t-flapping in New Zealand English: a change over time[1]

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Abstract

One of the characteristics of New Zealand English as spoken today is the decreasing use of the voiceless aspirated [t^h] in words like *water, whatever* and *bottle* where the consonant has become a flap [ɾ]. Research has shown this to have been occurring for some time and to be related to class, gender and age. This paper shows that since the 19th century where very little 'flapping' occurred, the phenomenon has been increasing, led by male non-professionals and closely followed by male professionals. Female non-professional speakers flap less than the males until the 1970s when they reach a similar level. The change is shown to be approaching completion and to affect all types of speakers of New Zealand English to a similar degree.

1. Introduction

It has been known for some time that an increasing number of speakers of New Zealand English have been producing what sounds like a voiced /t/ in certain linguistic situations. This realisation occurs in intervocalic position before an unstressed syllable as in *butter*, before syllabic [l] e.g. *bottle*, and at word boundaries e.g. *get eggs* (see Bauer and Warren (2004)). Wells (1982: 248) refers to /t/ voicing as 'one of the most striking characteristics of American pronunciation to the ears of a non-American'. He says it sounds to English ears like a /d/ rather than a /t/ but that is an oversimplification. There are a range of degrees of this phenomenon from a light tap or flap [ɾ] through to a voiced plosive [d]. There is some argument as to whether it ever becomes completely voiced because most Americans seem to be able to distinguish words such as *latter* and *ladder* or *putting* and *pudding* (Kenyon 1958: 163,

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quoted in Wells 1982: 250). According to Wells (1982: 250-251), t-flapping occurs in some British dialects, some Irish speech and Canadian English. He does not say much about Southern Hemisphere English but does mention it as occurring in the speech of younger Australians. Wells (1982: 250) regards /t/ voicing as 'the first distinctively American phonetic innovation likely to spread in time to all accents of English'. In the 1970s Allan Bell (Bell 1990: 176-178) analysed the speech of Radio New Zealand news readers who were reading on the prestigious National Programme and the commercial 'ZB' network. He found more t-flapping on the commercial network where the target audience was probably more 'working class'. In 1994 Janet Holmes published the results of her comprehensive research into this phenomenon. Holmes (1994: 197) analysed conversational and interview style speech of middle-aged and younger speakers from working class and middle class environments. Holmes (1994: 215) concluded that this was a change in progress in New Zealand English which had probably been slowly developing over many years. She showed more frequent use in younger people than middle aged, more by working class than middle class and more by men than women. The results suggested that t-flapping was on the increase in New Zealand.

2. Aim

Having done a pilot study of a small number of speakers from the Canterbury Corpus of the ONZE collection at the University of Canterbury and finding on the whole similar trends but less flapping than Holmes, I decided to do a larger study of a random selection of speakers using the three major archives of the ONZE Corpus held at the University of Canterbury (Gordon, Maclagan & Hay 2007) in order to identify the onset and progression of t-flapping in New Zealand English. The aim has not been to count the number of speakers using flaps but to analyse the percentages of flapping for groups according to gender, age and where possible, socio-economic status. Two separate analyses were carried out. The first synchronic analysis uses data obtained from the Canterbury Corpus and shows the current state of t-flapping. This analysis is gender based, has been categorised into two socio-economic groups and divides the speakers broadly, according to age when recorded, into 'older' (aged 40 to 63) and 'younger' (aged 18 to 34). The second diachronic analysis uses data from all three archives to give a picture of the start of the phenomenon and its change over time. The oldest archive is the Mobile Unit (MU) collection of speakers born from the mid 19th century to 1899 and recorded in the 1940s. The Intermediate Archive (IA) is a collection of older speakers born from 1900 to 1930 and recorded around 1990 and the Canterbury Corpus (CC) is a recent set of recordings of word lists and

conversations covering birth dates of speakers from 1930 to 1985 which were recorded from 1994 to 2007 (Maclagan & Gordon 1999).

