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Register Change in the British and Australian Hansard (1901-2015)

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Abstract

"Colloquialization," and anti-colloquial effects such as "densification," have been shown to shape register change in English, with Australian English showing stronger effects of colloquiality than British English. Parliamentary Hansard records are at the intersection of writing and speech and are subject to various influencing factors possibly leading to change in this register, which we represent in a conceptual model. We apply Biber's (1988) method of multidimensional analysis to examine the co-occurrence of linguistic features in the British and Australian Hansard over five consecutive time periods. The data provide evidence of shared as well as differentiated effects of colloquialization and densification across the two varieties. The evidence also points to a new type of anti-colloquial trend observed in the parliamentary register, whereby presentation of information appears to be taking the place of a more interactive and interpersonally oriented style, a trend we term "monologization."

Keywords

colloquialization, densification, Hansard, multidimensional analysis, parliamentary discourse, register, diachronic corpus

1. Introduction

The concept of "register" reflects the relationship between the immediate context of a communicative event and the linguistic features that characterize the discourse produced during such communication. Registers are thus "situation-based text

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categories" (Conrad 2015:309) defined by the co-occurrence patterns of sets of linguistic features, which reflect differences in communicative contexts in a functionally motivated way. Numerous studies of language variation and change in English focus on how individual linguistic features vary in frequency and in conditioned probability across different registers, varieties of English, and historical periods. However, there are comparably few studies that attempt to investigate how registers vary across different varieties of English or across time—and even fewer that consider both factors simultaneously to understand how and why register configurations change in similar or different ways over time in different varieties (see Bös & Kornexl 2015; Kytö & Smitterberg 2015).

Biber's (1986, 1988) multidimensional method has been particularly influential in the analysis of register variation. It uses an inductive method, "factor analysis," to identify the statistical co-occurrence patterns of a large set of linguistic features. These co-occurring features are interpreted as continuous underlying dimensions of variation, and each dimension has both linguistic and functional content: "Each dimension thus characterizes the situational, social, and cognitive functions most widely shared by the co-occurring linguistic features" (Biber & Finegan 1989:488).[1] The multidimensional method is designed, in the first instance, to distinguish between different registers. However, some studies have used the method to consider how a single register differs between varieties of English (e.g., Baker & Eggington 1999; van Rooy & Terblanche 2009), or how multiple registers vary across different varieties of English (e.g., Xiao 2009; Kruger & van Rooy 2018). Most applications of the multidimensional approach have focused on synchronic data, with a more limited application of the method to analyze diachronic register change in English (e.g., Biber & Finegan 1989; Atkinson 2001; Kruger & Smith 2018).

In this article, we develop a novel extended application of Biber's (1988) multidimensional method to investigate how one particular register, the official written record of parliamentary proceedings known as the Hansard, changes over a period of roughly a century, in two varieties of English: British English and Australian English. Our use of the Hansard as a dataset is motivated by several factors, set out in more detail in section 2, where we demonstrate how the hybrid spoken-written nature of the Hansard offers a unique window into processes identified as important in stylistic change in English, namely "colloquialization" and "densification." In section 3, we focus in more detail on the Hansard, and specifically outline five key factors that potentially shape change in this register, namely editorial policy and practice, communicative aims of the register, intended audience, production mechanisms, and broader social context. We demonstrate how these factors affect the participants involved in creating the text of the Hansard: parliamentarians, Hansard reporters, and editors, and explore how they may contribute to colloquialization and densification. We also indicate how these factors may influence other potential trends of register change. Section 4 outlines the diachronic Hansard corpus used in this study, and the adaptation of Biber's (1988) multidimensional method. Section 5 presents the results for the first five dimensions in Biber's model, as applied to the British and Australian diachronic Hansard corpora, and section 6 summarizes findings and outlines further avenues for research.

2. Register Change and the Hansard: Colloquialization and Densification

Our use of the Hansard is motivated by several factors. First, given the challenges of representativeness and comparability in compiling historical corpora (see Kytö & Smitterberg 2015), particularly across different varieties of English, the Hansard is unique in offering the opportunity to investigate a specialized institutional register with a continuous historical record. Furthermore, despite being firmly rooted in a British institutional tradition, the Hansard was transplanted to a variety of other contexts through colonization, thus allowing for the investigation of how a comparable register is reshaped by different contexts over time.

Second, we view the hybrid spoken-written nature of the Hansard as a particular advantage in studying important forces that shape register change in English. The Hansard record contains an edited transcript of speeches, debates, and other parliamentary business. The tradition of parliamentary reporting evolved in Britain from the seventeenth and eighteenth centuries onwards (Ralphs 2009), initially produced by reporters and printed in newspapers, but it was not until 1909 that parliament assumed control of the publication and established an in-house staff of Hansard reporters (Edwards 2016). The definition of a full report was adopted in 1907 by the Select Committee on Parliamentary Debates: "one which, though not strictly verbatim, is substantially the verbatim report, with repetitions and redundancies omitted and with obvious mistakes corrected, but which on the other hand leaves out nothing that adds to the meaning of the speech or illustrates the argument" (House of Commons 2010).

A key point is that the transformation from the actual spoken parliamentary discourse to the written record involves substantial intervention, often altering spoken usage in the direction of norms for formal writing (Mollin 2007), and thus the Hansard cannot be treated as a record of spoken usage (see Kytö & Smitterberg 2015).[2] However, instead of viewing the undeniable "writtenness" of the Hansard as an undesirable "filter" that stands in the way of the linguist's direct access to speech and requires concerted efforts at removal (Schneider 2004; see also Biber & Gray 2016:32-38), we argue that the fact that the Hansard is an edited written representation of speech (Slembrouck 1992) is a unique advantage of the register. The Hansard is a site where norms and conventions for spoken and written language compete and fuse: the strong incentive to fidelity to the spoken reality is in tension with the need to meet norms for formal, institutionalized, written language.[3]

It is this feature that makes the Hansard particularly well suited to the investigation of register change in terms of colloquialization and densification—two trends that have been invoked by various researchers to explain how registers "drift" in particular directions over time (e.g., Biber & Finegan 1989; Hundt & Mair 1999; Mair 2006; Leech et al. 2009). Colloquialization is defined as an "underlying pattern of drift towards more ORAL linguistic characterizations" (Biber & Finegan 1989:489, emphasis in original), or more specifically as the process through which lexicogrammatical features associated with informal spoken interaction increasingly occur in more formal written or spoken genres (Collins & Yao 2013:480). Colloquialization may also be

evidenced in the increasing avoidance of features associated with formal writing in registers where such features would typically be expected. The effects of colloquialization have been found in written registers across varieties of English, with Australian English often identified as leading the trend alongside American and Canadian English (Leech et al. 2009; Collins 2013; Collins & Yao 2013). Colloquialization overlaps with what has been termed "informalization" (Fairclough 1992) or "popularization" (Biber & Gray 2012), and ties in with trends such as "democratization" (Myhill 1995), which refers to the tendency of linguistic usage to demonstrate increasing avoidance of forms that cue unequal relations between people.

Colloquialization is most obviously reflected in the increased frequency of specific colloquial features from speech in written registers (e.g., contractions, semi-modals, first-person pronouns, the *going to* future), but also in the decline of features typically associated with formal writing, such as passives. It is undergirded by a pattern of discourse construction that Biber and Gray (2010:3) and Biber (2014:16) describe as "clausal": centered on verb phrases (particularly mental and communication verbs) and with elaboration primarily carried out through clausal coordination and subordination. Koch and Oesterreicher (2012) describe this style of discourse construction as "the language of immediacy."

At the same time, anti-colloquializing trends have also been observed in various written registers (Leech et al. 2009:245-248), in other words, a movement away from spoken features, and an exaggeration of the features of formal writing. The most researched anti-colloquial trend has been referred to as densification or "structural compression" motivated by increased economy of expression (Biber 2003; Leech et al. 2009; Biber & Gray 2012, 2016), which involves packaging more information into more compact linguistic structures.[4] Densification thus involves a movement away from the typically clausal style of discourse construction associated with spoken language, towards a more "literate" style (Biber 2014:16), which is characterized by a focus on phrasal discourse construction and elaboration allowing for more information to be condensed into fewer words. Koch and Oesterreicher (2012) describe this style of discourse construction as "the language of distance." Nouns and noun-phrase modification are key features of this style, and Biber and Gray (2016:207) demonstrate how finite relative clauses, non-finite relative clauses, post-modifier phrases (e.g., prepositional phrases), and pre-modifier phrases (e.g., attributive adjectives) can be seen as functioning on a cline of increasing densification.

The interplay between colloquialization and densification as forces shaping register change is conditioned by changes to the communicative purpose and audience of a particular register, and therefore realizes in distinctive ways across different registers and even subregisters (see Biber & Gray 2011, 2012, 2013, 2016). As a hybrid spoken-written register, the parliamentary Hansard is a register in which the tension between colloquialization and densification is particularly strongly felt, and is conditioned in particularly complex ways. Register change in the Hansard, whether colloquialization or densification, potentially results from two separate sources: changes in spoken usage in parliament, as well as changes in the norms for representing spoken language in writing.

Kruger and Smith (2018) investigate the tension between colloquialization and densification in the Australian Hansard (for the House of Representatives) from 1901 to 2015, and find substantive support for both tendencies—as well as unexpected evidence for other trends (such as reduced persuasion). These findings raise several further research questions. A pertinent first question is how these trends play out in register change in the Hansard across different varieties of English, and whether Australian parliamentary debates, as might be predicted from studies on Australian English, are more prone to colloquialization than other varieties. A second question relates to explanations for the observed co-existence of both trends of change. Kruger and Smith (2018) propose that five factors need to be taken into account in explaining the nature of the competition between colloquialization and densification in the Hansard: editorial policy and practice, communicative aims of the register, intended audience, production mechanisms, and broader social context.[5] However, they do not discuss these factors in detail, nor indicate how they interact. A third (related) question that arises is how to account for other observed changes, for example, the trend towards decreased persuasion.

In this article, we address these three questions. In the following section we elaborate on the five factors shaping register change in the Hansard proposed by Kruger and Smith (2018), and develop a coherent model outlining how they potentially interact in affecting register change in the Hansard. We highlight the differential effects of these factors on the different language producers involved in creating the Hansard, and indicate how they may contribute to colloquialization, densification, and other potential stylistic changes.

3. The Hansard as Hybrid Register over Time: A Model of Factors Affecting Register Change

As suggested in section 1, the Hansard should be understood as the fused production of three groups of language users: (a) the parliamentarians who produce speeches and participate in debates; (b) Hansard reporters, who transform the speeches and debates into written material; and (c) Hansard (sub-)editors, who polish the written record and apply the house style of the publication.[6]

These three groups are affected in different ways by the five factors identified above. First, there is the broader social context within which parliament as an institution is embedded, which affects all three groups. Trends such as colloquialization and densification are usually ascribed to external, social factors (Leech et al. 2009:49), such as changes in the readership of a particular genre, or the development of less hierarchical, more democratized societies. For example, Collins and Yao (2018) argue that the increasing severance of cultural ties between Australia and Britain from the 1960s onwards is an important factor in the trend of increased colloquialization in Australian English. The progressive rejection of cultural and economic ties with Britain corresponded to an emphasis and celebration of Australian culture, including features seen as setting Australian colloquial English apart from British English (Collins & Yao 2018). This legitimized Australian English features

and gave them a foothold to disseminate into more contexts. Parliamentarians and Hansard staff alike would be affected by such broader changes filtering through from the social dynamics at large.

The four remaining factors are grouped into two sets. Two factors are related to the immediate production context of the Hansard: editorial policy and practice, and production mechanisms. The remaining two factors are associated with the way in which the participants construe aspects of the relationship between the parliamentary debate/Hansard and the context. These are the aim or function of the register and the intended audience. Unlike the effects of the broader social context, which affect all three groups of Hansard producers, the effects of the remaining four factors are highly differentiated for different groups of producers.

