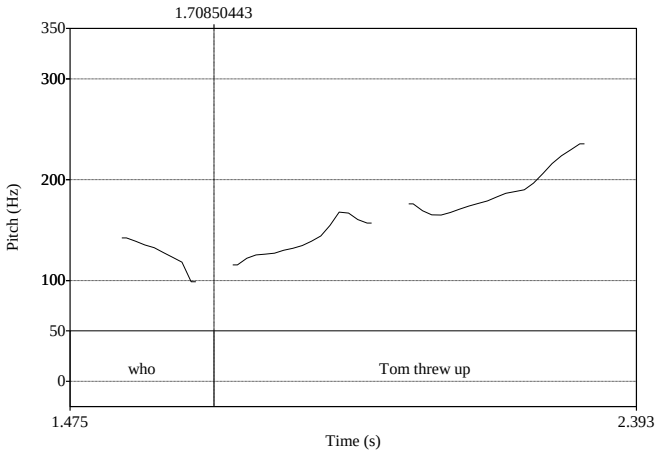


Figure 63: female b

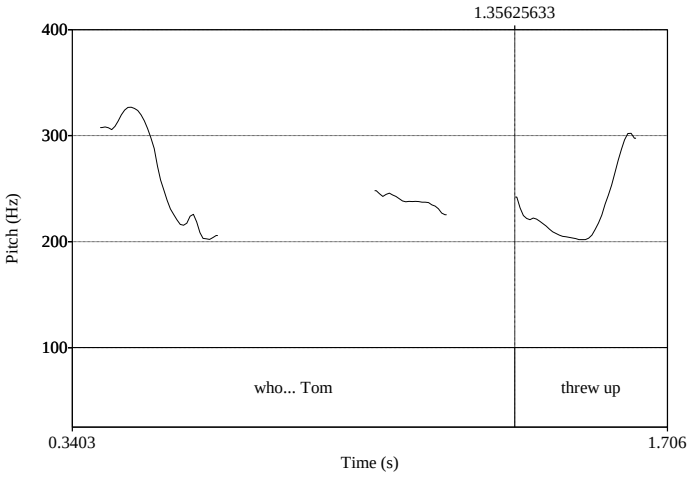
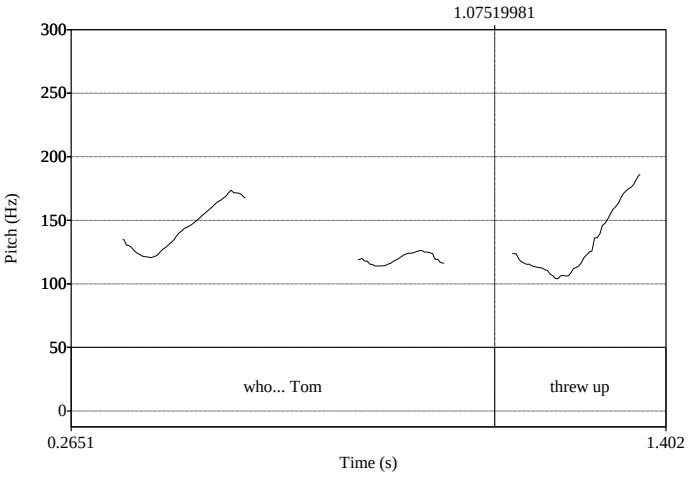


Figure 64: male b



The context of this final dialogue from the data is self explanatory:

(80) A: 嗰你聖誕有邊度去啊?
Gam2 lei5 Sing1daan3 jau5 bin1dou6 heoi3 aa3?
so 2s Christmas have where go SFP
"So where are you going for Christmas?"

B: 聖誕? 未知啊。
Sing3daan3? Mei6 zi1 aa3.
Christmas not-yet know SFP
"Christmas? I don't know yet."

A: **重未知呀?**
Zung6 mei6 zi1 aa4?
still not-yet know AA
"You don't ノ<u>know yet</u>?"

The results are similar to the other examples above:

Figure 65: female a

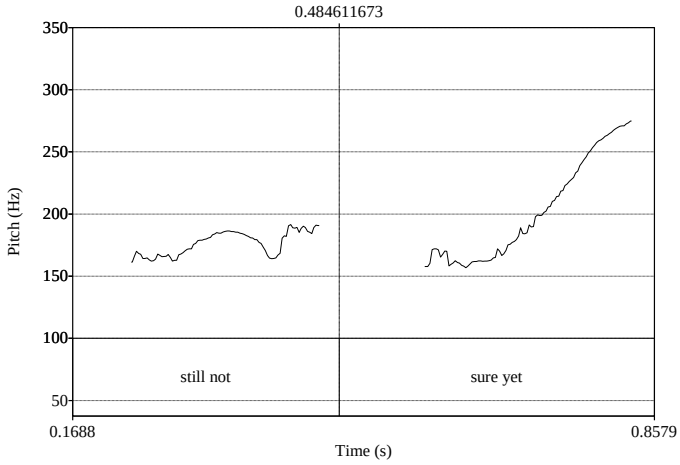


Figure 66: male a

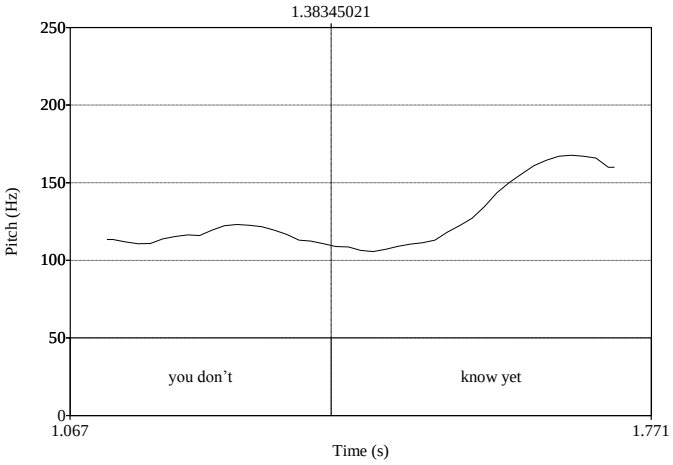


Figure 67: female b

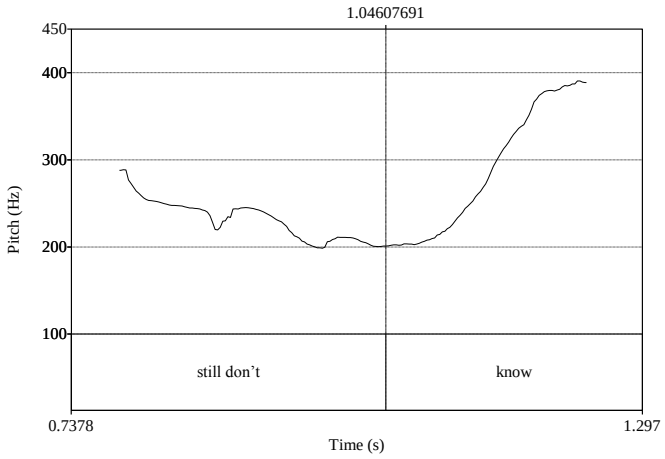
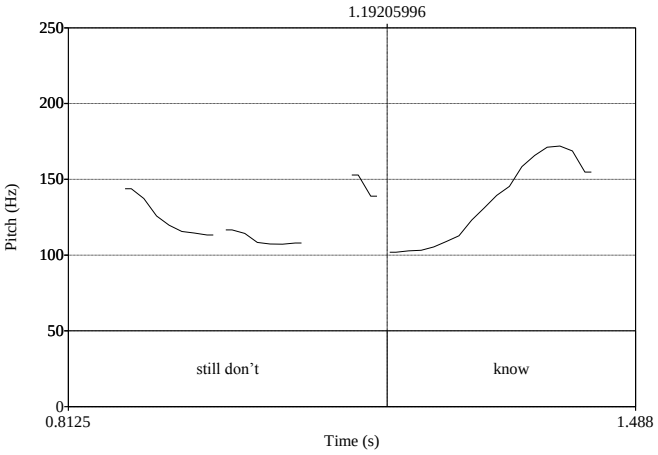


Figure 68: male b



Based on the data, I conclude that all 3 portions of the null hypothesis were falsified. Regarding part i) there was a discernable intonation pattern (i.e., a rising tone); regarding part ii) this pattern occurred in more than one of an individual participant's translations; and regarding part iii) the same pattern occurred in at least one of another participant's translations. I therefore conclude that *aa4* has an intonational equivalent in English, which is the rising tone that appears in the data. It is concluded to be a floating-tone morpheme with the definition shown in (76).

There is an obvious problem here. How can the tones of the English equivalents of the two question particles *me1* and *aa4* be distinguished from each other? I

referred to the English counterpart to *me1* as a "high-rising" tone and the counterpart to *aa4* as a "rising" tone, because my impression from listening to the translations is that the *me1*-equivalent tone rises higher than the *aa4*-equivalent tone. However, it is difficult if not impossible to see this by looking at the F_0 contours of the various translations.

In order to test my impression, I constructed three minimal pair dialogues and asked two native-Cantonese speakers to record them for me. Three of the four participants (female-a, male-a, and male-b) were available to translate those dialogues, which was done in order to contrast the *me1*-equivalent tone from the *aa4*-equivalent tone. The first dialogue was this one shown in (81):

(81) A: 我聽日同啲朋友去騎馬啊。
Ngo5 ting1jat6 tung4 di1 pang4jau5 heoi3 kei4 maa5 aa3.
1s tomorrow with CL(pl) friend go ride horse SFP
"I'm going horse riding with some friends tomorrow."

B: **你鍾意騎馬呀/咩？**
Lei5 zung1ji3 kei4 maa5 aa4/me1?
2s like ride horse AA/ME
"You like horse riding?/?!"

Each constructed dialogue had two versions, one in which the final utterance had the SFP *aa4* attached, and one in which it had the SFP *me1* attached. This is represented in (81B) by showing *aa4/me1* at the end of the Cantonese sentence, and by showing the punctuation "?/?!" at the end of the English translation of that sentence. The F_0s of the three participants' translations for both versions of (81) were as follows:

Figure 69: female-a-*aa4*

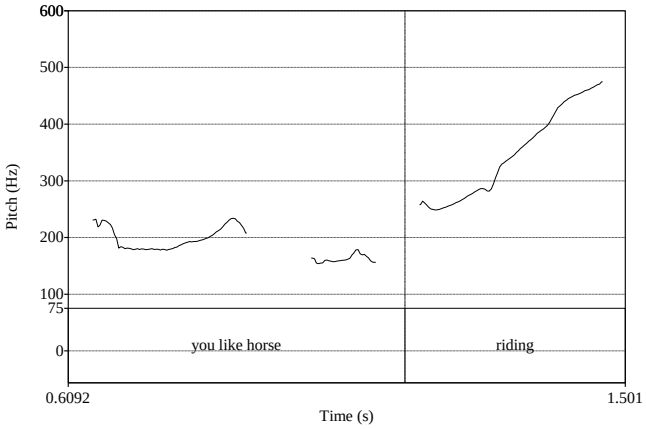


Figure 70: female-a-*me1*

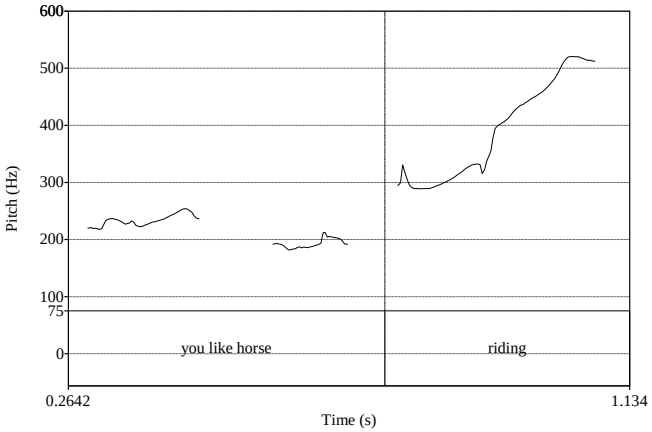


Figure 71: male-a-*aa4*

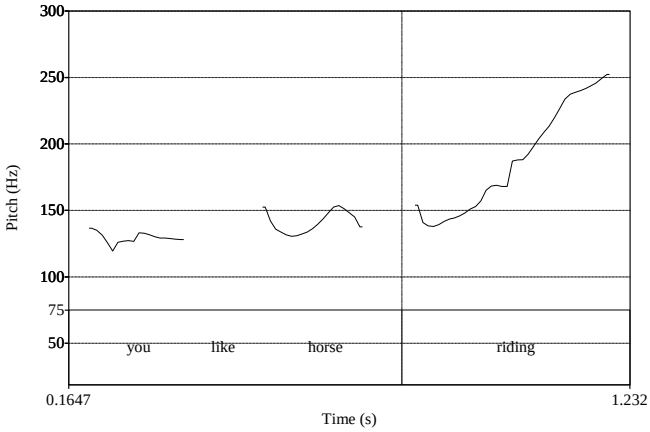


Figure 72: male-a-*me1*

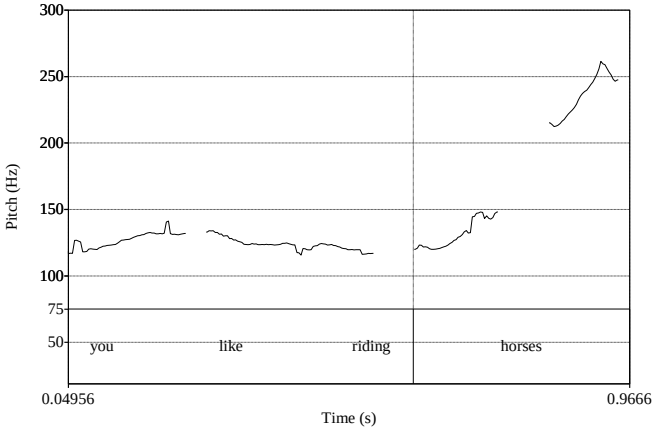


Figure 73: male-b-*aa4*

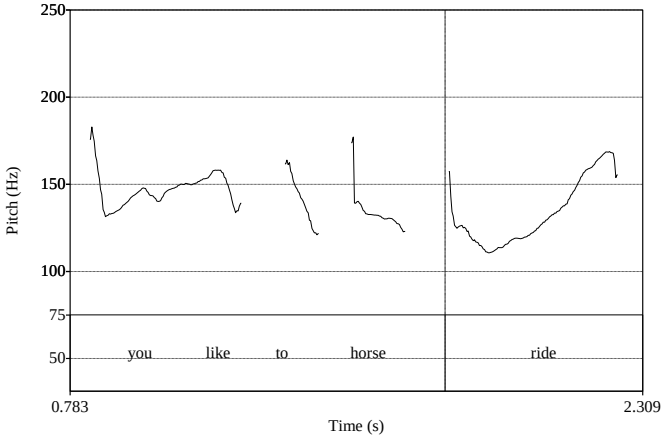
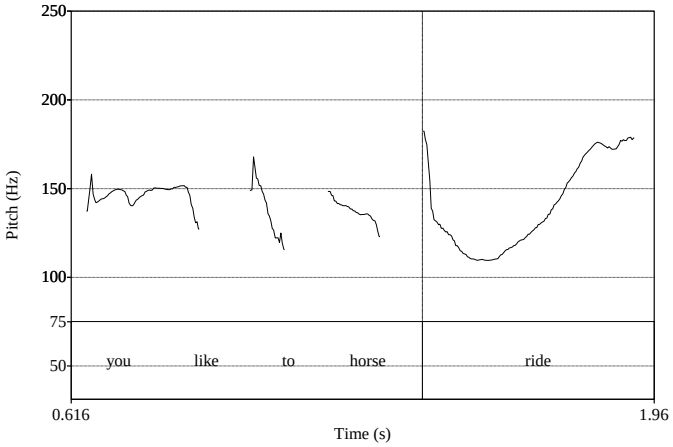


Figure 74: male-b-*me1*



For all three participants the translations of their *me1*-suffixed sentences (shown on the right) rose more than did the translations of their *aa4*-suffixed sentences. Looking at the F_0 contours, the difference appears to be very slight. However, I could clearly hear a difference, and other native-English speakers consulted agreed.

This is not surprising considering that tests of perception have shown that "0.1% changes in frequency can be heard, e.g., with synthetic speech, for a tone around 1,000 Hz, listeners can detect a 1-2 Hz difference" (Chun, 2002, p. 11). Another influencing factor is that there does not appear to be any "one-to-one relationship between frequency and pitch, i.e., a tone that is judged to be twice as high as another tone does not necessarily have twice the Hz value." (ibid). This means that the difference in degree to which the F_0 curves rise between the *me1*- and *aa4*-equivalent translations is likely to be perceived as having a greater difference than what is indicated visually on the F_0 contours. There may also be some voice quality factors that are influencing pitch perception. My own perception, as well as those of other native-English speakers, indicates that one or more of these factors caused the *me1*-equivalent tones to rise to a meaningfully higher pitch than the *aa4*-equivalent tones.

The next dialogue I used to test the difference between the *aa4*- and *me1*-equivalent tones is as follows:

(82) A: 我班機聽日兩點半起飛啊。
Ngo5 baan1 gei1 ting1jat6 loeng5 dim2 bun3 hei2fei1 aa3.
1s CL plane tomorrow two CL half rise-fly SFP
"My plane leaves at 2:30 tomorrow."

B: **你聽日走呀/咩？**
Lei5 ting1jat6 zau2 aa4/me1?
2s tomorrow leave AA/ME
"You're leaving tomorrow?/?!"

This time the three participants' translations showed an even greater difference in pitch height between the two translations:

Figure 75: female-a-*aa4*

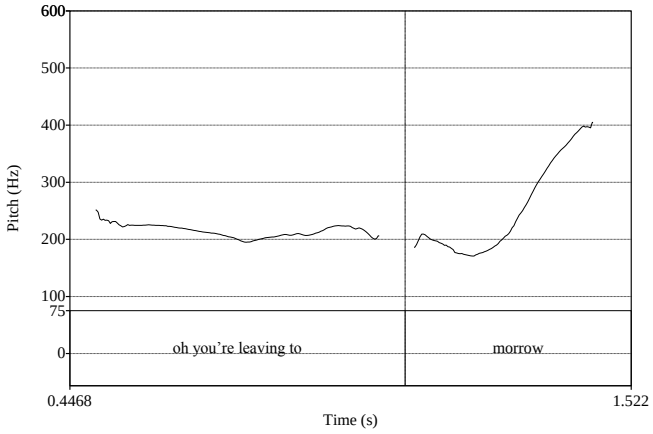


Figure 76: female-a-me1

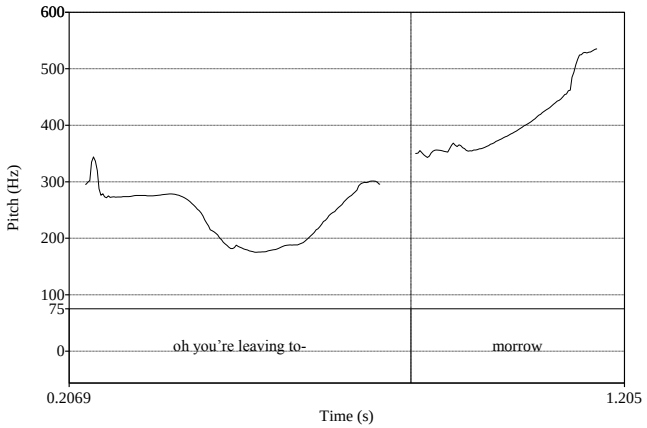


Figure 77: male-a-*aa4*

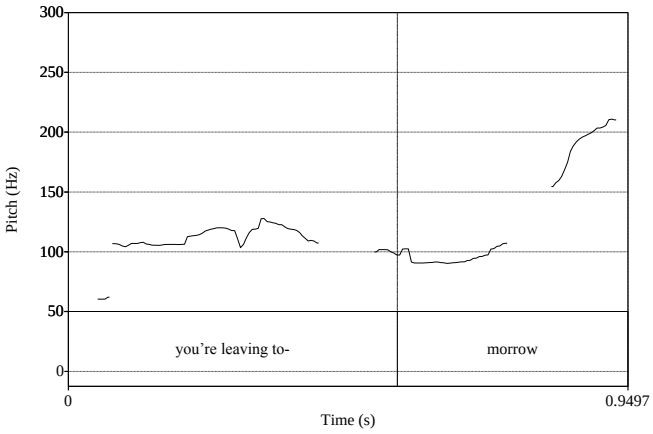


Figure 78: male-a-*me1*

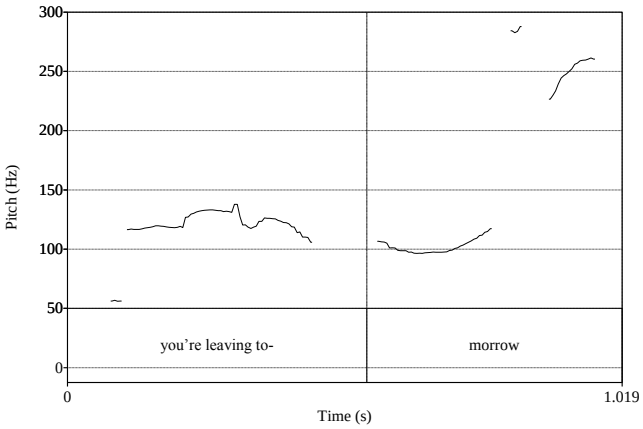


Figure 79: male-b-*aa4*

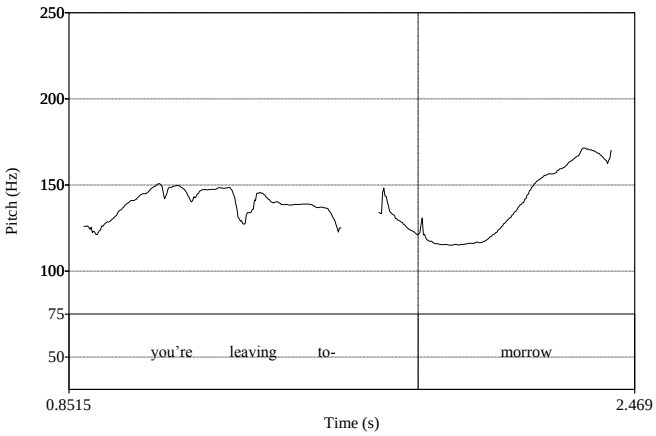
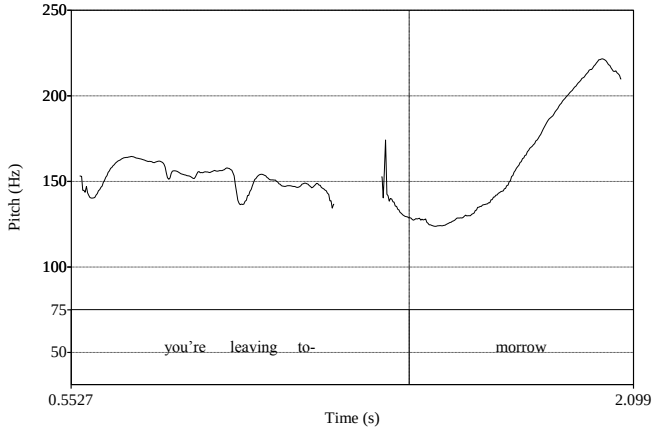


Figure 80: male-b-*me1*



The third and final constructed dialogue is as follows:

(83) A: 食多碗飯添喇。
Sik6 do1 wun2 faan6 tim1 laa1.
eat more bowl rice also SFP
"Have another bowl of rice."

B: 唔好啊。我食咗三碗啊。
M4-hou2 aa3. Ngo5 sik6-zo2 saam1 wun2 aa3.
NEG-good SFP 1s eat-PERF three bowl SFP
"No. I've had three bowls."

A: **你食咗三碗呀/咩？**
Lei5 sik6-zo2 saam1 wun2 aa4/me1?
2s eat-PERF three bowl AA/ME
"You've had three bowls?/?!"

The three participants' translations were as follows:

Figure 81: female-a-*aa4*

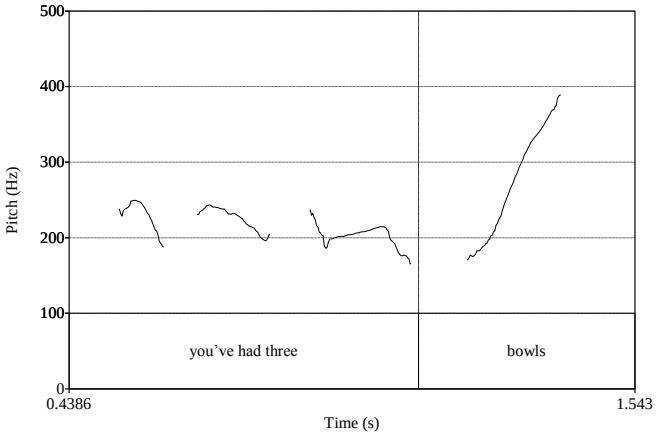


Figure 82: female-a-*me1*

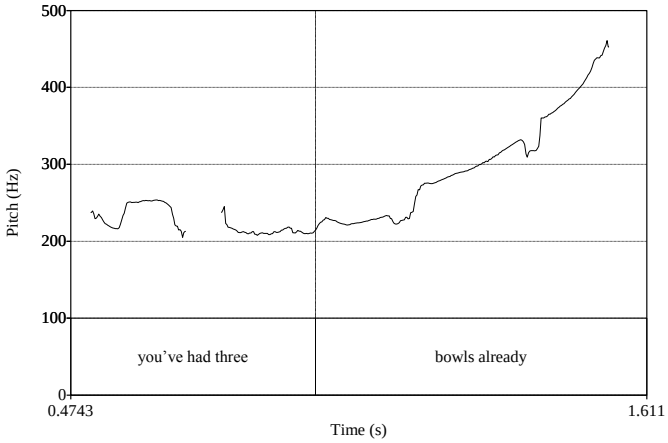


Figure 83: male-a-*aa4*

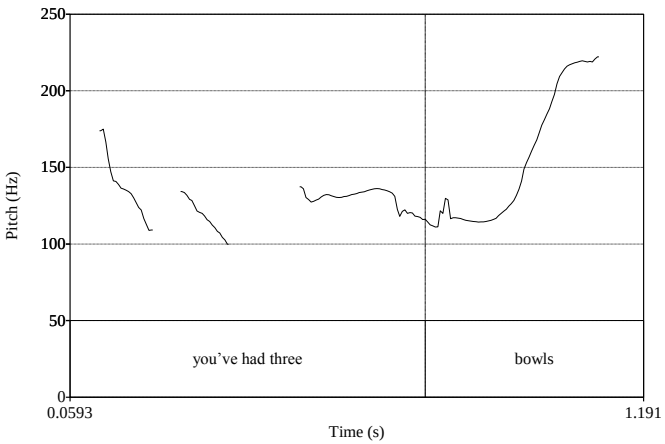


Figure 84: male-a-*me1*

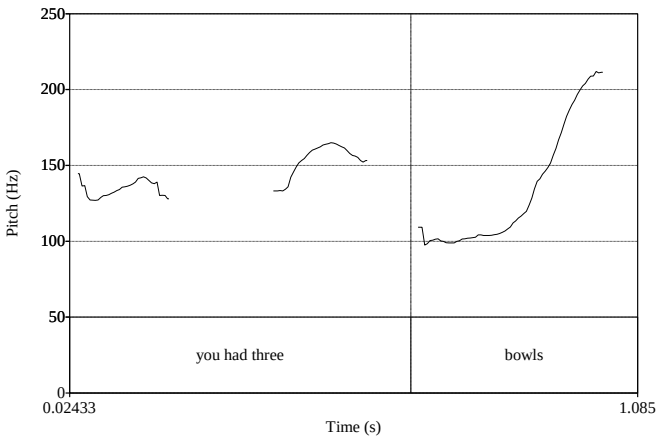


Figure 85: male-b-*aa4*

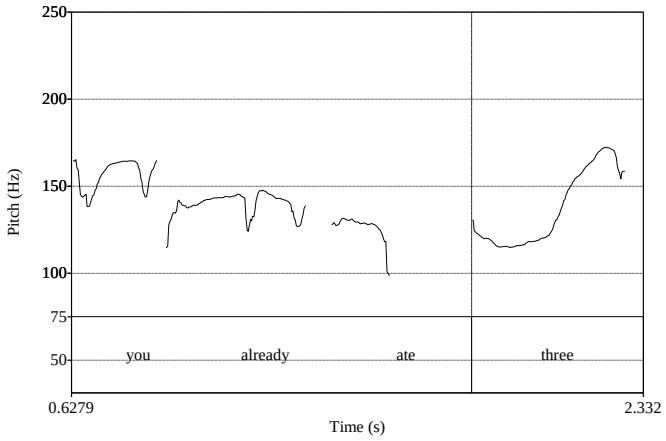
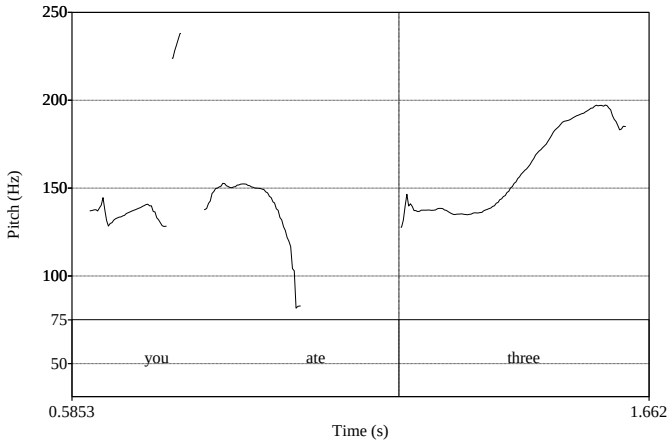


Figure 86: male-b-*me1*



It is interesting that male-a's translation of *me1* sounds like it rises higher than did his translation of *aa4*, even though the F_0 contour looks like it actually did not quite rise as high. Perhaps one factor that causes this perception is the raised pitch on "three" that preceded the high-rising tone of "bowls."

Based on these minimal pair translations, I conclude that the *me1*- and *aa4*-equivalent floating tones have distinct forms; the pitch (though not necessarily the F_0) of the *me1*-equivalent tone rises to a higher degree than does the *aa4*-equivalent tone.

6.2.2.3 Applying the NSM Explication to the Examples of *aa4* from the Data

The first example from the data was (77):

(77') 九月中都咁多人去呀?
Gau2 jyut6 zung1 dou1 gam3 do1 jan4 heoi3 aa4?
nine month middle also so many people go AA
"That many people go even in mid-Sep-ノ<u>tember</u>?"

Putting D and P into the explication for *aa4*-equivalent intonation results in the following meaning:

I think maybe it's like this (P: *that many people go [to Disneyland] even in mid-September)*
because something happened (D: *you said it was about the same [as it was for me in July and August]the last time you went in mid-September)*
I want to know
I want you to say something because of this

It is easy to see how the examples (78) to (80) fit into the explication, as well as the examples whose contexts I constructed, so I will not write them out.

6.2.2.4 Applying the English Equivalent of *aa4* and the NSM Explication to the Examples of *aa4* in the Literature

The first example I cited of *aa4* from the literature was from Matthews and Yip (1994):

(72') 你下個禮拜放假呀?
Lei5 haa6 go3 lai5baai3 fong3gaa3 aa4?
2s next CL week take-leave AA
"You're going on ↗leave next week?"

Inserted into the explication it looks like this, guessing as to what D is:

I think maybe it's like this (P: *you're going on leave next week*)
because something happened (D: *you said that you're going on leave next week*)
I want to know
I want you to say something because of this

The next two examples were both from Yip and Matthews:

(73') 咁淺嘅道理你都唔明呀？
Gam3 cin2 ge3 dou6lei5 dou1 m4-ming4 aa4?
so shallow PRT principle even NEG-understand AA
"You can't even understand such a simple↗ principle?"

For this example, D is not "you said P." I show it instead as "you said something," in which the antecedent of "something" is some piece of evidence that the speaker thinks implies P:

I think maybe it's like this (P: *you can't even understand such a simple principle*)
because something happened (D: *you said something*)
I want to know
I want you to say something because of this

The next example was (74):

(74') 佢到而家都唔肯原諒你呀？
Keoi5 dou3 ji4gaa1 dou1 m4-hang2 jyun4loeng4 lei5 aa4?
3s up to now even NEG-willing forgive 2s AA
"He's still unwilling to forgive you even↗now?"

In this example, D could be "you said P" or, as in (73'), "you said something." Inserting it into the explication is straightforward.

6.2.3 Summary and Analysis

The evidence from the mimic translations, and from the translations of the minimal-pair sentences, indicates that the question particles *me1* and *aa4* have

English floating-tone equivalents in the form of rising pitch contours. The data indicates that the *me1*-equivalent pitch contour rises higher than does the *aa4*-equivalent contour. An alternative for the two question tones of this study is to analyze them simply as high tones rather than as pitch contours, with the *me1*--equivalent tone being higher than the *aa4*-equivalent tone. This is how S. Law (1990) analyzed intonation questions in Cantonese. She said that the pitch of sentences rose up to the level of the high tone used at the end of intonation questions. Whether they are specifically-shaped contours or high-level end points, the phonological end result would be very similar, deriving from a process of phonological assimilation.

The pronunciation of *me1*, and/or the associated facial gestures, may be affected by the speaker's belief about how probable it is that P is the case, resulting in a range of meanings on a continuum from extreme doubt to extreme surprise. Further research will be required to confirm whether variations in the meanings of *me1* are associated with variations in suprasegmental features and/or facial gestures. If so, it would be interesting to see if these have similar or different forms between English and Cantonese. This study has found evidence of at least two forms of rising declaratives in English with distinct meanings. The present research therefore has something significant to contribute to the study of the forms and meanings of rising declaratives. The most thorough and detailed study of the meaning of rising declaratives, as far as I know, is Gunlogson's (2003), which will be discussed in some detail below.

I have argued that *me1* and *aa4* are not interrogative forming particles. I have maintained that they are question particles under the assumption that they always form polar questions. But what is a question? Bartels (1999) defined "questions as utterances that convey perceived relative lack of information—simply put, speaker uncertainty—regarding a relevant aspect of propositional content" (p. 9). Whenever

me1 or *aa4* are used sarcastically or rhetorically, the speaker does not consider herself to lack information or to be uncertain about the propositional content. In her mind she is certain the proposition is false. We can still use Bartels's definition, however, because the use of *me1* and *aa4* always "convey a perceived lack of information," even when there is not an *actual* lack of information.

If our definition of a question also includes a request for a reply that is related to the content of the proposition, then *me1* and *aa4* always form questions. We can more specifically say that *me1* and *aa4* form "polar questions" in the "functional sense of soliciting a yes/no response from a knowledgeable addressee" (Gunlogson, 2003, p. 68), which is precisely the intended function of the last lines of both particles' explications: "I want you to say something because of this," where the prime THIS refers to the immediately preceding line "I want to know," and the null complement of the prime KNOW refers to the status of P, i.e., is it or is it not the case. The line "I want to know" is what make sentences using *me1*, *aa4*, and their English equivalents polar questions in the sense proposed by Goddard (2003) for yes/no questions: "if it's like this, I want you to say it's like this; if it's not like this, I want you to say it's not like this" (p. 4).

Eliciting a response as to whether P is or isn't the case makes these sentences polar question, but at the same time they are something more, because in the last line of their explications they request the listener to "say something because of this (i.e., because of my wanting to know whether or not P is the case)." In many contexts it is naturally understood that the speaker is asking for much more of a response than simply "yes, P is the case" or "no, P is not the case." Consider (65), for example, where the jealous girlfriend asked her boyfriend if he knew the attractive girl who just waved at him: *Lei5 sik1 keoi5 me1* ("You know her?!"). In a context such as this the speaker is undoubtedly requesting the listener to say something more than only

"yes, I do" or "no, I don't."

I will now discuss the sarcastic and rhetorical uses of these two question particles, because such uses have been talked about in the literature. At the end of section 6.2.1.1, I said that *me1* was polysemous and wrote a tentative explication for *me1*$_2$. It appears at first glance that the explications I have proposed for *me1* or *aa4* cannot account for them being used sarcastically or rhetorically, and that perhaps one or more additional explications is needed to define sarcastic/rhetorical uses of these two SFPs. I propose that this is not necessary, because conversational participants can pick up these meanings pragmatically.

Consider a context that can use either particle sarcastically. Suppose a couple have dinner with a friend and his new girlfriend. When the dinner is finished and the couple has separated from their friends, the following dialogue occurs:

(84) woman: 嘩，佢女朋友咁矮嘅。
Waa4, keoi5 leoi5pang4jau5 gam3 ai2 ge3.
PRT 3s girlfriend so short PRT
"Wow, his girlfriend's so short."

man: 你好高咩/呀？
Lei5 hou2 gou1 me1/aa4?
2s very tall ME/AA
"And you're ノ/ノ tall?/?!"

In (84) the man is no doubt certain that the proposition "you're tall" is false. However, we can think of it as conveying a "perceived relative lack of information," and it is still a request—albeit an insincere one—that the listener "say something because of [my *perceived* desire to know if P is the case]." This sarcastic use of *me1* and *aa4* is unlike any of the examples seen thus far. As used in (84) it means the following, where *me1* includes the middle line in square brackets, but *aa4* does not:

I think maybe it's like this (P: *you're tall*)
because something happened (D: *you said his girlfriend's so short*)
[before this happened, I thought it wasn't like this (P)]
I want to know
I want you to say something because of this

The man's utterance implies the understanding of a common-knowledge belief about the unspoken rules of criticism, namely that person A should not say person B is X unless person A is obviously not X. In this case: only tall people are allowed to say that other people are short. Of course this does not imply that the man thinks it's proper for tall people to say this; he may or may not. The D of this context is obviously the woman's utterance, and both the man and the woman understand that her utterance does not influence the man's stance about the woman's height, i.e., he does not think that maybe the woman is tall as a result of her saying that the girlfriend was short. He is therefore not serious about wanting to know if P is the case. The sarcastic meaning is therefore understood pragmatically from the context, and does not need to come from the meaning of the question particle.

The fact that *me1* and *aa4* are "commonly used in rhetorical questions" (Matthews and Yip, 1994, p. 311) appears to pose a problem if we adopt Gunlogson's (2003) definition of a polar question (i.e., the solicitation of a yes/no response from a knowledgeable addressee), because rhetorical questions don't solicit a verbal response. We can get around this if we include the solicitations of responses that listeners are expected to provide to themselves, which is the function of a rhetorical question. Rhetorical polar questions are used to get the listener to think about, or say to one's self, a yes/no response to the question, rather than to say it aloud. (It could be argued that sarcastic questions such as (85) are the same—the speaker expects the

listener to respond in his/her own mind). Consider these examples from Matthews and Yip (1994, p. 311, translations mine):

(85) 重使你講咩？
Zung6 sai2 lei5 gong2 me1?
still need 2s say ME
"I need you to ノ<u>tell me</u>."

(86) 我使佢理我呀？
Ngo5 sai2 keoi5 lei5 ngo5 aa4?
1s need 3s care 1s AA
"I need him to ノ<u>care about me</u>."