3. Methodology

This auditory analysis used 202 speakers, 105 male and 97 female. A total of 2286 tokens were analysed, an average of 11.3 per speaker. Thirty-one Mobile Unit speakers were included, 30 Intermediate Archive speakers were analysed and 72 male and 71 female speakers from the categories older and younger, professional and non-professional were randomly selected from the Canterbury Corpus, trying to cover the span of years as well as possible. Mobile Unit speakers were used as long as the recordings were clear, as the limitations of early recording equipment prevented frequencies above about 5kHz from being recorded. Canterbury Corpus speakers were eliminated where the sound quality was sub-standard. For many of the Canterbury Corpus speakers, only 10 minutes of the original half hour recordings were available for analysis. The whole of such extracts were analysed, and similar or longer sections for speakers from the other corpora. A random selection of analysed tokens was checked by a second well qualified linguist. It should be noted that the Mobile Unit results show how speech was in the mid 1940s. Only the Canterbury Corpus speakers have been allocated a socio-economic status. Table 1 shows a breakdown of the numbers of speakers and tokens analysed from the different corpora and age ranges.

Table 1: Details of speakers and tokens analysed across the three archives**.**

ARCHIVE	BIRTH YEAR RANGE	MALE SPEAKERS		FEMALE SPEAKERS	
		Speaker Numbers	Tokens Analysed	Speaker Numbers	Tokens Analysed
MU	1850-1899	15	157	16	172
IA	1900-1930	18	270	10	151
CC	1931-1950	20	200	15	139
CC	1951-1960	16	157	13	156
CC	1961-1970	13	151	16	188
CC	1971-1980s	23	250	27	295
Total		105	1185	97	1101

MU = Mobile Unit, IA = Intermediate Archive, CC = Canterbury Corpus

In this analysis I categorise any tokens of /t/ that are not an aspirated [t^h] as a flap even though they may not be voiced. I used ONZEMiner (http://www.ling.canterbury.ac.nz/jen/onzeminer/ see Fromont and Hay, under review) to search the Origins of New Zealand English (ONZE) data bases for intervocalic tokens between stressed and unstressed syllables,

instances of /t/ before syllabic [l] and at word boundaries. The synchronic analysis used only speakers from the Canterbury Corpus. The analysis was restricted to the conversational speech and did not use any information from the word lists because it has been shown that most speakers read the words of the 't-flapping' line with an aspirated [t^h] even if they use flaps in the line numbers (Maclagan 2000). The diachronic analysis divided the Canterbury Corpus speakers into groups according to their year of birth and added Intermediate Archive speakers who were also recorded around 1990 and Mobile Unit speakers recorded in the mid 1940s. Speakers from the Canterbury Corpus have been divided into ten year time bands according to their date of birth except for the first period where, because of fewer tokens, a twenty year period (1930 to 1950) was used and the last period which includes a small number of speakers from the early 1980s.

4. Analysis Results

4.1 The Synchronic Analysis

Table 2 shows the results of the synchronic analysis. Holmes (1994) showed little t-flapping among the older, more conservative female professional speakers *(fop).* These results show the same lack of flapping (only 14%). The 12 older female non-professionals *(fon)* flapped at a slightly higher rate, averaging 27% flapping, however one 61 year old born in 1939 flaps 75% of the time. Individually the young professional females *(fyp)* show a wide range of results from 0% to 73% with the average at 35% flapping. The young female non-professionals *(fyn),* apart from one speaker who does not flap at all, show a range from 25% to 86% but show the highest average rate of flapping at 56%.

