

A corpus-based analysis of academic lectures across disciplines

Nesi, H.

Author post-print (accepted) deposited in CURVE August 2015

Original citation & hyperlink:

Nesi, H. (2001) 'A corpus-based analysis of academic lectures across disciplines' In: J. Cotterill and A. Ife (Eds). *Language Across Boundaries: Selected Papers from the Annual Meeting of the British Association for Applied Linguistics* (pp. 201-218). London: BAAL in association with Continuum press

<http://www.bloomsbury.com/uk/>

Publisher statement: This copy is not the final print version and is not to be cited.

Copyright © and Moral Rights are retained by the author(s) and/ or other copyright owners. A copy can be downloaded for personal non-commercial research or study, without prior permission or charge. This item cannot be reproduced or quoted extensively from without first obtaining permission in writing from the copyright holder(s). The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the copyright holders.

This document is the author's post-print version, incorporating any revisions agreed during the peer-review process. Some differences between the published version and this version may remain and you are advised to consult the published version if you wish to cite from it.

CURVE is the Institutional Repository for Coventry University

<http://curve.coventry.ac.uk/open>

A corpus-based analysis of academic lectures across disciplines

Hilary Nesi

In: Cotterill, J. and Ife A. (eds) 2001 **Language Across Boundaries** London: BAAL in association with Continuum Press 201-218

Introduction

This study was undertaken in response to a survey of the listening needs and lacks of international students, conducted as part of the process of creating materials to help non-native speakers develop academic listening skills (Kelly, Nesi and Revell 2000). One hundred and thirty international students representing twenty-eight different countries took part in the survey and were questioned about the problems they had experienced listening to British university lectures. It emerged that by far the greatest area of concern, attracting more than 50% more comments than the next most frequently mentioned problem area, was ‘taking notes at speed’.

The students’ response led me to examine the interrelationship between speed of lecture delivery and the ‘noteworthiness’ of lecture content. How fast do lecturers typically speak? How much of what lecturers say are students intended to write down? Does a fast-paced lecture necessarily pose a greater challenge to the student note-taker?

Clearly these are broad questions that cannot be satisfactorily answered in a single research paper. Yet they are also questions that have received very little attention from researchers. A body of research has now built up concerning the patterns of argumentation prevalent in lectures across disciplines, and the strategies lecturers employ to mark structure, present ideas, and indicate the relative importance of propositions within

the lecture. There are, for example, the corpus-based studies of DeCarrico and Nattinger (1988), Strod-Lopez (1991), Thompson (1994, 1998), and Young (1994), and some more detailed analyses of just one or two lectures typical of specific disciplines (Dudley Evans and Johns 1981, Olsen and Huckin 1990, Dudley-Evans 1994). Studies have also been undertaken to examine the note-taking strategies and behaviour of the students themselves (for example Clerehan 1995, McKnight 1999, and White, Badger, Higgins and McDonald 2000). Speed and density of delivery, however, have only previously been examined with reference to a broader range of spoken discourse, and no conclusions have been drawn as to the significance and effect of variation between these two factors.

The present study examines current research findings concerning the density and speed of spoken discourse generally, in the light of evidence from the BASE corpus of authentic academic speech¹. A sample of lectures from this corpus is compared with texts used for lecture comprehension practice in EAP textbooks, and tentative conclusions are reached regarding the relationship between lecturing purpose and delivery style.

The lexical density of spoken discourse

Linguists agree that spoken text is typically less lexically dense than written text (Halliday 1989, Ure 1971, Stubbs 1986), but the medium of delivery is not the only factor that affects density. The presence or absence of feedback is also influential, and spoken texts which do not involve any verbal or non-verbal response

¹ The British Academic Spoken English (BASE) corpus is a collection of recordings and transcriptions of academic speech events in a wide range of disciplines. It is under development at the University of Warwick (Hilary Nesi) and the University of Reading (Paul Thompson). So far BASE has received funding from Warwick and Reading, and from BALEAP, EURALEX and the British Academy.

from the listener tend to be denser than those which prompt some kind of reaction. Density has also been associated with the time taken to prepare a text, whether spoken or written; texts that have been rehearsed or redrafted tend to be denser than those that occur spontaneously (Ure 1971). The majority of spoken texts in Ure's study had a lexical density of under 40%, whilst the majority of written texts had a density of 40% or over. Ure, however, does not give details of her method of calculating density.