Even without knowing the details of the contexts for (85) and (86), and therefore not knowing what D is, it appears obvious that the speaker is not asking for a verbal response to the question. It is rhetorical; the speaker wants the listener to answer it in his or her own mind, and in both cases the speaker wants the listener to answer it in the negative. Whether or not a question is rhetorical is determined pragmatically from the context, and so is the understanding that the response should be negative.

Not all linguists agree with my claim here that *me1*- and *aa4*-equivalent intonation do not change clause type. Allan (2006) said that word order is "insufficient to distinguish [the] *declarative* [John's gone to New York.] from [the] *interrogative* [John's gone to New York?]" (p. 7, emphasis in italics mine). He said their spoken forms are clearly distinguished by their differing intonation, and concluded that they "are uncontroversially formally distinct clause-types" (ibid). I do not adopt this so-called "uncontroversial" view, but rather accept the view of Gunlogson (2003), who said both such clauses are declaratives that differ only in intonational contour. She said the following three sentences contain two minimal

pairs:

(87) a. Is it raining?
b. It's raining?
c. It's raining. (Gunlogson, 2003, p. 8)

Gunlogson (2003) considered all three sentences in (87a-c) to have the same propositional content. (87a) and (87b) are minimal pairs because they contrast "only in syntactic form," and (87b) and (87c) are "identical except for intonational contour" (p. 8).[1] This agrees with my assumption that (87a) and (87b) have syntactically distinct clause types, while (87b) and (87c) have the same clause type.

Using minimal pairs such as those in (87), Gunlogson constructed a large number of contexts to show how rising declaratives pattern in relation to interrogatives and falling declaratives. She developed the following two generalizations to explain the linguistic facts:

(88) Declaratives [rising or falling] express a bias that is absent with the use of interrogatives; they cannot be used as neutral questions.

(89) Rising declaratives, like interrogatives, fail to commit the Speaker to their content.

(Gunlogson, 2003, p. 99)

[1] The findings of this study indicate that this is a simplification of the actual facts. I agree with Gunlogson's (2003) argument that (87a) and (87b) are syntactically distinct clause types, one being an interrogative and the other a declarative, respectively. However, this is not their only difference; based on the arguments of this study, the two forms of rising tones that have been discussed in this chapter occur in rising declaratives, not in interrogatives. Therefore I do not consider the rising tone of (87a) to be the same as the rising tone of (87b). They therefore differ in intonation as well as in their clause type, and are therefore not minimal pairs.

Related to (88), Gunlogson (2003) said that rising declaratives "cannot readily be used as questions 'out of the blue,' with no particular context, as interrogatives can be" (p. 54). Her observation is clearly captured in my explication for *me1*, *aa4*, and their English equivalents, which say "I think maybe it is like this because something happened." Gunlogson (pp. 16-18, 54-55) gave a number of examples of out-of-the-blue contexts in which nothing had happened (i.e., there was no D) to cause the speaker to think that maybe P was the case. She demonstrated that rising and falling declaratives are not compatible with such contexts. Here is one example she gave:

(90) [initiating a phone conversation]
- a. Is Laura there?
- b. ??Laura's there?
- c. ??Laura's there. (Gunlogson, 2003, p. 55)

She contrasted those contexts with others that included a discourse element D, and in such cases, as expected, rising declaratives are acceptable. Here is one of her examples:

(91) A: Maria's husband was at the party.
B's reply:
- a. Is Maria married?
- b. Maria's married?
- c. ??Maria's married.

The rising declarative in (91b) translates very well as a *me1*- or *aa4*-suffixed question, as would be expected. It is easy to see how the meaning of either *me1* or *aa4*-equivalent intonation fits here by inserting D and P into the explications of (67)

and (76), respectively: “I think that maybe it’s like this (P: *Maria’s married*) because something happened (D: *you said Maria’s husband was at the party*). The sentence in (91b) represents two separate floating tones with different meanings, so there should actually be four sentences shown in (91) rather than three, and this is true for all of Gunlogson’s contexts that can acceptably use rising declaratives. The English equivalent of *me1* in (91b) would only be used in this context if the speaker originally thought: “Maria’s not married,” otherwise the tone used in (91b) is the English equivalent of *aa4*. To account for there being two different rising declaratives with distinct meanings, we could add this alongside Gunlogson’s generalizations in (88) and (89):

(92) The meaning of high-rising, but not mid-rising, declaratives entails a prior belief in the negative form of their content.

Some of the Gunlogson’s sentences do not translate well into Cantonese because she tested the insertion of evidential adverbs and other grammatical elements that do not translate smoothly into Cantonese, but as nearly as I can tell the rising declaratives of each of her contexts pattern with *me1*-and *aa4*-suffixed sentences in Cantonese translations of those contexts. Only one of her examples, according to my judgment,[1] showed a contrast between *me1* and *aa4*. She recognized that rising declaratives are:

> compatible with a variety of attitudes, intentions, and discourse effects. [Some] questions seem to fit the paradigm of requesting a yes/no response from the Addressee… But in others, for example the expression of doubt exemplified in [(93)], the rising declarative question seems to be used in a

[1] It would have been impractical for me to ask a native-Cantonese speaker to translate and test every one of Gunlogson’s (2003) large number of minimal pairs, so I used my own judgment for this task.

> more expressive way to register the Speaker's reaction, with the response of the Addressee being a secondary consideration (Gunlogson, 2003, p. 68).

This is the example she referred to:

(93) [A & B are looking at a co-worker's much-dented car]
A: His driving has gotten a lot better.
B's response:
a. Has it? I don't see much evidence of that.
b. It has? I don't see much evidence of that.
c. It has. ??I don't see much evidence of that.
(Gunlogson, 2003, p. 42)

This demonstrates a contrast between *me1*-and *aa4*-equivalent intonation, and this contrast is made even more clear if we change the follow up sentence to "He ran into my car this morning."

(93')	a.	Has it?	He ran into my car this morning.
	b_1.	It has? (*me1*)	He ran into my car this morning.
	b_2.	It has? (*aa4*)	?? He ran into my car this morning.
	c.	It has.	?? He ran into my car this morning.

The English equivalent of *me1* (93b_1'), but not of *aa4* (93b_2'), is acceptable in this context. It must be noted that I am not allowing for a sarcastic use of the *aa4*-equivalent tone in (93b_2'). In contrast, the *me1*-equivalent intonation expressing doubt clearly patterns with the interrogative in (93a'). Gunlogson explained that the contrast between (93b) and (93c) is non-commitment vs. commitment to the content uttered, respectively. Her generalization in (89) can account for the acceptability of

me1-equivalent intonation, but not the unacceptability of *aa4*-equivalent intonation. This generalization is therefore too broad.

Adding (92) to (89) can account for there being two rising declaratives with different distributions. The follow up sentence in (93') clearly indicates a prior stance that P is not the case, and since *aa4* and its English equivalent do not entail this meaning, they are not acceptable in this context.

Gunlogson (2003) defined the intonation of a rising declarative as "non-falling from the nuclear pitch accent to the terminus and ending at a point higher than the level of the nuclear accent" (p. 10). The problem is that this accurately describes both *me1*- and *aa4*-equivalent intonation, as well as the intonation of rising interrogatives, but does not distinguish between the three. The findings of this study do notconflict with Gunlogson's conclusions, but they suggest that there could be a more detailed, refined account of the linguistic facts than what Gunlogson provided. There should be at least the following number of contrasts:

(87') a. Is it raining? (rising interrogative)[1]
b_1. It's raining? (*me1*-equivalent tone)
b_2. It's raining? (*aa4*-equivalent tone)
c. It's raining.

Gunlogson's (2003) generalities do not account for the differences in meaning between (87b_1') and (87b_2'). She also didn't show any contexts in which a rising declarative patterns separately from both an interrogative *and* a non-rising declarative. I propose that the rising interrogative of (93) is actually unacceptable if it

[1] There are also non-rising interrogatives that pattern differently from rising interrogatives, but Gunlogson (2003) purposely left those out of her minimal-pair contrasts.

is neutrally intoned. This means that *me1*-equivalent intonation patterns with a rising interrogative that includes additional connotative meaning expressing doubt. To further illustrate this, consider the following context where neither a neutrally intoned rising interrogative nor a non-rising declarative is acceptable:

(94) [B was outside one minute ago and the sky was blue]
A: It's raining.
B's response:
a. ??係唔係落緊雨啊？
??Hai6-m4-hai6 lok6-gan2 jyu5 aa3?
be-NEG-be fall-PROG rain SFP
??"Is it raining?"

b_1. 落緊雨咩？(surprise, doubt)
Lok6-gan2 jyu5 me1?
fall-PROG rain ME
"It's ノraining?!"

b_2. ??落緊雨呀？
??Lok6-gan2 jyu5 aa4?
fall-PROG rain AA
??"It's ノraining?"

c. ??落緊雨啊。
??Lok6-gan2 jyu5 aa3.
fall-PROG rain SFP
?? "It's raining."

In the English translations, there are two rising declaratives. The *me1* equivalent one in ($94b_1$') is the only sentence acceptable in this context. The explication of *me1* can account for this because it includes the proposition: "before this happened (i.e., before you said, "It's raining"), I thought it was not raining." This is because just one minute prior, the speaker had been outside under a blue sky.

The different forms of various rising declaratives are uttered naturally by

speakers when they have a given context and intended meaning in mind. However, it is not so easy to consciously use a particular form without having the context clearly in mind. This can be illustrated by comparing the following three requests, which are progressively more difficulty: 1) “Use ‘hungry’ as opposed to ‘thirsty’ in a sentence”; 2) “Use *aa4*-equivalent intonation in a sentence as opposed to *me1*-equivalent intonation; 3) “Use *me1*-equivalent intonation in a sentence to express ‘surprise’ as opposed to ‘doubt’.”

The difference in 3) may include the use of suprasegmental features other than pitch, and it may include the use of differing facial gestures. This means that the distinctions between the various rising interrogatives are harder to tease apart than were those between *lo1*- and *aa1maa3*-equivalent intonation in the previous section. The distinctions may be finer, but they are no less real.

7. The Syntax of the SFPs and their English Equivalents

It is generally agreed that SFPs do not all occupy the same syntactic position since more than one of them can appear in the same sentence. Kwok (1984) observed that the "particles are found to combine in regular ways" (p. 9), giving syntacticians a means by which to test the co-occurability of various SFPs, as well as their hierarchal positions in relation to one another. A relatively recent phase of SFP-related research has focused on discovering their syntactic positions within the framework of generative grammar.

Adopting the assumptions of generative grammar resolves any debate regarding the use of the term "utterance particle" verses "sentence particle" because the latter one is taken for granted. SFPs either head CP (S. Law, 1990; Tang, 1998, 2002), or head various types of phrases that lie within a split CP (A. Law, 2002, 2004; Li 2006; Sybesma and Li, 2007) based on Rizzi's (1997) split-CP hypothesis. Either way, SFPs are unanimously considered to have a syntactic position somewhere inside the matrix CP. In generative grammar a sentence is a CP by definition (Chomsky, 1995), so SFPs are positioned somewhere within the uppermost projections of a sentence. I therefore assume that SFPs are bound morphemes that cannot attach to anything structurally smaller (or larger) than a sentence.

Based on previous observations about SFPs, Tang (1998) divided them into two groups according to their syntactic positions in relation to each other: "inner particles" and "outer particles" (p. 41). The outer SFPs occur after inner SFPs and are therefore analyzed as being higher up in the syntactic structure (Tang, 2002). The syntactic

divisions have been done in various ways. S. Law (1990), for example, placed inner SFPs in C^0 (i.e., the head of CP) of the matrix clause, and outer SFPs in SPEC of CP (i.e., the specifier position of CP). She argued that all [+Q] particles, which include *me1* and *aa4* according to her, are outer SFPs that are base generated in SPEC of CP. She assumed this syntactic position because these SFPs cannot co-occur in an A-not-A or *wh*- interrogative sentence, arguing that they block the formation of an interrogative clause, which requires SPEC of CP to be empty. She gave the following examples:

(95) *偉明去唔去食飯咩？
*Waiming heoi3-m4-heoi3 sik6 faan6 me1?
William go-NEG-go eat rice ME
"Is William going out to eat with us?"

(96) *邊個買咗本書呀?
*Bin1-go3 maai5-zo2 bun2 syu1 aa4?
Which-CL buy-PERF CL book AA
"Who bought a book?" (S. Law, 1990, p. 27)

Based on C.-T. J. Huang's (1982/1998) argument that Chinese *wh*-elements move covertly to SPEC of CP at the logical form (LF) level of the sentence, S. Law (1990) proposed that the ungrammaticality of (95) and (96) is due to the A-not-A element of (95) and the question word of (96) being unable to move into SPEC of CP in LF. She concluded that this must be because this syntactic slot is already filled by *me1* and *aa4*, respectively, and took this as evidence that these particles are base generated in SPEC of CP.

Sentences (95) and (96) do not necessarily demonstrate that two elements are competing for the same syntactic position. The unacceptably could be attributed to a semantic clash. It is possible that *me1* and *aa4* are not compatible with an

interrogative clause because an interrogative clause is not appropriate when the mind of the speaker holds the presuppositions that are inherent in the meanings of these two particles. Kwok (1984) said that *me1*and *aa4* questions are not semantically neutral; they are like Cantonese intonation questions, which imply that the speaker holds a particular belief about the proposition. Gunlogson (2003) showed that the situation is similar in English; questions formed from rising-tone declaratives have presuppositions that are not allowed in the same contexts as interrogative questions (details of Gunlogson's arguments were discussed in § 6.2.3).