Editorial policy and practice have the strongest effect on Hansard editors, with a slightly less strong effect on Hansard reporters (in cases where these tasks are separated, as they have been historically). Editorial policy is unlikely to have any direct effect on the speakers themselves, except where speakers may start imitating Hansard style in their debates, which has been proposed as a possible consequence of parliamentarians reading versions of their presentations in print and unconsciously starting to mold their subsequent presentations to the Hansard style (Gravlee 1981:93).

Editorial policy for Hansard is determined both formally, by style guides, and informally, by a community of practice. While most parliamentary websites acknowledge the edited status of the Hansard, editorial guidelines remain largely invisible (Edwards 2016:158). Editorial policies and practices have, no doubt, changed over time, and may affect colloquialization and densification tendencies. Most obviously, a greater tolerance for colloquial usage, or an increasing move towards a more verbatim report may bolster colloquialization in the written Hansard. Gravlee (1981) refers to comments from British Hansard reporters (from the 1970s) that they have a particular Hansard style "that we use for certain phrases and we tend to make people speak in that style if we can" (Gravlee 1981:92). In contrast, much of the contemporary Australian advice centers on the maxim of "give speakers what they say" (Hansard 2008).

Changes in production mechanisms affect Hansard reporters most strongly, and editors to a somewhat lesser degree. As outlined in section 2, it was only in 1909 that the production of the British Hansard became the business of parliament itself, and that the principle of "substantially verbatim," first-person reporting was firmly established. Prior to 1909 there was tremendous variation in practices for producing the British Hansard, with some speeches rendered verbatim, and others as reported speech in the third person (Sutherland & Farrell 2013). In Australia, in contrast, a more consistent policy of substantially verbatim reporting was followed from the beginning of the federal parliament in 1901.

For both British and Australian parliaments, shorthand reporting has been gradually replaced by recording, voice recognition software, respeaking, and closed captioning, which are used to produce first drafts for editing (Hardman 2011; Sutherland & Farrell 2013). The mechanisms by means of which Hansard is produced have thus shifted

from reconstructed monologue and dialogue (produced under extreme time pressure) as starting point, to transcribed monologue and dialogue (produced under less immediate time pressure). Whereas in the earlier Hansard it may well be that the limitation of shorthand "mitigates against the production of verbatim texts" (Gravlee 1981:92), changes in production mechanisms from the 1990s onwards are likely to facilitate more substantially verbatim reproduction. This trend is further strengthened by the public availability of the original sound recordings.

We propose that the last two factors, construal of the aim and function of parliamentary discourse (and its reconstruction in Hansard), as well as construal of the audience, play a particularly important role in shaping the spoken discourse of parliamentarians. Several factors may influence parliamentarians' construal of the audience, of which we highlight only one in this article, namely the effects of broadcasting. In Australia, radio broadcasts of parliamentary proceedings began in 1946, with regular television broadcasts from the House of Representatives beginning in 1991. In Britain there was considerable resistance against recording parliamentary proceedings, and it was not until 1978 that regular radio broadcasts began, followed by television broadcasts in 1989 (Hendy 2017). While there is little existing research we are aware of on how broadcasting has altered the nature of parliamentary debate, fears that broadcasting would "change the character of the House" (Hendy 2017) and place parliamentarians in a bad light were long at the root of resistance against parliamentary recordings (Law 1950:8-9). Broadcasting may have incentivized parliamentarians to start relying more on "scripted discourse" during parliamentary proceedings, specifically for speeches. Biber (1988:128) finds that prepared speeches are much closer to written registers as far as informational density is concerned, compared to spontaneous speeches, which raises the possibility that the Hansard may show densification over time if more speeches are read—a practice which has been allowed in the Australian parliament since 1965.

The awareness of parliamentary discourse as a "performance" or "posturing" for an increasing public audience may have had several consequences (see Ilie 2010). It may have led to a more careful, informational, and scripted style, directed to a broad, faceless audience, replacing the "semi-relaxed atmosphere" of the House (Parliament of the Commonwealth of Australia 1981:53). It may thus have tempered the more immediate dialogic, interactive, and interpersonal qualities of parliamentary debates construed as interactions between a group of people within a closed space. Existing findings from Kruger and Smith (2018) on the Australian Hansard seem to point in this direction. However, at the same time, the increasingly public nature of parliamentary debates may also have resulted in an increase in ostensible interactivity, as suggested in findings of increased "pseudo-sparring" in the subsection of parliamentary proceedings dedicated to questions to the prime minister (Bates et al. 2014).

The potential effects of a widening audience thus clearly require further investigation, which we undertake in this paper alongside our investigation of colloquialization and densification. Bakhtin (1994:59-60) notes that different genres with characteristic verbal repertoires develop depending on the construal of the audience.

Developing the ideas of Bakhtin within the broader framework of Systemic Functional Linguistics, Martin and White (2005) draw a distinction between two poles of engagement between conversation partners, speakers, and listeners: "heteroglossic" or "monoglossic." The former is more dialogic and provides for other voices, whereas the latter is monologic and closed, without leaving room for contrary opinions. In these terms, parliamentary discourse may develop a more monologic orientation as a result of the changed construal of the audience, from the immediate to the wider audience—or it may lead to a kind of performative heteroglossia, where interactivity is staged for a wider audience. These potential tendencies of "monologization" or "heterologization" reflect the degree to which interactivity and interpersonal coordination are explicitly encoded and discursively marked. It should thus be noted that the term "monologization" as we use it in this paper does not in the first instance reflect the increased frequency of monologues, as such. Rather, it reflects a discourse style (which may be evident in both monologues and dialogues) that makes less use of linguistic resources for marking interactivity and signaling interpersonal engagement. Monologization and heterologization intersect with colloquialization and densification in complex ways. In addressing a larger audience, parliamentarians may opt for more colloquial usage, but at the same time, may also rely more on carefully scripted speeches, leading to densification.

The above discussion suggests how these five factors may interact to shape register change in the Hansard, involving tendencies of colloquialization and densification, as well as other potential rhetorical changes. Colloquialization may be promoted by the development of a generally more informal style in parliament, changes in editorial policies, and a move towards a more verbatim style of reporting. At the same time, the broadcasting of parliamentary proceedings may lead to a less involved and spontaneous debating style, resulting in monologization, or an increase in staged interactivity, resulting in heterologization. Densification may result from a greater reliance on more formal scripted material, prompted also by the awareness of a broader audience and the permanence of the immediately recorded audiovisual record.

4. Material and Method

Corpora were created from the online, freely accessible archives of the British House of Commons, and the Australian House of Representatives. Five years (roughly at thirty-year intervals) were selected as sampling frames: 1901, 1935, 1965, 1995, 2015. The start date of 1901 is the start of the federal parliament in Australia and thus determined the first sampling year. The three subsequent sampling years roughly correspond to the timeframe of the Brown family of corpora, facilitating future comparisons. The last sampling year was included to reflect the most recent data available at the time data collection commenced.

The full last sitting of each month was selected for inclusion in the corpus, though some flexibility was exercised where data were sparse. Each full sitting is included as a separate file in the corpus. Table 1 summarizes the corpus composition.

Table 1. Corpus Composition: Number of Tokens and "Sittings" [Files] in Each Sample Year

Hansard	1901	1935	1965	1995	2015	Total
Australian House of Representatives	321,834 [8]	400,813 [12]	374,721 [8]	879,385 [9]	897,550 [9]	2,874,303 [46]
British House of Commons	407,852 [10]	556,791 [9]	594,082 [10]	657,534 [10]	896,289 [10]	3,112,548 [49]
						5,986,851

For the multidimensional analysis, two options were possible: either replicate the factor model in Biber (1988), or extract a new factor model (see Xiao 2009; Koteyko 2015; Kruger & van Rooy 2018). We chose to replicate Biber's (1988) multidimensional analysis in order to enable future comparisons with other registers identified using this method.

Biber's (1988) multidimensional method starts with identifying and quantifying a set of sixty-seven linguistic features, using algorithms for largely automatic identification (but see the discussion below on manual verification). The sixty-seven features used in Biber (1988), and in this study, are chosen because they reflect a large range of potentially important linguistic features that "have been associated with particular functions" (Biber 1988:72). The normalized frequency counts of these features are subjected to factor analysis. Factor analysis is a statistical method for identifying underlying patterns or groupings of dependent variables. Factor analysis "correlates every variable with each and every other variable. It then determines statistical clusters—it asks if there are some groups of items with scores that tend to be intercorrelated with one another" (Geher & Hall 2014:341). These statistical clusters are termed "factors," and the features that are intercorrelated are presumed to reflect a superordinate, latent, or derived variable that "represents an area of high shared variance in the data" (Biber 1988:79). The occurrence patterns of variables are analyzed and interpreted to arrive at a characterization of the factor that reflects the "shared" variable underlying them.

The importance of each individual variable loading onto a factor is indicated by a "factor loading." The factor loading indicates how representative the variable is of the factor: the further away from 0.0 (either in the positive or negative direction), the more important the variable is in characterizing the factor. A positive or negative loading indicates the distribution of features: where the group of features with positive loadings occur together, the group of features with negative loadings are less likely to occur (and vice versa) (Biber 1988:88).

Biber's (1988) analysis identifies six factors (or, as he terms them, dimensions) along which registers vary. While we acknowledge that the interpretation of these dimensions is open to question, we adopt Biber's (1988) characterizations here for the purposes of comparisons with other studies, and also in light of the findings of Biber (2014) that these dimensions appear to be comparably constant across text types and languages:

1. Involved versus informational production
2. Narrative versus non-narrative concerns
3. Explicit versus situation-dependent reference
4. Overt expression of persuasion
5. Abstract versus non-abstract information
6. On-line information elaboration

Appendix 1 shows the six dimensions, together with the linguistic features loading onto each dimension and their factor loadings. In this paper, we focus on the first five of these dimensions, omitting Dimension 6 from the discussion (for reasons of space, as well as additional statistical reasons outlined below). More detail on the five dimensions analyzed in this paper are provided in section 5.

Subsequent to the factor analysis, Biber (1988) calculates a dimension score for each corpus text: a score that reflects where a particular text "rates" in respect of the factor in question, which is construed as a scale with two poles. The dimension score for each of the six dimensions, for each text, is calculated by adding the standardized score of each linguistic feature that loaded positively on the dimension, and subtracting the standardized score of each feature that loaded negatively on the dimension. The dimension score provides an overall assessment of the "positioning" of a text on each of the six scaled dimensions.[7]

To perform the multidimensional analysis, we used the "Multidimensional Analysis Tagger" (MAT) developed by Nini (2014). MAT replicates Biber's (1988) original multidimensional analysis automatically with a substantial degree of accuracy according to the comparisons reported by Nini (2014). MAT uses part-of-speech-tagging by the Stanford Tagger (2013, see nlp.stanford.edu/software/tagger.shtml; Toutanova et al. 2003), which is a newer tagger with higher accuracy than most, but otherwise implements Biber's (1988) algorithms with a small number of refinements for improved accuracy (see Nini 2014) to extract feature counts, normalize them, and compute dimension scores using the factor loadings of Biber's (1988) original model. However, in order to control more carefully for the accuracy of algorithm classification, we manually checked samples of concordances for a number of features either (a) identified by Biber (1988) as having been subjected to manual analysis, or (b) identified in our own engagement with the data as potentially prone to misclassification.

Biber (1988:223-245) identifies eleven features that require manual editing to remove false hits. It was not feasible to check all tagging, as that would have amounted to close to a million instances. A sample of 400 instances per tag was extracted from each variety and checked manually against Biber's criteria. To these eleven features, we added the two uses of *and* for phrasal and clausal coordination, and nominalizations.[8] For *and*, a sample of 400 per variety per sampling year was checked, since the classification of *and* as either clausal or phrasal was based in part on the use of commas, for which usage conventions have changed over time. No similar changes in accuracy were observed for the other tags. Based on the samples, estimates for corrections were

derived mathematically and extrapolated to the entire corpus on a file-by-file basis. The estimates for incorrect tags were mostly below 20 percent, and usually within a couple of percentage points for the two varieties. For nominalizations, all types that occurred at least 100 times in the data (amounting to 88 percent of all assigned tags) were manually checked against the *Shorter Oxford English dictionary* (Little et al. 1973), and accepted or rejected based on whether the word was shown as containing the suffix in question. An overall accuracy of 98 percent was obtained, and hence no adjustments were made. Given adjusted values for thirteen features, the normalized values, standardized scores, and dimension scores were recomputed based on the original calculations (Biber 1988).