Stubbs (1986) calculated density by dividing the number of lexical words in a text by the total number of running words (expressed as a percentage by multiplying by 100). Using this formula Stubbs analysed a range of spoken texts in the London-Lund corpus, and recorded the following results:

Table One: densities of spoken texts	
phone conversation: business	44%
phone conversation: friends	45%
church sermons	47%
House of Commons	48%
radio commentary: cricket	54%
radio commentary: state funeral	56%

Although Stubbs' densities are higher than those recorded by Ure, his findings are similar in that most of the monologues (the sermon and the radio commentaries) are denser than the dialogues (the phone conversations and the House of Commons text). Stubbs points out that the speakers in the London-Lund corpus were highly educated, and their speech was therefore probably influenced by the denser written

discourse style. The highest densities were recorded for professional speakers, speaking in contexts where much of the language is formulaic and pre-rehearsed.

Lexically dense text usually has a higher information load because it expresses meanings more succinctly. Greater density is achieved through the use of complex nominal groups, ellipsis and embedded subordinate clauses. As we can see in the following pair of examples (taken from Halliday 1989: 79) sentence A, from a written text, is much more tightly packed than sentence B, which is a possible rendering of its meaning in spoken form:

Sentence A

Violence changed the face of once peaceful Swiss cities.

Sentence B

The cities in Switzerland had once been peaceful, but they changed when people became violent.

Spoken text, and especially conversation, tends to be lexically lighter because interlocutors have less time to pack and unpack dense information during 'real-time' communicative events.

It is true that lexically dense text does not necessarily incorporate more new propositions, because the ratio of lexical to grammatical words does not indicate the degree of redundancy in a text. It is possible for a text with a high percentage of lexical words to have quite a low information content, if the same propositions are repeated over and over again. Nevertheless lexical density is commonly regarded as an indicator of propositional content and input complexity in oral text (Ellis 1994), and it seems likely that the degree of density in an academic lecture will have some influence on note-taking success. Generally speaking, the denser the information content of the lecture, the more there will be to record.

The delivery speed of spoken discourse

The density of spoken discourse has to be examined in conjunction with speed of delivery, however, because dense text delivered at a slow pace may not present more propositions per minute than a lexically light text delivered at speed. Like density, the speed of delivery of spoken text varies according to the communicative context. From samples of radio monologues, conversation, interviews and academic lectures, Tauroza and Allison (1990) concluded that the normal range for British English speech was 130-220 words per minute. A closer analysis suggests that once again preparation and interactivity are important variables, however. In British English conversation, silence is generally interpreted as a sign that the speaker has ceded the floor, and it appears from Tauroza and Allison's data that speech rate decreases with increased opportunity to hold the floor without fear of interruption. Slower speech rate also seems to be a characteristic of texts that have been prepared and/or rehearsed in advance.

Table Two summarises Tauroza and Allison's findings (1990:102):

Table Two: speech rates in words per minute				
	radio	lectures	interviews	conversation
faster than normal	190	185	250	260
moderately fast	170 - 190	160 - 185	210 - 250	230 - 260
average	150 - 170	125 - 160	160 - 210	190 - 230
moderately slow	130 - 150	100 - 125	120 - 160	160 - 190
slower than normal	130	100	120	160

A kind of inverse relationship thus becomes apparent, with pre-rehearsal and the guarantee of an uninterrupted turn resulting in both an increase in density and a reduction in pace, whilst the cut and thrust of spontaneous conversation leads to delivery characterised by sparsity and speed.