S. Law (1990) obviously used [+Q] to refer to the syntactic notion of [+Interrogative] plus the semantic notion of [+Question]. I propose that *me1* and *aa4* do not have the feature [+Interrogative], but are instead semantically and syntactically like rising declaratives in English. They form a type of question that is semantically incompatible with interrogatives.

Tang (1998) placed outer SFPs in C^0, and argued that inner SFPs are overt realizations of T^0 (i.e., the head of the tense phrase: TP), having either the feature tense [T] (*laa3, lei4*) or focus [Foc] (*zaa3*). A. Law (2004), Li (2006) and Sybesma and Li (2007) all applied Rizzi's (1997) split-CP hypothesis to the syntactic mapping of SFPs. Rizzi proposed an expanded CP domain, with Force distinguishing clause type (e.g., declarative vs. interrogative) at the highest level, Topic and Focus in the middle, and Finiteness at the bottom, which marks the clause as finite or non-finite. Rizzi proposed the following hierarchy of functional phrases:

(97) ForceP > TopP* > FocP > TopP* > FinP (Rizzi, 1997, p. 297)

A. Law (2004) added an SFP_2 phrase to Rizzi's structure, proposing the following:

(98) ForceP > TopP > SFP_2P* > FocP > TopP > (A. Law, 2004, p. 60)

She argued that the SFPs *zaa3*, *tim1* and *laa3* are SFP_2s, the term she used for inner particles, and that they head the phrase she called SFP_2P, which is iterative as indicated by the asterisks. According to her this can account for all possible SFP clusters. She concluded that all of the discourse-related SFPs are clause-typers (CT) that have the feature [±Q]. She said the [+Q] particles are able to clause-type an interrogative, i.e., to change a declarative into an interrogative. According to her, the question particles *me1* and *aa4* are [+Q]. She said that the remaining discourse-related particles are all [-Q] CTs that are able to clause-type all types of clauses other than interrogatives—this includes the particles of obviousness *lo1* and *aa1maa3*. She argued that because SFPs have this [±Q] clause-typing feature, they head ForceP. A problem with her analysis is the fact both *lo1* and *aa1maa3* can attach to either a declarative or an imperative clause, and, even more problematic, *aa1maa3* can attach to rhetorical questions, which are interrogatives even if they are arguably not questions.[1] I therefore assume that the particles of obviousness *lo1* and *aa1maa3* are not CTs.

Huang, Li and Li (2009) argued that Mandarin SFPs are CTs. They supported their analysis with some example sentences that linked each of the SFPs *ma*, *ba*, and *ne* to a specific clause type. The problem with their conclusion is that each of those SFPs can attach to other types of clauses as well (e.g., Li and Thompson, 1981; Li, 2006). Huang, Li and Li (2009) said that "[w]hat remains unclear is why CT in Chinese never occurs with embedded clauses. Possibly, there are unidentified

[1]Dialogue (51) was translated by male-a into English as "Well how would I know?" I asked native-Cantonese speakers' judgments on attaching *aa1maa3* to *Ngo5 dim2 zi1 aa1maa3*? (1s how know AAMAA) "How was I supposed to know?" and it was considered acceptable given the right context.

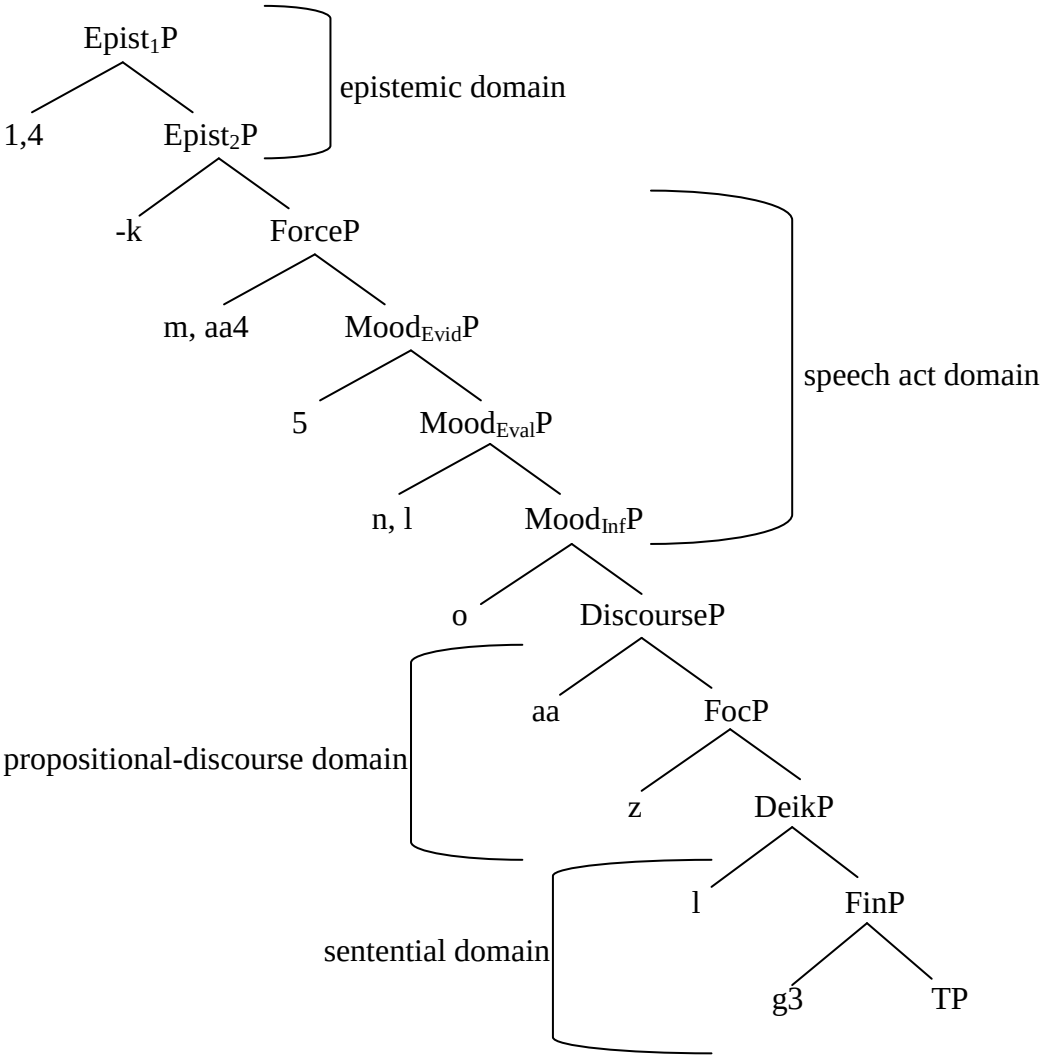
discourse functions that *ma*, *ba*, and *ne* perform that are associated only with matrix clauses" (p. 35).

Tang (2010) agreed with Huang, Li and Li's proposed answer as to why SFPs only appear in matrix clauses. He said that SFPs express modality, and therefore express utterance-meanings which "are related to the discourse context at the time of speech." This contrasts with clause types, which are "classified according to sentence internal meanings, and are determined by the grammatical properties of the sentence independent of the context" (p. 61, translation mine). He said that Chinese uses intonation rather than SFPs to type clauses, even in embedded clauses. According to him, CTs in Chinese are a set of complementizers that are in the form of intonation. This does not conflict with the conclusions of the current study if we assume that this class of intonational forms have no discourse related functions, and therefore comprise a different class from those forms of intonation that relate the sentence to the discourse, and therefore do not appear in embedded clauses.

Li (2006) and Sybesma and Li (2007) broke down all the SFPs into their phoneme and tone segments. They argued that each of these segments is a morpheme, and placed them within various phrases inside a split CP. SFPs were initially assumed to follow the same basic phonological rules as other lexical items in Cantonese, but a different perspective was proposed by Egerod (1984, cited in Bauer and Benedict 1997, p. 292), who said that the individual phonemes within SFPs contain semantic meaning. This idea was developed further by Fung (2000), who looked in detail at the semantics of three groups of SFPs that she divided up according to their onsets: *z-*, *l-*, and *g-*. She argued that each group had different core semantic features. Similarly, S. Law (1990) analyzed several SFPs as being derived from a combination of their segmental parts.

Li (2006) and Sybesma and Li (2007) expanded this approach to virtually all SFP segments, mapping each segment into one of a variety of functional phrases that are all located within CP:

(99)



(Sybesma and Li, 2007, p. 1779)

According to this analysis, the SFPs are considered to be clusters of minimal meaningful units (MMUs) consisting of one or more of four possible units: onset, rime, coda, and tone. Assuming a split CP à la Rizzi (1997), Sybesma and Li (2007) argued that each of their proposed MMUs heads a functional projection in the CP

domain, and proposed the hierarchal order shown in (99).

This is an intriguing proposal, but it raises some questions. For example, not all the units of all the SFPs are included. Even more problematic for the present study is the fact that their structure cannot account for the units of *aa1maa3*, which they excluded from their discussion. Its units are included in their structure, but their combinatorial order is not accounted for: *aa* + 1 + *m* + *aa* + 3. Adding *aa1maa3* to their structure would require them to place all or some of its units into a single projection. This would make their description less elegant because other than two non-dissectible clusters (i.e., *aa4* and *g3*), their structure is made up of single-unit morphemes.

S. Law (1990) observed that *aa4*-attachment does not always result in question formation, which means there must be two *aa4* particles: $aa4_1$ (a question-forming particle) and $aa4_2$ (a non-question-forming particle). Sybesma and Li (2007) had three options to account for the two *aa4* particles: either assume two *aa* particles, two tone *4* particles, or an additional, non-dissectible *aa4* particle. Without making any strong commitment one way or the other, they selected option 3 for their syntactic mapping, placing *aa4* (along with the onset *m*) into ForceP based on the idea that *me1* and *aa4* are clause-typing particles having interrogative force.

It should be clear to the reader by now that there is no consensus regarding the syntactic positions of the four SFPs of this study. Some have said that the SFPs are comprised of two or more units occupying one or more syntactic slots (S. Law, 1990; Li, 2006; Sybesma and Li, 2007), while others have assumed them to be one- or two-syllable morphemes that include their lexical tone(s). No two authors completely agree on which functional phrases each SFP heads. Nevertheless, for the purposes of this study I must state what my working assumptions are.

Although it appears there are some strong correlations between the SFPs'

various segments and meanings, this may be due to various SFPs having evolved from the same word, rather than from their being comprised of clusters of MMUs. If we assume that each segment has a unique and consistent function and/or meaning, then for many of them it is difficult to see what this might be.

If we consider tone *1*, for example, I don't know what consistent meaning could be seen to exist between the SFPs *me1* and *lo1*, which are defined in sections 6.1.1.1 and 6.2.1.1, respectively, or in other semantically distant particles such as *ze1* or *laa1*, which also include tone *1*. Sybesma and Li (2007) put tone *1* at the head of EpistP, saying that it indicates "forward looking" or "hearer orientation" (p. 1773). Based on the definition I propose for *lo1* (§6.1.1.1), it is hearer oriented but not forward looking. Based on the definition I give for *me1* (§6.2.1.1), it is forward looking in the sense that it is a request for a reply, but the epistemic knowledge involved is speaker oriented rather than hearer oriented. This conflicts with Sybesma and Li's conclusions about the proposed meaning of tone *1*.

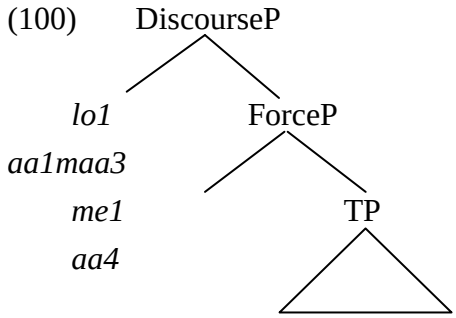
Another example is *aa4*, which Sybesma and Li put in ForceP, saying that it was "for yes/no-questions" (p. 1778). Based on the definition I give for *aa4* (§6.2.2.1), it is speaker oriented and forward looking to the same extent that *me1* is.

Perhaps Sybesma and Li's (2007) theory could be adjusted to more consistently account for the meanings of SFPs, but as their theory now stands, it does not appear to be able to explain how each segment consistently contributes a particular meaning/function to each of the various SFPs of which it is a part. Their theory is also unable to account for *aa1maa3* or any other two-syllable SFPs, and it makes it difficult to account for polysemous SFPs. For these reasons I will not adopt their assumptions here, but will adopt the assumptions found in most of the literature, which is that SFPs are one- or two-syllable-sized morphemes which include a lexical tone.