In order to investigate how the register of the Hansard changes in similar or different ways across the two varieties of English and the five periods in question, we used generalized linear modeling in R (R Core Team 2016) to model the change in dimension scores for Biber's (1988) six dimensions, with VARIETY and PERIOD as categorical predictor variables, including an interaction term (for an outline of linear regression models with categorical predictors, see Gries 2013:276-280; see Appendix 2 for full results). Assumption testing for models was done using the package "gvlma" (Pena & Slate 2014), and demonstrated that the statistical assumptions for linear regression were largely met for all models, except for Dimension 6. A full discussion of the difficulties associated with the analysis of Dimension 6 falls outside the scope of this paper, and we thus omit Dimension 6 from the further discussion (although we do discuss some of the results for individual features loading on this dimension, where relevant). To delineate register changes overall in the two Hansards, we discuss all five dimensions included in the analysis in turn.

In order to better understand the overall patterns of variation in dimension scores, we carry out a second quantitative analysis of individual features (see Appendix 3). This analysis is intended to allow for a more detailed focus on the functions of individual features, rather than just the aggregate pattern, thus compensating for a point of critique sometimes raised regarding the multidimensional method. A full statistical analysis, accounting for main effects and interactions between VARIETY and PERIOD as predictors, and interpretation for all individual features fall outside the scope of this paper. We therefore use as a statistical test for individual features, the non-parametric Kruskal-Wallis ANOVA (since most individual features do not meet the assumptions of parametric tests), and apply this test to determine whether the frequency of a feature varies significantly over time, for each of the two varieties separately. Post-hoc tests to determine the exact nature of the difference again are too detailed and complex to include in this paper; we based our further analysis of cases demonstrating a statistically significant change over time on observations of median and interquartile ranges over the five periods for the two varieties. We discuss statistically significant findings from individual features that illustrate or otherwise refine the interpretation for the overall dimension score. In the discussion of the results in the following section, we interpret the findings against the background of the conceptual model of register change in the Hansard discussed in section 2.

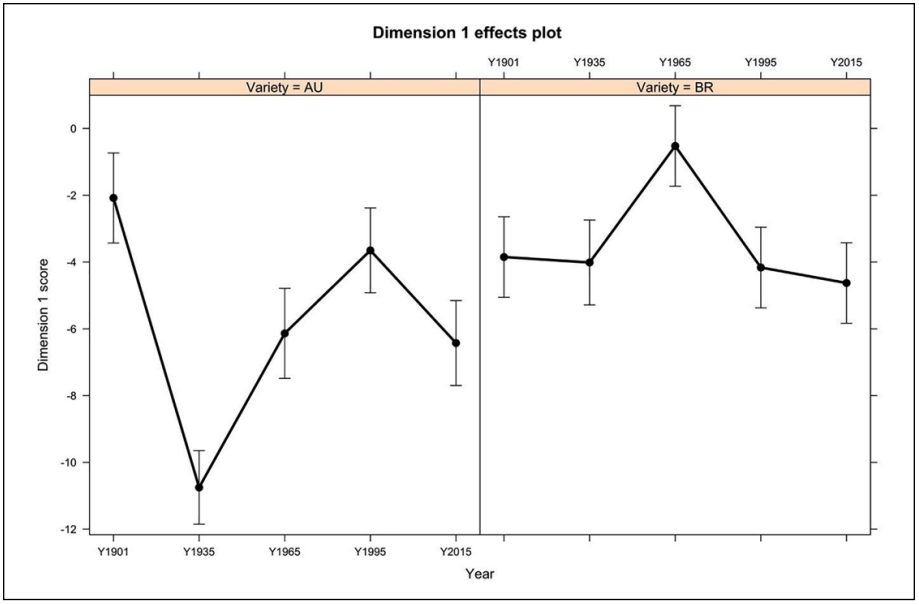

Figure 1. Overall Scores for Dimension 1, by Variety and Period

Note: Error bars indicate 95 percent confidence intervals.

5. Results

5.1. Dimension 1

Dimension 1 (involved versus informational production) is the dimension that accounts for the overall picture of register variation in the most comprehensive way across different multidimensional studies (Biber 2014:16). Features that load positively on this dimension characterize informal, interactive, spoken language, for instance, first and second person pronouns, contractions, complementizer *that* omission, and demonstrative pronouns. Features that load negatively on this dimension characterize the opposite pole of informationally dense, typically written language, for instance, attributive adjectives and nouns (see Appendix 1 for the complete list). Dimension 1 is therefore particularly relevant to the tension between colloquialization and densification, with higher dimension scores reflecting a more oral style.

The results of the regression analysis are shown in Appendix 2. Although the Hansard is a record of spoken discourse, it displays a very clear written character, as revealed by its negative dimension score values on this dimension (see Figure 1). It is striking that overall the British Hansard appears to trend towards somewhat higher dimension scores, reflecting a more spoken and less densely informational style

(although the overall main effect for VARIETY is not significant; see Appendix 2). Furthermore, these differences are hard to account for, given the variability emerging from the large set of features loading on this dimension.

The overall pattern of dimension scores does not reveal a clear trend towards either colloquialization (an increasingly positive/less negative score) or densification (an increasingly negative score). The scores fluctuate extensively from the one period to the next, while the two varieties reveal a separate outlier—the Australian Hansard has an extremely low score for 1935, while the British Hansard has a higher score for 1965 than any other period, close to 0. Closer inspection of the texts in these periods yielded no self-evident reasons for these differences; further detailed analysis is required.

The statistical analysis of changes in individual features (see Appendix 3) shows that most features show statistically significant differences in frequency over time. However, many of these do not reflect clear trends in frequency increase or decrease, but simply fluctuate across periods. Nevertheless, a number of individual features do show clear patterns of change over time. Closer inspection of these features suggests that densification and colloquialization take place simultaneously, but their effects are cancelled out at the level of the overall dimension score.

Evidence of densification emerges in both varieties, in increases in features with negative loadings on this dimension, and decreases in features with positive loadings. For example, there is a gradual increase in the frequency of attributive adjectives and, mainly since 1965, an increase in the overall frequency of nouns. This development towards a more compressed, noun-based phrasal discourse style (and away from a verb-based clausal discourse style) is further supported by the general decline in the frequency of complement-taking private (mental), public (communication), and suasive verbs (on Dimension 2 and Dimension 4), and the decline in the frequency of *that*-verb complements on Dimension 6 (see Appendix 3).[9] Additionally, coordination with *and* decreases (accompanied by an increase in phrasal coordination; see discussion in section 5.3).

In contrast, an increase in the frequency of features that load positively on Dimension 1 can be interpreted as evidence of colloquialization. Features like demonstrative pronouns, general emphatics, and sentential relatives (all associated with informal speech) show clear increases across both varieties (see Appendix 3).[10]

Two features loading on Dimension 1 stand out in their increase in the Australian data, but not the British: the use of the second person pronoun *you* and the use of contractions. In the British Hansard, contracted forms hardly ever occur. In the Australian Hansard this is also the case until 1965, but after this there is a moderate rise in frequency (up to a peak of 0.08 per 100 words in 1995). A similar pattern is seen for split infinitives, not loading on any of Biber's dimensions (see Appendix 3). These features clearly reflect differential changes in norms and editorial policy in the two varieties, with the Australian Hansard gradually more permissive in allowing the colloquial variants into the written record. In other words, in these particular cases it is clearly not

likely that parliamentarians' usage has changed; rather, norms for presenting speech in writing have become more relaxed in the Australian Hansard, so that the written record more closely approximates speech.

The use of the pronoun *you* shows more substantial differential frequency changes: remaining largely below 0.1 per 100 words in the British Hansard, but increasing to almost 0.5 per 100 words in 1995, in the Australian Hansard. This feature is particularly interesting against the background of the convention of third-person forms of address in parliament. Until 1965, both varieties scrupulously avoid *you*. The 1995 data show a sudden change in the Australian Hansard. The change demonstrates colloquialization both in usage and in editorial policy, as suggested by the following extract from the Australian *Hansard usage and editing guide*:

> *you*—Give speakers what they say. Strictly speaking, when all members and senators speak they must address the chair. Traditionally the Speaker, the President or the Chairman have been the only people able to be addressed as "you" in either chamber. However, over the years the more general use of "you" has become prevalent during debate and the occupants of the chair are now less inclined to pull up recalcitrants. Using "you" is also necessary to retain the flavour of the debate. (Hansard 2008:50)

Example (1) from the 2015 British Hansard shows how the usage rule is still enforced in the chamber, through explicit sanction. The same rhetorical choices are tolerated in the Australian parliament of 1995 and 2015. This is illustrated by (2), where the Speaker does intervene, but not to correct the use of the second person pronoun.

(1) JULIAN KNIGHT (SOLIHULL) (CON): I also congratulate the hon. Member for Burnley (Julie Cooper) on securing the debate and drawing up the Bill. It seems many hours since *you* spoke, but I remember that *you* spoke powerfully and are clearly a strong advocate for carers and for your local NHS. I also think that Government Members will be grateful for the fact that *you* also paid tribute to the actions of -
MADAM DEPUTY SPEAKER (MRS ELEANOR LAING): Order. I always let Members get away with this mistake once, and sometimes twice, but the hon. Gentleman has used the word "*you*" three times. "*You*" refers to the Chair, and the hon. Lady is the hon. Lady. (BR, 2015 30 October)

(2) MR BEAZLEY: [. . .] I notice that today *you* decided to go out with a variant of this when *you* were quizzed on the doorstop, despite what the Treasurer had to say about these matters today. *You* attempted to portray the position as follows: 'The worst net foreign debt position Australia has ever had.' Wrong, of course . . .
MR SNOWDON: *You* are a deceitful man.
MR SPEAKER: Order! The member for the Northern Territory will withdraw that remark and I warn the member for the Northern Territory. His constant interjections will not be tolerated. (AU, 1995 30 August)

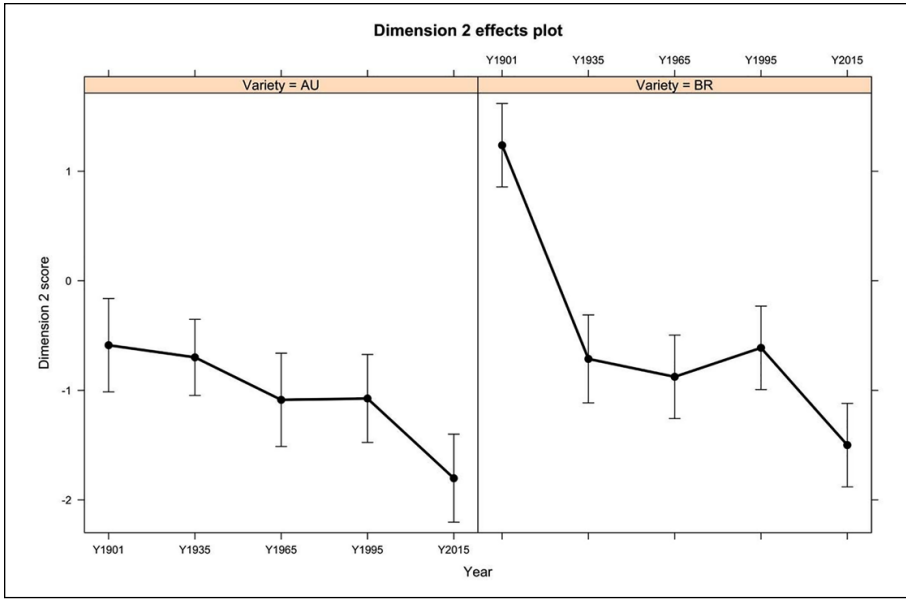

Figure 2. Overall Scores for Dimension 2, by Variety and Period

Note: Error bars indicate 95 percent confidence intervals.