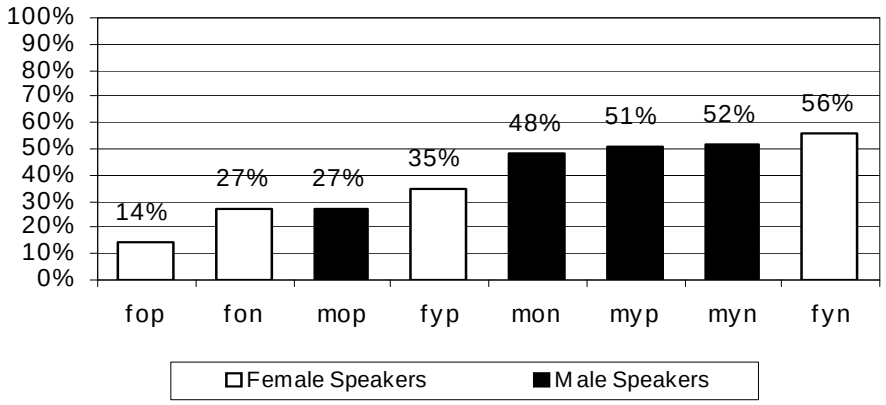
Table 2: Results of the synchronic analysis

Speaker Category	Year of Birth Range	Age Range	Average Age	Number of Speakers	Total Tokens Analysed	Total [ɾ] Tokens	% [ɾ] Tokens
fop	1933-1957	43-62	49.5	12	130	20	14%
fon	1939-1958	44-63	54	12	114	31	27%
fyp	1966-1985	20-34	27	21	237	82	35%
fyn	1964-1982	18-31	23.75	20	223	124	56%
mop	1938-1959	40-59	50	14	133	36	27%
mon	1932-1955	41-63	50.5	22	234	112	48%
myp	1962-1981	22-33	27	17	180	91	51%
myn	1966-1981	19-32	25	19	221	116	52%

There are 14 older professional males *(mop)*. Holmes (1994) gives a figure of 58% for total flapping in this category but the average I have is only 27%. Three of the males born immediately post-war do not flap significantly. The average percentage rises because of the more recently recorded men. The average flapping in older non-professional males *(mon)* is 48% which is considerably higher than the same category of females (at 27%). The young professional males *(myp)* exhibit a considerable amount of flapping averaging 51%. The flapping produced by the young non-professional male speakers *(myn),* 52%, is about the same as the young professional males and a little less than the non-professional young females. All these speakers flap. Most are flapping most of the time, some in the 80% to 90% level.

To summarise (see Figure 1), the percentage flapping among the female speakers in my analysis shows a strong lead by the younger non-professionals at 56%. The younger professionals at 35% come next and are closely followed at 27% by the older non-professionals with the older professionals very far down at 14%. As is the case with the females, the males are led by the younger non-professionals at 52% which is about the same level as the young professionals at 51%. The older non-professional males are slightly less at 48% and the older professional males flap 27% of the time. It can be seen that in both socio-economic groups the males are leading the females but the degree of flapping is greater in the non-professional classes.

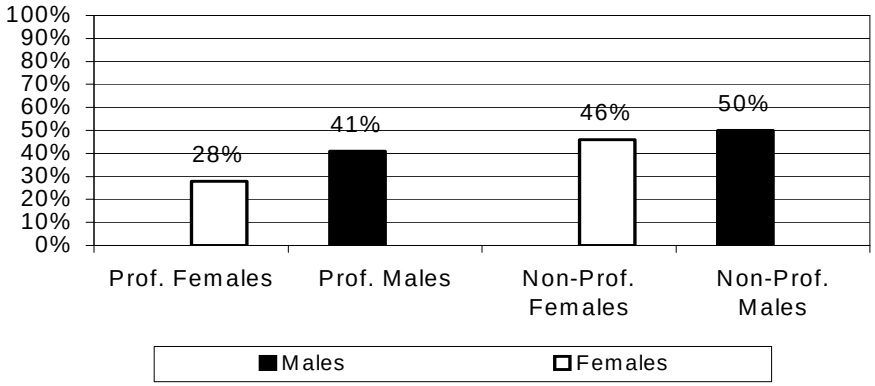
Figure 1: Percentage flapping of speakers from the Canterbury Corpus