While Sybesma and Li's (2007) analysis is problematic, it has two aspects that improved on A. Law's (2004) proposals. Other than the question particles, Sybesma and Li did not treat Chinese SFPs as CTs. Another improvement was their inclusion of an EpistP above ForceP. This agrees with Tang (2010), who argued that SFPs appear in discourse-related functional projections that are unique to the matrix clause, appearing above the phrase where CTs are located. All of this is in line with Haegeman's (2009) observation that West Flemish discourse markers can appear in more than one type of clause, and therefore "are not in Force but they select Force" (p. 14). Given the fact that SFPs can attach to more than one clause type, it is apparent that they do not function as CTs. And because SFPs relate the clause (including its type) to the discourse, they should be located above ForceP.

There is evidence for Rizzi's split-CP hypothesis based on many languages, so I will adopt it for SFPs, as did A. Law (2004), Li (2006), and Sybesma and Li (2007). Based on the definitions I give to SFPs (see § 4.2), they are considered to be discourse morphemes that link the sentence to the discourse. Their syntactic position is therefore assumed to be higher than ForceP. I propose the following structure:

(100)



The question particles *me1* and *aa4* are considered to add discourse meaning to a declarative without changing clause type, much the same as rising declaratives in English. Because they are not considered to change the clause type to interrogative (i.e., are not considered to have the syntactic feature [+Interrogative]), I do not put

them in ForceP. I instead put them in DiscourseP where the particles of obviousness and the large majority of SFPs are assumed to be located, because they link the sentence to the discourse in ways made clear by the definitions I give them in chapter 6.

Haegeman (2009) pointed out that "There have been a number of proposals in the literature to label the high projections [above ForceP] that are on the interface between the clause and the discourse," and she cited some proposed names, such as "DiscourseP," "PragP," and "Attitude." She concluded that "[a]t this stage the nature of the projections that dominate ForceP is not clear, and it must be subject to future research." I need to settle on a name, however, and will use the term DiscourseP for no particular reason.

The only entirely new idea in (100) is the placement of *me1* and *aa4* at the head of the same functional phrase as other SFP's. As far as I know, all other authors to date have assumed that these question particles have the feature [+Interrogative], and have therefore either placed them in SPEC of CP or in the clause-typing ForceP.

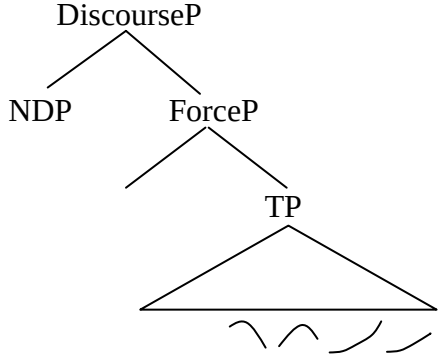
Let's now consider how this syntactic analysis can be applied to English discourse intonation. The forms of intonation discovered in this study may not be the exact semantic equivalents of their SFP counterparts, but the fact that they pattern similarly according to context is a good form of evidence to indicate that they share the same discourse functions, as well as similar (if not the same) meanings. They express speaker beliefs and epistemic knowledge, and they link the sentence to the discourse in the ways that were spelled out in their proposed explications.

Cinque and Rizzi (2010) said that "[t]he cartographic studies [which map out the syntax of sentences] can be seen as an attempt to 'syntacticize' as much as possible the interpretive domains" (p. 63). In this spirit, I will take the structure that I propose for SFPs and apply it to English discourse intonation in an attempt to

syntacticize this interpretable class of suprasegmental morphemes.

Based on the assumption that the floating-tone morphemes of this study have discourse functions and meanings that are virtually the same as those of SFPs, I take it as a working hypothesis that they occupy the same syntactic slot. I propose that they form a class of null discourse particles (NDPs), which are bound morphemes base generated in DiscourseP. The *me1*- and *aa4*-equivalent rising tones are not considered to have the feature [+Interrogative], based on the reasons explained above for *me1* and *aa4*, and on the evidence of (16) to (18) in section 3.4. These question NDPs are therefore sit—along with the *lo1*- and *aa1maa3*-equivalent NDPs—in DiscourseP rather than in ForceP. I propose the following structure:

(101)



The contour lines under TP represent the NDPs being realized phonologically as floating tones across some of the segmental phonemes in TP. The NDPs do not have segmental forms and therefore cannot be phonologically realized in their base generated position at the head of DiscourseP. Therefore, they are realized as suprasegmental tones that float over one or more syllables in TP.

If we assume a consistently right-branching structure for both languages, then, in Cantonese, the phrases under DiscourseP move into SPEC of DiscourseP to get the sentence-final position for SFPs. In English the floating tones occur near the end of the phrase, but this is assumed to be spelled out in phonological form (PF) only,

without any syntactic movement. This assumption is based on English phrases being generally head-initial, as well as for reasons of economy.

Proposing a null particle in CP that is realized phonologically over one or more syllables in TP is not without precedent. It is comparable to Tang's (2006) argument that the rising tone that forms intonation questions in Cantonese is an SFP that occupies the same syntactic slot as the other Cantonese SFPs. However, he did not propose the details of the question tone's syntactic or phonological properties. Another related example is Svenonius and Kennedy's (2006) proposal of a null degree operator in the CP of certain Northern Norwegian degree questions. Their analysis was based on the contrast between the following two sentences in Icelandic (102a) and Northern Norwegian (102b):

(102) a. Hvað ertu gammall?
what are.you old
"How old are you?"

b. Er du gammel?
are you old
"Are you old?"
"How old are you?"

Svenonius and Kennedy (2006) argued that the Icelandic degree operator *Hvað* ("what"), which questions the degree of the adjective "old," has a counterpart that exists at the front of the Northern Norwegian sentence in (102b). The difference, they claimed, is that this operator is phonologically null in Northern Norwegian. They said this operator originates inside the AdjP and moves into CP, just as its counterpart *Hvað* is assumed to do in Icelandic. The sentence in (102b) is interpreted in one of two ways depending on the intonation. It could be a straight forward polar question

(i.e., “Are you old”), or it could be a degree question (i.e., “How old are you?”). The intonational difference is that “Yes/no questions tend to have their prosodic peak on the most deeply embedded part of the sentence, which may be a predicative adjective, for example *cold* in *Are you cold?* Northern Norwegian degree questions never have an intonational peak on the adjective, but typically have the stress further to the left” (p. 136).

What Svenonius and Kennedy (2006) describe is comparable to what I am describing here—a phonologically null morpheme in CP overtly realized as a tone in TP, the only difference being that the morpheme they describe is assumed to have moved into CP rather than being base generated there. Instead of merely describing the intonation in terms of the location of the intonational peak, it would be interesting to analyze these types of sentences in Northern Norwegian to see if these degree questions consistently use a specifically shaped pitch contour to represent the proposed null morpheme in CP. If so, it could be taken as evidence that the null degree operator is realized phonologically as a floating tone in the form of a specifically-shaped pitch contour. It is interesting to note that they said these sentences “*typically* have the stress further to the left” (p. 136, emphasis mine), which indicates that the tone’s location may not be consistent. If the pitch shape *is* consistent, on the other hand, this would be good evidence in favor of a specifically-shaped floating tone morpheme.

Carnie (2007) said something directly related to the two question-forming floating tones of this study. He differentiated between subject-auxiliary inversion interrogatives and intonation questions as follows:

> [A sentence] with subject/aux inversion is a request for information, [while an intonation question] is an expression of doubt and a request for confirmation. How such phonological licensing is encoded into the syntactic tree is very controversial. One solution is that, like *wh*-questions and yes/no questions, echo questions and intonational questions involve a special complementizer. We can indicate this as $C_{[+INT]}$. The [+INT] feature doesn't trigger any movements, but it instructs the phonology to put a rising intonation curve on the clause that follows the C (Carnie, 2007, p. 343).

Something along these lines can be adopted for the four NDPs of this study, showing them as $NDP_{[+INT]}$. [+INT] is a feature in PF and it is different for each NDP, specifying a specific pitch contour for each. The tones generally appear on the nucleus of the canonically-intoned version of the intonational phrase, but can change positions to interact with contrastive or emphatic intonational meanings. Since contrastive and emphatic intonation are themselves considered to be the phonological manifestations of NDPs, the implication is that more than one NDP can appear in a single sentence. This is not a problem, however, because the NDPs associated with contrastive and emphatic intonation would assumedly sit in FocP, below DiscourseP.

8. Summary and Conclusions

The four SFPs of this study were defined using NSM explications. Based on various ideas from the literature, I adopted the working hypothesis that each of the four SFPs has an equivalent in English that is a floating-tone lexical morpheme. Both members of each SFP/floating-tone pair of equivalents were hypothesized to have the same function and meaning, and to head the same functional phrase in CP.

The data provided empirical evidence to support the claim that each SFP translates consistently into English as a specifically-shaped pitch contour, regardless of the discourse context or the syntactic structure of the sentence to which the SFP is attached. (Another possibility is that the question particles are high tones that cause some segments of the final intonational phrase to rise to a specific height.)

Contrasting the meanings and acceptability of each SFP vs. its English counterpart in the same contexts (i.e., a Cantonese vs. an English version of the same context) demonstrated a high degree of similarity in the context-based distribution patterns for each member of an SFP/floating-tone pair. This was concluded to be a form of evidence indicating that the SFP and the pitch contour had a very similar (if not the same) function and meaning. This was also a form of evidence indicating that the pitch contour consistently represented a particular meaning and function, providing a strong argument in favor of them being floating-tone morphemes. Based on that it was argued that they are NDPs base generated at the head of DiscourseP in a split-CP.

The evidence of this study is comparable to, but more rigorous than, Liberman's (1979) less detailed examination of "the meaning of [a pitch contour in order] to demonstrate that there is some real linguistic entity here" (p. 96). He argued for it

being “a sort of *intonational word*, a unit of meaning” (p. 97, emphasis his). He went on to say:

> Like any such argument, ours is essentially an appeal to intuition. It is well known that the meaning of a more conventional sort of word, e.g., “game,” is difficult to state with theoretical precision, yet everyone will agree that there is a word “game,” and that it does mean something. This agreement is based on our ability to recognize this word as an element of any utterance in which it may occur, as an abstract feature which is common to these otherwise quite different utterances, and which contributes something towards their final interpretation.
>
> All we require… is that the reader be convinced that there exists an intonational unit, a “tune,” an abstract feature which is common to the otherwise rather different examples we have cited, and which contributes something to their communicative value.

Likewise, my two arguments are an appeal to intuition: first is my argument that the SFPs have the meanings I proposed for them in their NSM explications; and second is my argument that the pitch contours discovered in the native-bilinguals’ translations also have those meanings. The numerous descriptions I provided of their use in specific contexts, and especially the constructed minimal-pair contexts, were an attempt to allow native speakers of both Cantonese and English to test the strength of my arguments against their own intuition.

It is perhaps impossible to determine if the floating tones have the exact same meanings as do the SFPs. It would be very surprising if they did, but it is not too surprising that very close counterparts exist between English and Cantonese for these SFPs. Their meanings and functions are not culture specific. They express epistemic meanings that facilitate communication, and they function to link sentences to the discourse in ways that are perhaps common to all humans. The results of this study provide evidence to suggest that we can answer “yes” to Yau’s (1980) speculation

that perhaps there are “common connotative concepts that will be handled either by means of [SFPs] or by intonation pattern variations in all languages” (p. 51).

On an intuitive level, it is not surprising that the types of listener-oriented epistemic knowledge that the SFPs of this study express are something that all humans might use, because unlike the meanings expressed by the vast majority of morphemes and lexemes, they are notions that are independent of culture or world views. Culture and systems of belief would determine when, why and how one uses these morphemes, but probably not whether or not one uses them at all. Nevertheless, we cannot claim that the SFP/floating-tone pairs of this study are exact equivalents; we can only say that, at the very least, they are close enough approximations to pattern together in all of the contexts of this study (both real and constructed), which is still a surprising and interesting discovery. The result is the discovery and isolation of intonational forms in English that have never before been isolated and described to such a degree.

The results of this study are also a form of evidence in favor of arguing that these are floating-tone morphemes, which, if true, teaches us something very critical and important about English discourse intonation. If it turns out that such meanings are always expressed lexically—in the form of sentence-final particles, mood particles, floating tones, or some combination of the three—then the parameters involved when a child acquires the ability to express discourse-related meanings could be described strictly in terms of lexical meanings, phonological forms and syntactic locations; there would be no lexical vs. non-lexical distinction.

Under the assumption that a large number of floating-tone morphemes exist in languages such as English, any theory developed to describe the phrasal intonation of these languages must take these floating tones into account and try to distinguish them from the purely syntactic intonation used to delimit phrases.

9. Suggestions for Further Research

The most obvious suggestion for further research is to apply the methodology to additional SFPs. I have collected some English-to-Cantonese mimic translations of some SFPs in addition to those reported here, but more research must be done before any valid claims can be made as to what their meanings and their English equivalent forms are. For example, a preliminary examination indicates that *zaa3* has an English equivalent that is the adverb "only" plus focus intonation on the focused element. The SFP *ze1*, in contrast, also means "only," but includes additional evaluative information. This appears to be another instance of the meaning of one SFP (i.e, *zaa3*) being embedded in another (i.e., *ze1*), which is comparable to my argument in section 6.1.2.1 that the meaning of *lo1* is embedded inside the meaning of *aa1maa3*.

