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PREFACE

(To appear at a later date.)

Use of the Term *Ms.*

EDITH CUERRIER

1. Introduction

The term *Ms.* was introduced in the 1960s. Now over thirty years old, this term appears to be suffering from widespread misunderstanding and misuse. Instead of replacing the terms *Miss* and *Mrs.* as a neutral term for age and marital status for women, like *Mr.* is for men, it has become a confounding third choice to many. Its intended meaning and usage is somewhat lost on most of the respondents to the survey on which the following research is based.

Acceptance of the term *Ms.* was demonstrated in a study reported in a 1986 issue of Sex Roles where the description of women using the *Miss*, *Ms.* or *Mrs.* titles did not significantly affect ratings given to each person (Connor et al. 1986). While the term *Ms.* may be accepted, other research clearly indicates that it and its counterparts, *Miss* and *Mrs.*, each carry a stereotypical image of who they represent. Some findings portray a woman who uses the title *Ms.* as "achievement oriented and socially assertive" (Dion 1987) and "a successful middle manager" (Dion and Schuller 1990, 1991). Much research has established the stereotype of a female who uses the term *Ms.* in relation to her occupation as a modern career woman.

Instead of having interviewees assign character traits to these titles, Donna Lillian (formerly Atkinson) took a different approach in her research: she explored how the terms *Miss*, *Ms.* and *Mrs.* would be applied by research participants to women of various descriptions. Overwhelmingly, her respondents used the terms in relation to marital status rather than occupation (Lillian 1995). In an earlier study by the same author (Atkinson 1987), a different approach yielded similar results with respect to the frequency of use of the term *Ms.* by women. Only 20 to 25 percent of the women surveyed reported that they always or often used the term for themselves, but that they used it for others slightly more frequently, primarily in terms of marital status. Overall, the 1995 survey indicated that most people use the term *Ms.* for someone presumably too old to be called *Miss* but of uncertain marital status, which precludes the use of *Mrs.* (Lillian 1995). These are the specific results which I will be testing with a scaled down version of Lillian's survey.

Based on the range of findings discussed in the preceding paragraphs and my personal experiences, I have formed several hypotheses:

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(St. John's: Memorial University of Newfoundland, 2008), pp. 1-7

1. Men and women will use the terms *Miss*, *Ms.* and *Mrs.* based on the marital status of the person being addressed, namely *Miss* for single women, *Mrs.* for married women and *Ms.* for those of other marital status (heterosexual and lesbian common-law, divorced, widowed or undetermined);
2. Career women will be called *Ms.* regardless of marital status;
3. Men and women whose own mothers use the term *Ms.* will use it to refer to women more often then those whose mothers use the term *Mrs.*;
4. Women will use the term *Ms.* more often then men.

I expect that the results will likely not show a significant change from earlier research. However, I expect to find a correlation between the use of *Ms.* by the participants and their mothers, and I also expect that young women are becoming more educated about the term and are therefore more likely to use it than their male counterparts.

2. Methodology

I employed a modified and shortened version of Lillian's (1995) survey to gather data on the attitudes surrounding the usage of *Ms.* held by 20 male and 20 female students at Memorial University of Newfoundland (MUN). The survey is designed to examine the social factors that influence the use of the terms *Miss*, *Ms.*, and *Mrs.* The results of the survey are compared with Lillian's (1995) results to assess if they hold true to her findings.

Part A of the survey consists of scenarios in which the respondents are asked whether they would use the term *Miss*, *Mrs.* or *Ms.* as appropriate to each woman described (See Appendix). In the interest of making the survey less time-consuming for the respondents, only nine scenarios, chosen from Lillian's (1995) survey, were selected to be representative of women's various marital statuses (single, married, common-law, divorced and widowed), and are virtually unchanged from the original study. Previous research suggests that marital status and occupation dictate the title used to address various women. This study provides quantitative data for comparison with this previous research. In addition, voluntary personal comments on why the respondents chose one term over another will provide qualitative insight into the current attitudes of males and females on the issue.

Part B of the survey questions the participants regarding the title they and their mothers use for themselves and what they consider the term to signify. Part C of the survey provides space for respondents to indicate their age, sex and academic year, and thanks them all for their participation. In order to control for the age of the participants, the survey was only distributed to MUN students below 30 years of age. The 20 male and 20 female volunteers were surveyed in the Fall 2003 semester. Volunteers were solicited from introductory anthropology and history classes, student societies, and common areas around the university. I assume that the social class and educational background of the participants are controlled due to their current status as university students.

3. Results

The participants' ages and university experience are provided in Table 1. Table 2 illustrates the results of Part A, indicating the number of times males and females chose each term in judgment of the scenarios. Table 3 summarizes the results shown in Table 2, grouping the scenarios by the marital status involved. Table 4 illustrates the results from Part B regarding the use of each term by female participants and their mothers to refer to themselves.

Table 1: Range of ages and university experience of respondents

GROUP	AGE RANGE (MEAN)	YEARS IN UNIVERSITY (MEAN)
Males	19–27 (21.05)	2–5 (3)
Females	18–24 (21.25)	1–6 (3)

Table 2: Use of each term in judgment of scenarios[1]

SCENARIOS PRESENTED	USE BY MALE RESPONDENTS			USE BY FEMALE RESPONDENTS		
	Miss	*Ms.*	*Mrs.*	*Miss*	*Ms.*	*Mrs.*
Single student, 17	14	6	0	20	0	0
Single welder, 28	4	15	1	6	14	0
Single retired teacher, 63	6	11	3	1	19	0
Married lawyer, 35	0	3	17	0	4	16
Married homemaker, 38	1	3	16	0	0	20
Common-law student, 23	3	17	0	6	14	0
Lesbian common-law stockbroker, 42	2	15	3	0	19	1
Divorced mother of two, 40	1	14	5	0	17	3
Widowed, retired, 41	1	10	9	0	6	13
TOTALS	32	94	54	33	93	53
PERCENTAGE OF USE	18%	52%	30%	18%	52%	29%

Table 3: Use of terms for each marital status presented in scenarios

MARITAL STATUS	USE OF *MISS*		USE OF *MS.*		USE OF *MRS.*	
	Males	Females	Males	Females	Males	Females
Single	40%	43%	53%	55%	7%	0
Married	3%	0	15%	10%	83%	90%
Common-law	13%	15%	80%	83%	8%	3%
Divorced	5%	0	70%	85%	25%	15%
Widowed	5%	0	50%	30%	45%	65%

Table 4: Use of each term by respondents' mothers and female respondents

GROUP USING TERM	MALE RESPONDENTS			FEMALE RESPONDENTS		
	Miss.	*Ms.*	*Mrs.*	*Miss*	*Ms.*	*Mrs.*
Respondents' mothers	0	2	18	0	6	14
Respondents	n/a	n/a	n/a	10	9	1

[1] One female did not provide a response for the widow scenario.

4. Discussion

Participants in the survey ranged in age between 18 and 27. Although the range of ages had a higher upper limit for the male participants, the average age of both groups was still just over 21. Overall, participants had spent an average of three years at university.[2] Participants were all MUN students completing bachelor's degrees.

Table 2 illustrates that the overall percentage of use of *Miss*, *Ms.*, and *Mrs.* in all scenarios was nearly identical for both males and females, contradicting my prediction that women would use *Ms.* more often then men. I also note that only 10 percent of the men's mothers used *Ms.* as opposed to 30 percent of the women's mothers. When referring to themselves, approximately half of female participants use *Miss* and half use *Ms.*, with the exception of one participant who uses *Mrs.* because she has married and assumed her husband's name. Two of the male respondents chose *Ms.* in all scenarios (one of whom indicated that his mother uses *Mrs.* for herself). Conversely, two males did not use *Ms.* at all. One participant indicated that he does not use the term, while the other misunderstood *Ms.* as a contraction of *Miss*. These four males demonstrate how widely attitudes may vary towards the term *Ms.*

In contrast, the female respondents were not as polarized in their use of the term. There were, however, two scenarios that displayed unanimous results. All females referred to the 17-year-old single student as *Miss* and the 38-year-old married homemaker as *Mrs.* The unanimous responses to these two scenarios by the female group hints at a slightly higher degree of traditionalism than the male group in their definition of *Miss* and *Mrs*. Interestingly, for both men and women, the two scenarios depicting married women (one a homemaker, the other a lawyer), overwhelmingly triggered the response *Mrs.*, suggesting that, for both men and women, marital status is a more important criterion than occupation. The scenarios depicting a single welder and an older retired teacher who had never married were both more commonly responded to with *Ms.*, indicating that the term *Miss* tends to be reserved for very young women.

The widow scenario was a source of ambivalence. Sixty-five percent of female respondents chose the term *Mrs.* as opposed to 45 percent of the male respondents. Widowhood implies that a woman was married at one time, but this woman's nontraditional career may have swayed some respondents to the term *Ms*.

The common-law and divorced scenarios elicited the most *Ms.* responses (between 70 and 85 percent) regardless of occupation, suggesting that *Ms.* is mainly perceived as a term to be used for older women who are not married. This corresponds with the comments of at least half of the participants, who indicated that they use *Ms.* when they are unsure of a woman's marital status.

In answering the question about their own use and understanding of *Ms.* only two females made an allusion to occupation by indicating that *Ms.* is "formal and professional". All other written answers considered only age and marital status as criteria for using and understanding the term *Ms*. One male stated that he learned that *Ms.* is used to rid *Miss* from the language. Another male noted that *Ms.* denotes commitment to an un-

[2] Because there is no obvious correlation between the degree of use of *Ms.* and the number of years in university, I do not discuss it further.

married lifestyle. A female responded that *Ms.* is respectable and for use by a woman in a situation different from that where *Miss* or *Mrs.* would normally be used.

According to the respondents, 80 percent of their mothers use the term *Mrs*. Of those who commented on their mother's choice of *Mrs.* most simply wrote "Married", some adding that she had taken her husband's name.[3] For participants whose mothers use the term *Ms.*, the main comment was the mother had divorced, but one male wrote that his mother used *Ms.* in order to seem younger, while one female responded that *Ms.* has fewer implications and is therefore more neutral. The eight participants whose mothers use *Ms.* chose this term in the survey scenarios 57 percent of the time, while those whose mothers use the term *Mrs.* selected the term *Ms.* for 51 percent of the scenarios. This illustrates that, contrary to my hypotheses, the use of *Ms.* by one's mother does not significantly influence one's willingness to use it for other women.

In support of one of my hypotheses, the terms *Miss*, *Ms.* and *Mrs.* seem to have become firmly linked to the idea of marital status. Instead of replacing *Miss* and *Mrs.*, the term *Ms.* is now a third option strongly associated with a woman who is not single or who has a marital status that is not traditional. Occupation, traditional or not, did not have any influence on the results of the survey responses. The respondents do not use the term *Ms.* as an equivalent to *Mr.* On a positive note, the survey stimulated many respondents to engage in a conversation about the term *Ms.*, most of them for the first time.

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Appendix

LINGUISTICS 3212 QUESTIONNAIRE (Based on research by D. Lillian, 1995)

PART A. Suppose that you have to make up mailing labels, using a title and surname, for each of the following people. In each case, circle the ONE option which you feel best suits the person being described. Feel free to comment on the reason for your choice.

[3] Two of the scenarios involved choices of maiden name or married name, but this variable is not discussed here. Retention of birth name upon marriage is an issue which warrants research in itself and is beyond the scope of this survey.

- Anne Murphy is a 23-year-old university student. She has been living with her boyfriend, Fred Rogers, for two years. You would address the letter to (choose ONE):

  Miss Murphy Ms. Murphy Mrs. Murphy
  Miss Rogers Ms. Rogers Mrs Rogers

  Comments: _____

- Elaine Parsons is a 35-year-old lawyer, married to Alex Wilson. (Choose ONE):

  Miss Parsons Ms. Parsons Mrs. Parsons
  Miss Wilson Ms. Wilson Mrs. Wilson

  Comments: _____

- Krista Croft is a 17-year-old high school student living with her parents. (Choose ONE):

  Miss Croft Ms. Croft Mrs. Croft

  Comments: _____

- Leanne Norton is 38 years old. She is a full-time homemaker with three children. Her husband works full time and supports the family. (Choose ONE):

  Miss Norton Ms. Norton Mrs. Norton

  Comments: _____

- Mildred Bishop is a 63-year-old retired teacher. She has never been married. (Choose ONE):

  Miss Bishop Ms. Bishop Mrs. Bishop

  Comments: _____

- Mary Clarke is 40 years old and has been divorced since last year. She is looking for work in order to help support herself and her two teenage children.

  Miss Clarke Ms. Clarke Mrs. Clarke

  Comments: _____

- Barb Elliot is a 42-year-old stock broker who lives with her lesbian lover, Judy Albright.

  Miss Elliot Ms. Elliot Mrs. Elliot

  Comments: _____

- Allison Moore is 28 years old and works as a welder at a shipyard. (Choose ONE):

  Miss Moore Ms. Moore Mrs. Moore

  Comments: _____

- Rose Spooner is a 41-year-old. She was recently widowed. She has returned to University after a 20 year career in the military as an aircraft technician. (Choose ONE).

  Miss Spooner Ms. Spooner Mrs. Spooner

  Comments: _____

PART B. Please answer the following questions:

- To the best of your knowledge, what title does your mother use? (Choose ONE):

  Miss Ms. Mrs.

  Why? _____

- (For females) When asked to select a title for yourself on an official form, which of the following do you normally choose:

  Miss Ms. Mrs.

  Why? _____

- When the term 'Ms.' was introduced, the goal was to replace the terms 'Miss' and 'Mrs.' as an age and marital status neutral term equivalent to the term 'Mr.' for men. It appears that 'Ms.' has taken on a different meaning to different people. How do you use and understand the term 'Ms.'?

  _____

PART C. Please provide the following information about yourself:

- Age:
- Sex (circle one): male / female
- Student status (circle one): 1st year / 2nd year / 3rd year / 4th year / Grad Student / other

THANK YOU FOR PARTICIPATING IN THIS STUDY

An Investigation of Canadian Raising among Students in St. John's

DOUGAL GRAHAM

1. Introduction

In this study I investigate the raising of the nuclei of the diphthongs /aɪ/ and /aʊ/ in St. John's English among middle middle-class to upper middle-class students. This phenomenon, known as Canadian Raising (CR) due to its prevalence in mainland Canada, consists of a phonetic change in the diphthongs /aɪ/ and /aʊ/ preceding voiceless obstruents such as /t/ or /s/.

Vowels are loosely described in terms of height and frontness/backness, such that they can be conceptualized as occupying a given space in a two-dimensional continuum. CR describes a change in the pronunciation of some vowels over time, such that younger speakers pronounce certain vowels as higher and more fronted versions of the vowels used by their parents. By examining the acoustic properties of utterances, we can attempt to determine whether or not the diphthongs have a more raised pronunciation.