Trends in lecturing style

It is important to note that the lectures in Tauroza and Allison's study were delivered in an L2 setting, in contrast to the lectures in the BASE sample, recorded at Warwick. We know from the literature that there is considerable variation in lecturing style across cultures and academic disciplines (Dudley-Evans 1994, Olsen and Huckin 1990, Flowerdew and Miller 1995) and it is reasonable to assume that variations in style may affect both the density and speed of lectures. For example lecturers may try to simplify their language when addressing learners of English, and this may mean that they speak more slowly, and include more redundant information.

Benson (1994: 189) points out that whereas in the US lecturers favour 'the "bright" student who interacts whenever allowed', in some Asian countries attendance is regarded as far more important than interaction. Lecturers who encourage or tolerate student participation (for example in the form of question and answer sessions), may deliver lectures closer in style to unplanned conversation, both because the exact text of the lecture cannot be prepared in advance, and because the lecturer no longer has a guaranteed right to hold the floor. In Ure's study (1971:445) 'feedback was an even more powerful factor in determining lexical density than the spoken/written choice'.

Traditionally lectures have not included much opportunity for feedback, but Benson (1994: 188) draws attention to the way lecture styles are now changing, and points out that ‘students feel the influence of a greater egalitarianism than in periods past’. Some British Higher Education teaching development programmes are now encouraging lecturers to adopt a more participatory lecturing style (see, for example Jenkins 1992), and newly appointed lecturers at Warwick are advised that they should try to intersperse stretches of monologue with discussion tasks, to improve the quality of student learning.

The three distinct lecturing styles identified by Dudley-Evans and Johns (1981) are often cited with reference to interactivity in lectures. The ‘reading’ style, where the lecturer reads from notes (or sounds as if he is doing so), seems to provide the greatest opportunities for uninterrupted monologue and adherence to a pre-rehearsed text, whilst the ‘conversational’ style, where the lecturer speaks informally, with or without notes, seems less predictable. Flowerdew (1994) comments on the increasing use of the conversational style of lecturing, and in DeCarrico and Nattinger’s study of L1 lectures this style was found to be the most prevalent, involving ‘considerable interaction with the students’ (1988: 93). Culture and environment clearly have a role to play in determining the extent of student participation, but the research findings do not provide a straightforward picture in this respect. At the University of Kansas the level of participation within a lecture was found to vary according to class size - the smaller the group the greater the likelihood of interaction (Hansen and Jensen 1994) - but Mason concludes from her study at Georgetown University that ‘class size seems not to dictate the style or combination of styles that a lecturer might employ’ (1994: 203).

Dudley-Evans and Johns' third lecturing style, 'rhetorical', is characterised by frequent digressions and asides, structural features that are also typical of everyday conversation (Strodt-Lopez 1991). DeCarrico and Nattinger found evidence for this style only in cases where the lecturer was being recorded on videotape, and 'the presence of the video camera seemed to promote a stage-like atmosphere in which the lecturer "performed"' (1988: 93).

Speed and density in the BASE corpus

For the purposes of this study I analysed a sample of thirty undergraduate lectures delivered at Warwick University in 1998 / 1999. The lectures had been video-recorded and transcribed, and form part of the larger BASE corpus. Each broad discipline area (Science, Social Science and Humanities) was represented by ten lectures, spoken with a variety of accents, mostly British but also North American and Asian. All the lecturers were experienced and in relatively senior positions. Because of gender inequalities within the British university system as a whole, twenty-two lecturers in the sample were male and eight female.

All the lectures were recorded by Tim Kelly, materials developer for the EASE CD-Rom series (Kelly, Nesi and Revell 2000). Tim Kelly also noted the audience size. The video recordings of the complete lectures were examined to determine lecturing style and participation levels. The lectures were fully transcribed, and speed and lexical density were calculated by analysing a five minute section of each lecture that was deemed representative of the lecture as whole. This came from somewhere in the middle, after announcements had been made and all the students had arrived, but before any concluding summary. Atypically interactive sections of lectures were not chosen for the analysis of density and speech rate. Before the analysis all hesitation and filler words were removed from the transcribed lecture sections.