These two "only" particles are another pair of semantically related SFPs that would be good to compare. A complicating factor is that *ze1* is polysemous. It can be used in a sentence such as *Hou2 gwaai3 ze1* (very strange ZE) "That's really strange," which cannot be construed to include the meaning "only." The SFP *zaa3* cannot be used in this way. My impression after listening to several mimic translations of *ze1* is that it will be necessary to get a better understanding of the different meanings of *ze1* in order to isolate examples of each meaning so that their English-equivalent intonational forms can be identified.

I believe I may have discovered one of its meanings, which is a downplaying of the amount/degree of something. Referring to the example *Jat1 baak3 man1 ze1* (one hundred dollar ZE) "It's only a hundred ∿dollars," Fung (2000) said, "The particle *ze1* then tries to downplay the outcome and reassures the hearer that the amount is not too excessive"(p. 60). The pitch contour is a rise-fall-rise, which is represented

by the curved line preceding “dollars” in the example just given. “Dollars” is underlined to indicate that the pitch contour is realized over both syllables of the word; this is based on my intuition of what sounds most natural to me. Two examples of this floating tone from the native bilingual participants, female-a and male-a,are shown here in figures 87 and 88, respectively:

Figure 87: female-a

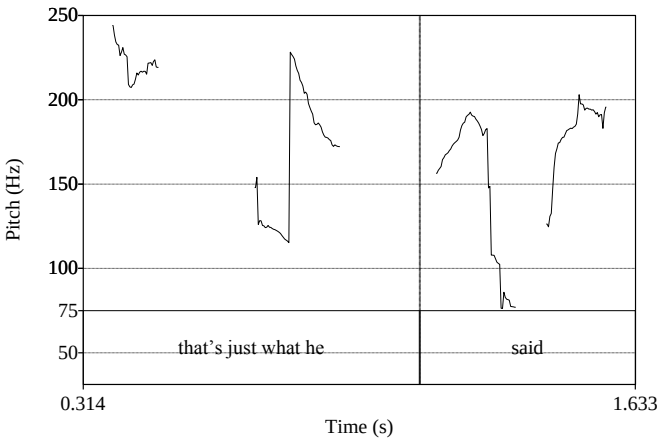
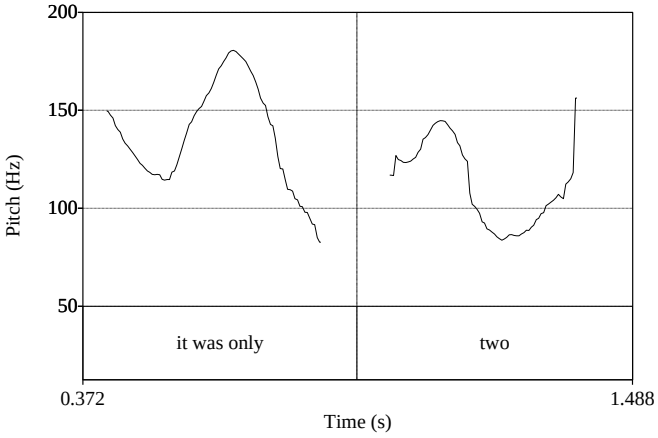


Figure 88: male-a



I am fairly confident that this is an English counterpart to one of the meanings of *ze1*. It is an intonational form that I recognize and use. Intuitively I feel it has the same meaning, or at least a sufficiently similar meaning, but further research is needed before I can make any strong claims about it.

A very interesting contrast between the particles *zaa3*/*ze1* and English’s “only” or Cantonese’s *zing6hai6* “only,” is that *zaa3*/*ze1* can be suffixed to a proposition such as “It’ll be fast” to get the meaning “It won’t take a long time.” It is not possible to get this meaning with the adverb “only” in either English or Cantonese, i.e., “It’ll only be fast” does not mean “It won’t take long.” This does not appear to be a difference in the pragmatics of English speakers vs. Cantonese speakers; if so, then the Cantonese adverb *zing6hai6* “only” should be able to produce the same meaning

as *zaa3*. This is a clear indication that not all SFPs have exact counterparts in English.

An initial look at some translations of other SFPs indicates that some show a consistent pattern, while others do not. This raises a number of questions. Keeping in mind that many SFPs translate into English as something in addition to an intonational form—as illustrated by examples (2') to (6') in section 2.3—why is it that some appear not to translate even partially as an identifiable form of intonation? There are three possible explanations: 1) I have not yet discovered an intonational form, but will do so after further, more careful examination; 2) these are polysemous particles whose various different meanings translate as different forms of intonation, making it unlikely that the same form would appear throughout a small sampling of a given SFP's translations; 3) some SFPs have no English equivalent forms—they express meanings that have no lexical counterpart in English.

Reason 1) can be overcome with further investigation. Reason 2) can be addressed by, first, examining a polysemous SFP in enough detail to discover all of its polysemous meanings, then second, learning how to distinguish the tokens of one meaning from the tokens of another meaning, and finally, collecting a set of mimic translations for each meaning separately. Reason 3) is more difficult to address. If Cantonese has some SFPs that express meanings that stem from culturally-specific communicative needs, which is not unlikely, then it will be possible to develop NSM explications for these SFPs, but it will *not* be possible to find English equivalent forms. If reason 3) exists as a complicating factor, then it is entirely possible that polysemous particles could have one or more meanings that have English equivalents as well as one or more meanings that do not.

Something else worth researching is whether or not there are suprasegmental features that are associated with each of the different meanings of a polysemous SFP

(or SFPs that have slight variations of meanings, such as *me1*'s expression of "surprise" vs. "doubt"). It would be interesting to know if the different meanings of a polysemous SFP, which has a single segmental form, pattern consistently with a particular suprasegmental form that is superimposed over the segments. Things such as pitch, lengthening, or even voice qualities could coincide with given meanings. Such research would require a more rigorous examination of the phonetic qualities of the SFPs and their English counterparts than was carried out here.

In order to further test the validity of the present study's conclusions, research could be carried out to verify that native-English speakers recognize the four floating tones discovered, verify that they can distinguish them from each other, and that they can distinguish them from other intonational meanings. Back translations could also be carried out to test whether native bilinguals consistently translate the *lo1*-equivalent tone, for example, as a *lo1*-suffixed sentence in Cantonese.

Bolinger (1983) made the strong claim that "[i]ntonation belongs more with gesture than with grammar" (p. 157). I propose that there may not be such a clear cut distinction between gesture and grammar. Gestures that are regularly associated with certain connotative meanings are perhaps used in a consistent way to distinguish forms of intonation that may otherwise have a very similar form. Under the assumption that the arguments of this study are correct (i.e., that emotion-related and connotative-related suprasegmentals belong to two separate systems, the former being a form of animal communication and the latter being part of the linguistic system) then a potential object of study is whether or not it is possible to separate gestures that are linked to one or the other systems.

Finally, the methods used in this study (perhaps modified) could be used to compare the forms of discourse-related meanings between any two languages one chooses to study. If a significant amount of this type of research were carried out on a

large number of languages, we would be in a better position to decide whether suprasegmentals ought to be classified along the lines of table 3.2.

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Appendices

Appendix 1. An Argument for the Compatibility of the Natural Semantic Metalanguage and Generative Syntax

Goddard and Wierzbicka (2002) didn't appear to think that Chomskyan UG was compatible with their theory. They said that Roger Bacon "believed that the fundamentals of grammar arise from fundamentals of human thought, which are shared by all people and by all languages. This is the time-honoured tradition of universal grammar, now largely displaced by Chomsky's structure-based conception of UG in which meaning plays no real part" (p. 41). I don't agree that "meaning plays no real part" in Chomskyan UG, and I argue that the NSM Program and Chomsky's Minimilist Program are not necessarily incompatible. I propose that it is not contradictory or problematic to apply both theories to a single study, and to a single set of data, as I have done here.

Wierzbicka correctly said that Chomsky refers to semantics to a much lesser degree than she does, but he has never denied the complexity, or the importance, of the semantic contents of words; and, agreeing with Wierzbicka, Chomsky said that "nature has provided us with an innate stock of concepts, and that the child's task is to discover their labels" (Chomsky, 1987, p. 23). Wierzbicka acknowledged Chomsky's claim that humans are born with semantic concepts, but instead of seeing it as common ground, concluded that Chomsky's motivation for saying this was "as an argument against lexical semantics." She concluded that Chomsky is against any pursuit of a theory of lexical semantics or of developing a systematic method for creating lexical definitions. Her conclusion appears to have come from the following quote she gave from Chomsky (1987, quoted in Wierzbicka, 1996, p. 250):

> Ordinary dictionary definitions do not come close to characterizing the meaning of words. The speed and precision of vocabulary acquisition leaves no real alternative to the conclusion that the child somehow has the concepts available prior to experience with language, and is basically learning labels for concepts that are already part of his or her conceptual apparatus. This is why dictionary definitions can be sufficient for their purpose though they are so imprecise: the rough approximation suffices, because the basic principles of word meaning (whatever they are) are known to the dictionary user, as they are to the language learner, independently of any instruction or experience.

Wierzbicka said "[w]hat is most striking in Chomsky's remarks is the absence of any cross-cultural perspective, and the complete disregard for the fact that words differ in meaning across language and culture boundaries" (p. 250). Another interpretation of Chomsky's quote could be that he was highlighting the idea that all normal humans are born with the same semantic concepts (the core of the NSM theory), and that even L2 learners are therefore able to acquire vocabulary in another language based on flawed and limited input. I think he meant that this is why dictionaries, in their flawed state, can work, rather than Wierzbicka's (1996) conclusion that he meant "there is no need to try to improve on existing dictionaries, however bad they may be, because one can always rely on one's innate conceptual apparatus" (pp. 250-251). In short, I believe Chomsky (1987) was saying that roughly approximate definitions can be sufficient because humans are born with "the basic principles of word meaning (whatever they are)" (p. 21). The NSM theory agrees that humans are so endowed, and it proposes what the basic principles of word meaning are: the formulation of word explications (i.e., definitions) using a combination of the 60+ semantic primitives that are part of the human endowment.

Chomsky (1987) went on to say that the point he made in the above quote "is dramatically illustrated in the case of the blind, or even the deaf-blind, who can

acquire knowledge of the visual vocabulary with remarkable precision though extremely limited evidence; the meanings of such words as *watch, gaze, glare, scrutinize,* etc." (p. 21). This is explained in NSM terms by its claim that SEE is an innate semantic prime, which would be the key component in explications of the words Chomsky listed.

Chomsky (1987) said that complex aspects of meaning "come to be known on the basis of a biological endowment… even [those] involving the sophisticated idea of human agency" (p. 21). NSM theory says virtually the same thing, arguing that THIS PERSON (or SOMEONE) DID SOMETHING are primitives that we are born with, and these primes are theorized to be linked directly to indigenous thought. Likewise, Chomsky said the semantics of a sentence is comprised of its elements in LF, which all "have a (language independent) interpretation" (Chomsky, 1995, p. 27). In other words, a sentence breaks down into semantic concepts that are language independent, and therefore linked to indigenous thought.

There is a difference between Chomsky's and Wierzbicka's thoughts regarding the semantic primes, but I think this difference is only a superficial one. Chomsky said something to indicate that he thought (at least some) of the NSM primes are themselves complex semantic concepts. For example, PERSON is a semantic prime according to the NSM theory, but Chomsky (1987) said that "the concept of person, one of the most primitive concepts available to a young child, is extremely complex, and has been the subject of subtle philosophical inquiry for many centuries" (p. 21). The NSM theory hypothesizes that we are endowed with the primitive meaning PERSON, the evidence for which is based on two things: 1) its indefinability; and 2) its universality. "The definition of the term 'semantic prime' hinges on indefinability. A semantic prime is a linguistic expression whose meaning cannot be paraphrased in any simpler terms. A secondary criterion (on the hypothesis of universality) is that a

semantic prime should have a lexical equivalent (or a set of equivalents) in all languages" (Goddard, 2004, p. 19).

No matter how strong the empirical evidence is that PERSON is indefinable and universal, it cannot prove that humans are born with this prime intact. It can only prove that all humans share this semantic concept; this concept may be an innate endowment that humans posses in its complete form at birth, or it may be a collection of semantic concepts in a single word that is acquired similarly in all languages very early on during the language acquisition process. Regardless, even if we conclude that PERSON is conceptually complex, the working definition of "semantic prime" remains intact without weakening the working hypothesis of the NSM theory. The semantic primes remain indefinable because there are no semantically simpler morphemes or lexemes for the semantic concepts that the primes are comprised of, whatever those semantic concepts may be. And the primes still remain universal across languages, which means they are still perfectly understandable cross linguistically.

Chomsky (2006) said that "Julius Moravcsik's 'aitiational theory of semantics' is a recent development of [ideas from] Aristotelian origins and *with rich implications for natural language semantics*" (p. 178, emphasis in italics mine). This is the strongest endorsement of a semantic theory I am aware of Chomsky giving, though he said it needs to be developed much further. NSM explications could easily be used to define words based on Moravcsik's (1989) semantic theory, a theory that does not appear to be in any serious conflict with the NSM theory according to my understanding of the two theories. Moravcsik appears to share many of Wierzbicka's (1996) ideas about word meaning, and many of Wierzbicka's ideas about defining words seem to be in agreement with Moravcsik's and Chomsky's.