The height and backness of a given vowel can be measured by analyzing the spectrograph of the recording and determining the frequencies of the formants (areas of intensity in sound spectrum). I will be examining the speech of four students, two of whom have parents from the mainland of Canada (non-local or "NL"-parents) and two of whom who have local parents ("L"-parents) from the St. John's, Newfoundland area.

1.1. Previous Literature

There have been several studies of CR in Newfoundland, but apart from the work of D'Arcy (2000, 2005), there has been no work done on CR in St. John's and there has been none at all on the occurrence of CR in a male population in St. John's.

In Clarke's 1991 study of St. John's English there is no mention of occurrence of CR within St. John's itself; however, in other studies, CR is found in two rural Newfoundland communities: Burin (Lanari, 1994) and Burnt Islands (Newhook, 2002). Only the Burin study, however, looked at the /aɪ/ and /aʊ/ variables in both raising and non-raising contexts. The sample displayed a pattern similar to Canadian Raising for both variables, even though the raised [əɪ] variant proved to be the community norm for /aɪ/ (as also found in Burnt Islands).

In her 2000 paper, D'Arcy found raising in teen and pre-teen girls in St. John's. In her study she examined three contrastive variants for /aɪ/: [əɪ, ʌɪ, aɪ]. In her 2005 paper,

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she examines three variants for /aʊ/ for fronting and three variants for the retraction and lowering of /æ/. D'Arcy found that the variant [ʌɪ] appears only in St. John's English (SJE), and not in Canadian English (CE). It consists of a backing of the nucleus of /aɪ/ in the raising context—that is, preceding a voiceless obstruent. D'Arcy also found that among children of non-local parents, the CE variants were used more often than the SJE variants.

1.2. Hypotheses

According to sociolinguistic literature, children's speech should reflect the speech of the area in which they acquire their language, not necessarily the language of their parents. This means that if a child were raised in a part of England where Cockney is the standard dialect, he or she would learn to speak the Cockney dialect as he or she grew, not the dialect spoken by his or her parents. However, D'Arcy (2000) indicates that children of non-local parents may be more likely to adopt variants from outside the community. In this case, the outside variants are the raised variants, rather than the traditional unraised variants.

I hypothesize that young male speakers of the middle to upper-middle class may have picked up the use of /aɪ/ and /aʊ/ raising found among young girls in D'Arcy's study. On the basis of D'Arcy's study, I also hypothesize that this behaviour could be accentuated among children of parents who are non-local and speak with a mainland dialect that already incorporates the raised forms.

2. Methodology

2.1. Participants

My study examines four male participants, chosen because of the lack of studies conducted with male participants in this area. Two participants had parents who were from the mainland of Canada and two had parents from within the St. John's area. L1 and L2 will be used to refer to the two participants with L-parents, and NL1 and NL2 will refer to the two participants with NL-parents.

Participants L1, L2 and NL2 all belong to the same social network, know each other and interact occasionally. Participant L1, who is 19, has two local parents who are in the upper middle class. He is well educated, having participated in the International Baccalaureate. L2 has a father who works for the government and a mother who is a schoolteacher. He is also 19 and of middle to upper-middle class.

NL1 is the oddball of this group. His parents work for the government, while he is 21 years old, works as an actor, has somewhat closer ties to the mainland than the other participants, and is not from the same social network. However, his social networks are similar to those of the other participants. NL2 has one parent who is a teacher and another who works for the government. He seems to identify somewhat with the more rural or traditional networks; his social network extends further into groups who enjoy hunting and ice fishing.

I attempted to select participants from the same social network in order to determine if in fact CR is affected by the origin of the speaker's parents. If within the network there is a difference then it cannot be attributed to the social network itself. Unfortunately, one

participant comes from outside the network, as I was unable to include some of the potential participants.

2.2. Variables and Methodology

As briefly described in Section 1, I examine the variable /aɪ/ and /aʊ/. Variants that have been found in other studies include [ʌɪ, ɛɪ, ʌʊ, əɪ, əʊ]. These variables have been found to front or raise mainly before a voiceless obstruent.

I elicited data through a formal reading exercise using a list of short phrases which contained the variants in both raising and non-raising contexts. I created a word list with eight words each for the variables /aɪ/ and /aʊ/. Because I was unsure whether certain words containing /aʊ/ would be pronounced correctly (*touton*, *to house*), I included a few extra words containing /aʊ/ in the sentences.

The words were placed in a phrasal context in order to disguise the variants and eliminate conscious or subconscious self-editing by the participants. These phrases introduce a few additional occurrences of the non-raising variants that can be used if necessary.

2.3. Recording Procedure

The recordings of the participants were made in a partially sound-proof recording room. The speakers spoke into a microphone that was in turn recorded in high-quality digital format on a computer. Unfortunately, while it gives great quality recordings, this unnatural situation can lead to a fairly formal style of speech. However, this may emphasize use of the raised variant if it occurs. In D'Arcy's study she found that the more formal the style, the greater the frequency of raising among the older subjects.

2.4. Data Analysis Procedure

In order to analyze the data two programs were used, Praat and Plotnik. Praat was used to calculate the F1 and F2 values for raising and non-raising samples of the nuclei of the diphthongs /aɪ/ and /aʊ/. In order, to take these measurements, I set Praat to have a window length of 0.005, the default setting, which is most useful for the analysis of formants. I used Praat's built-in formant calculation tool as a guide. However, in places where it seemed to err, relative to the visual cues, I used my own judgment. I took the formant measurements at one quarter the length of the diphthong, listening to the sound and looking at the formants and waveform in order to determine the beginning and end of the diphthong. Due to time constraints only the variants occurring in raising positions were analyzed in the second data set.

The values that I obtained were placed in a chart that includes the sample number, the variant, and the environment. From this table I plotted the values on Plotnik to give a general visualization of their positioning relative to each other.

3. Results and Discussion

The following sections examine the data in two ways. Section 3.1 describes the F values for each of the tokens produced by the participants. Section 3.2 proceeds to discuss the mean F values for each participant.

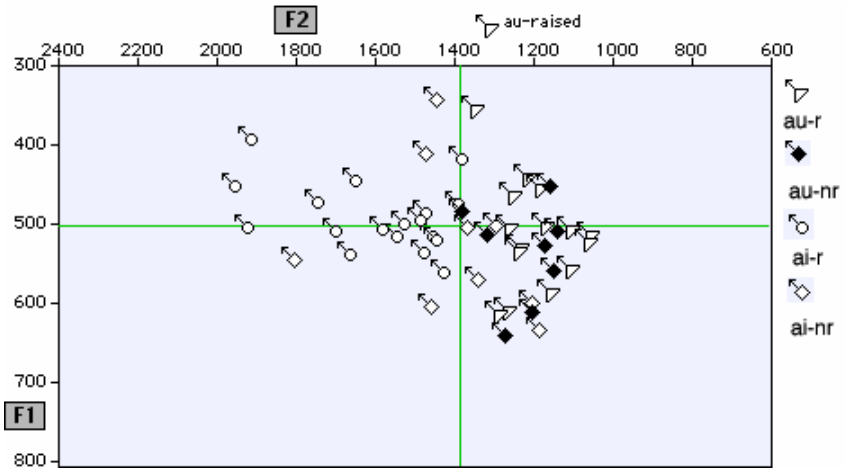
3.1. The Variables (aɪ) and (aʊ) with Plotnik

Any two speakers will display different F values when pronouncing a vowel because of the shapes of their vocal tracts, length of vocal chords and so forth. We therefore cannot simply place data from two speakers on the same graph, but instead must examine the contrasts within a single speaker's pronunciations. For this reason, all plots in this section show data from only a single speaker.

Since each speaker's F values vary, normalization processes are often used to make comparisons easier. Evans and Preston (2001), however, note that discrete differences among speakers may be lost with normalization. Therefore, I have not used any normalization processes and have instead just compared the variances in speakers' usage. The following four sections each contain all the data for a single speaker accompanied with a brief description of the data.

Speaker L1. In Figure 1 we can see that for speaker L1 there is a relatively consistent raising and fronting of the diphthong /aɪ/ before voiceless obstruents (ai-r tokens). When examining the variable /aʊ/ we see that it is positioned somewhat evenly in both contexts (au-r & au-nr tokens), except for a single outlying vowel. Clarke (1991) found that the more upwardly-mobile type of young middle-class people were more likely to display CR. L1 fits this model well as he and his family are quite upwardly mobile.

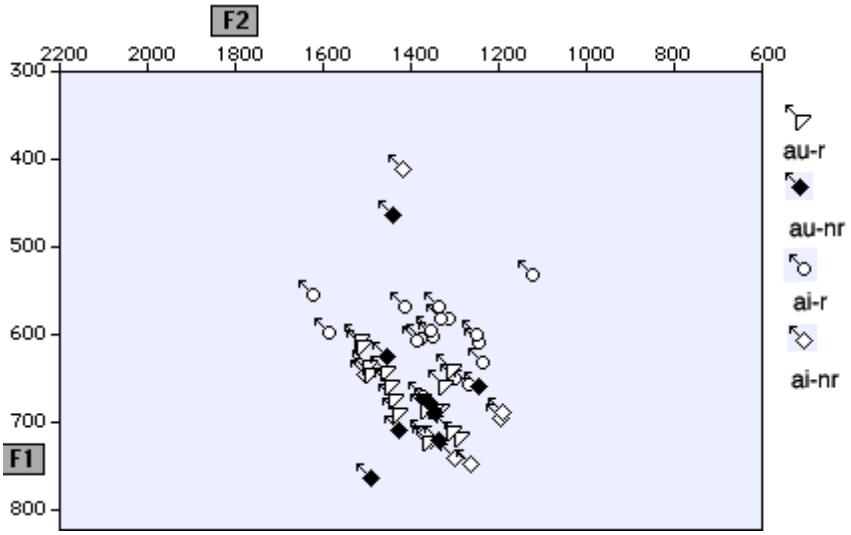
Figure 1: Speaker L1*



*NOTE: In the legend, the part before the hyphen designates the diphthong (ai = /aɪ/, au = /aʊ/) and the part after the hyphen designates the environment (r = raising, nr = non-raising).

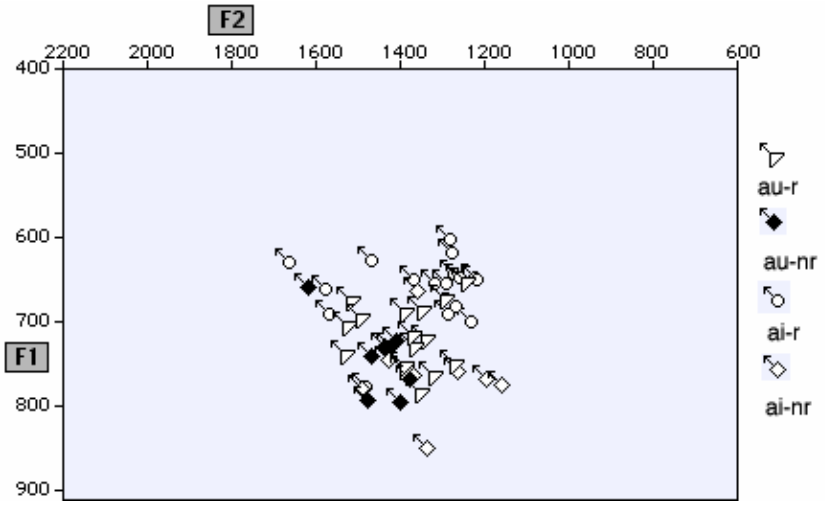
Speaker L2. In examining the data from speaker L2, shown in Figure 2, it is immediately apparent that his raising-context and non-raising-context diphthongs show little variation. There is a slight raising tendency that seems to show clearly in the diphthong /aɪ/. The /aʊ/ diphthong seems to cluster consistently in both the raising and non-raising contexts. L2 does not seem to have the same raising displayed by L1. This may be explained by his upbringing in a more traditional family and less upwardly-mobile setting than L1.

Figure 2: Speaker L2



Speaker NL1. We see in Figure 3 that speaker NL1 raises his /aɪ/ quite distinctly in the raising environments, although the sharp contrast is somewhat obscured by overlap with the /aʊ/ plotting. However, the raising environment seems to have no effect upon his pronunciation of /aʊ/ which clusters in the area of an F1 of about 750Hz and an F2 of about 1450Hz.

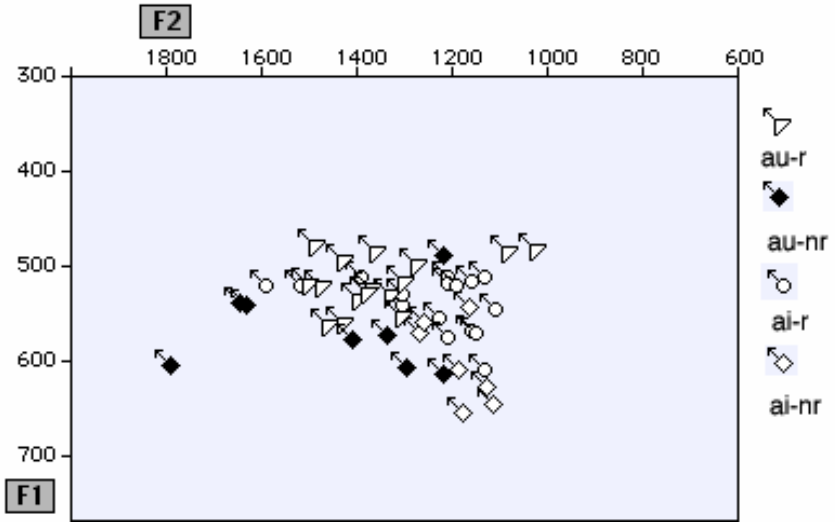
Figure 3: Speaker NL1



Speaker NL2. Here the raised and non-raised environments of /aɪ/ cluster together, and there seems to be almost no difference between the two, with the exception of a slight tendency towards fronting in the raising environment. As for the variant /aʊ/, the results are consistently close to each other and are also consistently slightly raised from the positions of those pronounced in the non-raising environment (Figure 4). This may reflect his

parents' non-local origins or his connection to more rural social networks that may not contain this style. Although he raises somewhat due to his upper-class networks, he does not do it strongly as an effect of his identity with the more rural networks.

Figure 4: Speaker NL2



3.2. Analysis of Means

In addition to examining individual tokens, we can also survey the general patterns using average formant values by speaker and environment, comparing the values to certain standard values. Here I look only at the values for /aɪ/ because they are not significantly different from those for /aʊ/, although I include the latter in Table 1 for reference.