Since in real life there is much interaction within the same class between middle aged and younger people both socially and in the work place, I have looked at a combined age picture of the two classes of males and females speaking conversational New Zealand English (see Figure 2). Very little difference exists between the male and female non-professionals at about

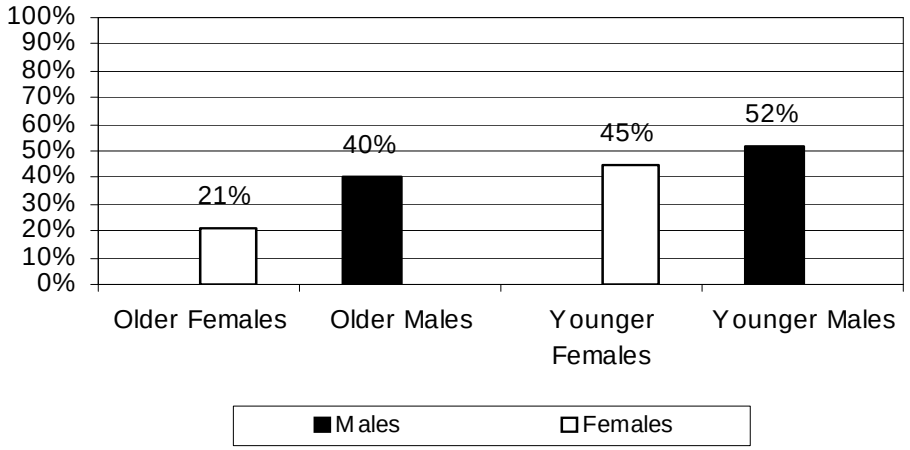
50%. Both professional groups exhibit less flapping with the females at 28% producing fewer flaps than any other category.

Figure 2: Percentage flapping by gender and class



Leaving class out of the analysis and concentrating on the percentages by gender and age, the gap between younger and older speakers is much greater for females than for males as shown in Figure 3.

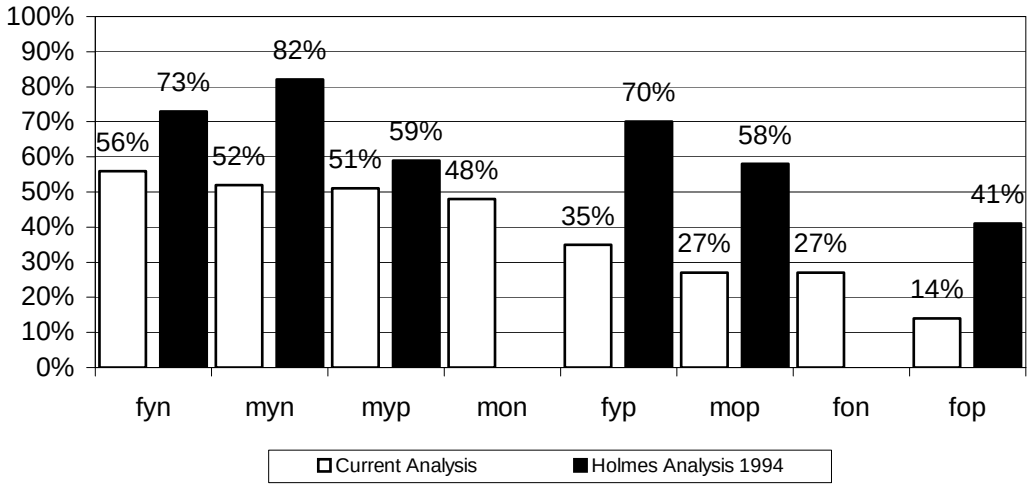
Figure 3: Percentage flapping by gender and age



In Figure 4, the present data is compared with conversational data from Holmes (1994: 209). Holmes did not include older non-professional groups of either gender. It will be noticed that her figures are higher in all categories, considerably so in some. Holmes analysed a larger number of tokens from fewer speakers, whereas the present analysis was designed to indicate the

average amount of t-flapping in a period. This analysis therefore analysed fewer tokens from a larger number of individuals thus embracing a wider range of speakers and maybe including more individuals flapping at lower rates. In Holmes' study, the rate of flapping of the older professional males was about equal to that of the younger professionals at around 58% whereas the younger professional males in the present study show a strong lead. Her young female professionals are higher than the young male professionals whereas the situation is reversed in my analysis.