Moravcsik (1989) said that knowledge of a word is based on a combination of four factors: 1) the material factor, which is based on the Kantian philosophical idea that people interpret reality as either abstract or spatio-temporal; 2) the structure factor, which takes something that has been selected as a particular type of abstract or spatio-temporal entity, and then "distinguishes it from other items in the same category… [providing] the qualitative distinguishing marks in terms of which the items covered by a given term can be distinguished from other elements in that category" (p. 274); 3) the agency factor, which refers to cause and effect relations; and 4) the function factor, which describes the perceived function roles of the item that a word refers to. These four factors are called the m-, s-, a-, and f-factors, respectively. Moravcsik said a "complete characterization of the meaning structure thus generated is made up of a relation R combining the four elements m, s, a, and f in the appropriate way. The general schema is therefore: R(m, s, a, f) where the four letters in the parenthesis are property variables, and in some cases a particular factor, a, or f, may be empty" (p. 275).

Moravcsik's s-factor, which distinguishes an item from others of the same category, can be compared to Wierzbicka's (1996) formula "X is a kind of Y." For example, she said that the explication for the word tiger could begin with "a kind of animal" (p. 367). Different types of knives with different structures and/or functions are all "a kind of knife," but are all different from each other.

Another comparison comes from Wierzbicka's argument against the need for always appealing to prototypes. She cited Verschueren (1985),who said that "one could come up with a definition [of boat] such as a 'man-made object that can be used for travelling on water'… and [could] describe a boat with a hole in terms of deviations from the prototypical boat" (quoted in Wierzbicka, 1996, p. 149).

Wierzbicka's response was that "boats are a kind of thing *made for* 'traveling on water' rather than *able to* 'travel on water' [and she asked]: why phrase the definition in terms of *ability* rather than *intended function* anyway?" (p. 149, emphasis hers). This is clearly relates to Moravcsik's "f-factor."

Chomsky (2006, pp. 109-10) said the following, showing that he agreed that some words' meanings must include the f-factor:

> It can be seen at once that an analysis of concepts in terms of such features as animateness, action, etc., will hardly be adequate, and that certain features must be still more abstract. It is, for example, a fact of English that the phrase 'a good knife' means 'a knife which cuts well.' Consequently the concept 'knife' must be specified in part in terms of features having to do with the characteristic *functions* (not just physical properties)… (emphasis in italics mine)

An NSM explication for *knife* would account for this by including the knife's function, and there would be separate explications for different categories of knife. Wierzbicka (1996) said, "The same object, e.g., a *knife*, can be viewed as either a *weapon* or piece of *cutlery* (or *kitchen utensil*)" (p. 373), and we could, for example, add *stage prop* to the list. The phrase "a good knife" would mean something different in each case. For example "a good knife" that is to be used as a stage prop would probably not be one that cuts well, but rather one that is easily identified from a distance as having the physical characteristics of a knife (i.e., the s-factor)—and this itself would vary depending on the stage play. These are things that are easily understood by speakers as situational contexts change. And these are things that could be incorporated into each individual explication for *knife* by varying the s-factor and the f-factor.

Wierzbicka often refers to the cultural specificness of semantically complex words. It follows logically that word definitions may have slight variations in

different speech communities based on a modification of one or more of the four frames of Moravcsik's theory. Along these lines Moravcsik (1989) said the distinguishing of an item from others in the same category "might assume a fund of general knowledge to be shared by the speakers of a language, or it might be relativized to a certain subset of the speakers of the language" (p. 275).

I don't believe that using Wierzbickian explications in this study in any way conflicts with generative syntax. However, this is by no means a perfect blend of theories, because according to generative syntax, morphemes include syntactic features that are not recognized in the NSM program. Wierzbicka (1996) talks about the "valiancy" of predicates, for example, which refers to the types of grammatical elements that they can combine with, but I don't see how the syntactic proposals within the NSM program—at least in their present state—could be applied to researching the syntactic properties of SFPs. I have therefore taken what is useful from both theories: semantic definitions that the theory of generative syntax lacks, and syntactic analysis that the NSM theory lacks.

Goddard (2004) said that "[e]ven if one does not 'buy' the NSM theory as a whole, it seems to me that it has much to recommend it from a purely practical or heuristic point of view. A plain description couched in reductive paraphrase can be reinterpreted into various formalisms, if one so wishes, or it can be taken as input to more technical theories" (p. 30). Following Goddard's suggestion, my NSM explications represent the semantic properties of the SFPs that they define. In addition the SFPs are assumed to contain some purely syntactic features—for example an edge feature that causes TP to raise and attach to them, something that is not at all a factor in the NSM theory.

It is far beyond the scope of this thesis to propose a detailed formulation of what a blending of NSM and generative syntax might look like, but one obvious way to begin would be to add syntactic features to the NSM explications of words, as well as to the primes themselves. The primes are proposed to be semantically identical across languages, but since the same prime may be a morpheme in one language, but a lexeme or phraseme in another, the syntactic features of the primes are obviously not universal.

Despite the clear differences between the theories, I see no reason why NSM explications cannot be used to define words whose syntax are analyzed in a generative framework. One can argue (as Chomsky does) that some or all of the NSM primes are complex concepts, but this is not a problem for the NSM theory, or for the practicality of applying NSM to generative syntax analyses wherever useful. If a word is semantically complex (i.e., definable using semantically simper words), then it is a "semantic molecule" in NSM terminology. Semantic molecules are generally language specific, while semantic primes are all universal. If we consider an NSM prime to be conceptually complex, as Chomsky implied, then we can simply think of it as a universal semantic molecule, expressing the exact same meaning—in different forms—in all languages.

Appendix 2. Semantic Primes: Cantonese

English (Goddard, 2008a)	Mandarin (Chappell, 2002)	Cantonese: Taken from Tong et al (1997)† Translated from Chappell (2002)‡ My own analysis*
Substantives		
YOU	nǐ	lei5‡
I	wǒ	ngo5‡
THING/SOMETHING	shénme/yǒushì/dōngxi	(jau5)je5*
Determiners		
THIS	zhè (ge)	li1/lei1 + CL*
ELSE	bié (de)	ling6ngoi6 + Num + CL*
Mental/experiential predicates		
THINK	xiǎng	lam2*
KNOW	zhīdao	zi1dou3‡
WANT	yào	jiu3‡
Speech		
SAY	shuō	gong2/waa6*
Logical concepts		
BECAUSE	yīnwèi	jan1wai6‡
CAN	néng	lang4gau3*
NOT	bù/méi	m4(hai6)/mou5*
MAYBE	kěnéng	ho2lang4‡
Similarity		
LIKE	xiàng	(hou2)ci5/gam2joeng2*
Time		
NOW	xiànzài	ji4gaa1†
BEFORE	yǐqián	zi1cin4†
AFTER	yǐhòu	zi1hao4†
Event		
HAPPEN	fāshēng	faat3sang1‡
Specification		
BE	shì	hai6*

Column one of the grid shows the English primes used in the explications of this study. Column two shows their Mandarin counterparts according to Chappell (2002), and column three shows the Cantonese counterparts that I propose. This is not a complete list of the primes, but only the ones used in this study. A complete list of Cantonese counterparts to all of the primes that have been proposed for English and Mandarin is left for future investigation.

Each Cantonese prime in the grid is marked to show how I chose it. The primes related to time are based on Tong et al (1997). I agree with their choices and will not discuss those further. They are all marked with a cross. Next are the primes based on Chappell (2002), which are marked with a double cross. They represent the primes that, when translated directly into Cantonese using the same Chinese character(s), had the same valiancy properties as their Mandarin counterparts. This was based on Cantonese translations of the example sentences that Chappell gave. Tien (2009) proposed two Mandarin allolexes for HAPPEN that differ from Chappell's (2002). I think Chappell's choice translates more naturally into Cantonese and I have therefore chosen the Cantonese counterpart to her Mandarin representation of HAPPEN. The remaining primes are all marked with an asterisk. They are my choices, and I will explain each one in order as they appear in the grid from top to bottom.

Chappell (2002) concluded that Mandarin has three allolexes for SOMETHING. Based on the examples she gave, I concluded that *je5* can substitute for each of them in Cantonese versions of the same sentences, illustrated in (1) to (3) below, where the a. sentences are hers and the b. sentences are my translations from Mandarin to Cantonese. Sometimes the existential marker *jau5* ("have") must accompany this prime. The Cantonese *jau5 je5* is virtually equivalent to the Mandarin allolex *yǒu shì*. The exact Cantonese equivalent, using the same Chinese characters of *yǒu shì* (i.e., *jau5 si6*), is regularly used in spoken Cantonese discourse, but it only works as a

substitute for one of the Cantonese versions of the sentences that Chappell used, which is shown below in example (2). Note that *je5* is also suitable, so rather than conclude that Cantonese has two allolexes for SOMETHING, I conclude that it has a single lexeme *je5*, with the existential *jau5* only being additionaly required in the Mandarin equivalent contexts that use *yǒu shì*.

(1) a. 他想說甚麼。
Tā xiǎng shuō shénme.
3s want say something
"He wanted to say something." (Chappell, 2002, p. 249)

b. 佢想講嘢。
Keoi5 soeng2 gong2 je5.
3s want say something
"He wanted to say something." (my translation of 1a)

(2) a. 有事發生了。
Yǒu shì fāshēng-le.
have thing happen-PERF
"Something happened." (Chappell, 2002, p. 250)

b. 有嘢/事發生咗。
Jau5 je5/si6 faat3sang1-zo2.
have thing happen-PERF
"Something happened." (my translation of 2a)

(3) a. 這個東西在動。
Zhège dōngxi zài dòng.
this-CL thing PROG move
"This thing is moving." (Chappell, 2002, p. 250)

b. 呢樣嘢喺道郁緊。
Lei1 joeng6 je6 hai2dou6 juk1-gan2.
this CL thing PROG move-PROG
"This thing is moving." (my translation of 3a)

It can be seen from examples (1) to (3) that the three Mandarin allolexes for SOMETHING all translate as the single lexeme (*jau5*) je5 into Cantonese.

The next prime is straight forward. The demonstrative THIS (*li1*/*lei1*) has at least two pronunciations. It is the colloquial version of the written form *ze5* (Mandarin: zhè), which Chappell chose for Mandarin. Like the written form and its Mandarin counterpart, *li1*/*lei1* must be followed by a classifier.

For the next Cantonese prime OTHER/ELSE, I could have chosen *kei4taa1*. This is the colloquial form of the literary *bit6 (dik1)*, which is the same two characters as Mandarin's *bie(de)*, which Chappell chose for this prime. However, *ling6ngoi6* seems to fit better in the structure "something else," which is how this prime is used in my explications. More importantly, The "something else" of the explications has an antecedent, and it does not seem that *kei4taa1* can have an antecedent.

The Chinese character for *xiǎng* (THINK) only has this meaning in written Cantonese. When this same character is used in colloquial Cantonese (i.e., *soeng2*), it always means "to want," which is also one of its meanings in Mandarin. The lexeme used for "think" in Cantonese is *lam2*, and it is what must be used in all of the Cantonese versions of the example sentences that Chappell gave for Mandarin's *xiǎng*.

The prime SAY is another instance where Mandarin uses the written form used in Cantonese. I conclude that Cantonese has two allolexes of SAY, because neither can be used acceptably in all of the examples provided by Chappell. One of them (i.e., *waa6*; Mandarin *huà*) is often used in Mandarin as the NP object of SAY (or speak): *shuō huà* "speak words." The Cantonese equivalent of these two Chinese characters is *syut3waa6*, but in spoken Cantonese they combine to form a noun which can function as the object of the other allolex of SAY: *gong2 syut3waa6*

"speak words." The allolex *gong2* takes NP objects (e.g., *gong2 zung1man4* "speak Chinese"; *gong2 gu2zai2* "tell stories"; *gong2 je5* "say something"), but the allolex *waa6* takes clause complements:

(4) 佢話唔想嚟喎。
Keoi5 waa6 m4-soeng2 lei4 wo5
3s say NEG-want come SFP
"He said he didn't want to come."

The prime CAN is optionally one or two syllables in Mandarin, but must be two syllables in Cantonese. These two syllables are the same characters that Mandarin uses for the two syllable version of CAN. The Cantonese counterparts of NOT are different in colloquial Cantonese than in written form. They are the only choices and are therefore certainly the right ones. I show the optional copula *m4(hai6)* "not (be)" as part of NOT, because it is required when NOT is used to negate non-verbal elements.

The best candidate for the Cantonese prime for LIKE is *ci5*, rather than the Cantonese counterpart of the character *xiàng* (i.e., *zoeng6*), which was Chappell's choice for the prime LIKE in Mandarin. When *ci5* takes an NP object (i.e., Subject is LIKE NP), then it can be used alone, but when it takes a clause complement (i.e., SOMETHING LIKE Clause), then *hou2ci5* must be used in combination with *gam2joeng2* ("like this"), forming the structure *hou2ci5…gam2joeng2*. The second part of this construction is the Cantonese counterpart to Mandarin's *zhèyàng*, which Chappell said is sometimes used in combination with *xiàng*, forming the structure *xiàng...zhèyàng*. In this study the prime LIKE is used in the structure IT IS (NOT) LIKE THIS, where the antecedent of THIS is propositional in nature. The most natural translation is *(m4)hai6 gam2joeng2* ((not) be like this) "it is (not) like this."