Table 1: Average formant values

SPEAKER	ENVIRONMENT	/aɪ/, MEAN F1/F2	/aʊ/, MEAN F1/F2
L1	Non-raising	523 / 1418	534 / 1232
	Raising	486 / 1595	495 / 1208
L2	Non-raising	658 / 1303	660 / 1394
	Raising	590 / 1369	664 / 1406
NL1	Non-raising	749 / 1331	739 / 1448
	Raising	655 / 1377	717 / 1388
NL2	Non-raising	584 / 1159	565 / 1451
	Raising	545 / 1196	515 / 1356

Speaker L1. L1's average F1 and F2 of 523Hz and 1418Hz respectively (Table 1) in the non-raising environment for /aɪ/ do not correlate very well with any of the standard values for American English (AE) (Borden et al, 2003). They are somewhat like a higher, more backed version of /æ/ (660Hz, 1720Hz), perhaps in between a /ɛ/ (530Hz and 1840Hz) and /æ/. What is interesting, however, is that his values in the raising context

average out to 486Hz and 1595Hz, which is closer to a raised and backed version of the standard value for /ɛ/ of 530Hz and 1840Hz.

Speaker L2. L2's averages are much lower and more centralized than those of speaker L1. His values in the non-raising position are somewhat close to the values given for /ʌ/ of 640Hz and 1190Hz. This is consistent with the findings of D'Arcy involving movement from [aɪ] to [ʌɪ] which occurs in St. John's English, except that in her study this happened only in the raising environment. In the non-raising environment his values show little change, staying near to those of [ʌɪ] (Borden et al., 2003).

Speaker NL1. NL1's values for the non-raising environment fit almost exactly in between the values for /æ/ and /a/ proposed by Borden et al. (2003) of 660Hz and 1720Hz for /æ/ and 730Hz and 1090Hz for /a/. This puts him very close to the range of standard American English speakers. His values for the raised position show /aɪ/ raising to be closer to the position between /æ/ and /ɛ/.

Speaker NL2. Speaker NL2's means for F1 and F2 of /aɪ/ are remarkably close to those proposed for /o/ by Borden et al. (570Hz and 840Hz) except that it is fronted, becoming closer in backness to /ʌ/.

4. Conclusion

These plots seem to show that /aɪ/ raises the most consistently, with three of the four speakers showing a tendency towards raising /aɪ/ before voiceless obstruents and two speakers showing a tendency towards fronting it in that environment. The /aʊ/ diphthong, however, is always consistent throughout the speech of all four participants in both the raising and non-raising environments. That is, /aʊ/ does not seem to be affected by the raising environment in the speech of any of the four speakers.

It is interesting to note that although these findings are based on a much smaller group than those of D'Arcy (2000) and involve only males, they parallel her findings quite well in most respects. Here, too, there is both raising and fronting, although with such a small sample it is impossible to determine whether or not the St. John's English variant [ʌɪ] occurs more often in the speech of L-parent males. Also, it seems that within this data set, there is little difference between the fronting and raising of vowels between the L- and NL-parent groups. This data also correlates with the findings of Lanari (1994), who found that /aʊ/ was less likely to raise than /aɪ/. Lanari also noted that /aʊ/ was 12% less likely to raise than /aɪ/ before a voiceless obstruent and 30% less likely before a voiced obstruent. Such precise statistical findings are not possible in the current study, as it involves only four participants. A larger study is required in order to produce results that are indeed statistically valid.

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Appendix A: Measurements

In these tables, # denotes the number of the sentence from which the data was extracted, F1 and F2 refer to those values in Hz as extracted from the sample, VAR gives the variable being examined, and ENV tells whether the variable is in a raising (r) or non-raising (nr) environment.

Table A1: Speaker L1

FIRST RECORDING					SECOND RECORDING				
#	F1	F2	VAR	ENV	#	F1	F2	VAR	ENV
4	354	1352	/aʊ/	r	1	470	1752	/aɪ/	r
6	555	1110	/aʊ/	r	3	448	1961	/aɪ/	r
23	440	1222	/aʊ/	r	7	535	1671	/aɪ/	r
24	503	1268	/aʊ/	r	9	557	1435	/aɪ/	r
27	249	1317	/aʊ/	r	12	496	1533	/aɪ/	r
28	513	1061	/aʊ/	r	17	532	1486	/aɪ/	r
30	608	1270	/aʊ/	r	20	512	1463	/aɪ/	r
30	454	1189	/aʊ/	r	26	483	1480	/aɪ/	r
4	613	1292	/aʊ/	r	1	442	1656	/aɪ/	r
6	529	1238	/aʊ/	r	3	502	1928	/aɪ/	r
23	532	1243	/aʊ/	r	7	518	1454	/aɪ/	r
24	505	1110	/aʊ/	r	9	506	1708	/aɪ/	r
27	462	1255	/aʊ/	r	12	389	1620	/aɪ/	r
28	502	1175	/aʊ/	r	17	504	1587	/aɪ/	r
30	585	1162	/aʊ/	r	20	415	1389	/aɪ/	r
30	521	1066	/aʊ/	r	26	472	1398	/aɪ/	r
Mean	495	1208			Mean	486	1595	/aɪ/	
8	480	1389	/aʊ/	nr	2	542	1810	/aɪ/	nr
10	505	1147	/aʊ/	nr	13	596	1212	/aɪ/	nr
11	609	1210	/aʊ/	nr	15	501	1377	/aɪ/	nr
14	556	1156	/aʊ/	nr	16	339	1454	/aɪ/	nr
21	524	1181	/aʊ/	nr	18	602	1467	/aɪ/	nr
29	448	1167	/aʊ/	nr	19	409	1479	/aɪ/	nr
31	511	1326	/aʊ/	nr	22	630	1195	/aɪ/	nr
32	638	1278	/aʊ/	nr	23	567	1347	/aɪ/	nr
Mean	534	1232			Mean	523	1418		

Table A2: Speaker L2

FIRST RECORDING					SECOND RECORDING				
#	F1	F2	VAR	ENV	#	F1	F2	VAR	ENV
4	683	1338	/aʊ/	r	1	541	1527	/aɪ/	r
6	604	1519	/aʊ/	r	3	564	1419	/aɪ/	r
23	672	1441	/aʊ/	r	7	598	1285	/aɪ/	r
24	720	1368	/aʊ/	r	9	529	1129	/aɪ/	r
25	632	1502	/aʊ/	r	12	600	1386	/aɪ/	r
27	641	1497	/aʊ/	r	17	578	1320	/aɪ/	r
28	656	1328	/aʊ/	r	20	647	1305	/aɪ/	r
30	683	1354	/aʊ/	r	26	603	1392	/aɪ/	r
23	688	1435	/aʊ/	r	26	597	1255	/aɪ/	r
24	714	1293	/aʊ/	r	20	668	1378	/aɪ/	r
25	656	1452	/aʊ/	r	17	564	1344	/aɪ/	r
27	611	1517	/aʊ/	r	12	593	1363	/aɪ/	r
28	638	1312	/aʊ/	r	9	629	1242	/aɪ/	r
30	708	1312	/aʊ/	r	3	594	1591	/aɪ/	r
4	683	1369	/aʊ/	r	7	578	1337	/aɪ/	r
6	640	1463	/aʊ/	r	1	552	1628	/aɪ/	r
Mean	664	1406			Mean	590	1369		
8	760	1496	/aʊ/	nr	2	634	1149	/aɪ/	nr
10	460	1447	/aʊ/	nr	13	408	1425	/aɪ/	nr
11	686	1353	/aʊ/	nr	15	693	1202	/aɪ/	nr
14	673	1367	/aʊ/	nr	16	642	1511	/aɪ/	nr
21	656	1252	/aʊ/	nr	18	716	1362	/aɪ/	nr
29	622	1461	/aʊ/	nr	19	737	1307	/aɪ/	nr
31	706	1434	/aʊ/	nr	22	745	1272	/aɪ/	nr
32	717	1341	/aʊ/	nr	23	685	1197	/aɪ/	nr
Mean	660	1394			Mean	658	1303		

Table A3: Speaker NL1

FIRST RECORDING					SECOND RECORDING				
#	F1	F2	VAR	ENV	#	F1	F2	VAR	ENV
2	669	1371	/aɪ/	nr	8	655	1627	/aʊ/	nr
13	847	1341	/aɪ/	nr	10	726	1429	/aʊ/	nr
15	661	1366	/aɪ/	nr	11	790	1484	/aʊ/	nr
16	743	1434	/aɪ/	nr	14	727	1442	/aʊ/	nr
18	756	1271	/aɪ/	nr	21	765	1382	/aʊ/	nr
19	776	1500	/aɪ/	nr	29	719	1418	/aʊ/	nr
22	765	1201	/aɪ/	nr	31	738	1474	/aʊ/	nr
23	772	1165	/aɪ/	nr	32	793	1407	/aʊ/	nr
Mean	749	1331			Mean	739	1458		
1	558	1523	/aɪ/	r	4	719	1343	/aʊ/	r
3	659	1583	/aɪ/	r	5	687	1392	/aʊ/	r
7	615	1286	/aɪ/	r	6	674	1519	/aʊ/	r
9	688	1291	/aɪ/	r	24	763	1325	/aʊ/	r
12	688	1577	/aɪ/	r	25	756	1392	/aʊ/	r

17	645	1229	/aɪ/	r	27	738	1536	/aʊ/	r
20	651	1299	/aɪ/	r	28	671	1300	/aʊ/	r
26	650	1325	/aɪ/	r	30	650	1246	/aʊ/	r
26	679	1275	/aɪ/	r	24	752	1394	/aʊ/	r
20	644	1268	/aɪ/	r	25	782	1356	/aʊ/	r
17	647	1226	/aɪ/	r	27	704	1529	/aʊ/	r
12	623	1476	/aɪ/	r	28	686	1354	/aʊ/	r
9	640	1279	/aɪ/	r	30	748	1275	/aʊ/	r
3	773	1488	/aɪ/	r	4	729	1369	/aʊ/	r
7	696	1239	/aɪ/	r	6	694	1496	/aʊ/	r
1	625	1672	/aɪ/	r	5	715	1375	/aʊ/	r
Mean	655	1377			Mean	717	1388		

Table A4: Speaker NL2

FIRST RECORDING					SECOND RECORDING				
#	F1	F2	VAR	ENV	#	F1	F2	VAR	ENV
2	488	926	/aɪ/	nr	8	602	1796	/aʊ/	nr
13	650	1186	/aɪ/	nr	10	486	1227	/aʊ/	nr
15	540	1170	/aɪ/	nr	11	535	1654	/aʊ/	nr
16	566	1273	/aɪ/	nr	14	570	1344	/aʊ/	nr
18	606	1195	/aɪ/	nr	21	604	1303	/aʊ/	nr
19	642	1119	/aɪ/	nr	23	537	1637	/aʊ/	nr
19	556	1268	/aɪ/	nr	31	573	1416	/aʊ/	nr
22	623	1135	/aɪ/	nr	32	610	1227	/aʊ/	nr
Mean	584	1159			Mean	565	1451		
1	666	1345	/aɪ/	r	4	533	1401	/aʊ/	r
3	517	1600	/aɪ/	r	6	518	1507	/aʊ/	r
7	509	1218	/aɪ/	r	23	529	1333	/aʊ/	r
9	542	1116	/aɪ/	r	24	514	1308	/aʊ/	r
12	545	1307	/aɪ/	r	25	557	1435	/aʊ/	r
17	550	1232	/aɪ/	r	27	520	1478	/aʊ/	r
20	564	1166	/aɪ/	r	28	481	1031	/aʊ/	r
26	507	1140	/aɪ/	r	30	484	1366	/aʊ/	r
1	606	139	/aɪ/	r	4	561	1467	/aʊ/	r
3	516	1525	/aɪ/	r	6	493	1435	/aʊ/	r
7	512	1167	/aɪ/	r	23	521	1374	/aʊ/	r
9	568	1155	/aɪ/	r	24	550	1311	/aʊ/	r
12	507	1399	/aɪ/	r	25	526	1385	/aʊ/	r
17	515	1214	/aɪ/	r	27	476	1494	/aʊ/	r
20	572	1217	/aɪ/	r	28	482	1089	/aʊ/	r
26	516	1198	/aɪ/	r	30	496	1281	/aʊ/	r
Mean	545	1196			Mean	515	1356		

Appendix B: Sentence List

Table B1: Sentence list

/aɪ/	/aʊ/
Please **tigh**ten that.	**Tou**tons are a tasty snack.
I **like** to **fight**.	I **shout loud**ly.
Don't **bite** me.	She **pout**s a lot.
I **like** that.	It is **tout**ed as the next big thing.
I **hike**d today.	The battle was a **rout**.
Biking is good exercise.	It's **about** a **house**.
Mike is my best friend	A nice green **couch**.
I'm afraid of **heigh**ts.	Please don't **slouch**.
This is a **hy**brid CD.	I own a **thous**and cars.
Please **id**entify that sample.	I **hous**e dogs.
I am **my**opic.	Bread dough must be **poun**ded flat.
Occu**py** the enemy base.	Do it **now**.
Taiwan is part of China.	A **round** circle.
Don't **lie** to me.	How now brown **cow**.
Why are you here?	I am a l**oud** man.
That's **my** house.	Be p**roud** of your country.

Sentences were read in the following order: (1) Please tighten that. (2) I say why it's true. (3) I hiked today. (4) The battle was a rout. (5) Toutons are a tasty snack. (6) I shout loudly. (7) Biking is good exercise. (8) Do it now. (9) Mike is my best friend. (10) Bread dough must be pounded flat. (11) A round circle. (12) I'm afraid of heights. (13) This is a hybrid CD. (14) I own a thousand cars. (15) Please identify that sample. (16) I am myopic. (17) Don't bite me. (18) Occupy the enemy base. (19) Taiwan is part of China. (20) I like that. (21) Be proud of your country. (22) Don't lie to me. (23) That's my house. (24) She pouts a lot. (25) It is touted as the next big thing. (26) I like to fight. (27) A nice green couch. (28) Please don't slouch. (29) I house dogs. (30) It's about a house. (31) How now brown cow. (32) I am a loud man.

A Classifier Analysis of Direct Object Doubling

WILL OXFORD

1. Introduction

This paper examines two constructions that pose a serious problem for conventional ideas about the relationship between argument structure and syntactic structure. One construction, classificatory noun incorporation, is found mainly in North American and Australian languages, while the other, the cognate object construction, is found in a variety of typologically diverse languages. The two constructions seem quite different on the surface, but they both present exactly the same problem. In both, the verb's direct object seems to be expressed by two distinct nouns at once. This doubling of the direct object is difficult to account for in a syntactic analysis, and as a consequence, neither construction is very well understood. However, previous analyses have been concerned with either one construction or the other, not both; their similarity has apparently gone unnoticed. In this paper, I capitalize upon this similarity, developing a unified analysis of object doubling based on evidence from both constructions.

The paper is organized as follows. Section 2 introduces the object doubling problem by describing the two constructions and pointing out their similarities. Section 3 reviews the adjunction analysis of doubling and provides several reasons why it is not sufficient to explain all instances of object doubling. Section 4 proposes a new classifier approach to direct object doubling.