Table Three summarises my findings:

Table Three: delivery speed, density and participation in a sample of lectures from the BASE corpus					
	Department	words per minute	lexical density	size	participation
	Science				
1	Biological Sciences	127.4	50.2	10+	none
2	Chemistry	162.4	48.9	-20	none
3	Chemistry	175.0	48.7	10+	none
4	Computer Science	162.0	44.2	100+	show of hands/ tasks
5	Engineering	182.8	51.0	150	none
6	Engineering	152.6	46.5	20+	none
7	Mathematics	169.6	44.6	20+	none
8	Mathematics	57.8	49.5	100	5
9	Mathematics	120.2	49.9	100	none
10	Postgraduate Medical Education	150.6	48.0	20+	5
		146 (av)	48 (av)		
	Social Science				
11	Business School	205.0	44.4	100+	15+
12	Business School (MBA)	149.5	49.8	100+	15+
13	CELTE (MA / Staff)	140.8	57.5	15+	1 (at end)
14	Economics	166.2	48.4	150+	5
15	Economics	162.2	47.0	100+	1
16	Law	161.2	43.7	100+	none
17	Politics and International Studies	133.2	47.1	50	15+
18	Politics and International Studies	85.6	52.8	30+	none
19	Politics and International studies	129.2	55.5	200+	5 (at end)
20	Psychology	139.2	45.5	100+	none
		147 (av)	49 (av)		
	Humanities				
21	Classics and Ancient History	124.8	47.6	30	none
22	Comparative American Studies	189.0	46.4	50	1 + show of hands

23	English and Comparative Literary Studies	170.4	41.3	100+	none
24	English and Comparative Literary Studies	147.2	49.2	100+	none
25	Film and Television Studies	175.2	52.8	30+	none
26	French	137.0	50.8	100+	none
27	History	142.0	57.9	50	none
28	History	168.2	49.6	100+	none
29	History of Art	126.0	52.0	30	none
30	History of Art	179.2	50.0	30	none
		156 (av)	50 (av)		
	Averages for entire sample	150	49		

The average speed of delivery was 150 words per minute (also ‘average’ according to Tauroza and Allison’s criteria), but ranged from 57.8 (lecture 8) to 205 words per minute (lecture 11). Two of the lectures (numbers 11 and 22) were delivered at Tauroza and Allison’s ‘faster than normal’ rate, and the fastest (11) was at typical interview speed according to Tauroza and Allison’s data. As well as being considerably faster than any of the others in my sample, this lecture was participatory in style (eliciting many short answers from students), and was one of the least lexically dense. In contrast some of the slowest speakers (1, 18, 19, 29) produced text with some of the highest density, delivered in a non-participatory context.

There is less evidence for the effect of participation, because nineteen out of the thirty lecturers did not invite any feedback from the audience, and only eight lecturers allowed students to speak in the main body of the lecture. Although there were some startling divergencies, in most cases where audience participation of any kind was permitted during the lecture it was delivered at average or above average speed, and with below average density.

Audience size does not appear to have affected the degree of audience participation. Students did not participate during most of the lectures with the smallest audiences (3, 6, 7 and 13), whilst several of the lectures where students spoke had audiences of over a hundred people (8, 11, 12, 14, and 15). Other lectures with similar-sized audiences were non-participatory, however (9, 16, 20, 23, 24, 26 and 28). It would appear from this small sample that lecturers in Social Sciences encourage interaction more than their colleagues in the Sciences and Humanities, and that there tends to be more interaction in the applied disciplines than in the pure (following the categorisation described by Becher 1989).

Evidence of a reciprocal relationship between the factors of speed, density and audience response in academic lectures will be examined in more detail in the discussion section of this paper.