5.2. Dimension 2

Dimension 2 is interpreted by Biber (1988) as reflecting narrative versus non-narrative concerns, or, distinguishing "active, event-oriented discourse and more static, descriptive or expository types of discourse" (Biber 1988:109). The model for Dimension 2 is shown in Appendix 2. There is a significant main effect for VARIETY, which indicates that the two varieties, overall, differ in their score on Dimension 2. The main effect for PERIOD is significant only for 2015 (with the 2015 score for Dimension 2 across both varieties significantly different from the 1901 score). The effects for the interaction between the predictors VARIETY and PERIOD are significant. These effects are visualized in Figure 2, which shows that the dimension score remains slightly negative. Both the Australian and the British Hansard demonstrate a noticeable drop in dimension score from 1995 to 2015, suggesting a movement towards a somewhat more static and expository, and less active and narrative style.

The clear difference for the 1901 British data is in part due to the much higher frequency of past-tense verbs in this period: the median value of 4.21 per 100 words is about double that of the median frequency elsewhere, where there is a narrow range of around 2 per 100 words (see Appendix 3). Likewise, third-person pronouns occur at a higher frequency of 2.31 per 100 words in the 1901 British Hansard; elsewhere this feature never occurs more than 1.75 times per 100 words. These outliers can be attributed to early uncertainty about editorial norms for the Hansard, specifically the use of

indirect speech to report some speeches prior to the establishment of the principle of verbatim reporting in 1907 (see section 3).

As shown in Appendix 3, most features that load on this dimension reflect a decline in frequency. The overall decline in the dimension score is not of a great magnitude, but it accelerates after 1995 in both varieties. We interpret this trend as a decline in the subjective and interactive qualities of the data over time, what we regard as a change in the rhetorical style away from an "active" dialogic style of engagement (which may involve elements of narrativity), thus monologization rather than colloquialization or densification.

This argument can be illustrated by the decline in negation. Synthetic negation with *no* + noun phrase (NP) is associated with formal and written registers, as it is noun-based, whereas analytic negation, with *not* + verb, is more common in speech (Tottie 1988; Biber et al. 1999). Synthetic negation declines in frequency in both varieties—from just over 0.2 per 100 words in 1901, to just over 0.1 per 100 words in 2015 (see Appendix 3). At the same time, there is also a substantial decline in analytic negation in the verb phrase (with a positive loading on Dimension 1) in both varieties (see Appendix 3). In other words, there is no trade-off between a decline in synthetic negation and a rise in analytic negation (which would have been evidence in favor of colloquialization). Rather, there is a decline in negation overall. Verhagen (2005) argues that the use of negation is dependent on presupposing the interlocutor holds a different view, and negation therefore explicitly marks unexpected information for the hearer. If speakers become less concerned with the hearer's state of mind, then negation becomes a less useful resource. We thus propose that the decline in negation potentially indexes a move away from a more interactive and dialogic style in parliamentary discourse, particularly saliently evident in the Australian data. This dialogic character of negation is illustrated by (3), where negation marks that one speaker disagrees with the other, in a rather heated exchange.

(3) LORD STANLEY: Discretion as to making contracts for the supply of malt liquor to the troops is vested in the General Officers Commanding Districts, who may either make a district contract or allow commanding officers of units to make their own. There is *no* regulation under which canteen contracts are bound to be placed locally, and it is a fact that a considerable amount of Irish stout is sold in canteens in England. It is *not* proposed to question the manner in which the General Officer Commanding has used his discretion.
MR. PATRICK WHITE: Will the noble Lord answer the latter portion of the question?
LORD STANLEY: I think I have. We do *not* propose to question the discretion of the commanding officer.
MR. PATRICK O'BRIEN: Does the Irish beer supplied to soldiers contain *no* poison, and is that the reason you send for English beer? (BR, 1901 18 February)

5.3. Dimension 3

Dimension 3 captures the distinction between explicit, endophoric, text-dependent reference, and exophoric, situation-dependent reference that relies on the shared context of addresser and addressee for interpretation (Biber 1988:110). Written texts typically

cannot rely on such shared context, and therefore tend to depend heavily on explicit, text-dependent reference, as well as detailed specification. This is reflected in the positive features loading on this dimension, which are all noun phrase features and therefore typical markers of densification, such as phrasal coordination and nominalization, as well as three types of relative clauses, which are a "stereotypically literate feature" (Biber 2003:169). Conversely, the three features with negative loadings are all verb phrase features that can be used to specify situation-dependent reference anchored in the shared deictic frame of the interlocutors (time adverbials, place adverbials, and other adverbs). These latter features can thus be associated with colloquial and interactive usage, and are specifically associated with the degree to which interlocutors establish joint attention to the same object (see Verhagen 2005). Example (4) is an extract from the 1965 British Hansard that reflects the combination of high frequencies of relative clauses (in bold), phrasal coordination (underlined), and nominalizations (italicized) that would typically lead to a high score on Dimension 3.

(4) This, again, is a matter **which** involves technical and *security considerations*, but I assure my hon. Friend, having looked into this carefully, that the procedures **which** are laid down provide that the message must be clear and unambiguous and must be subject to a quite complicated *authentication* procedure **which** would identify the intent and origin of the message beyond all doubt. (BR, 1965 30 June)

The model for Dimension 3, shown in Appendix 2, demonstrates few significant effects. Both the Australian and the British Hansard maintain a strongly positive score over time, as shown in Figure 3. When considering the individual features in this dimension, however, most features, as reported in Appendix 3, actually show a significant, steady development away from the top end of the dimension score: all relative clause types (with a positive loading) decline in frequency while adverbs (with a negative loading) increase.

In other words, it appears that generally both the Australian and the British Hansard are becoming characterized by less use of "literate" noun-phrase modification by relative clauses for specification, and more use of "oral" modification through adverbials. Such adverbials are anchored in shared deictic reference and serve functions of constructing joint attention in the context of parliamentary interactions, a function typical of oral interaction. This is illustrated in (5), where the use of the first-person plural pronoun and the anchoring of the discourse in the shared context of *here* and *today* overtly function as a rhetorical device for constructing joint attention.

(5) I wish to be clear about the measures *we* are talking about here today. (AU, 2015 28 May).

However, the overall dimension score, apart from the last two periods in the British data, shows the opposite movement mainly due to increases in the frequency of phrasal coordination. Phrasal coordination is one of the most clear-cut signs of densification, and doubles in frequency over time at the same time as clausal coordination, a typical spoken-language feature (with a positive loading on Dimension 1), declines steadily by about 20 percent (see Appendix 3).

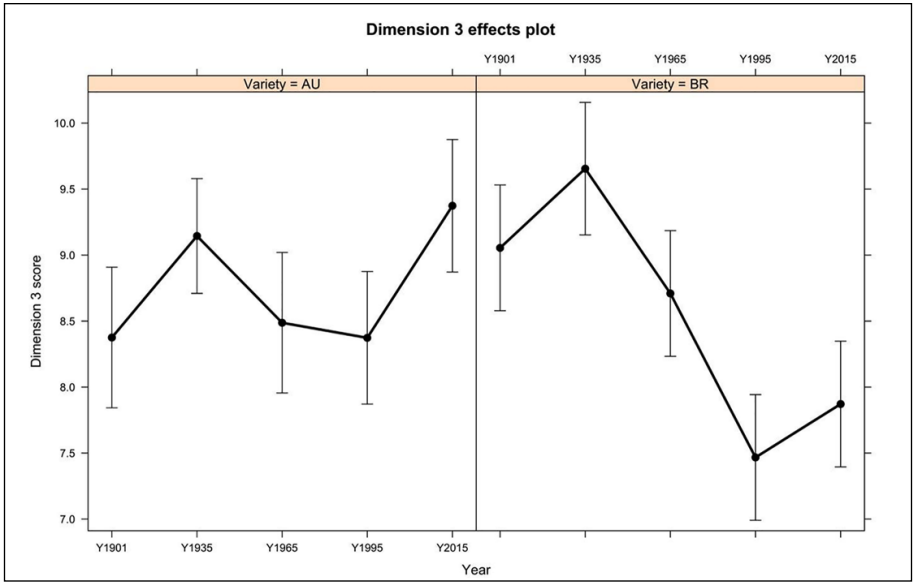

Figure 3. Overall Scores for Dimension 3, by Variety and Period

Note: Error bars indicate 95 percent confidence intervals.

Thus, passages such as (6), with clausal coordination (in italics), become less frequent, while passages such as (7), with phrasal coordination (underlined), become more frequent.

(6) The very essence of soldiership is discipline and training, *and* if we are to make soldiers fit for every condition of warfare - *and* the conditions of warfare may be very different on our shores from what they were in South Africa - I say that whatever system we adopt, we must either have a larger permanent force than is proposed, with every possible new and scientific equipment, *and* then the citizen soldiers, on the other hand, with a moderate amount of training [. . .] (AU, 1901 31 July)

(7) When someone applies for a provisional, permanent or temporary visa, applicants must sign a statement that they have read and understood about the following Australian values: respect for freedom and dignity of the individual; freedom of religion; commitment to the rule of law, parliamentary democracy, equality of men and women, and the spirit of egalitarianism; *and* embraces things like mutual respect, tolerance, fair play and compassion for those in need in pursuit of the public good. (AU, 2015 30 November)

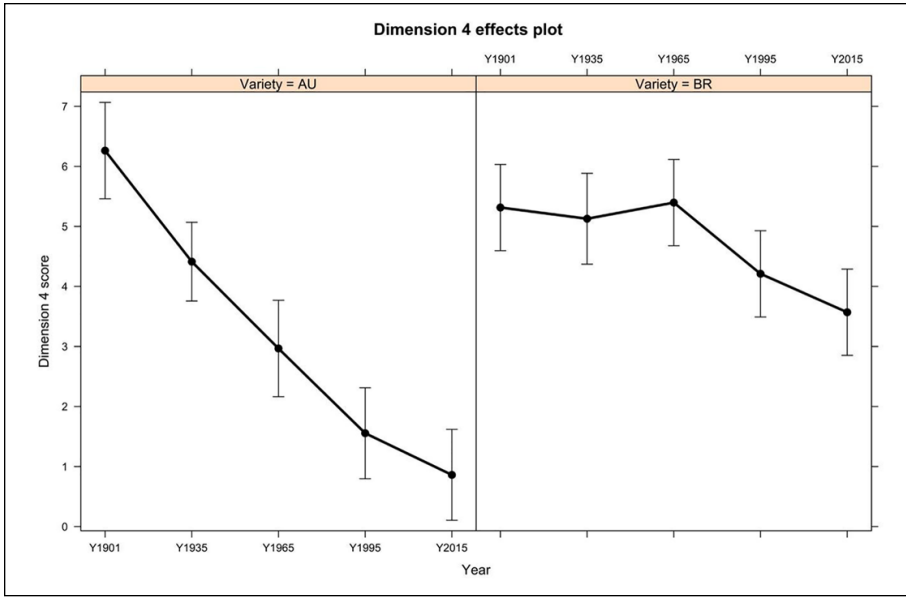

Figure 4. Overall Scores for Dimension 4, by Variety and Period

Note: Error bars indicate 95 percent confidence intervals.

5.4. Dimension 4

Dimension 4 is labelled "Overt expression of persuasion" by Biber (1988:111), and is particularly relevant to the genre of parliamentary debate, which, by nature, is intended to persuade listeners of a particular viewpoint, and does so through interactions that draw on a complex interplay of confrontational, competitive, cooperative, and performative interaction (Ilie 2015). There are only positive features on this dimension (see Appendix 1), with the most salient features a combination of modal auxiliaries, suasive verbs, infinitive clauses, and conditional subordination.

The regression model for Dimension 4 is shown in Appendix 2, and demonstrates strong effects for PERIOD, as well as for the interaction between VARIETY and PERIOD. The effects plot for the model is given in Figure 4.