2. Direct Object Doubling Constructions

This section provides a brief description of classificatory noun incorporation (or "classifier incorporation" for short, following Baker (1995)) and the cognate object construction, along with several reasons why the two constructions should be given a common analysis.

2.1. Classifier Incorporation

Classifier incorporation, labeled Type IV noun incorporation by Mithun (1984), occurs when a verb appears with both an incorporated noun and a separate object NP. The incorporated noun is usually more general than the independent object, so it is said to serve a classificatory function. The following examples of classifier incorporation are from Mohawk (Baker 1995: 9–10). In (1a), the incorporated noun *its*- 'fish' is doubled by the ob-

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(St. John's: Memorial University of Newfoundland, 2008), pp. 19-35

ject NP *kikv rabahbot* 'this bullhead'; in (1b), the incorporated noun *nakt-* 'bed' is doubled by the object NP *Sak raonakta'* 'Sak's bed'.

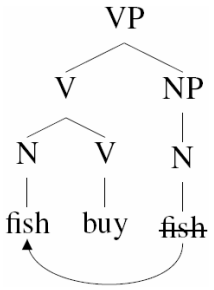
(1) a. *Kikv rabahbot wa-ha-its-a-hninu-' ki rake-'niha.*
this bullhead FACT-MSS-fish-Ø-buy-PUNC this my-father
'My father [fish-]bought this bullhead.'

b. *Uwari v-ye-nakt-a-nuhwe'-ne' ne Sak rao-nakt-a'.*
Mary FUT-FSS-bed-like-PUNC NE Sak MSP-bed-SUF
'Mary [bed-]likes Sak's bed.'

Classifier incorporation is attested in the Northern Iroquoian languages (Rosen 1989), the Caddoan languages of Oklahoma and North Dakota (Mithun 1984), Hopi, spoken in Arizona (Gronemeyer 1996), Totonac, spoken in Mexico (Levy 1999), and the Australian languages Gunwinggu (Mithun 1984) and Rembarnga (Rosen 1989).

If we apply Baker's (1988) syntactic analysis of noun incorporation to classifier incorporation, the direct object doubling problem immediately arises. Consider first a normal example of noun incorporation such as *My father fish-bought*. According to Baker (1988), the incorporated noun originates as the direct object of the verb and raises to adjoin to V, as shown in (2).[1]

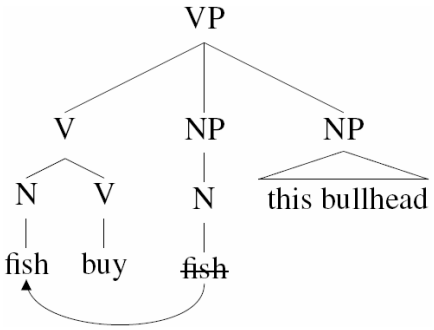
(2)



Classifier incorporation differs from the typical case in that it involves not only an incorporated direct object but also an extra independent direct object. The incorporated object and the independent object both seem to bear exactly the same thematic role. For instance, in an example of classifier incorporation such as *My father fish-bought this bullhead*, both *fish* and *this bullhead* answer the question "What did the father buy?" At face value, then, it appears that *fish* and *this bullhead* are both the direct object of *bought*, as the awkward tree diagram in (3) suggests.

[1] When presenting analyses that were developed before the adoption of DP, I follow the original author and use NP rather than DP.

(3)



2.2. The Cognate Object Construction

The cognate object construction provides a similar example of direct object doubling. In this construction, a normally intransitive verb occurs with what appears to be a direct object, as in (4).

(4) a. Lillian smiled an enticing smile.
b. The villagers danced a dance.
c. Peter lived the life of a king.

As Massam (1990) and Hale and Keyser (2002) observe, the term "cognate object construction" actually lumps together two distinct classes of verbs. Adopting the terminology of Hale and Keyser, there is a class of strict cognate object verbs, which take only a morphologically related object:

(5) a. The accountant laughed a wicked laugh/*cackle/*guffaw.
b. Gina screamed a bloodcurdling scream/*shriek/*squeal.
c. John burped a resounding burp/*belch.

There is also a class of hyponymous object verbs, which take either a morphologically related object or a hyponym of that object:

(6) a. Ross and Sharon danced a dance/a jig/the Macarena.
b. Chrissy sang a song/a serenade/Penny Lane.
c. David drank a drink/the bottle of Pepsi.

Massam (1990) identifies several syntactic differences between the strict cognate object construction and the hyponymous object construction. A strict cognate object may not be passivized or topicalized:

(7) a. *A gruesome death was died by Judith.
b. *A raucous sneeze, nobody sneezed.

With a hyponymous object, on the other hand, passivization and topicalization are possible:

(8) a. A piece from Swan Lake was danced by Martin.
b. The Macarena, nobody danced.

As well, the strict cognate object construction is at most marginally acceptable when the object is not modified:

(9) a. ? Susan lived a life.
b. Susan lived a happy life/a life to be proud of.
c. ? The dog barked a bark.
d. The dog barked a vicious bark.

However, the objects of hyponymous object verbs are perfectly acceptable without a modifier:

(10) a. John danced a dance/a jig.
b. Laura sang a song/an anthem.

The differences between these two constructions will be addressed in section 4.3. When these differences are not relevant to the discussion, I will use "cognate object construction" as a cover term for both the strict cognate object construction and the hyponymous object construction.[2]

Another important property of the cognate object construction is that it occurs only with unergative intransitive verbs. Unaccusative intransitive verbs do not participate in the construction, as shown in (11), and neither do transitive verbs, as shown in (12).

(11) a. * The team arrived a noisy arrival.
('The team arrived noisily.')
b. * John stood a silent stand.
('John stood silently.')

(12) a. * Susan kicked John an angry kick.
b. * Susan kicked an angry kick John.

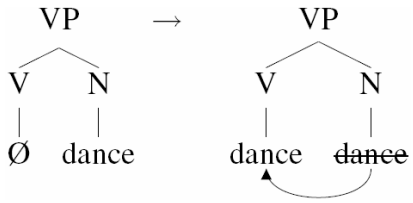
The cognate object construction is attested in many languages, including French (Larjavaara 1998), Classical Latin and Ancient Greek (Bary and de Swart 2005), Icelandic (Svenonius 2001), Russian (Pereltsvaig 1999), Hebrew (Schwarzschild 2004), Turkish (Turan 1995), Chinese (Hong 1999), Japanese (Ohara 1997), Vietnamese (Phan 1999), and several Australian languages (Austin 1982). Of course, the construction does not have identical properties in each language. This paper is concerned primarily with the English cognate object construction; the proposals made here can be extended to similar constructions in other languages to the extent that they share the properties of English.

Since a sentence like *John danced a jig* appears, on the surface, to involve only a single object, it may not be immediately obvious how the cognate object construction can be seen as involving object doubling. To understand how this could be so, first consider a normal unergative such as *John danced*. In the model of lexical semantics proposed by Hale and Keyser (1993, 2002), this unergative is derived from an underlyingly transitive

[2] Although in a sentence like *John danced a jig*, the hyponymous object and the verb are not morphologically cognate, they are still "cognate" (< Latin *co-* 'together' + *gnatus* 'born') in the sense that they are "born together" in the same syntactic position (as I will argue below). "Cognate object" is therefore an appropriate cover term for both strict cognate objects and hyponymous objects.

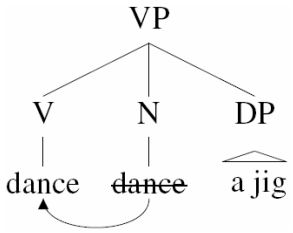
structure in which a null verb meaning something like 'do' takes the noun *dance* as its complement. The phonological features of N subsequently raise to fill the empty phonological matrix of V in a process called Conflation.

(13)



Regardless of the specifics of the Conflation mechanism, which has been compared to head movement (Harley 2004), the proposal that unergatives are underlyingly transitive has been widely adopted (e.g. Chomsky 1995: 248). If we accept this proposal, however, we are immediately faced with the same doubling problem that arose for classifier incorporation. If the verb itself is derived through incorporation of its direct object, how can we explain a cognate object construction such as *John danced a jig*, which involves both the incorporated direct object *dance* and the independent direct object *a jig*? As with classifier incorporation, the sentence taken at face value suggests the following awkward tree diagram.

(14)



2.3. Similarities Between the Two Constructions

Classifier incorporation and the cognate object construction are similar in several ways. Both constructions present the same structural challenge, illustrated in (3) and (14): how can we represent the co-occurrence of two direct objects that are, in some sense, one and the same object?

As well, both constructions can be seen as alternating with simpler structures in a parallel way. An underlying verb phrase like [$_{VP}$ buy fish] in a language with classifier incorporation and an underlying verb phrase like [$_{VP}$ (do) dance] in a language with the cognate object construction can both participate in the same three syntactic patterns. In the first alternant, the direct object remains in its original position. In a language like Mohawk, the result is a normal transitive verb phrase; in a language like English, the result is a light verb construction.

(15) a. My father bought a fish.
b. John did a dance.

In the second alternant, the verb incorporates its direct object. In Mohawk, the result is normal noun incorporation; in English, the result is an unergative intransitive verb.

(16) a. My father fish-bought ~~fish~~.

b. John danced ~~dance~~.

In the third alternant, the verb incorporates its direct object and also takes an independent direct object. In Mohawk, the result is classifier incorporation; in English, the result is the cognate object construction.

(17) a. My father fish-bought ~~fish~~ this bullhead.

b. John danced ~~dance~~ a jig.

This shared alternation suggests that aside from the different nature of the verb involved, the constructions may have parallel syntactic origins.

A final important similarity between classifier incorporation and the cognate object construction is that in both constructions, the noun in V acts as a classifier for the extra object. This is illustrated for classifier incorporation by the Caddo examples in (18) (Mithun 1984: 865) and for the cognate object construction by the English hyponymous object example in (19).

(18) a. *kassi' háh-'ič'á-sswí'-sa'.*
bead PROG-eye-string-PROG
'She is [eye-]stringing beads.'

b. *ka'ás háh-'ič'ah-'í-sa'.*
plum PROG-eye-grow-PROG
'Plums are [eye-]growing.'

(19) Ross and Sharon danced a jig/the tango/the Macarena…

In light of these similarities, it seems worthwhile to develop an analysis that treats both constructions in a parallel way, if possible.

3. The Adjunction Analysis

In fact, similar analyses that avoid the doubling problem have already been proposed, separately, for both classifier incorporation and the cognate object construction. In these analyses, the extra independent "object" is considered not to be an object at all, but rather an adjunct. This leaves the verb with only one true direct object, thus side-stepping the doubling problem. In this section, I summarize the adjunction analyses and then present several reasons why they do not explain all cases of direct object doubling.

3.1. Doubling as Adjunction

Baker (1988) takes the adjunction approach to explain classifier incorporation in Mohawk, assuming that in a sentence like (1a), the incorporated noun originates as the direct object of V and the independent NP is an adjunct attached outside the verb phrase, as shown roughly in (20). The adjoined NP is coreferential with the incorporated direct object but has no structural relationship with it, much as in the English example (21).

(20) [$_S$ [$_{NP}$ these bullheads$_i$] [$_S$ my father fish$_i$-bought ~~fish~~]]

(21) [$_S$ [$_{NP}$ that guy over there$_i$], [$_S$ I really hate him$_i$]]

Baker et al. (2004: 165) explicitly state that the relationship between incorporated nouns and doubled objects is one of resumption.

Although this analysis avoids the doubling problem, it makes the potentially undesirable prediction that the extra object, as an adjunct, may have different syntactic properties from regular argumental NPs (e.g. direct object NPs in sentences with no noun incorporation). Baker's (1996) revised theory, however, does not make this prediction. In Baker 1996, all overt NPs in a polysynthetic language, not just doubled objects, are considered to be adjuncts. This analysis avoids the doubling problem and predicts, apparently correctly, that all overt NPs have the same syntactic behaviour.

A similar adjunction analysis has been proposed for the cognate object construction. Zubizarreta (1987), Jones (1988), and Moltmann (1989) claim that the cognate object is actually an adverbial that modifies the verb phrase. In this analysis, cognate objects are structurally and semantically similar to adverbs, as the following example suggests.

(22) a. Heather [$_{VP}$ [$_{VP}$ smiled ~~smile~~] [$_{AdvP}$ pleasantly]]

b. Heather [$_{VP}$ [$_{VP}$ smiled ~~smile~~] [$_{NP}$ a pleasant smile]]

Since this analysis treats the extra object as an adjunct rather than a direct object, the doubling problem does not arise.

3.2. Problems with Adjunction

The adjunction analysis is a reasonable solution to the doubling problem, and for some languages, it seems appropriate. However, in at least a substantial subset of cases, the extra object behaves morphosyntactically like a typical direct object, not like an adjunct. In these cases, the adjunction analysis clearly makes the wrong predictions. Instead, some sort of direct object analysis seems preferable.

Consider first the adjunction analysis of classifier incorporation. Toyoshima (2001) argues against Baker's (1996) analysis of Mohawk on the grounds that coreference between the incorporated noun *fish* and the adjunct *these bullheads* in (20), repeated here as (23a), should be just as impossible as it is in the comparable English sentence (23b).

(23) a. These bullheads$_i$ my father fish$_i$-bought.

b. *The officer$_i$, a guerrilla shot the soldier$_i$.

Even if we accept Baker's analysis of Mohawk, however, it may not be appropriate for other languages. The polysynthetic status of Mohawk makes it difficult to establish whether an NP is in an argument or an adjunct position; Baker's (1996) analysis suggests that the distinction is not relevant at all. Mohawk is therefore not a good base for drawing generalizations about the nature of the extra object. A better test case would be a non-polysynthetic language with classifier incorporation. In such a language, the syntax should clearly show whether the extra object is in an adjunct position or an argument position.

Such a language does in fact exist. Hopi, as discussed by Jeanne (1978) and Gronemeyer (1996), has fixed SOV word order and classifier incorporation. Example (24), from Jeanne 1978: 234, illustrates the behaviour of both direct objects and adjoined NPs in Hopi.

(24) *mi maana, nu pu-t tuwa.*
that girl, I her-ACC see
'That girl, I see her.'

The direct object immediately precedes the verb and bears the accusative case marker *-t*. The topicalized NP, on the other hand, is adjoined to the left edge of the sentence and does not bear a case marker; it is also intonationally separate from the rest of the sentence.

Having established the difference between direct objects and adjoined NPs in Hopi, now consider an example of classifier incorporation like (25) (Gronemeyer 1996: 8).

(25) *piikuyi-t paa-mòy-ta.*
milk-ACC water-hold.in.mouth-CAUS
'He took a mouthful of milk.'