Figure 4: Comparison of current analysis with Holmes 1994



4.2 The Diachronic Analysis

Table 3 shows the results of the Mobile Unit and the Intermediate Archive analysis. Tables 4 and 5 respectively show the results of the male and female Canterbury Corpus analysis.

Table 3: Percentage flapping by early speakers, Mobile Unit and Intermediate Archive. Social class data is not available for these speakers.

Year Of Birth	Male				Female			
	Speakers	Total Tokens	Flaps	% Flapped /t/ tokens	Speakers	Total Tokens	Flaps	% Flapped /t/ tokens
MU 1850-1899	15	157	6	4%	16	172	5	3%
IA 1900-1930	18	270	31	11%	10	151	6	4%

Table 4: Percentage flapping by speakers of the Canterbury Corpus

Year Of Birth	Non-Professional				Professional			
	Speakers	Total Tokens	Flaps	% flapped /t/ tokens	Speakers	Total Tokens	Flaps	% flapped /t/ tokens
Males								
1930-1950	11	115	43	37%	9	85	19	22%
1951-1960	11	109	65	60%	5	48	17	35%
1961-1970	6	79	33	42%	7	72	40	56%
1971-1980	13	142	83	58%	10	108	51	47%
Females								
1930-1950	8	61	9	15%	7	78	3	4%
1951-1960	7	93	21	23%	11	63	18	29%
1961-1970	5	61	35	57%	6	127	36	28%
1971-1980	15	162	89	55%	12	133	51	38%

Although Table 3 shows the male MU speakers with an average of 4% flapping, only six of the fifteen males were doing any flapping at about 10% of the time. Similarly, only four of the sixteen females were flapping about 10% of the time to give the overall female average of 3%. All the women who used flaps were born after 1874. In these 1947 recordings the conversation is very much interview style and mostly not very relaxed, and may therefore underestimate the amount of flapping that would have occurred in a more relaxed style. Almost all the flapping occurs between a stressed and unstressed syllable. There was variable flapping up to 32% of the time in 10 of the 18 male Intermediate Archive speakers starting about 1916 but no flapping amongst the equivalent group of females until the two women born in 1928. Among the early speakers there is a large number who never use flapping at all. In Figures 5 and 6 respectively we see the male and female speakers of the two earlier archives. In figure 5, the male speakers 1 to 15 are from the Mobile Unit and speakers 16 to 33 are from the Intermediate Archive. In figure 6, the female speakers 1 to 16 are from the Mobile Unit and speakers 17 to 26 are from the Intermediate Archive. The males of the Intermediate Archive show an increased amount of flapping which rises to over 30% in several born after 1919. It is interesting that this starts occurring about the time of New Zealand's involvement in the First World War, when a large number of the fathers of these speakers would have been returning from overseas having lived with and been affected by the speech of people from outside New Zealand. It was not until the recordings of the Intermediate Archive that flapping before a syllabic [l] occurs but it must be remembered that these recordings show the speech of these elderly people in the early 1990s and they may have acquired this feature from younger speakers. Older

people do tend to pick up on the language of the younger members of society (see, e.g., Harrington, Palethorpe and Watson 2000: 927)). The females of the Intermediate Archive are not flapping until two who were born in 1928. By the 1950s all the non-professional men are using flaps with the professional men all flapping in the 1960s. There is only one professional male not flapping in the 1970s, with the rest flapping variably up to 87% of the time. Both non-professional and professional women are all flapping by 1970.

Figure 5: Percentage flapping of individual early male speakers by year of birth. Speakers 1 to 15 are from the Mobile Unit and speakers 16 to 33 are from the Intermediate Archive.