Figure 4 shows that the British data are stable in the earlier periods, but demonstrate a notable decline in dimension score after 1965, when broadcasting of the British parliament commenced. The Australian data show a very clear and continual drop in the dimension score throughout, which may be related to the earlier onset of radio broadcasting than in Britain. The linguistic features that contribute most strongly to the decline in the dimension score are the necessity modals, suasive verbs, and conditional subordination, all of which demonstrate a substantive decline in frequency across both varieties (slightly more than half in the Australian data and slightly less than half in the British data; see Appendix 3).

The decline in the dimension score suggests that there is an overall trend, more marked in the Australian data, towards a less argumentative style—at least insofar as an argumentative style is indexed by the features included in this dimension. While it may be that alternative linguistic resources are increasingly used to express argumentation (a possibility requiring further detailed analysis), it is clear that important resources that are useful to signal dialogic engagement with the information being presented, such as modals and suasive verbs, decline in frequency. The result is a more monologic, and less interactive and interpersonally marked presentation of information without strongly marking stance or opening up the space for the audience to interact with the information.

Example (8) illustrates the dialogic style that typifies the earlier Hansard in Australia (but appears to be on the decline subsequently), with a high frequency of prediction and necessity modals (in bold), suasive verbs (underlined), and conditional subordination (italicized). The dialogic intent is clear, from the anticipation of other views and the attempt to address such other views in this argumentative extract. These features decline significantly in more recent texts.

(8) I think that most of us **will** agree that whatever concession is made to the press throughout the Commonwealth in regard to telegraphic press rates, **should** apply to reports of the utterances of each section or individual member of the House. Further than that, the concession **should** be made so comprehensive as to avoid the necessity for any interpretation, because as long as we insist upon differentiating between one section and another, there **will** always be room for abuses to creep in. *If* the statement tentatively put forward by the acting leader of the Opposition be correct, I do not think that any honorable member will attempt to justify the transmission over the wires at reduced rates of reports of expressions of party opinion pure and simple [. . .] The Government **should** fix as low a rate as can be made applicable to all press telegrams sent over the wires. *If* that is done there **will** be no ground for complaint on the part of honorable members. I think the rate **should** be fixed at 1s. per 100 words. (AU, 1901 13 December)

5.5. Dimension 5

Dimension 5 draws a distinction between registers that are "abstract, technical and formal versus other types of discourse" (Biber 1988:113). This dimension, like Dimension 1, captures a contrast between more informationally dense and more colloquial registers very directly.

Details of the model for Dimension 5 are given in Appendix 2, and show significant effects particularly for PERIOD, and to a lesser degree for the interaction between VARIETY and PERIOD. As would be expected for this dimension, both the Australian and the British data have scores on the positive side of the dimension continuum, indicating a more formal and abstract register, but the effects plot in Figure 5 shows that there is a clear downward trend over time (more pronounced in the Australian Hansard), indicating that colloquialization takes place.

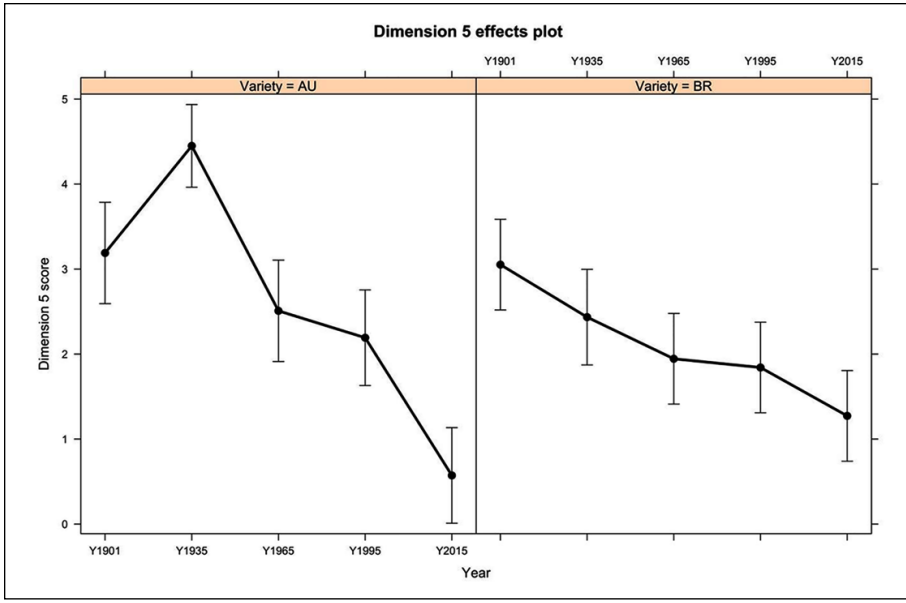

Figure 5. Overall scores for Dimension 5, by Variety and Period

Note: Error bars indicate 95 percent confidence intervals.

In terms of the features loading on this dimension (see Appendix 1), there is, notably, a consistent decline in the frequency of both agentless passives and *by*-passives, which are typical of formal written registers, and thus index a movement towards a more colloquial, informal style. The decline in passives is also accompanied by a decline in the frequency of past-participial WHIZ deletion relatives (in line with the general decline in relativization features on Dimension 3). There is also a decline in the frequency of conjuncts.[11] Biber (1988:239) notes that conjuncts are important in highly informational discourse as they "explicitly mark logical relations between clauses," particularly important in argumentative discourse that directs the listener's construal of the relations between propositions. The use of conjuncts in both varieties declines after 1965, but the Australian data show a much more rapid decrease of use, indicating a more pronounced move away from this marking of logical relations. The decline in this feature further supports the gradual replacement of a more interactive, dialogic argumentative style with a less interactive, more monologic presentational style, already discussed in relation to Dimension 2 and 4.

Example (9) illustrates how two conjuncts (underlined, indicating causality and specification, respectively) are used in quick succession to conclude a detailed argument about the impracticability of a Japanese attack on Australian soil, alongside various passives (marked in bold). This passage is indicative of the older style combining increased formality with more dialogic engagement, that appear to have gradually given way to a more monologic and simultaneously more informal style.

(9) But even from the point of view of experts and the militarists, it can easily **be demonstrated** that it would be impracticable for Japan to land a hostile force in Australia, even if, on other grounds, such a thing were not almost unthinkable. In this connexion I commend to honorable members a book entitled *The Defence of Australia*, by Mr. M. H. Ellis, a brother of a gentleman well known to members of the Country party. He draws attention to the time **taken**, and the expense **incurred**, in landing 100,000 Australians in a foreign friendly port during the Great War. He points out that our troops **were amply protected** by convoys on their way to Europe; they **were moved** from one friendly port to another; they took with them no artillery or munitions, and no food except for the voyage; no huts or housing, and none of the campaigning necessities which must go with the most ill-equipped force nosing into hostile territory and dependent on a long line of sea communications. Therefore, if we assume the absurd, namely, that Japan has the desire to attack Australia, we see how difficult, if not impossible, a successful invasion would be. (AU, 1935 31 October)

6. Conclusions

In this study, we find clear evidence of register change in the Hansard, with evidence for both shared and divergent patterns of change in the Australian and British Hansard. These register changes may be seen as emerging from three overarching tendencies: colloquialization, densification, and a trend we term monologization.

We find evidence for shared as well as differentiated effects of colloquialization in the two varieties. In the first instance, there are colloquialization effects that are evident only in the Australian Hansard, which can be ascribed to more permissive norms for reflecting spoken-language or informal features in formal writing, such as contractions and split infinitives. This is clearly the result of changes in editorial policy, one of the factors outlined in the conceptual model discussed in in section 3. More ambiguous between a change in speaker norms and a change in editorial norms is the use of *you*. Beyond these colloquialization features that are strongly present in the Australian but not the British data, there are also other features that suggest the adoption of a more colloquial style across both varieties. On Dimension 3, there is a decline in text-dependent referencing in the form of relative clauses, and the adoption of more context-dependent referencing strategies of speech (e.g., adverbials). Dimension 5, overall, suggests the colloquializing trend in both varieties, particularly strongly reflected in the Australian data in the decreased frequency of passives. These colloquializing trends are likely the consequence of a combination of a more informal style adopted by speakers as well as editorial staff, and the tendency towards a more verbatim approach to Hansard reporting, facilitated by the factors outlined in our model.

However, we also find strong evidence of densification as one form of anti-colloquialization across both varieties, evident in the increase of features like nouns, attributive adjectives, and phrasal coordination on different dimensions, and the decrease in complement-taking verbs and *that*-complement clauses. Most

of these features follow remarkably similar patterns, with similar frequencies, in the British and Australian data, suggesting a register change in the Hansard that cuts across both varieties. The fact that densification features most notably increase from 1965 onwards suggests that increasing reliance on scripted text, for reasons discussed in section 2, may at least in part account for this change.

Combined with these densification trends (and potentially even more prevalent) is another anti-colloquial trend that we term monologization. It reflects a decreased use of linguistic resources to express dialogic engagement, interactivity, and intersubjective coordination, and a greater emphasis on monologic, non-interactive presentation. This may be seen as an anti-colloquial tendency in the sense that interpersonal alignment and dialogic engagement are typical of spoken language. It is reflected, overall, on Dimension 4, and in elements on Dimension 2 and 5. Drawing on the model presented in section 2, our conjecture is that monologization is the consequence of changing construals of the nature and audience of parliamentary debates, affecting parliamentarians. This rhetorical change appears to be more extensive in Australian than British English, potentially as a consequence of the earlier public broadcasting of parliamentary proceedings and the effects that this has had on the construal of the audience of parliamentary debates.

While we do find evidence that the Australian Hansard is more colloquial, in some respects, than the British Hansard, the findings of our study also caution against an uncritical and oversimplified overall characterization of the Australian variety of English as "more colloquial" than other varieties. Claims like these are too often based on small sets of features, and are made without due consideration of the degree to which observed linguistic changes are register-specific, or how colloquialization may relate to other tendencies, like densification or monologization. This study highlights the complexity of the interaction between various types of change in one particular register. While the Australian Hansard takes the lead in a more permissive approach to the representation of spoken-language features in writing, the British Hansard sometimes tends to the more colloquial end of the scale (as on Dimension 1). Moreover, Australian English also often takes the lead in adopting anti-colloquial features in the Hansard. Our findings reiterate the point made by Biber and Gray (2013) and Szmrecsanyi (2016) that language change is strongly conditioned by register, and that care should be taken in considering the complex relations between register change and language change. In this respect, a crucial area of further investigation is to consider the different subgenres within the Hansard, such as speeches, debates, and Prime Minister's question time (see Bates et al. 2014; Ilie 2015). Undoubtedly, these different subgenres will demonstrate their own individualized effects of colloquialization, densification, and monologization (or, conversely heterologization), which will help to form a more complete picture of the forces at work in shaping register change in parliamentary discourse and its written representation in the Hansard.

Appendix

Appendix 1: Factorial Structure (Dimensions) from Biber (1988:102-103)

Scores next to features indicate the factor loading. Features that meet the cutoff point of 0.35 for inclusion in the final dimension score calculation but with a higher loading on another dimension are included in parentheses. They are ignored when computing factor scores, but are used to aid the functional interpretation of the dimension.