Here, the doubled object *piikuyit* clearly has the properties of a direct object, not an adjoined NP: it bears accusative case and is not followed by an intonational boundary. In light of these properties, it appears that Baker's adjunct analysis of classifier incorporation is not appropriate for Hopi. An analysis that treats the extra object as a true direct object is needed.

A similar argument can be made for the English cognate object construction. As Massam (1990) points out, cognate objects differ from adverbial adjuncts in several ways. Cognate objects cannot co-occur with direct objects, but adverbials can:

(26) a. *Maria kicked Ed a swift kick.
b. Maria kicked Ed swiftly.

As well, a hyponymous object can become the subject of a passive, as shown in (27), but an adverbial noun cannot, as shown in (28).[3]

(27) a. John danced a merry dance.
b. A merry dance was danced by John.

(28) a. John danced yesterday.
b. *Yesterday was danced by John.

Both of these properties are what we would expect if the cognate object were a true direct object, not an adjunct. Furthermore, in languages with overt case marking, cognate objects often show up with accusative case, as in the following examples.

[3] Unlike hyponymous objects, however, a strict cognate object cannot become the subject of a passive (**A happy smile was smiled by John*). I propose a reason for this difference in section 4.3.

(29) a. *Johann starb einen milden Tod*.
Johann died a peaceful death.ACC
'Johann died a peaceful death.' (German; Jones 1988: 102)

b. *istam pugnam pugnabo*.
that.ACC battle.ACC fight.FUT.1S
'I will fight that fight.' (Latin; Bary and de Swart 2005: 3)

It is possible to say, as Jones (1988) does, that adjunct NPs can receive default accusative case at PF. However, a more parsimonious hypothesis is that the cognate objects in (29) receive accusative case simply because they are structural objects.[4]

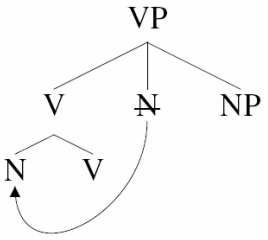
In view of this evidence, it seems that at least some cognate objects should be analyzed as true direct objects, not adverbials. This conclusion is in accord with recent work by Pereltsvaig (1999), who found that cognate objects in Hebrew, Russian, Vietnamese, and Edo can be divided into two classes: adverbials and direct objects. Pereltsvaig proposes an analysis for the adverbial class of cognate objects but not for the direct object class.

For both classifier incorporation and the cognate object construction, then, the adjunction analysis is not a complete solution to the doubling problem, although it may be correct in some cases. In order to explain object doubling in at least Hopi and English, we need an analysis that treats the extra object as a true direct object, not an adjunct.

4. A Classifier Analysis

If we accept that a direct object analysis is needed, the problem of accommodating two direct objects arises once again. A structure like (30), in which the two objects are separate constituents, is not adequate, since it fails to express that the noun in V and the independent object NP are both, in some sense, the same argument. In order to capture this idea, a structure is needed that permits both nouns to share the same object position at some point in the derivation.

(30)



Rosen (1989: 296) observes that in classifier incorporation, the incorporated noun and the independent object "are linked semantically in much the same way that a noun classifier is linked semantically to the noun it classifies." I believe that this insight is the key to a successful analysis of direct object doubling. By taking the "classifier" label at face value, my analysis will make Rosen's semantic link structurally explicit.

[4] See Massam 1990 for additional reasons why a cognate object should be seen as an argument of the verb.

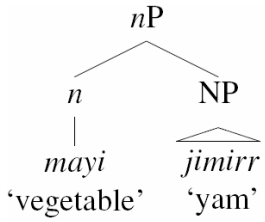
4.1. Deriving Object Doubling

Consider first the structure associated with noun classifiers in a classifier language, as in example (31) from the Australian language Yidiny (Craig 1994: 566).

(31) *mayi* *jimirr* *bamaal* *yaburungu* *julaal.*
vegetable.ABS yam.ABS person.ERG girl.ERG dug
'The girl dug up the yam.'

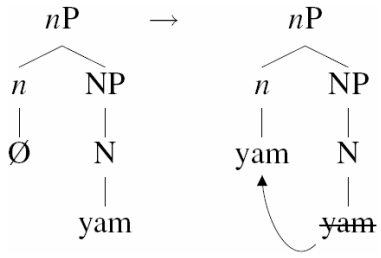
While Craig (1994) refers to words like *mayi* and *bamaal* as classifiers, Dixon (1977) calls them "generic nouns." This insight into the nature of such classifiers is captured by Tang (2005a,b), who analyzes Chinese classifiers as "light nouns," an analogy with light verbs. Extending the light noun analysis to Yidiny provides the structure in (32), in which the classifier occupies the light noun position and takes a full-fledged noun as its complement.

(32)



In classifier languages like Yidiny and Chinese, the overt classifier fills the *n* position. In languages that do not have overt classifiers, N raises to *n*, as proposed by Borer (2005: 109-110) and shown for English in (33).[5]

(33)



With this more elaborate representation of the noun phrase in place, let us reconsider the structures that are relevant to the doubling problem. For concreteness, I will assume that the raising involved (N to *n*, N to V, etc.) occurs through Conflation, shown by Hale and Keyser (1993, 2002) to be a useful mechanism for expressing syntactic aspects of certain lexical processes.[6] I will also assume, for uniformity, that the object of V is always DP. Hale and Keyser note that Conflation skips the D position, plausibly because a

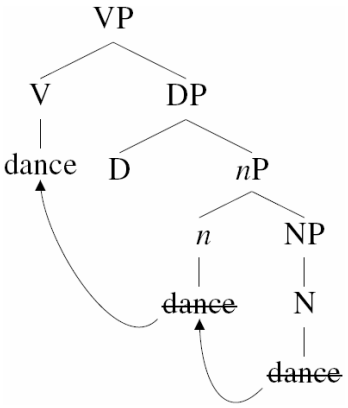
[5] Borer's (2005) formalization of noun-to-classifier movement differs somewhat from the analysis presented here, but the basic idea is equivalent.

[6] While Conflation technically involves phonological copying, not movement, I will nevertheless describe its effects using terms like "raising" and "movement" when they seem intuitively appropriate. I suspect, as does Harley (2004), that Conflation and head movement may be unifiable.

lexical process like Conflation cannot apply to purely functional categories. In the derivations sketched below, then, I will assume that D is invisible to Conflation.[7]

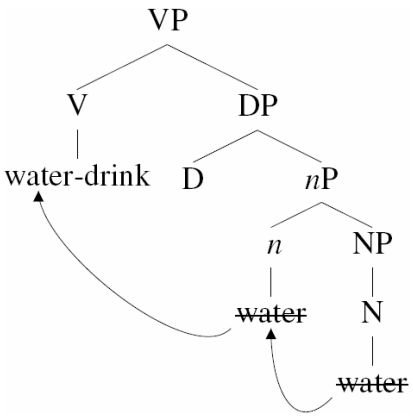
First consider the derivation of incorporation structures that do not involve doubling. In a normal English unergative like *John danced*, the noun *dance* moves from N to *n* to V by Conflation, as shown in (34).

(34)



In a normal example of noun incorporation such as *I water-drank*, the object *water* moves from N to *n* to V by Conflation, as shown in (35).

(35)

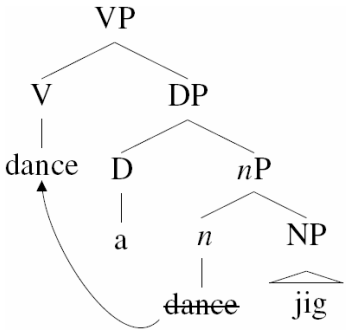


For both of the non-doubling structures, then, the introduction of the light noun position changes little from the original analyses given in (2) and (13). The only change in (34) and (35) is that the noun moves through one additional position.

Now consider the direct object doubling constructions. I propose that a hyponymous object construction like *John danced a jig* is derived as shown in (36).

[7] Skipping D is a problem for Hale and Keyser's model and, consequently, for mine as well. I suggest a possible solution in footnote 11.

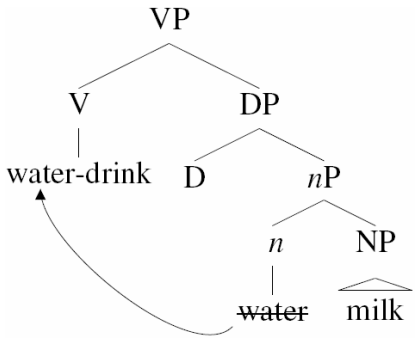
(36)



Here, the light noun position is not filled by the usual N-to-*n* raising. Instead, the noun *dance* is inserted into the light noun position, serving as a classifier for the noun *jig* in N. This creates the classifier phrase [$_{nP}$ [$_{n}$ dance] [$_{NP}$ jig]], parallel to the Yidiny classifier phrase in (32). The noun in *n* subsequently raises to V by Conflation, just as in the normal unergative in (34). As mentioned above, D is effectively invisible to Conflation and consequently does not block movement from *n* to V.[8]

The derivation of a classifier incorporation example such as *I water-drank milk* proceeds in the same way, as shown in (37): first the classifier phrase [$_{nP}$ [$_{n}$ water] [$_{NP}$ milk]] is created, then the noun in *n* raises to V by Conflation.

(37)



4.2. Implications of the Classifier Analysis

The classifier analysis solves the doubling problem by providing space for two noun-like items in DP: one in N and one in *n*. This analysis has several advantages. First, it recognizes that the incorporated noun and the extra object share the same syntactic source. Since they both originate within the DP complement of V, it is natural that both are understood as being one and the same thematic object. The eventual separation of *n* and N by *n*-to-V movement is merely a case of stranding, entirely parallel to the stranding of determiners and modifiers by N-to-V movement seen in Baker 1988.

[8] Here it is obvious why Conflation must ignore D: assuming strict locality, the overt determiner would otherwise block *n* from conflating with V. Hale and Keyser rationalize the apparent skipping of D on the basis of its nature as a functional category. While this rationalization is sufficient for my purposes here, a better solution may be to recast the entire Conflation mechanism in terms of head-to-specifier movement as suggested for head movement in general by Matushansky (2006). In a Matushansky-style analysis, N could be attracted to V via successive-cyclic movement through the specifiers of *n* and D and thus would not be blocked by overt material in the head D position.

A second advantage of the classifier analysis is that it places the extra object NP in an object position, not an adjunct position, thus predicting that it should have the morphosyntactic properties of a normal direct object, not an adjunct. I argue in section 3.2 that this is indeed the case for Hopi and English, and it is likely true for other languages as well.

A third advantage is that this analysis provides a structural representation for the classification relationship that has been observed to hold between the incorporated noun and the independent object NP. Rosen (1989: 297) notes that "the incorporated noun places a selectional restriction on the verb, such that the object NP must be within the class of objects delineated by the incorporated noun root." My analysis explicitly predicts this selectional restriction by treating the incorporated noun as a classifier of the object NP.

In this analysis, what makes classifier incorporation and the cognate object construction special is not that an extra direct object is permitted—something that is difficult to accommodate structurally—but rather that the classifier position is filled by external merge (i.e. by an item taken from the lexicon) instead of internal merge(i.e. movement). In order for this external merge to occur, certain general nouns like *paa* 'water' in Hopi and *dance* in English must have been reanalyzed as potential classifiers. This reanalysis is what makes doubling possible. In a language with no direct object doubling, no such reanalysis has taken place. Consequently, *n* cannot be filled by external merge and must be filled by N-to-*n* movement instead, making doubling impossible.

It is important to note that *n*-to-V raising appears to depend on morphological requirements that vary from language to language. In a language like Yidiny, classifiers are morphologically free and need not be incorporated into a verb; they can therefore occur freely with both subjects and objects, as in example (31). In Yidiny, then, it seems that *n*-to-V raising is not required to occur. In languages like English and Hopi, on the other hand, *n*-to-V raising seems obligatory. Nouns externally merged into *n* cannot stand on their own; rather, they must be incorporated into something else, possibly only into a verb. Because of this morphological requirement, members of the *n* category can occur only in positions from which incorporation into V is possible. In Hopi, a language that has noun incorporation, this requirement means that an overt *n* can occur only in the complement of V. In English, a language that has noun incorporation only when V is null, this requirement means that an overt *n* can occur only in the complement of a null V. As a consequence, English does not have freely-occurring classifiers as in (38).

(38) a. *John did a dance jig.
b. *The dance jig was entertaining.

4.3. A Closer Look at Cognate Objects

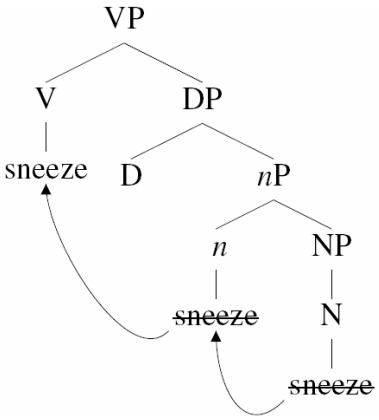
Up to this point, I have been vague about the difference between the strict cognate object construction and the hyponymous object construction. The classifier analysis of object doubling works well for the hyponymous object construction: it captures the classifier semantics that hold between, for example, *dance* and *jig*, and it correctly predicts that *a jig*, as the direct object, can be passivized and topicalized. Recall from section 2.2, however, that the strict cognate object construction differs from the hyponymous object construction in two ways:

(39) a. Modification of the strict cognate object is strongly favoured, if not obligatory.
b. The strict cognate object syntactically inaccessible in that it cannot be passivized or topicalized.

These differences indicate that the strict cognate object construction should be analyzed differently from the hyponymous object construction.

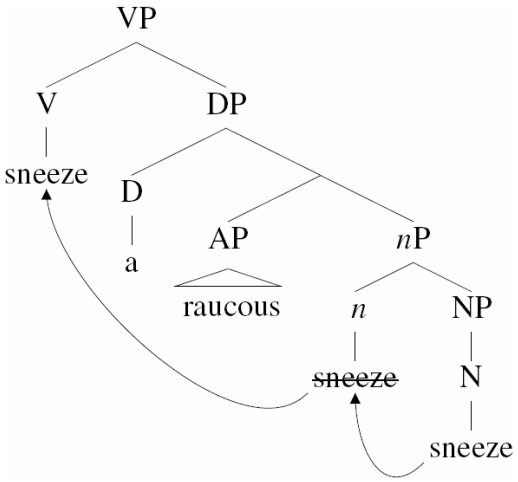
The modification requirement suggests an analysis along the same lines as that of Hale and Keyser (2002: 75–76). Suppose that English has a constraint against the stranding of modifiers. Now imagine the structure [$_{VP}$ [$_{V}$ Ø] DP], in which a null verb takes a DP object. Conflation applies to this structure, resulting in N-to-V movement. If the object is unmodified, N is spelled out only in its highest position, V. This is what happens in a normal unergative like *Sue sneezed*.