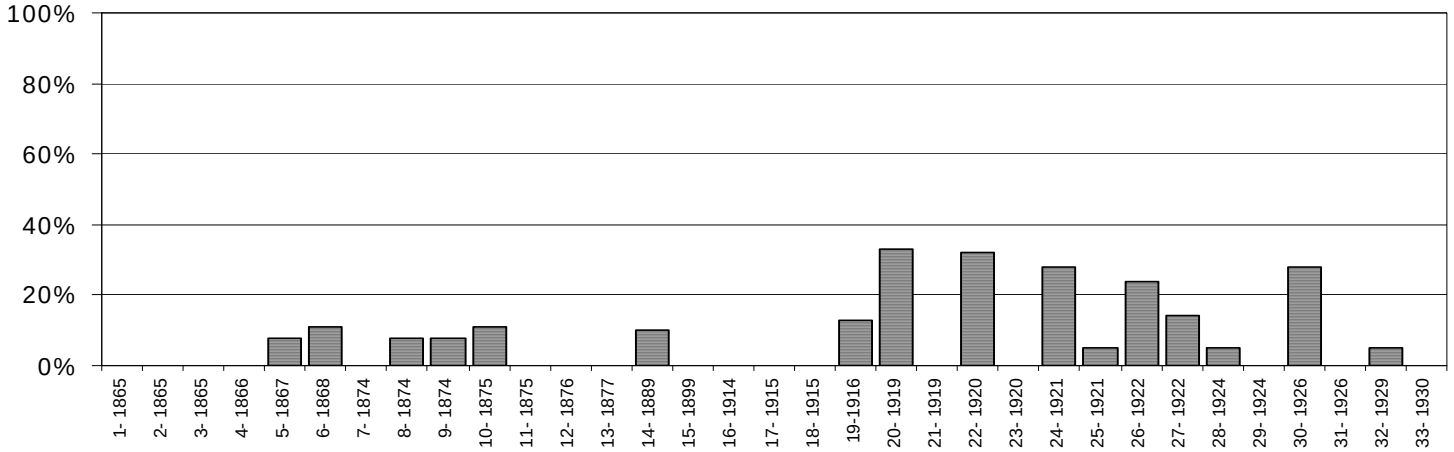


Figure 6: Percentage flapping of individual early female speakers by year of birth. Speakers 1 to 16 are from the Mobile Unit and speakers 17 to 26 are from the Intermediate Archive.