Dimension 1. Involved versus Informational Production

Private verbs	.96
That deletion	.91
Contractions	.90
Present-tense verbs	.86
Second-person pronouns	.86
DO as pro-verb	.82
Analytic negation	.78
Demonstrative pronouns	.76
General emphatics	.74
First-person pronouns	.74
Pronoun *it*	.71
BE as main verb	.71
Causative subordination	.66
Discourse particles	.66
Indefinite pronouns	.62
General hedges	.58
Amplifiers	.56
Sentence relatives	.55
WH questions	.52
Possibility modals	.50
Non-phrasal coordination	.48
WH clauses	.47
Final prepositions	.43
(Adverbs)	(.42)
(Conditional subordination)	(.32)
Nouns	−.80
Word length	−.58
Prepositions	−.54
Type/token ratio	−.54
Attributive adjectives	−.47
(Place adverbials)	(−.42)
(Agentless passives)	(−.39)
(Past participial WHIZ deletions)	(−.38)
(Present participial WHIZ deletions)	(−.32)

Dimension 2. Narrative versus Non-narrative Concerns	
Past-tense verbs	.90
Third-person pronouns	.73
Perfect-aspect verbs	.48
Public verbs	.43
Synthetic negation	.40
Present participial clauses	.39
(Present-tense verbs)	(−.47)
(Attributive adjectives)	(−.41)
(Past participial WHIZ deletions)	(−.34)
(Word length)	(−.31)

Dimension 3. Explicit versus Situation-dependent Reference	
WH relative clauses on object position	.63
Pied-piping constructions	.61
WH relative clauses on subject positions	.45
Phrasal coordination	.36
Nominalizations	.36
Time adverbials	−.60
Place adverbials	−.49
Adverbs	−.46

Dimension 4. Overt Expression of Persuasion	
Infinitives	.76
Prediction modals	.54
Suasive verbs	.49
Conditional subordination	.47
Necessity modals	.46
Split auxiliaries	.44
(Possibility modals)	(.37)

Dimension 5. Abstract versus Non-abstract Information	
Conjuncts	.48
Agentless passives	.43
Past participial clauses	.42
By-passives	.41
Past participial WHIZ deletions	.40
Other adverbial subordinators	.39
(Predicative adjectives)	(.31)
(Type/token ratio)	(−.31)

Dimension 6. On-line Information Elaboration

That clauses as verb complements	.56
Demonstratives	.55
That relative clauses on object positions	.46
That clauses as adjective complements	.36
(Final prepositions)	(.34)
(Existential *there*)	(.32)
(Demonstrative pronouns)	(.31)
(WH relative clauses on object positions)	(.30)
(Phrasal coordination)	(−.32)

Appendix 2: Results of Regression Analyses

Dimension 1.

	Estimate	*SE*	*t*-value	*p*-value
(Intercept)	−2.08	0.68	−3.07	*
VarietyBR	−1.77	0.91	−1.94	ns
PeriodYear_1935	−8.67	0.88	−9.90	**
PeriodYear_1965	−4.05	0.96	−4.23	**
PeriodYear_1995	−1.57	0.93	−1.68	ns
PeriodYear_2015	−4.34	0.93	−4.66	**
VarietyBR:PeriodYear_1935	8.51	1.24	6.85	**
VarietyBR:PeriodYear_1965	7.38	1.29	5.74	**
VarietyBR:PeriodYear_1995	1.25	1.27	0.99	ns
VarietyBR:PeriodYear_2015	3.57	1.27	2.82	*

Note: *$p < .05$, **$p < .001$, ns = not significant.
Residual standard error: 1.92 on 85 *df*.
Multiple R^2: 0.70, Adjusted R^2: 0.67.
F-statistic: 22.21 on 9 and 85 *df*, $p < .001$.

Dimension 2.

	Estimate	*SE*	*t*-value	*p*-value
(Intercept)	−0.59	0.21	−2.74	*
VarietyBR	1.83	0.29	6.35	**
PeriodYear_1935	−0.11	0.28	−0.40	ns
PeriodYear_1965	−0.50	0.30	−1.65	ns
PeriodYear_1995	−0.49	0.29	−1.65	ns
PeriodYear_2015	−1.21	0.29	−4.12	**
VarietyBR:PeriodYear_1935	−1.84	0.39	−4.69	**
VarietyBR:PeriodYear_1965	−1.61	0.41	−3.97	**

(continued)

Dimension 2. (continued)

	Estimate	*SE*	*t*-value	*p*-value
VarietyBR:PeriodYear_1995	−1.36	0.40	−3.41	*
VarietyBR:PeriodYear_2015	−1.52	0.40	−3.81	**

Note: *$p < .05$, **$p < .001$, ns = not significant.
Residual standard error: 0.61 on 85 *df*.
Multiple R^2: 0.65, Adjusted R^2: 0.61.
F-statistic: 17.41 on 9 and 85 *df*, $p < .001$.

Dimension 3.

	Estimate	*SE*	*t*-value	*p*-value
(Intercept)	8.38	0.27	31.28	**
VarietyBR	0.68	0.36	1.89	ns
PeriodYear_1935	0.77	0.35	2.23	*
PeriodYear_1965	0.11	0.38	0.30	ns
PeriodYear_1995	−0.00	0.37	−0.01	ns
PeriodYear_2015	0.10	0.37	−0.35	*
VarietyBR:PeriodYear_1935	−0.17	0.49	−0.87	ns
VarietyBR:PeriodYear_1965	−0.46	0.51	−0.90	ns
VarietyBR:PeriodYear_1995	−1.59	0.50	−3.17	*
VarietyBR:PeriodYear_2015	−2.18	0.50	−4.36	**

Note: *$p < .05$, **$p < .001$, ns = not significant.
Residual standard error: 0.76 on 85 *df*.
Multiple R^2: 0.45, Adjusted R^2: 0.39.
F-statistic: 7.74 on 9 and 85 *df*, $p < .001$.

Dimension 4.

	Estimate	*SE*	*t*-value	*p*-value
(Intercept)	6.26	0.40	15.51	**
VarietyBR	−0.95	0.54	−1.75	ns
PeriodYear_1935	−1.85	0.52	−3.55	**
PeriodYear_1965	−3.30	0.57	−5.77	**
PeriodYear_1995	−4.71	0.56	−8.48	**
PeriodYear_2015	−5.40	0.56	−9.73	**
VarietyBR:PeriodYear_1935	1.66	0.74	2.25	*
VarietyBR:PeriodYear_1965	3.38	0.77	4.41	**
VarietyBR:PeriodYear_1995	3.60	0.75	4.78	**
VarietyBR:PeriodYear_2015	3.66	0.75	4.85	**

Note: *$p < .05$, **$p < .001$, ns = not significant.
Residual standard error: 1.14 on 85 *df*.
Multiple R^2: 0.69, Adjusted R^2: 0.65.
F-statistic: 20.82 on 9 and 85 *df*, $p <$0.001.

Dimension 5.

	Estimate	*SE*	*t*-value	*p*-value
(Intercept)	3.19	0.30	10.64	**
VarietyBR	−0.14	0.40	−0.34	ns
PeriodYear_1935	1.26	0.39	3.25	*
PeriodYear_1965	−0.68	0.42	−1.61	ns
PeriodYear_1995	−0.10	0.41	−2.42	*
PeriodYear_2015	−2.62	0.41	−6.35	**
VarietyBR:PeriodYear_1935	−1.88	0.55	−3.42	**
VarietyBR:PeriodYear_1965	−0.43	0.57	−0.75	ns
VarietyBR:PeriodYear_1995	−0.21	0.56	−0.38	ns
VarietyBR:PeriodYear_2015	0.84	0.56	1.50	ns

Note: *$p < .05$, **$p < .001$, ns = not significant.
Residual standard error: 0.85 on 85 *df*.
Multiple R^2: 0.64, Adjusted R^2: 0.60.
F-statistic: 16.69 on 9 and 85 *df*, $p < .001$.

Appendix 3: Results of Kruskal-Wallis ANOVA for Individual Features

Significance codes: *$p < .05$, **$p < .001$, ns = not significant

Dimension 1.

		Median and [interquartile range]					
Feature	Variety	1901	1935	1965	1995	2015	Kruskal-Wallis χ^2
Private verbs	AU	1.62 [0.27]	1.07 [0.10]	1.37 [0.04]	1.26 [0.06]	1.18 [0.02]	33.82**
	BR	1.27 [0.24]	1.41 [0.21]	1.54 [0.15]	1.48 [0.12]	1.35 [0.05]	19.65**
That deletion	AU	0.31 [0.11]	0.16 [0.05]	0.23 [0.04]	0.25 [0.03]	0.22 [0.02]	36.26**
	BR	0.32 [0.07]	0.22 [0.01]	0.20 [0.06]	0.15 [0.02]	0.20 [0.04]	31.04**
Contractions	AU	0.00 [0.00]	0.00 [0.00]	0.00 [0.00]	0.08 [0.02]	0.06 [0.02]	42.36**
	BR	0.01 [0.02]	0.00 [0.00]	0.00 [0.00]	0.01 [0.01]	0.02 [0.02]	25.81**
Present-tense verbs	AU	5.69 [0.43]	4.74 [0.24]	5.75 [0.16]	5.90 [0.42]	5.85 [0.19]	26.03**
	BR	5.16 [1.71]	5.92 [0.33]	5.92 [0.33]	5.86 [0.66]	6.05 [0.48]	31.02**
Second-person pronouns	AU	0.04 [0.05]	0.04 [0.03]	0.09 [0.04]	0.48 [0.14]	0.33 [0.09]	34.98**
	BR	0.08 [0.18]	0.15 [0.09]	0.04 [0.02]	0.05 [0.05]	0.09 [0.05]	21.32**
DO as pro-verb	AU	0.15 [0.07]	0.11 [0.03]	0.14 [0.06]	0.15 [0.04]	0.16 [0.04]	14.50*
	BR	0.13 [0.05]	0.12 [0.04]	0.17 [0.03]	0.13 [0.02]	0.17 [0.01]	13.83*
Analytic negation	AU	0.99 [0.10]	0.77 [0.10]	0.88 [0.12]	0.82 [0.11]	0.65 [0.12]	30.73**
	BR	0.99 [0.08]	0.96 [0.09]	1.06 [0.13]	0.92 [0.19]	0.81 [0.16]	13.71*
Demonstrative pronouns	AU	0.48 [0.06]	0.42 [0.09]	0.56 [0.06]	0.61 [0.08]	0.63 [0.08]	32.36**
	BR	0.45 [0.10]	0.51 [0.03]	0.67 [0.03]	0.56 [0.06]	0.59 [0.04]	36.08**
General emphatics	AU	0.42 [0.10]	0.31 [0.08]	0.42 [0.11]	0.49 [0.10]	0.61 [0.03]	35.55**
	BR	0.37 [0.09]	0.38 [0.04]	0.43 [0.15]	0.42 [0.05]	0.54 [0.09]	23.83**

(continued)

Dimension 1. (continued)