Comparison with EAP listening materials

It might be of interest at this point to compare my findings from the BASE corpus sample with those from a sample of non-authentic lectures, used for EAP teaching purposes. There is, in fact, relatively little published material for teaching listening comprehension and associated skills to non-native speaker students, and most of what there is was developed many years ago. Two commonly used textbooks, *Study Listening* (Lynch) and the *Listening Comprehension and Note-Taking Course* (James, Jordan, Matthews and O'Brien.) date from 1983 and 1979 respectively, although the latter was revised and enlarged in 1991. For the purposes of this study these two older textbooks were compared with *Academic Listening Encounters* (Espeseth) and *Listening* (Fairfax and Trzeciak), both published in 1999. All four books are accompanied by audio cassettes of recorded material intended to exemplify lectures. In *Listening Comprehension and Note-*

Taking Course this material is scripted and read aloud, and in the other three textbooks it is delivered from notes.

As with the BASE corpus sample, the speed and lexical density of five-minute excerpts from the longer lecture passages in the textbooks were calculated. In *Study Listening* all the longer stretches of lecture are in the last section of the book, so extracts were necessarily taken from there. In the *Listening Comprehension and Note-Taking Course* the speed of delivery is said to increase (and does), so extracts were taken from the beginning and end of the course to give an idea of the range. Samples from *Academic Listening Encounters* and *Listening* were also extracted from both earlier and later units.

Table Four summarises my findings:

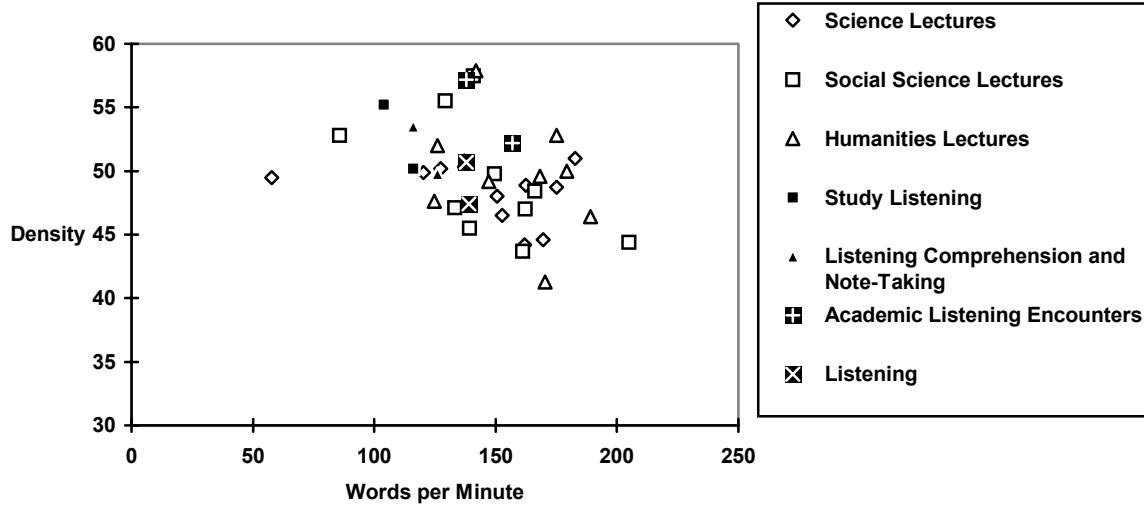
Table Four: delivery speed and density in excerpts from lectures in EAP textbooks		
course, unit, topic	words per minute	lexical density
<i>Study Listening</i>		
Unit 17: Land Use	116	50.2
Unit 18: Preventative Medicine	104	55.2
Averages	110	52.7
<i>Listening Comprehension and Note-Taking Course</i>		
Unit 1 Language Learning	116	53.5
Unit 10 Language Learning	126	49.8
Averages	121	51.6
<i>Academic Listening Encounters</i>		
Unit 1 Stress and the Immune System	138	57.2
Unit 5 Love - what's it all about?	157	52.2
Averages	148	54.7
<i>Listening</i>		
Unit 1 Listening strategies	139	47.4
Unit 8 Thomas Coon	138	50.7