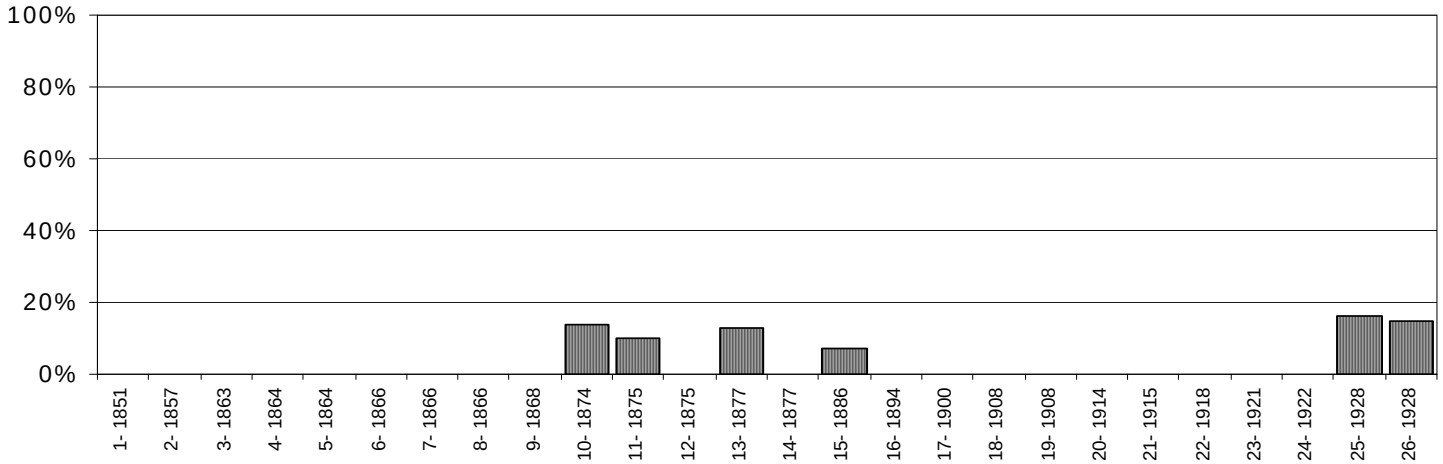
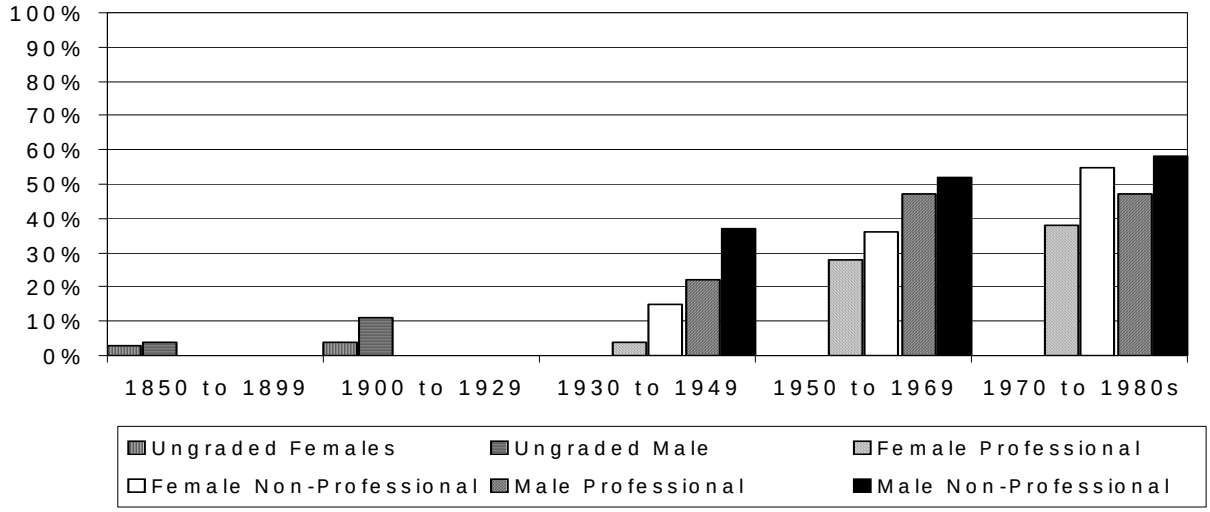


Figure 7 summarises the analysis, showing the percentages of flapping of male and female speakers of both classes who were born between 1850 to the early 1980s in twenty year time bands for the more recent speakers. No social class data is available for the MU or IA speakers, but after 1930 the social class data is available for the Canterbury Corpus speakers. The non-professional speakers always produce more flaps than their professional counterparts and there is a steady rise in the percentage of flaps produced by the speakers born later, until the non-professional speakers settle at approximately 55%, with the men reaching this level 10 years earlier than the women. There were no speakers in this analysis who flapped 100% of the time although percentages between 82% and 90% were reached amongst the more recent males of both classes and the non-professional females.

Figure 7: Percentage of flapping amongst speaker groups by year of birth



5. Discussion and conclusion

John Wells (1982: 250) commented: "T voicing is sometimes to be observed in southern-hemisphere English (Australians assure me, though, that it is only younger speakers there who do it), and also in certain casual styles in British accents ranging from RP to Cockney." With regard to the increasing use of t-flapping, Nicola Woods (2000: 109) noted "It is possible that young New Zealanders now look more to American than to British norms." The phenomenon has certainly been around for a much longer time than Wells suggests. The present study confirms Holmes' (1994: 215) suggestion that t-flapping is a change from below and that it has been underway for some time. Many sociolinguistic studies have found distinct gender and social class markers in interviews (see, e.g., Jenny Cheshire's (2005) syntactical study where girls and boys varied in their frequency of use of bare noun phrases).