(40)



Now consider what happens when N-to-V movement applies to a modified object. In this case, the constraint against modifier stranding forces the lower copy of N to be spelled out in addition to the higher copy. This multiple spell-out of N produces a strict cognate object construction like *Sue sneezed a raucous sneeze*.

(41)



In the stranding analysis, then, unergatives and strict cognate object constructions involve exactly the same N-to-V movement. If N is unmodified, the outcome of movement is an unergative, while if N is modified, the outcome of movement is a strict cognate object

construction. Examples in which the strict cognate object contains an overt determiner but no modifier, such as ?*Sue sneezed a sneeze*, are presumably deviant because determiners, unlike modifiers, cannot trigger exceptional spell-out of the lower N.[9]

The stranding analysis predicts the distinguishing properties of the strict cognate object construction given in (39). The modification requirement follows from the fact that a strict cognate object is spelled out only when required by a modifier. The syntactic inaccessibility of the strict cognate object follows from its status as a lower copy. As far as any further syntactic operations are concerned, the noun *sneeze* in (41) is located in V, its highest position; exceptional spell-out of the copy in N is simply due to a morphophonological constraint against modifier stranding. Since the syntax cannot access *sneeze* in N, it follows that *sneeze* cannot be passivized or topicalized.

5. Conclusion

Close examination of classifier incorporation and the cognate object construction indicates not only that both constructions are similar enough to invite a parallel analysis, but also that existing adjunction solutions to the direct object doubling problem are inadequate. I have argued that doubling arises from a classifier structure in which the light noun position *n* and the full noun position N are filled by two distinct lexical items. In comparable non-doubling structures, *n* is filled with a copy of the noun in N. I distinguish between two grammatically distinct classes of cognate objects: hyponymous objects, which arise through a classifier structure, and strict cognate objects, which result from multiple spell-out of a single N. Table 1 summarizes the derivation of each construction discussed in this paper.

Table 1: Object doubling and related constructions

CONSTRUCTION	DERIVATION
Unergative	N raises to *n* to null V
Strict cognate object	N raises to *n* to null V; N spelled out in two positions
Noun incorporation	N raises to *n* to overt V
Hyponymous object	N and *n* distinct; *n* raises to null V
Classifier incorporation	N and *n* distinct; *n* raises to overt V

The classifier analysis of doubling explains how two objects can seemingly originate in the same syntactic position. It correctly predicts that the extra object has the morphosyntactic properties of a true object, not an adjunct; as well, it explains the classification relationship that holds between the incorporated noun and the independent object. The

[9] It may seem strange that the determiner cannot trigger spell-out of the lower N, since determiners, like modifiers, cannot be stranded: **Sue sneezed a.* Recall, however, that Conflation is a lexical semantic process. I assume that functional categories like D are not as intimately involved in the lexical semantic derivation as modifiers are. Although a stranded D is indeed grammatically bad, D stranding cannot be circumvented by multiple spell-out in the lexical semantic derivation because D is not semantically "heavy" enough to trigger such an operation. Indeed, if D does somehow manage to trigger multiple spell-out of N, thus satisfying the grammar, the result seems to violate some semantic principle: as Massam (1990: 182) observes, the deviance of sentences like *?Sue sneezed a sneeze* is semantic, not grammatical.

proposal that the two classes of cognate objects have a different structural basis provides a principled reason for the differences between them.

This analysis was developed to account for classifier incorporation in Hopi and the cognate object construction in English, which both clearly require the extra object to be placed in an argument position, not an adjunct position. The extent to which the classifier analysis is appropriate for doubling constructions in other languages is, as of yet, an open question.

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An Investigation of /æ/ Retraction and Lowering in St. John's

HEATHER RECKLING

1. Introduction

According to Clarke (1991: 111), the speech community of St. John's, Newfoundland is in "a state of flux". Traditionally, Newfoundland has been a geographically and socially-isolated region, giving its people the opportunity to develop a local dialect of English distinct from the rest of the country. Although the English dialect spoken in St. John's appears relatively stable (D'Arcy 2005: 327), the province is currently more influenced by mainland Canada than in the past, and this influence is seemingly being felt in the variety of English spoken in St. John's. In fact, Clarke (1991) found that in St. John's speech, a general movement towards mainland Canadian pronunciation is taking place (119). Canadian English (CE) is considered to be a distinct dialect with three major dialect areas: Newfoundland, the remainder of Eastern Canada (including Ontario), and Western Canada (de Wolfe 1992). Sub-groups of dialects are found within these broader groups as well. CE is currently undergoing a substantial vowel shift involving the lowering of front lax vowels. Clarke et al. (1995) report on this vowel shift and refer to it as the Canadian Shift. Esling and Warkentyne (1993) investigated one component of this vowel shift—the retraction and lowering of /æ/. They found that social status and gender were both important factors. D'Arcy (2005: 334) proposes that this type of innovation is "filtering gradually into the community via formal speech styles".

Most recently, D'Arcy (2005) studied whether the Canadian Shift is taking place in St. John's English. More specifically, she investigated the retraction and lowering of /æ/ as well as the fronting of /aʊ/. She interviewed 16 young females (pre-adolescent and adolescent) using word lists as well as free speech in order to elicit both casual and careful speech styles. Regarding the frequency of production of the standard and innovative variant of /æ/, she found that the innovative pronunciation was used by adolescent-aged children with non-local parents. For participants with local parents, she found that stylistic and social factors are significant, while for participants with non-local parents, internal linguistic constraints determine which variant is produced. D'Arcy concluded that the speech community of St. John's appears to be moving towards the innovative mainland variants, and that these pronunciations would eventually become the norm.

This study examines the lowering and retraction of /æ/ which is reportedly taking place in St. John's English by examining the speech of local university students. Given that D'Arcy's study examined adolescents five years ago, the university-age participants

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in this study are the same age that D'Arcy's participants would be now. This study examines many of the same social and linguistic factors as D'Arcy's study. Half of the participants have one or both parents originally from mainland Canada while the other half have parents who are native to Newfoundland and have lived in St. John's for most or all of their lives. Unlike D'Arcy's study, this study includes both males and females. Although much of the sociolinguistic literature identifies women as the leaders of sound change and the most likely users of prestige variants (e.g. Labov 1990: 206), gender differences do not appear to be as pronounced as they were 15 years ago. It is possible, given the social context, that both males and females now adopt innovative variants at approximately the same time. The aim of this study is to determine whether the retraction and lowering of /æ/ is indeed happening in the speech community of St. John's. It examines the speech of the social group that would be the most likely to adopt innovative and prestigious variants first: upwardly mobile university students.

I predict that linguistic change towards the innovative mainland variant of /æ/ will occur in greater frequency for females than males, but not to a very significant degree given that the participants are all university students or recent graduates. Parental origin may not be particularly significant, but perhaps there may be a slightly higher frequency of the innovative variant for participants with non-local parents. I expect to find a notable difference between careful and casual speech styles due the reported trend of St. John's youth becoming bidialectal (Clarke 1991). I also predict that internal linguistic constraints will be somewhat significant for participants with non-local parents. In short, I expect to find similar results to those of D'Arcy's study, but to a lesser extent.

2. Methodology

This study includes 8 speakers: 4 males and 4 females between the ages of 19 and 22. They are all currently students or recent graduates of Memorial University. University students were chosen because of their status as socially-ambitious people likely to adopt prestige variants. Many local university students face the possibility of having to move to mainland Canada to seek employment, thus providing additional incentive to adopt a more standard dialect.

2.1. Age and Sex

Previous studies contend that regardless of the particular linguistic variant, change consistently manifests itself among younger speakers, while adults tend to be conservative with regard to linguistic variables (Eckert 1997). For this reason, I chose to look at only younger speakers. Previous studies have also shown that, in general, women lead the way in the adoption of linguistic innovations and tend to speak a more standard dialect in comparison with men (Labov 1990, D'Arcy, 2005). Clarke (1991: 115) found that "while males tend to favour local speech norms, females are quicker to embrace the external standard variety". However, there are documented cases of men leading minor linguistic changes such as the unrounding of /o/ (Labov 1990). For this reason, and for the aforementioned narrower gender distinction, males are also included in this study.

2.2. Parental Origin

Half of the female and male participants have one or both parents originally from mainland Canada, while the other half have parents native to Newfoundland. The parents had all been actively involved in the upbringing of the participants, therefore having the opportunity to exert a linguistic influence on them. Considering that the innovative pronunciation of /æ/ developed 25–30 years ago (D'Arcy 2005), participants were selected whose non-local parents had moved to Newfoundland since the 1970s, making it more likely that the innovation may have found its way into their speech when they lived in mainland Canada. Local parents had lived in the St. John's area for a substantial number of years. All of the participants themselves are native Newfoundlanders and have lived in St. John's for all of their lives. The non-local parents originally came from several different Canadian provinces.

2.3. Linguistic Variables

As previously mentioned, the linguistic variable examined in this study is /æ/, which is articulated as a low front vowel in standard Canadian English. Examining the production of this vowel in a number of controlled phonetic environments will indicate whether there is a tendency towards the standard pronunciation of the /æ/ variable, or its innovative retracted and lowered variant. In addition to the standard Canadian English /æ/ and the innovative lowered and retracted /æ/, the St. John's dialect also has a raised variant of /æ/ (Clarke 1991). Since previous literature has shown that the preceding linguistic environment does not affect the articulation of a vowel (Clarke et al. 1995), only the phonetic environment following the vowel in question was noted. The environment was coded for place of articulation, manner of articulation, and voicing. The codas of each word contain a voiced or voiceless plosive, fricative or nasal with a labial, coronal or velar place of articulation.

2.4. Method

Data was collected for this study using two distinct methods: a word list and an interview. The word list included 50 words, 17 of them foil words not containing /æ/. The word list consists of VC and CVC examples. Following the initial reading of the word list, 10-15 minutes of casual conversation between the interviewer and the participant were recorded, from which 10 tokens of /æ/ were extracted for analysis. After the period of casual conversation, the word list was read for a second time. The interviews were recorded on cassette tapes. A total of 76 relevant speech tokens were analyzed per speaker: 66 from the word list (read twice) and 10 from the casual conversation.

2.5. Stylistic Factors

The chosen methodology was intended to elicit both casual and careful speech in an attempt to minimize the Observer's Paradox. Labov (as cited in Milroy and Gordon 2003) states that when speakers are less attentive to their speech, they produce their vernacular dialect, which is the most useful form for examining language change in progress. Careful speech, in contrast, results when speaker is self-conscious of their speech (Schilling-Estes 2002). Since Clarke's (1991) results indicated that younger St. John's speakers are able to shift between local variants in casual situations and CE variants in formal situations, it seems worthwhile to examine the issue once again, 14 years later. The prediction,

therefore, is that participants will produce their most careful speech during the first reading of the word-list, and will begin to produce more casual variants during the conversation period and final word-list reading. If speakers do indeed shift between local and standard variants, this context is likely to elicit such code-switching.

3. Results

Tables 1 and 2 display the results from the doubly-elicited word list. Table 1 provides the overall frequency of each variant while Table 2 takes into account the manner of articulation of the preceding segment. The data from the casual conversations are not included here due to the difficulties encountered in extracting tokens (mainly a result of the high speech rate that occurs in casual conversation).

Table 1: Overall frequencies (percentage and number)

VARIANT	LOCAL		NON-LOCAL	
OF /æ/	MALE	FEMALE	MALE	FEMALE
Raised	53% (70)	33% (44)	47% (63)	23% (35)
Standard	37% (49)	67% (88)	53% (69)	77% (102)
Retracted	10% (14)	0	0	0

Table 2: Frequency by manner of articulation (percentage and number)

PRECEDING	VARIANT	LOCAL		NON-LOCAL	
SEGMENT	OF /æ/	MALE	FEMALE	MALE	FEMALE
Plosive	Raised	44% (29)	13% (9)	31% (20)	16% (11)
	Standard	45% (30)	86% (59)	70% (48)	84% (57)
	Retracted	11% (9)	0	0	0
Fricative	Raised	42% (12)	25% (7)	36% (10)	3% (1)
	Standard	43% (12)	75% (21)	64% (18)	97% (27)
	Retracted	15% (4)	0	0	0
Nasal	Raised	81% (29)	77% (28)	92% (33)	50% (18)
	Standard	19% (7)	22% (8)	8% (3)	50% (18)
	Retracted	0	0	0	0

As Table 1 illustrates, the local raised /æ/ variant is still frequent in the speech of young university students, both male and female. Also obvious from this table is the notable absence of the innovative CE variant of /æ/ in any of the results, regardless of the linguistic, social, or stylistic context. One of the male speakers sometimes produced a retracted version of /æ/. This, however, was not the innovative retracted and lowered variant, as the vowel also underwent raising, and it also cannot be classified as the local raised variant due to its retraction. Overall, the standard Canadian English variant of /æ/ appears more frequently than the local raised variant.

3.1. Social Factors

The social factors examined in this study were sex of the participant and origin of the participant's parents. Table 1 indicates that sex did indeed correlate with the variety of /æ/ produced. Overall, females tended to produce the standard Canadian /æ/ at a higher fre-

quency than males, and conversely produced the local raised variant at a lower frequency. The only production of a variant retracted enough to be classified as the innovative variant came from a male, but as mentioned above, it would be best treated as an exception. Regarding parental origin, Table 1 indicates a slight trend for speakers with non-local parents to produce a lower frequency of the local raised /æ/, and a higher frequency of the standard CE vowel. Statistical tests would be required in order to determine the true significance of the results.

3.2. Linguistic Factors

Table 2 displays the frequencies of the variant occurring based on the manner of articulation of the following segment. Since there were no clear tokens of the retracted and lowered /æ/, it is impossible to test D'Arcy's predictions regarding the manner of articulation of the following consonant. Indeed, the only clear trend in the data regarding manner of articulation is that a nasal following the vowel quite often correlates with a raised pronunciation. This is most likely due to the co-articulatory effect that nasals tend to have on surrounding vowels. Otherwise, the manner of articulation of the following segment does not appear to have any clear effect on the variant.

The other two possible internal constraints are voicing of the following segment and place of articulation, neither of which appears to have a significant effect on the following segment. Once again, since no clear examples of retraction and lowering were produced in the data, the results cannot be compared with those of D'Arcy's experiment.

3.3. Stylistic Factors

If one assumes that speakers use a more informal style during and after the period of casual conversation, then a stylistic effect seems to surface in the data. This is most noticeable in the data for speakers 3 and 4: two males, one with local and one with non-local parents. For speaker 3, the frequency of raised /æ/ versus standard Canadian /æ/ increases from 58% to 85% during the second reading of the wordlist. For speaker 4, the frequency of local raised /æ/ produced in speech increases from 48% on the first reading to 79% on the second reading. A possible explanation for this effect is that the speakers are more at ease later in the recording and read the word list at a faster, more natural, rate. The data from the casual conversation itself provides no obvious trends. However, it did seem to elicit more casual speech in some of the speakers, possibly those who had been feeling guarded at the beginning of the interview.