Feature	Variety	Median and [interquartile range] 1901	1935	1965	1995	2015	Kruskal-Wallis χ^2
First-person pronouns	AU	3.50 [0.79]	1.81 [0.46]	2.63 [0.18]	2.30 [0.32]	2.83 [0.20]	35.14**
	BR	1.41 [1.14]	2.67 [0.29]	3.22 [0.38]	3.10 [0.55]	3.42 [0.79]	27.60**
Pronoun *it*	AU	1.26 [0.16]	1.23 [0.14]	1.20 [0.16]	1.36 [0.13]	1.10 [0.08]	18.55**
	BR	1.10 [0.12]	1.20 [0.04]	1.32 [0.23]	1.27 [0.09]	1.12 [0.24]	13.48*
BE as main verb	AU	1.72 [0.24]	1.50 [0.15]	1.74 [0.08]	1.88 [0.16]	1.77 [0.09]	25.18**
	BR	1.72 [0.16]	1.81 [0.12]	2.04 [0.09]	1.85 [0.10]	1.84 [0.19]	22.98**
Causative subordination	AU	0.16 [0.06]	0.12 [0.03]	0.16 [0.03]	0.17 [0.04]	0.14 [0.00]	13.20*
	BR	0.09 [0.03]	0.12 [0.01]	0.20 [0.03]	0.18 [0.04]	0.14 [0.04]	34.32**
Discourse particles	AU	0.01 [0.01]	0.01 [0.00]	0.02 [0.01]	0.02 [0.00]	0.02 [0.01]	13.92*
	BR	0.02 [0.02]	0.01 [0.01]	0.01 [0.01]	0.02 [0.01]	0.01 [0.01]	11.95*
Indefinite pronouns	AU	0.03 [0.00]	0.03 [0.02]	0.04 [0.01]	0.04 [0.01]	0.03 [0.01]	1.65 ns
	BR	0.05 [0.02]	0.05 [0.01]	0.06 [0.02]	0.05 [0.02]	0.04 [0.01]	10.14*
General hedges	AU	0.02 [0.01]	0.01 [0.01]	0.01 [0.01]	0.01 [0.00]	0.01 [0.00]	10.95*
	BR	0.01 [0.01]	0.01 [0.00]	0.01 [0.00]	0.00 [0.01]	0.00 [0.00]	18.30*
Amplifiers	AU	0.39 [0.15]	0.21 [0.05]	0.27 [0.06]	0.34 [0.04]	0.31 [0.02]	32.74**
	BR	0.38 [0.12]	0.33 [0.04]	0.41 [0.06]	0.24 [0.06]	0.31 [0.05]	29.23**
Sentence relatives	AU	0.02 [0.01]	0.02 [0.00]	0.02 [0.00]	0.02 [0.00]	0.02 [0.00]	19.67**
	BR	0.02 [0.00]	0.02 [0.00]	0.02 [0.00]	0.03 [0.01]	0.04 [0.00]	37.85**
WH questions	AU	0.04 [0.05]	0.02 [0.02]	0.06 [0.03]	0.08 [0.02]	0.05 [0.02]	26.77**
	BR	0.05 [0.02]	0.04 [0.01]	0.04 [0.02]	0.06 [0.02]	0.04 [0.02]	5.35 ns
Possibility modals	AU	0.67 [0.13]	0.50 [0.06]	0.58 [0.05]	0.44 [0.09]	0.37 [0.03]	37.15**
	BR	0.59 [0.08]	0.70 [0.10]	0.71 [0.05]	0.59 [0.18]	0.58 [0.10]	19.02**
Non-phrasal coordination	AU	1.20 [0.05]	0.88 [0.07]	0.83 [0.04]	0.88 [0.04]	0.99 [0.06]	34.67**
	BR	1.30 [0.10]	1.02 [0.09]	1.01 [0.03]	0.98 [0.08]	1.01 [0.11]	28.79**
WH clauses	AU	0.09 [0.02]	0.06 [0.03]	0.08 [0.03]	0.08 [0.01]	0.06 [0.01]	14.44*
	BR	0.12 [0.02]	0.10 [0.01]	0.12 [0.03]	0.12 [0.03]	0.08 [0.02]	9.70 ns
Final prepositions	AU	0.09 [0.04]	0.06 [0.02]	0.06 [0.04]	0.09 [0.02]	0.09 [0.01]	10.28*
	BR	0.10 [0.03]	0.08 [0.03]	0.09 [0.01]	0.08 [0.02]	0.07 [0.01]	7.51 ns
(Adverbs)	AU	2.32 [0.41]	2.13 [0.13]	2.44 [0.11]	2.73 [0.25]	2.64 [0.05]	30.45**
	BR	1.97 [0.06]	2.27 [0.11]	2.67 [0.24]	2.64 [0.32]	2.76 [0.13]	35.03**
(Conditional subordination)	AU	0.42 [0.12]	0.29 [0.07]	0.32 [0.03]	0.23 [0.05]	0.15 [0.04]	34.87**
	BR	0.37 [0.06]	0.41 [0.04]	0.40 [0.11]	0.30 [0.10]	0.21 [0.07]	24.86**
Nouns	AU	20.64 [2.72]	22.98 [0.60]	21.86 [1.20]	22.17 [1.46]	24.21 [1.01]	22.47**
	BR	23.47 [2.11]	21.61 [0.82]	20.82 [0.74]	22.61 [1.70]	23.36 [1.31]	23.39**
Word length	AU	4.54 [0.12]	4.85 [0.09]	4.73 [0.06]	4.73 [0.07]	4.82 [0.05]	27.70**
	BR	4.59 [0.10]	4.59 [0.03]	4.53 [0.06]	4.67 [0.07]	4.69 [0.09]	25.72**
Prepositional phrases	AU	12.37 [0.49]	13.25 [0.51]	12.58 [0.50]	11.50 [0.48]	11.09 [0.38]	37.31**
	BR	12.86 [0.46]	12.52 [0.14]	11.29 [0.20]	10.96 [0.59]	10.75 [0.32]	38.84**
Type/token ratio	AU	203.0 [16.75]	207.5 [25.75]	211.5 [6.25]	189.0 [13.00]	198.0 [16.00]	11.75*
	BR	172.0 [13.50]	199.0 [6.00]	194.5 [21.75]	208.5 [20.75]	211.0 [15.25]	19.61**

(continued)

Dimension 1. (continued)

Feature	Variety	Median and [interquartile range]					Kruskal-Wallis χ^2
		1901	1935	1965	1995	2015	
Attributive adjectives	AU	5.48 [0.36]	5.82 [0.52]	5.62 [0.76]	5.41 [0.21]	6.14 [0.29]	12.11*
	BR	4.76 [0.54]	5.31 [0.22]	5.42 [0.46]	5.51 [0.54]	5.75 [0.68]	23.46**
(Place adverbials)	AU	0.17 [0.05]	0.19 [0.08]	0.23 [0.09]	0.25 [0.04]	0.29 [0.05]	23.75**
	BR	0.16 [0.05]	0.19 [0.05]	0.21 [0.09]	0.22 [0.07]	0.32 [0.06]	20.14**
(Agentless passives)	AU	1.70 [0.72]	1.86 [0.15]	1.53 [0.20]	1.10 [0.13]	0.86 [0.05]	37.27**
	BR	1.75 [0.27]	1.54 [0.23]	1.27 [0.16]	1.18 [0.09]	0.95 [0.26]	37.48**
(Past participial WHIZ deletions)	AU	0.22 [0.04]	0.31 [0.05]	0.21 [0.04]	0.15 [0.03]	0.14 [0.02]	32.10**
	BR	0.28 [0.06]	0.22 [0.04]	0.16 [0.04]	0.15 [0.04]	0.14 [0.03]	28.84**
(Present participial WHIZ deletions)	AU	0.16 [0.03]	0.23 [0.05]	0.18 [0.03]	0.23 [0.03]	0.26 [0.03]	28.26**
	BR	0.18 [0.03]	0.17 [0.03]	0.17 [0.03]	0.16 [0.03]	0.17 [0.04]	2.28 ns

Dimension 2.

Feature	Variety	Median and [interquartile range]					Kruskal-Wallis χ^2
		1901	1935	1965	1995	2015	
Past-tense verbs	AU	1.66 [0.52]	2.11 [0.37]	1.90 [0.47]	2.18 [0.49]	1.94 [0.09]	7.08 ns
	BR	4.21 [1.32]	1.80 [0.07]	1.90 [0.31]	2.07 [0.09]	1.64 [0.28]	29.17**
Third-person pronouns	AU	1.41 [0.62]	1.53 [0.44]	1.55 [0.19]	1.71 [0.27]	1.75 [0.12]	5.32 ns
	BR	2.31 [0.51]	1.74 [0.45]	1.68 [0.06]	1.74 [0.18]	1.49 [0.22]	25.54**
Perfect-aspect verbs	AU	1.02 [0.26]	1.11 [0.12]	1.03 [0.08]	1.09 [0.12]	0.91 [0.06]	16.28*
	BR	1.18 [0.24]	1.09 [0.29]	1.00 [0.11]	1.10 [0.13]	0.96 [0.11]	7.88 ns
Public verbs	AU	0.72 [0.13]	0.74 [0.16]	0.83 [0.21]	0.75 [0.10]	0.57 [0.05]	17.76*
	BR	0.95 [0.05]	0.74 [0.08]	0.83 [0.12]	0.78 [0.06]	0.72 [0.12]	31.00**
Synthetic negation	AU	0.24 [0.08]	0.22 [0.04]	0.20 [0.04]	0.15 [0.02]	0.11 [0.01]	36.27**
	BR	0.28 [0.02]	0.23 [0.02]	0.20 [0.02]	0.22 [0.07]	0.13 [0.03]	34.76**
Present participial clauses	AU	0.08 [0.03]	0.08 [0.04]	0.05 [0.00]	0.07 [0.01]	0.11 [0.01]	25.20**
	BR	0.07 [0.02]	0.06 [0.01]	0.06 [0.01]	0.06 [0.02]	0.10 [0.03]	22.46*
(Present-tense verbs)	AU	5.69 [0.43]	4.74 [0.24]	5.75 [0.16]	5.90 [0.42]	5.85 [0.19]	26.03**
	BR	5.16 [1.71]	5.92 [0.33]	5.92 [0.33]	5.86 [0.66]	6.05 [0.48]	31.02**
(Attributive adjectives)	AU	5.48 [0.36]	5.82 [0.52]	5.62 [0.76]	5.41 [0.21]	6.14 [0.29]	12.11*
	BR	4.76 [0.54]	5.31 [0.22]	5.42 [0.46]	5.51 [0.54]	5.75 [0.68]	23.46**
(Past-participial WHIZ deletions)	AU	0.22 [0.04]	0.31 [0.05]	0.21 [0.04]	0.15 [0.03]	0.14 [0.02]	32.10**
	BR	0.28 [0.06]	0.22 [0.04]	0.16 [0.04]	0.15 [0.04]	0.14 [0.03]	28.84**
(Word length)	AU	4.54 [0.12]	4.85 [0.09]	4.73 [0.06]	4.73 [0.07]	4.82 [0.05]	27.70**
	BR	4.59 [0.10]	4.59 [0.03]	4.53 [0.06]	4.67 [0.07]	4.69 [0.09]	25.72**

Dimension 3.

Feature	Variety	Median and [interquartile range]					Kruskal-Wallis χ^2
		1901	1935	1965	1995	2015	
WH relative clauses on object position	AU	0.14 [0.03]	0.13 [0.03]	0.08 [0.03]	0.05 [0.00]	0.02 [0.01]	40.08**
	BR	0.13 [0.04]	0.15 [0.03]	0.18 [0.05]	0.04 [0.01]	0.02 [0.02]	40.43**
Pied-piping constructions	AU	0.22 [0.07]	0.19 [0.04]	0.17 [0.02]	0.09 [0.02]	0.05 [0.01]	36.40**
	BR	0.24 [0.03]	0.23 [0.03]	0.19 [0.03]	0.17 [0.02]	0.12 [0.02]	35.23**
WH relative clauses on subject position	AU	0.34 [0.05]	0.30 [0.08]	0.32 [0.09]	0.29 [0.03]	0.24 [0.08]	15.18*
	BR	0.35 [0.04]	0.41 [0.03]	0.39 [0.07]	0.20 [0.05]	0.15 [0.05]	37.49**
Phrasal coordination	AU	0.85 [0.13]	1.04 [0.20]	1.13 [0.17]	1.35 [0.10]	1.95 [0.10]	38.64**
	BR	0.93 [0.18]	1.04 [0.13]	1.06 [0.16]	1.22 [0.21]	1.75 [0.19]	32.66**
Nominalizations	AU	3.48 [0.77]	4.58 [0.53]	4.41 [0.82]	4.37 [0.35]	4.26 [0.52]	12.35*
	BR	3.34 [0.45]	4.00 [0.37]	3.10 [0.60]	3.29 [0.58]	3.54 [0.61]	7.78 ns
Time adverbials	AU	0.31 [0.06]	0.41 [0.07]	0.40 [0.06]	0.42 [0.02]	0.44 [0.04]	15.00*
	BR	0.32 [0.06]	0.37 [0.13]	0.37 [0.10]	0.42 [0.02]	0.44 [0.12]	14.58*
Place adverbials	AU	0.17 [0.05]	0.19 [0.08]	0.23 [0.09]	0.25 [0.04]	0.29 [0.05]	23.75**
	BR	0.16 [0.05]	0.19 [0.05]	0.21 [0.09]	0.22 [0.07]	0.32 [0.06]	20.14**
Adverbs	AU	2.32 [0.41]	2.13 [0.13]	2.44 [0.11]	2.73 [0.25]	2.64 [0.05]	30.45**
	BR	1.97 [0.06]	2.27 [0.11]	2.67 [0.24]	2.64 [0.32]	2.76 [0.13]	35.03**

Dimension 4.