Both Bell (1990) and Holmes (1994) indicate that t-flapping used to come into a similar category being a phonological marker, with males leading the females. More recently, Hay, Maclagan and Gordon (2008: 102) state that speakers from higher social classes avoid t-flapping. The present study shows that the situation is changing, with the non-professional females now flapping almost as much as the non-professional males and the female professionals coming within 10% of the professional males. The professional females as a group, nevertheless, still produce the fewest t-flaps. This is the reverse of many sociolinguistic variables, in that women are adopting what used to be clearly a male characteristic.

To reiterate, as can be seen in Figure 7 above, flapping today is led by the male non-professionals of all age groups. The female non-professionals increase over the years so that by the 1970s they almost equal their male counterparts. The male professionals continue to lead the female professionals but in the 1970s the female non-professionals move ahead of the male professionals. The fact that all differing categories in the youngest group of speakers of New Zealand English are flapping to a similar degree indicates that the phenomenon has become a standard part of New Zealand speech which is here to stay. It also indicates that no particular class, age or gender can be stigmatized for using a flapped or tapped alveolar stop.

References

Bauer, Laurie and Paul Warren 2004. New Zealand English: phonology. In Bernd Kortman & Edgar W. Schneider (eds), A Handbook of Varieties of English, Vol 1. Berlin: Mouton de Gruyter, 580-602.

Bell, Alan 1990. Audience and Referee Design in New Zealand Media Language. In Alan Bell & Janet Holmes, (eds.) New Zealand Ways of Speaking English, Clevedon and Philadelphia: Multilingual Matters: 65, 176-178

Cheshire, Jenny 2005. Syntactic variation and beyond: gender and social class variation in the use of discourse-new markers. Journal of Sociolinguistics 9: 479-507

Fromont, Robert and Jennifer Hay (under review) ONZE Miner: Development of a browser-based research tool. Manuscript under review. Available 27 June 2008 from: http://www.ling.canterbury.ac.nz/jen/pubs.html

Gordon, Elizabeth, Margaret Maclagan and Jen Hay 2007. The ONZE Corpus. In J.C. Beal, K. P. Corrigan and H. Moisl (eds). Models and Methods in the Handling of Unconventional Digital Corpora: Volume 2, Diachronic Corpora. Basingstoke, Hampshire: Palgrave Macmillan, 82-104.

Harrington, Jonathan, Sallyanne Palethorpe, and Catherine I. Watson 2000. Does the queen speak the Queen's English?, Nature 408 (December 21/28): 927.

Hay, Jen, Margaret Maclagan & Elizabeth Gordon 2008. New Zealand English. Edinburgh: Edinburgh University Press.

Holmes, Janet 1994. New Zealand flappers: an analysis of T voicing in New Zealand English. English World-wide 15: 195-224

Kenyon, J. S. 1958. American Pronunciation. Tenth Edn. Ann Arbor, Michigan: George Wahr.

Maclagan, Margaret & Elizabeth Gordon 1999. Data for New Zealand social dialectology: the Canterbury Corpus. New Zealand English Journal 13: 50-58.

Maclagan, Margaret 2000. Where are we Going in our Language? New Zealand English Today. New Zealand Journal of Speech and Language Therapy 53-54: 14-20

Wells, John. C. 1982. Accents of English. Cambridge University Press: Cambridge, 248-251, 324-325, 344

Woods, Nicola 2000. New Zealand English Across the Generations: an analysis of selected vowel and consonant variables. In Alan Bell and Koenraad Kuiper (eds.) New Zealand English. Wellington: Victoria University Press, 84-110.