4. Discussion

As noted above, D'Arcy's prediction about the innovative nature of /æ/ in St. John's English is not confirmed by the results of this study. Since the speakers interviewed were approximately the same age as the participants in D'Arcy's study when it was conducted five years ago, this raises some important questions about her findings. Why is it that, excluding the one exceptional case, there were no clear examples of retraction and lowering found in this study? Furthermore, the outlying example in question was from a male speaker, a group which D'Arcy had not even looked at in her study. The lack of supporting results can be attributed to an unrepresentative pool of speakers in this study, but D'Arcy's study included only 16 speakers, and certain details are omitted from the study.

For instance, there is little description of the social backgrounds of the speakers in question, such as living outside the province.

Perhaps the lack of the retracted and lowered variant in the speech of students with non-local parents occurs because the feature in question may not exist in their parents' language. Since retraction and lowering only began to take hold during the 1970s, the parents may have left mainland Canada before the innovative variant had a chance to replace their traditional pronunciation.

Although the innovative /æ/ does not appear in the speech elicited from the participants, this does not disprove the prediction that university students would tend to use more prestigious variants. Until the innovative /æ/ makes its way into the St. John's dialect in a more notable way, the standard Canadian /æ/ continues to be the prestige variant. These young university students are producing the standard Canadian pronunciation at a higher frequency than the local variant, revealing an aspiration towards what is considered to be the prestige variant.

The male speakers, regardless of their parents' origins, tend to produce a higher frequency of the local, less prestigious, variant. This corresponds with the findings of many other sociolinguistic studies. However, statistical testing would once again be necessary in order to determine whether the effect of the participant's sex and parental origin is indeed significant.

Evidently, examining only eight speakers does not allow us to draw conclusions about sound change in St. John's English. In order to do this, a larger study examining many more speakers is needed. Also, a drawback of both this study and D'Arcy's study is the lack of acoustic analysis in classifying the vowels. Using acoustic analysis software such as PRAAT would allow for a much clearer analysis and coding of the vowels in question.

Clarke (1991: 116) observed that the retraction of /æ/ in St. John's English is a slowly-occurring linguistic change in younger groups, and D'Arcy's (2005) study set out to prove that this was in fact occurring. However, the data from the current study does not uncover any clear instances of retraction and lowering of /æ/, contrary to what one might expect. It would be interesting to conduct a similar study ten years from now to see if this variant does indeed become the prestige variant in St. John's English.

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The Acquisition of French Front Rounded Vowels by Native English Speakers

ERIN SWAIN

1. Introduction

The following study deals with the acquisition of new phonemes in a speaker's second language. The particular focus of this study is the acquisition of French front rounded vowels by native English speakers. The problem English L2 speakers of French face is the necessity of acquiring new categories. From a horizontal perspective, the English vowel inventory has a two-way distinction between vowels: front unrounded and back rounded. The French vowel inventory on the other hand, requires a three-way distinction: front rounded, front unrounded, and back rounded. Based on the analysis of production of English L2 learners of French, I examine the extent to which this contrast is acquired in both low-intermediate and advanced speakers of French.

This paper begins with a discussion of two background studies that deal with the second language acquisition of vowels, one based on production, the other based on perception. Based on the results of the background studies, Section 3 sets out my predictions regarding the results of the current study. Section 4 outlines the methodology of the study. Section 5 provides an overview of the results and Section 6 discusses their significance.

2. Background Studies

2.1. Production

The fact that non-native speakers of French make production errors is not surprising. Wade (1980) conducted a study of pronunciation errors made by American beginner learners of French. This study concentrates on several common pronunciation errors gathered from the productions of 80 to 100 students in their first semester of university French. The experiment consisted of four tasks: mimicry, reading, grammatical transformations, and picture naming. The first two were conducted near the beginning of the semester, while the final two were conducted near the end of the term (Wade 1980: 425).

The results varied with regards to the pronunciation of front rounded vowels. Wade found that [y] was produced correctly only 27% of the time, with a fairly consistent substitution of [u]. The other front rounded vowels, [ø oe], were reported to have been pro-

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duced accurately 30-60% of the time, with variable substitution. The most 'dominant' substitutions were [u] and [ø], respectively (Wade 1980: 429).

Certain aspects of Wade's study could potentially present problems. Two of the tasks, mimicry and reading, are questionable methods for eliciting second-language speech. Mimicry is based on short-term memory, as opposed to the more important factor of speaker competence. Reading may also confuse pronunciation, because the orthographic representation of French may initiate transfer from English. For example in seeing the letter 'u,' English speakers may use the vowel [u] rather than [y]. In such a case, the speakers' performance may not reflect their actual competence.

Wade's transcription may also be problematic. He does not state whether he is a native French speaker, and he transcribes by ear from recordings rather than using speech analysis software. This leaves a wide margin for error in transcription. An analysis of the acoustic correlates of the vowels would provide much more accurate results. This is the method used in the current study.

Furthermore, Wade does not present an analysis of the consistent substitutions the speakers used: Why were the phonemes produced as such? Is this a perception or a production problem, or both?

Despite these issues, Wade's study provides hypotheses which can be tested using acoustic analysis in the current study.

2.2. Perception

Escudero and Boersma (2002) examine the acquisition of a new phoneme inventory in a second language. Their study discusses three types of category assimilation. In the first type, single-category assimilation or perceptual equivalence, two categories in the L2 are perceived as one category. For example, Japanese does not distinguish between the laterals /l/ and /r/. Therefore, a Japanese speaker may perceive both /l/ and /r/ as one category, [ɺ] (Escudero and Boersma 2002: 208). In the second type, two-category assimilation, the speaker perceives a binary contrast in the second language as a binary contrast that exists in their native language. For example, the /p^h/ and /b/ contrast in English may be perceived by native Spanish speaker as unaspirated /p/ and /b/ since Spanish does not have aspiration (Escudero and Boersma 2002: 208). The third type of category assimilation, multiple category assimilation, is the focus of Escudero and Boersma's paper. This type of assimilation is described as a binary contrast in the second language which is perceived as a multiple contrast in the L1 (Escudero and Boersma 2002: 209). For example, Dutch has /i e ɛ/ while Spanish has /i e/. Dutch learners of Spanish may perceive a three-way contrast in Spanish, where only a binary contrast exists. This type of category assimilation is the focus of the paper, as it results from the subset problem in L2 acquisition. Although the current study deals with an L2 which has a larger vowel inventory than the L1, Escudero and Boersma's results are still relevant.

Escudero and Boersma study native Dutch speakers' acquisition of Spanish by analyzing their vowel perception. Dutch has twelve vowels, seven of which are front, while Spanish has five vowels, two of which are front. If multiple category assimilation exists, we may expect more errors in front vowels than in back vowels (Escudero and Boersma 2002: 213), since language is acquired through positive evidence only. Furthermore, if

there are more front vowels than back, the L2 learner must move and delete existing category boundaries (Escudero and Boersma 2002: 210).

In their study, Escudero and Boersma (2002: 211) tested five groups: 11 beginners, 18 intermediate learners, and 9 advanced speakers with 44 Spanish and 11 Dutch controls. The subjects completed three tasks. In the first task the subjects were given Spanish forms (Spanish vowels surrounded by Spanish-sounding consonant environments), but were told they were listening to Dutch forms. They were asked to label the vowels as either /e/ or /i/, which exist in Spanish. In the second task, the subjects were told they were listening to Spanish vowels (but the vowels were in Dutch-sounding consonant environments), and had to label the front vowels as /e/ or /i/. These first two tasks deal with the effects of language mode on vowel perception, which is not relevant to the current study. In the third task, however, which is the more relevant task for the current study, subjects simply labeled the five Spanish vowels given in a CVC environment (Escudero and Boersma 2002: 211–215).

In the Escudero and Boersma study, Dutch monolinguals and beginner speakers of Spanish made almost all labeling errors in the front vowels, while intermediate and advanced speakers of Spanish showed a more equal number of errors in the labeling of front and back vowels (Escudero and Boersma 2002: 212). The results of this task suggest that the initial perceptual system in the L2 is a copy of that of the L1 perceptual system. In later stages of the interlanguage, however, speakers acquire new boundaries or categories, which allow them to properly perceive vowels in the target language.

3. Predictions

The studies discussed above reveal important aspects of phonological acquisition, specifically regarding production and perception, which leads to certain predictions for the current study. First, Wade's (1980) study predicts deviations in pronunciation from the target vowels. The results of the current study demonstrate whether /y/ and /ø/ are in fact realized as [u], and whether /oe/ is realized as [oe], as reported by Wade. Wade also notes that /y/ is pronounced correctly 27% of the time, while /ø/ and /oe/ are pronounced correctly 30-60% of the time.

Escudero and Boersma's (2002) study is based solely on perception, whereas the current study tests only production. It is important to note that in L2 acquisition, perception precedes production. Therefore, perception problems manifest themselves in an L2 learner's production. Consequently, I predict that the beginner speakers will not have fully acquired the categories needed for the target language, but that these categories (i.e. front rounded vowels) will be properly produced in the advanced speakers' productions.

4. The Study

This section outlines the subjects and methodology of the current study.

4.1. Subjects

For the current study I have chosen one female native French speaker as a control and five female university students between the ages of 21 and 23 as the L2 subjects. Females were chosen consistently in order to control the effects of the size of the vocal tract and

the fundamental frequency (Borden, Harris, and Raphael 2003). Three of the five students are low to low-intermediate speakers, while two of the students are high-intermediate to advanced speakers of French.

The control, Anna, is a native speaker of European French, which is important since there are many dialectal features in Qubec French that do not exist in European French. She is very articulate and animated when speaking, which may have an effect on her vowel categories. This is discussed further in Section 6.

The first beginner speaker, Marla, is 21 years old and a native of St. Anthony, a small community on the Northern Peninsula of Newfoundland. Her exposure to French includes some core French courses at the high school level, and two courses at the introductory level at university. She has not spent significant time in a French-speaking environment, and has not taken a course in French in approximately two years.

The second beginner speaker, Danielle, is 23 and a native of St. John's. Her exposure to French includes a French immersion program from Kindergarten to grade six and one introductory course at the university level. Danielle has not spent significant time in a French-speaking environment and has not spoken French on a regular basis in twelve years.

The third beginner speaker, Michelle, is Danielle's twin sister. She too was enrolled in French immersion until grade six. She has, however, taken three courses at that introductory level and one course at the intermediate level at university. She has never spent significant time in a French-speaking environment.

The first advanced speaker, Tara, is 23 and is from St. John's. Her exposure to French includes enrollment in French immersion from Kindergarten until grade twelve. In the last five years she has completed a French minor at university and has spent a month in St. Pierre, an island of France off the coast of Newfoundland.

The second advanced speaker, Christina, is 22 years old and is from St. John's. Her exposure to French is mostly from a naturalistic environment—her father is a native French speaker and has consistently spoken to her in French from birth. Christina is also completing a minor in French at university. She has spent a significant amount of time in St. Pierre, as she has relatives there.

4.2. Methodology

Data was collected using a series of picture-naming tasks. The experiment consists of a series of images representing words with front rounded vowels as well as other non-low vowels for comparison. The pictures were of concrete objects that represent fairly basic words in the vocabulary.[1] Since French is iambic, with primary stress at the right edge of words (or prosodic phrases), the analyzed vowels were taken only from the last syllable of the word.

The vowels were analyzed using Praat, open-source software that decomposes sound files into waveforms and spectrograms. Each vowel was analyzed on the basis of its formant frequencies. Formants represent the peaks of resonance in the vocal tract. The frequency of each formant represents the shape of the vocal tract during the production of a vowel. In general, the first formant (F1) is related to vowel height; the higher the vowel,

[1] The chosen images proved to accurately depict the target words, as the native French speaker correctly identified 94% of the words.

the lower the formant and vice versa. The second formant (F2) is related to vowel backness: the more back the vowel, the lower the formant and vice versa. The third formant (F3) is related to rounding, which is relative. For example, the F3 of mid front rounded vowels should at least be 200Hz lower than that of the corresponding unrounded vowel. These formant measurements have been taken midway through the vowel production, in order to avoid the effects of adjacent consonants.

Acoustic analysis is perhaps the most accurate method of studying vowel production, as it is not biased by a transcriber's perception. The formant frequencies display exactly how the vowel is being produced. The precision provided by this vowel measurement technique could have reinforced Wade's (1980) findings.

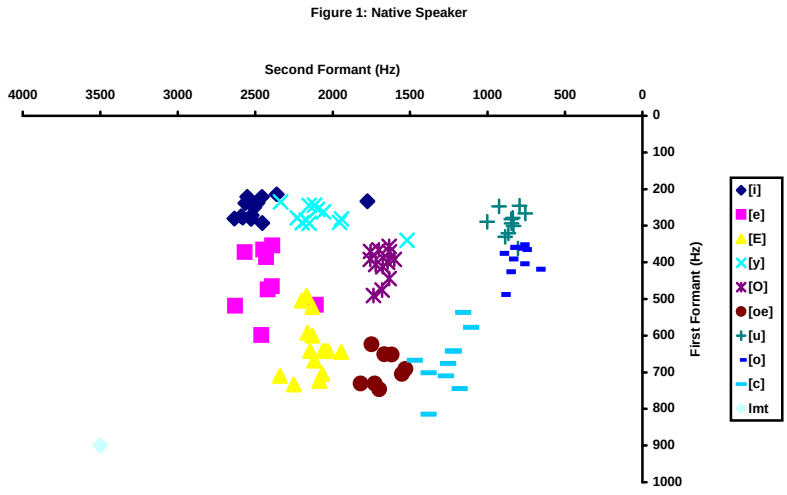
5. Results

This section discusses the vowel measurements for each participant individually. Note that in the legends of all vowel charts, 'E' represents /ɛ/, 'O' represents /ø/, 'c' represents /ɔ/, and 'lmt' is a limit inserted to maintain a consistent chart size.

5.1. Native French Speaker (Anna)

The vowel inventory of the native speaker is given in Figure 1. Other than a couple of counter-examples, the vowel categories are clearly defined. One such counterexample is a token of [i] that is much more backed than expected. Such counterexamples are simply instances of mispronunciation.