<i>Averages</i>	<i>138.5</i>	<i>49.0</i>
-----------------	--------------	-------------

As the table indicates, in all but *Listening* there is an inverse relationship between speed and density - the faster speaker delivers the sparser text. The recorded material in the two earlier textbooks is delivered at a much slower pace than most of the excerpts from the BASE corpus sample ('moderately slow' according to Tauroza and Allison's classification). It is also lexically denser, thus displaying the characteristics we associate with pre-rehearsed or scripted, uninterrupted monologue. The excerpts from the two later textbooks fall into Tauroza and Allison's 'average' speed category, and those from *Listening* are correspondingly sparser. In terms of speed and density these texts are authentic-sounding, although only five of the BASE excerpts were as dense as excerpts taken from *Academic Listening Encounters*.

Graph 1, representing all the excerpts in terms of speed and density, shows the earlier textbook recordings situated in the higher (denser) and left of centre (slower) area of the graph, whereas the later textbook recordings are more closely integrated with the authentic texts in the central area. (Note, however, that although their speed is comparable to that of the typical authentic lecture, three out of four of the later textbook recordings are still slightly slower than average, and three are of above average density.)

Graph 1: authentic and EAP lectures



Discussion: the significance of speed and density

Almost all the lectures in the BASE corpus sample exemplified the ‘conversational’ lecturing style (Dudley-Evans and Johns 1981). Although the lecturers were the only speakers in most of the lectures, there were plenty of signs that they were aware of their students and were sensitive to their response. They established eye contact and addressed their audiences directly, sometimes mentioning students by name. In the thirty lectures ‘you’ occurred 3,647 times, and other personal pronouns ‘we’, and ‘I’ occurred 1,867 and 1,878 times respectively. Some of the macro-organisers DeCarrico and Nattinger (1988) associate with the conversational style of lecture were also present, such as the topic marker ‘the first thing is’:

now the first thing you can see is the global figure at the bottom (lecture 1)

: the topic shifter ‘let’s look at’:

So let’s actually have a look at that initially I mean just as an illustration (lecture 12)

and the exemplifier ‘one way is’

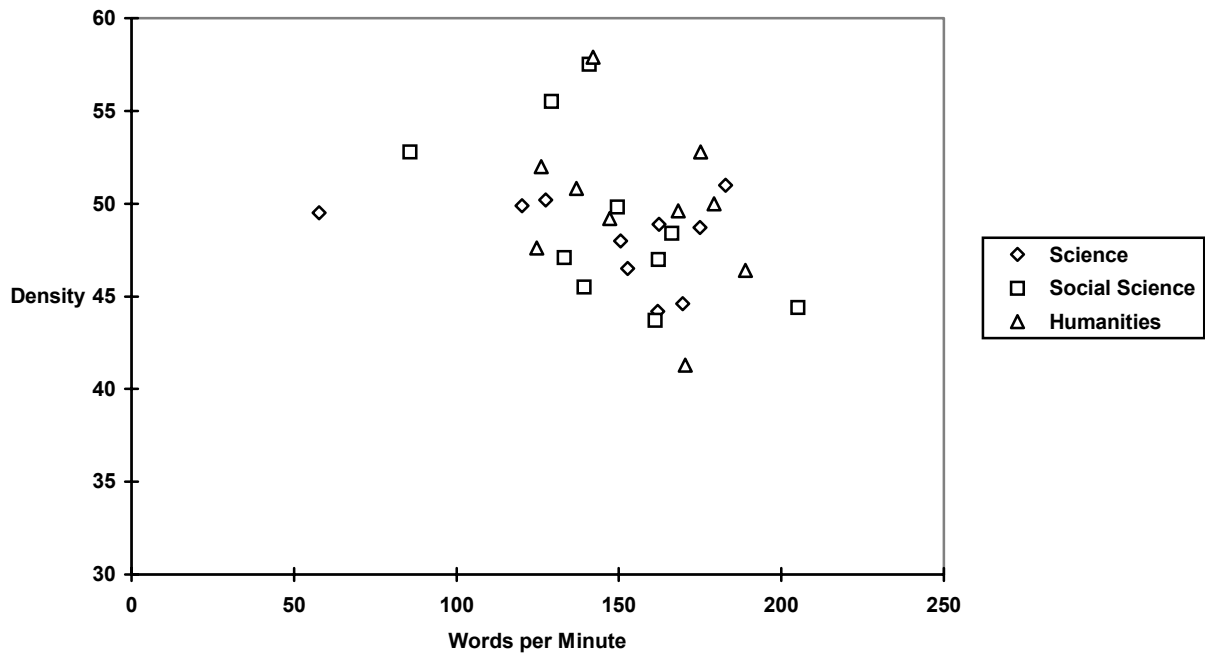
So, what I am suggesting is that one way in which these Republican leaders tried to create a sense of nationalism was through inventing an appropriate heroic national past. (lecture 22)