Feature	Variety	Median and [interquartile range]					Kruskal-Wallis χ^2
		1901	1935	1965	1995	2015	
Infinitives	AU	2.35 [0.43]	1.99 [0.08]	1.88 [0.14]	1.85 [0.10]	2.09 [0.05]	23.27**
	BR	2.14 [0.08]	2.05 [0.09]	2.09 [0.16]	2.02 [0.25]	2.33 [0.14]	19.01**
Prediction modals	AU	1.15 [0.24]	0.10 [0.18]	0.99 [0.07]	0.81 [0.13]	0.88 [0.13]	17.06*
	BR	0.88 [0.10]	1.12 [0.05]	1.19 [0.17]	1.19 [0.15]	1.12 [0.15]	8.72 ns
Suasive verbs	AU	0.81 [0.27]	0.75 [0.21]	0.61 [0.12]	0.52 [0.06]	0.41 [0.07]	28.70**
	BR	0.95 [0.19]	0.82 [0.19]	0.62 [0.20]	0.58 [0.12]	0.60 [0.08]	27.03**
Conditional subordination	AU	0.42 [0.12]	0.29 [0.07]	0.32 [0.03]	0.23 [0.05]	0.15 [0.04]	34.87**
	BR	0.37 [0.06]	0.41 [0.04]	0.40 [0.11]	0.30 [0.10]	0.21 [0.07]	24.86**
Necessity modals	AU	0.56 [0.21]	0.45 [0.08]	0.36 [0.04]	0.23 [0.04]	0.15 [0.04]	38.33**
	BR	0.44 [0.06]	0.37 [0.09]	0.53 [0.09]	0.45 [0.12]	0.29 [0.07]	27.24**
Split auxiliaries	AU	0.43 [0.07]	0.44 [0.07]	0.35 [0.03]	0.41 [0.05]	0.40 [0.05]	21.54**
	BR	0.44 [0.05]	0.41 [0.03]	0.40 [0.02]	0.41 [0.03]	0.42 [0.02]	5.38 ns
(Possibility modals)	AU	0.67 [0.13]	0.50 [0.06]	0.58 [0.05]	0.44 [0.09]	0.37 [0.03]	37.15**
	BR	0.59 [0.08]	0.70 [0.10]	0.71 [0.05]	0.59 [0.18]	0.58 [0.10]	19.02**

Dimension 5.

Feature	Variety	Median and [interquartile range] 1901	1935	1965	1995	2015	Kruskal-Wallis χ^2
Conjuncts	AU	0.24 [0.03]	0.24 [0.07]	0.23 [0.03]	0.20 [0.02]	0.15 [0.04]	26.35**
	BR	0.20 [0.08]	0.23 [0.06]	0.28 [0.06]	0.27 [0.06]	0.25 [0.05]	15.71*
Agentless passives	AU	1.70 [0.72]	1.86 [0.15]	1.53 [0.20]	1.10 [0.13]	0.86 [0.05]	37.27**
	BR	1.75 [0.27]	1.54 [0.23]	1.27 [0.16]	1.18 [0.09]	0.95 [0.26]	37.48**
Past-participial clauses	AU	0.02 [0.01]	0.03 [0.01]	0.02 [0.00]	0.02 [0.00]	0.02 [0.00]	7.25 ns
	BR	0.03 [0.00]	0.02 [0.01]	0.01 [0.00]	0.02 [0.02]	0.02 [0.02]	12.12*
By-passives	AU	0.17 [0.02]	0.22 [0.04]	0.18 [0.02]	0.15 [0.02]	0.11 [0.02]	35.57**
	BR	0.18 [0.05]	0.18 [0.04]	0.14 [0.05]	0.14 [0.02]	0.12 [0.00]	28.99**
Past-participial WHIZ deletions	AU	0.22 [0.04]	0.31 [0.05]	0.21 [0.04]	0.15 [0.03]	0.14 [0.02]	32.10**
	BR	0.28 [0.06]	0.22 [0.04]	0.16 [0.04]	0.15 [0.04]	0.14 [0.03]	28.84**
Other adverbial subordinators	AU	0.15 [0.04]	0.15 [0.07]	0.12 [0.01]	0.13 [0.04]	0.14 [0.05]	6.09 ns
	BR	0.11 [0.04]	0.10 [0.03]	0.11 [0.03]	0.13 [0.04]	0.13 [0.02]	3.95 ns
(Predicative adjectives)	AU	0.77 [0.12]	0.71 [0.09]	0.76 [0.07]	0.71 [0.06]	0.67 [0.02]	11.26*
	BR	0.73 [0.15]	0.80 [0.09]	0.94 [0.06]	0.95 [0.15]	0.88 [0.15]	21.28**
(Type/token ratio)	AU	203.0 [16.75]	207.5 [25.75]	211.5 [6.25]	189.0 [13.00]	198.0 [16.00]	11.75*
	BR	172.0 [13.50]	199.0 [6.00]	194.5 [21.75]	208.5 [20.75]	211.0 [15.25]	19.61**

Dimension 6.

Feature	Variety	Median and [interquartile range] 1901	1935	1965	1995	2015	Kruskal-Wallis χ^2
That clauses as verb complements	AU	1.31 [0.17]	1.14 [0.19]	1.26 [0.05]	1.10 [0.09]	0.89 [0.07]	33.80**
	BR	1.14 [0.05]	1.25 [0.08]	1.41 [0.09]	1.30 [0.08]	1.13 [0.05]	28.33**
Demonstratives	AU	0.68 [0.06]	0.69 [0.16]	0.74 [0.10]	0.73 [0.06]	0.67 [0.04]	8.53 ns
	BR	0.76 [0.13]	0.85 [0.04]	0.76 [0.08]	0.59 [0.06]	0.63 [0.03]	36.52**
That relative clauses on object positions	AU	0.56 [0.05]	0.60 [0.09]	0.64 [0.06]	0.64 [0.05]	0.60 [0.04]	11.98*
	BR	0.49 [0.07]	0.55 [0.04]	0.52 [0.04]	0.59 [0.04]	0.52 [0.04]	21.80**
That clauses as adjective complements	AU	0.19 [0.05]	0.17 [0.04]	0.18 [0.04]	0.17 [0.03]	0.16 [0.01]	4.43 ns
	BR	0.17 [0.03]	0.18 [0.02]	0.22 [0.05]	0.22 [0.02]	0.21 [0.03]	14.93*
(Final prepositions)	AU	0.09 [0.04]	0.06 [0.02]	0.06 [0.04]	0.09 [0.02]	0.09 [0.01]	10.28*
	BR	0.10 [0.03]	0.08 [0.03]	0.09 [0.01]	0.08 [0.02]	0.07 [0.01]	7.51 ns
(Existential *there*)	AU	0.38 [0.08]	0.19 [0.05]	0.31 [0.04]	0.31 [0.02]	0.27 [0.05]	31.31**
	BR	0.30 [0.07]	0.36 [0.03]	0.42 [0.04]	0.32 [0.06]	0.30 [0.08]	28.24**
(Demonstrative pronouns)	AU	0.48 [0.06]	0.42 [0.09]	0.56 [0.06]	0.61 [0.08]	0.63 [0.08]	32.36**
	BR	0.45 [0.10]	0.51 [0.03]	0.67 [0.03]	0.56 [0.06]	0.59 [0.04]	36.08**
(WH relative clauses on object position)	AU	0.14 [0.03]	0.13 [0.03]	0.08 [0.03]	0.05 [0.00]	0.02 [0.01]	40.08**
	BR	0.13 [0.04]	0.15 [0.03]	0.18 [0.05]	0.04 [0.01]	0.02 [0.02]	40.43**
(Phrasal coordination)	AU	0.85 [0.13]	1.04 [0.20]	1.13 [0.17]	1.35 [0.10]	1.95 [0.10]	38.64**
	BR	0.93 [0.18]	1.04 [0.13]	1.06 [0.16]	1.22 [0.21]	1.75 [0.19]	32.66**

Additional Feature Referred to in the Analysis

Feature	Variety	Median and [interquartile range]					Kruskal-Wallis χ^2
		1901	1935	1965	1995	2015	
Split infinitives	AU	0.01 [0.00]	0.00 [0.00]	0.00 [0.00]	0.03 [0.01]	0.03 [0.01]	38.43**
	BR	0.01 [0.01]	0.00 [0.00]	0.00 [0.00]	0.00 [0.00]	0.00 [0.01]	15.43*

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Notes

1. While there have been critiques of Biber's method, it has generally been demonstrated as robust (e.g., by similar findings yielded by different statistical methods, text types, or sets of features). For a more detailed discussion, see Kruger and van Rooy (2018).
2. We use the terms "formal" and "informal" throughout this paper, while keeping in mind the difficulties of specifying exactly what is meant by formality in terms of situational and functional characteristics. While it is difficult to provide a clearly delineated definition, we generally interpret formality in line with a pragmatic view, where formality is associated with the use of "distancing" linguistic resources to reflect "negative politeness" (Brown & Levinson 1978). Hyland and Jiang (2017:41) explain that "formality helps to avoid ambiguity and misinterpretation by minimizing the context-dependence and fuzziness of expressions, while, in contrast, informality rejects stuffy orthodoxy to project a relaxed and approachable persona." In our interpretation of these terms, both spoken and written registers may vary along a cline of formality. For example, a keynote address at an academic conference or a religious sermon is a more formal spoken register, while a conversation between friends is a more informal spoken register; an academic monograph is a more formal written register, whereas a personal letter or online chat is a more informal written register.

3. In this respect, the current study is broadly aligned with the historical pragmatics framework (see Jucker 1995; Fitzmaurice & Taavitsainen 2007), which uses speech-related records to draw inferences about spoken language in the past. Our research, however, highlights more explicitly the nature of editorial intervention, and how this intervention reflects the dynamics between spoken and written, and formal and informal language use.
4. Leech et al. (2009:245-248) also identify other forms of anti-colloquialization, including the use of punctuation to create longer sentences with more complex syntax.
5. There are of course many other factors to consider. Most pertinently there is the question of what role individual speakers and their sociolinguistic background play in these broader processes. This is foreseen as an important avenue for further investigation, once the detailed markup of speakers in the corpus is completed; however, the current article focuses only on broader patterns of change.
6. It appears that the last two functions are increasingly combined in contemporary parliamentary reporting (Hardman 2011; Sutherland & Farrell 2013).
7. It should be noted that our choice of replicating Biber's (1988) analysis means that we compute the dimension scores using the mean and standard deviation used by Biber (1988), and not from our Hansard data.
8. Nominalizations are operationalized by Biber (1988:227) as words ending in a small set of character strings: *-tion*, *-ment*, *-ness*, and *-ity*. While some may not be productive formations in contemporary language, as a reviewer pointed out, those that have roots in complex forms historically still share a function of densification of complex and often abstract ideas. Thus, we relied on the *Shorter Oxford English Dictionary* to clean up forms that are not defined as morphologically complex there, irrespective of the subsequent history of a particular form. A large number of more concrete derived nouns, such as those ending in *-er* (*silencer*, *runner*, etc.), are excluded, but in terms of the function of the abstract nominalizations in texts, this definition suffices.
9. See Nini (2014) for a full list of the verbs included in these three categories.
10. General emphatics include *just*, *really*, *most*, *more*, *real*+adjective, *so*+adjective, *for sure*, *a lot*, *such a*, and any form of DO followed by a verb.
11. Conjuncts included are punctuation+*else*, punctuation+*altogether*, punctuation+*rather*, *alternatively*, *consequently*, *conversely*, *e.g.*, *furthermore*, *hence*, *however*, *i.e.*, *instead*, *likewise*, *moreover*, *namely*, *nevertheless*, *nonetheless*, *notwithstanding*, *otherwise*, *similarly*, *therefore*, *thus*, *viz.*, *in comparison*, *in contrast*, *in particular*, *in addition*, *in conclusion*, *in consequence*, *in sum*, *in summary*, *for example*, *for instance*, *instead of*, *by contrast*, *by comparison*, *in any event*, *in any case*, *in other words*, *as a result*, *as a consequence*, *on the contrary*, *on the other hand*.

Corpora

The Australian Diachronic Hansard Corpus (ADHC). Compiled by Haidee Kruger, Adam Smith & Minna Korhonen, with the assistance of Bertus van Rooy, Deidre Duvenage & Emile Kotze. The corpora are available from Haidee Kruger.

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