Figure 1: Native French Speaker (Anna)



The F3 value, which is not represented in the vowel chart, is also important in the perception of roundness. The approximate average F3 values of the native speaker's vowels are as follows:

Table 1: Anna's F3 Values

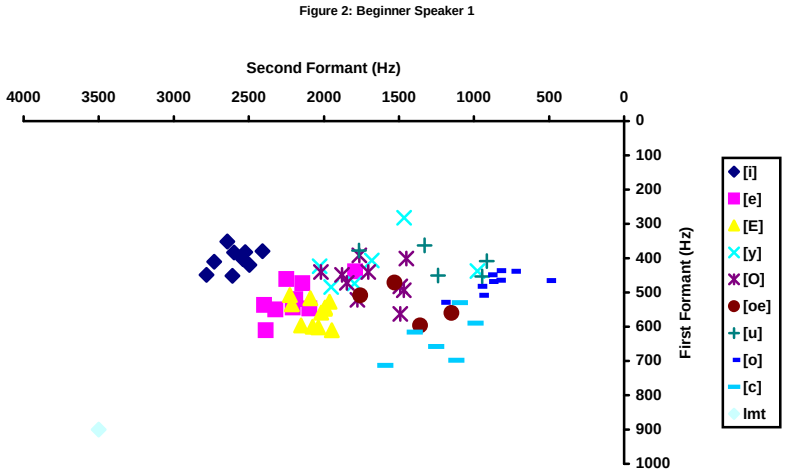
VOWEL	AVERAGE F3 (HZ)
i	3500
e	3000
ɛ	3000
y	2500
o	2800
œ	2700
u	2700
o	3000
ɔ	3000

In light of Table 1, it is evident that [y] should have an F3 approximately 1000 Hz lower than [i], and [ø oe] should have an F3 at least 200Hz lower than the corresponding unrounded vowel. The fact that the contrast is only about 200 to 300 Hz in the mid vowels suggests that the roundedness of these vowels is not as salient as that of [y]. I speculate that vowel rounding exists on a continuum, with [ø oe] less rounded than [y].

5.2. Beginner Speaker 1 (Marla)

In view of Figure 2 it is clear that Marla has not acquired the three target categories. The vowels /i e ɛ u o ɔ/, which exist in English, are clear categories. The new categories, however, do not appear to hold any specific space in the vowel inventory. It appears that Marla is at a stage of interlanguage where the perceptual system has not yet created categories for target vowels.

Figure 2: Beginner Speaker 1 (Marla)



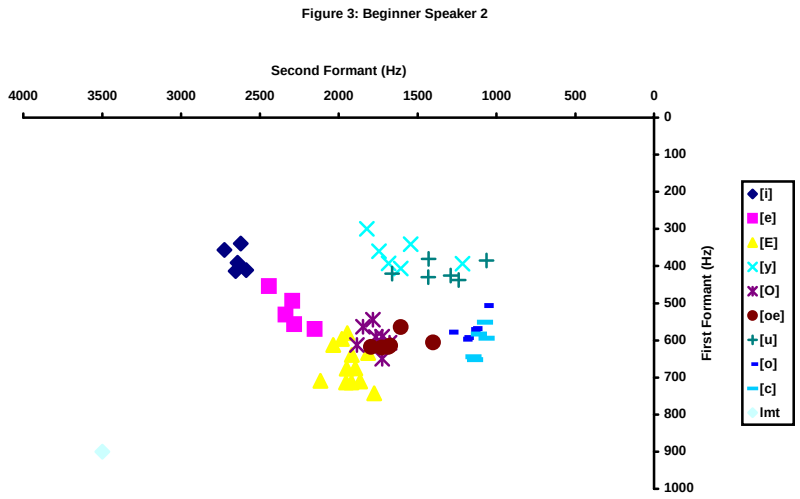
Although the vowel categories have not been distinguished, Marla knows 72 out of 114 or 63% or lexical items. This percentage of known lexical items is comparable to the number known by the other beginner speakers. Danielle identifies 59 of 114, and Mi-

chelle identifies 63 of 114 items. This implies that lexical acquisition occurs at an earlier stage of acquisition than does vowel specification.

5.3. Beginner Speaker 2 (Danielle)

Figure 3 suggests that Danielle is at a slightly later stage of the interlanguage. The vowel [y] appears to share the same acoustic space as [u], therefore they exist as one category. They both also have an average F3 of 2550 Hz. The vowels [ø œ] also form one category. They overlap in the given inventory, and they also share the same average F3 of 2775 Hz.

Figure 3: Beginner Speaker 2 (Danielle)



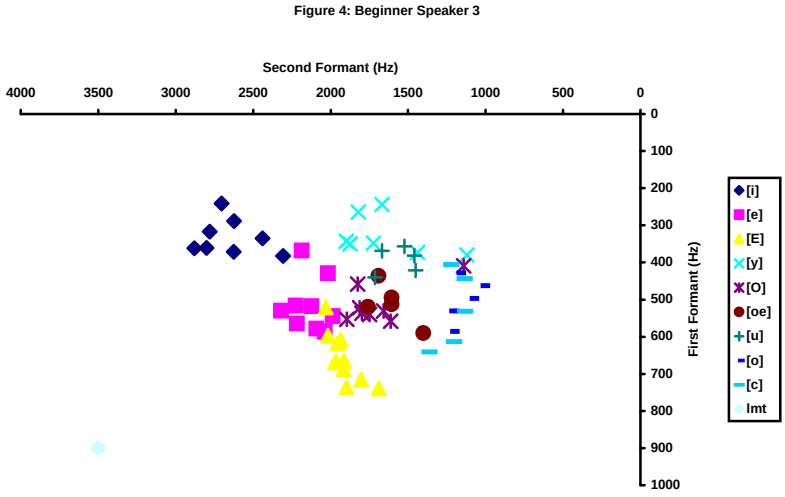
The corresponding unrounded vowels have an approximate average F3 value of 2900 Hz. This reveals that there is no significant rounding of these vowels, in comparison to the native speakers contrast of 200 to 300 Hz.

The fact that there is more vowel specification implies that the second stage of vowel acquisition involves category differentiation. This differentiation has not been acquired at Marla's initial stage of L2 acquisition. The fact that Marla has not yet acquired new vowel categories is consistent with Escudero and Boersma (2002: 212), who found that the performance of the beginner L2 learners of Spanish was very similar to the performance of Dutch-only speakers.

5.4. Beginner Speaker 3 (Michelle)

As seen in Figure 4, although Michelle has not acquired the proper categories yet, she is somewhat closer to the target vowels than Danielle. First, she does not yet have the correct production of [y]; however, she has begun to acquire a new category for this vowel. Clearly her [y] is not a front vowel, but it is higher than [u], which suggests that she does perceive the difference in the two vowels, and is beginning to produce two categories.

Figure 4: Beginner Speaker 3 (Michelle)

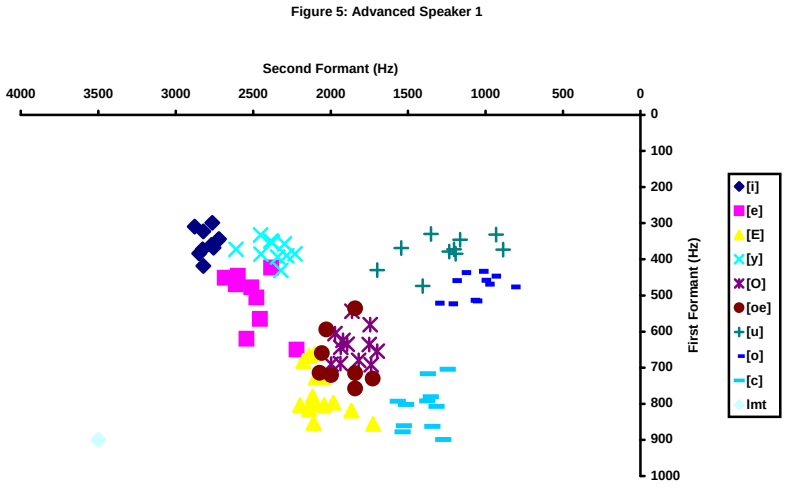


As for the mid front rounded vowels, it is clear that Michelle does not have separate categories either. The mid front rounded vowels both occupy the same acoustic space, and they both have and approximate average F3 of 2650 Hz. Michelle's /e/ and /ɛ/ have an average approximate F3 of 2900 and 2850 Hz respectively. This contrast is closer to the target, demonstrating that this speaker has in fact acquired the [+round] feature of this category.

5.5. Advanced Speaker 1 (Tara)

In view of the first advanced speaker's vowel chart in Figure 5, it is clear that she has acquired a pronunciation fairly close to that of the target vowel. The vowel [y] is fronted and does not overlap with [u] as it does with the other speakers.

Figure 5: Advanced Speaker 1 (Tara)



The mid front rounded vowels do overlap slightly. The vowel [ø] overlaps [œ] 33% of the time (4 out of twelve tokens). This suggests that this speaker is at a stage of the interlanguage where separate categories are being created. There are other possibilities that may explain this overlap, and they will be discussed in Section 6.

This speaker's mid front rounded vowels have an approximate average F3 value of 2800 Hz, while the corresponding unrounded vowels have an approximate average F3 of 3100 Hz. The fact that there is approximately a 300 Hz difference in the F3 it is clear that this speaker too, has acquired the [+ rounded] feature of these vowels.

5.6. Advanced Speaker 2 (Christina)

Figure 6 reveals a target-like inventory, aside from a couple of counterexamples, which can be explained. Two examples of the vowel [y], shown in Table 2, are realized as back vowels.

Figure 6: Advanced Speaker 2 (Christina)

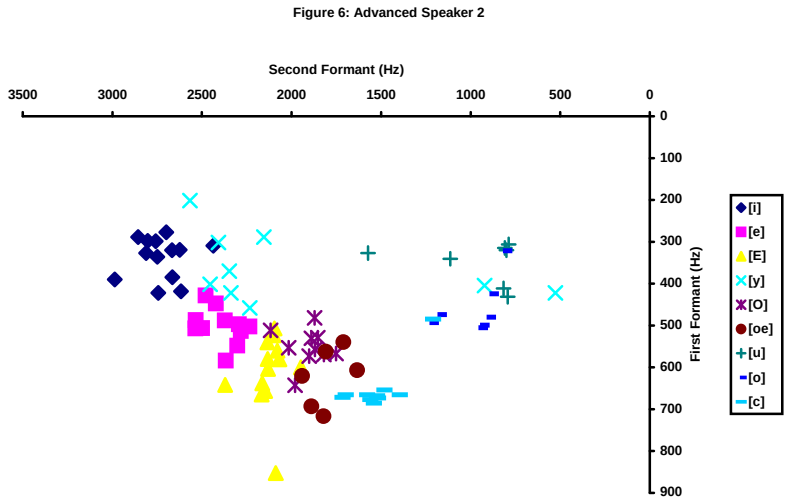


Table 2: Christina's non-target productions

VOWEL	WORD	ENVIRONMENT	F1	F2	F3
[y]	*autobus*	b_s	404.95	921.66	2958.03
[y]	*bulle*	b_l	422.24	527.03	2949.00

This does not appear to be a production or perception problem, as Christina uses a front vowel in all other cases. This appears to be a lexical problem. Firstly, 'autobus' is similar to the word 'bus' in English, which contains a non-front vowel. It appears that this is perhaps an example of lexical transfer from the first language. In the second example, there appears to be a lexical confusion between two minimal pairs with similar meanings. The word 'bulle', which means 'bubble' in English, appears to be confused with the word 'boule' meaning 'ball'. Other than these two counterexamples, [y] appears to be properly acquired.

The mid front rounded vowels appear to be target-like. They form two separate categories, though they are not as distinctly separate as they are in the native speaker's inventory.

The F3 value of Christina's mid front rounded vowels is approximately 2900 Hz for [ø] and 2950 Hz for [œ]. The corresponding unrounded vowels have and approximate average F3 of 3150 Hz. There is a 200-250 Hz contrast, which means rounding of these vowels has been acquired.

6. Discussion

In view of the results of the study, it is clear that some of the previous predictions are supported. The fact that [u] and /y/ were very similar in two out of three of the beginner speakers confirms one of the predictions based on Wade's study. This is also evidence of single category assimilation. As discussed in Section 2.2, single category assimilation emerges when two categories in the L2 are perceived as one. In this case the two categories /y/ and /u/ are produced as one category [u].

The two other production errors noted by Wade were not found in the current study. The results contain no clear examples of /ø/ was pronounced as [u] or of /œ/ pronounced as [ø]. Based on these results, it appears that in the initial stages of the interlanguage these vowels exist as one category in the vowel inventory.

Not only does Wade offer substitutions for target vowels, he also offers percentages of correct pronunciation. Wade's beginner subjects apparently produced [y] correctly 27% of the time. In my results, however, the number is much lower. In fact, the beginner speakers in this study produce [y] correctly 0% of the time. Wade also suggests that [ø œ] are produced 30 to 60% of the time. However, this is difficult to measure in the beginner speakers as two of them only have one category for these vowels.

The advanced speakers also have a slight overlap in these vowels. There are two possible reasons for overlap—one which involves the type of French these speakers have been exposed to, and one which may simply reflect the native speaker used in this study.

First, it is possible that the two categories [ø œ] are acquired at a later stage of the interlanguage, and that these speakers were exposed to L2 French-speaking teachers that had not yet acquired that contrast. Again, such an explanation would not account for the slight overlap in Christina's vowels.

A second possibility, and the most plausible, is that most French speakers do produce a slight overlap here. As discussed previously, the native French speaker spoke very clearly with exaggerated production. It is possible that her speech style may have created clear boundaries which would not be so distinct in other native speakers' speech.

Although overlap in these vowels may exist in native speakers, they should be somewhat distinguished. This is the case for Anna and the two advanced speakers, who have little or no overlap, while both of the beginner speakers, Danielle and Michelle, clearly have only a single category.[2]

[2] The preceding discussion assumes that the vowels are not currently undergoing merger in the target language. The merging of /ø/ and /œ/ is another factor that should be researched from a historical perspective. Therefore, I do not discuss it further here.

7. Conclusion

Although this is a cross-sectional study, the results reveal the way in which a second language develops in production. The first beginner speaker, Marla, exemplifies an initial stage of the interlanguage in which there is lexical acquisition but little vowel specification. In view of the fact that both Danielle and Michelle have more defined vowel spaces for the production of French rounded vowels, it seems that at a slightly later stage of the interlanguage there is category differentiation. This differentiation is not, of course, complete, as they both demonstrate single category assimilation (/u/ and /y/ are one category: [u]). Michelle is at a stage in which this single category initially begins to separate into two categories. The two advanced speakers have acquired the two target categories for [y] and [u] as well as for [ø] and [œ].

Based on the findings of this study and their concurrence with the results of Escudero and Boersma (2002), it is likely that the problem in the acquisition of French front rounded vowels may stem from a perception problem. This study also provides additional support for the fact that the L2 perceptual system is initially a copy of the L1 perceptual system. Later in language development this system creates the necessary categories for the target language (which was discussed with regards to Escudero and Boersma's study). However, the results of this study do not allow generalizations to be firmly drawn due to the small sample size. In order to better understand the progression of L2 phonological development, longitudinal studies involving more participants should be conducted.

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