Although all lecturers referred to notes, only one exhibited characteristics of Dudley-Evans and Johns' 'reading style', by reading most of his lecture aloud from a previously prepared paper. There was little or no evidence of features associated with the 'rhetorical' style; lecturers appeared unaffected by the presence of the video camera, and did not play to the gallery in the way DeCarrico and Nattinger describe.

The well-established tri-partite view of lecturing styles was therefore not a useful classification system for my corpus sample. Instead, another kind of picture begins to emerge from my data, in which lectures can be grouped according to delivery style, reflecting the lecturer's purpose and the intended audience response.

Graph 2 represents the BASE corpus samples in terms of speed and density. It will be seen that there are several prominent points around the edges of the scattergram: a couple of lectures that are noticeably slow (8 (Science) and 18 (Social Science)), three more that are noticeably dense (19 (Social Science), 27 (Humanities) and 13 (Science)), one considerably sparser than average (23 (Humanities)) and another that is considerably faster (11 (Social Science)). The rest of the lectures cluster around the average (150 words per minute and 49% density), and although a couple are both faster and denser than this (25 (Humanities) and 5 (Science)) there is a tendency for increased speed to correlate with decreased density.

Graph 2: authentic lectures



What factors might influence these groupings, and, to return to the original problem identified by international students in our survey, what can we learn from this data and the corpus sample that might help those who have difficulty ‘taking notes at speed’?

A closer examination of the lecture recordings and transcriptions reveals that, whereas those lectures forming the central cluster tended to encourage the taking of notes, almost all those lectures on the fringes of the central cluster are atypical in terms of their note-taking requirements. Central cluster lectures were more likely to use advance organisers such as enumeration to help students structure their notes around key points (see Choi and Nesi 2000), as, for example, in this excerpt from lecture 6:

So that's the first lesson to learn - that tensile structures are highly efficient because they they don't buckle the second thing we're going to look at is the behaviour of horizontal tension structures.

A very slow pace also aids copious note-taking, and one lecture (18) does seem to have been spoken slowly for the purpose of helping students to take notes. On the other hand lecture 8, which is by far the slowest in the corpus sample, was based on a lecture handout in which key ideas for the lecture had already been provided. In 18 and 8 the lecturers did not actually drawl, of course; instead they were inclined to leave long pauses between propositions. Whereas in lecture 18 these pauses allowed students time to write up what had just been said, in lecture 8 the pauses were apparently intended, not for note-taking, but to enable the students to perform or just think about the mathematical calculations that the lecturer discusses. Indeed at one point the lecturer specifically recommends the audience not to take notes:

At this stage you probably need to stop writing and just watch what I'm going to draw here. How do I know how trajectories behave on the sides of the triangle? If I'm here then the system evolves towards bulls. If I'm here the system evolves towards the equilibrium position of this side. The same thing here and here. So how, what happens if I am somewhere here? Clearly if I'm closer to this side I'll go [short pause] some way along this side. If I'm closer to this side then I'll go this way [short pause] then I go this way. What can happen here? Clearly I can't hit the board for the verdict. (1 minute, 111 words.)

My sample is too small to include other clear-cut examples of this particular lecturing style, although the same sort of pausing did occur to a lesser extent in another mathematics lecture (9), the third slowest lecture

examined. Perhaps this style is commonest in the pure sciences, particularly when lectures require students to understand complex propositions, rather than record factual information for future reference.

On the other edge of the scattergram is lecture 11, the fastest in the sample. The speed of its delivery might be expected to pose considerable challenges to the note-taker, even though it is relatively sparse lexically. Like its super-slow counterpart, however, this lecture contains a lot of language that students need not record. The chosen five minute section explains how prices for goods are decided in the light of supply and demand. The lecturer tells the story of how she needed a bathroom cupboard to fit an awkward space, and searched in vain in all the furniture shops (MFI, Ikea etc.) before finding a carpenter who made the cupboard to her specifications, but charged her much less than she would have been prepared to pay. The fast pace is justified from the lecturer's point of view because there is no need for students to take detailed notes about personal anecdotes which have no independent value and are intended solely to illustrate the central concept in an interesting and familiar way. The challenge for unskilled students, of course, is to distinguish between the key facts and the funny stories.

Once again my sample is too small to link speed, sparsity and anecdotal examples as characteristics of a single lecturing style. Certain other lectures in the sample displayed similar characteristics – in particular the fairly fast-paced lecture 7. This is not true for all the faster-than-average lectures, however, many of which did seem to place considerable demands on the audience's note-taking skills.

Lecture 27, the densest of the sample, shares with 11 similarities of style. The five minute excerpt chosen for this study is also a highly personalised narrative, this time describing the life and work of a colleague

and fellow historian. The lecturer seems to presuppose familiarity with topic, and constructs his narrative in a predictable chronological sequence. Interestingly, however, this style proved typical of only the first third of the lecture, and served as a kind of preface to much more complex argumentation. Having provided a lexically dense but structurally predictable potted biography of his subject, the lecturer signals a change of topic and simultaneously changes pace and delivery style. A second five minute sample, taken later in the lecture, discusses the politics of the period, and in this part more note-taking seems to be expected; the lecturer speaks at a much slower than average speed (130.2 words per minute) and with closer to average density (51.3%).

The two other relatively dense lectures (19) and (13) are generically atypical in that they address rather different discourse communities, with unusual listening requirements. Lecture 13 is the one lecture in this sample delivered in the reading style. The lecturer is not a native speaker of English, and the recording (like the original lecture, which I attended) is extremely difficult to follow. The unusual degree of density may be accounted for by the fact that the speaker felt insufficiently secure to speak without a script, but this lecturer was also a guest speaker performing as part of a seminar series, and his lecture was not linked to assessed work or a degree programme. For this reason detailed note-taking was not really expected, and the lecturer was less likely to feel the need to modify his delivery to enable note-takers to keep pace.

Lecture 19, although it is much easier to follow, is also markedly dense. It was also one of a series of guest lectures, this time as part of Warwick University's pre-session course in English language and study skills. One of the main purposes of a pre-session lecture series is to provide international students who are unfamiliar with British academic conventions with opportunities to practice listening and note-taking.

However, the atypical style of this lecture raises concerns about the appropriacy for this purpose of lectures delivered outside the normal context of an award bearing degree programme. The lecture is carefully planned and delivered with the note-taker in mind - there are plenty of advance organisers, and topics are enumerated – yet it differs from the norm not only in density but also in content. The lack of references to the literature and to a shared programme of study reflects the fact that the lecturer is addressing students who do not need to develop skills specific to his subject. Perhaps if this need had been pressing, he might have altered his style somewhat to ensure that key ideas were carried home.

Finally the lexically sparsest lecture in the sample (23) is also addressed to non-specialists, of a kind. This is an introductory talk on essay writing, intended to explain academic conventions and more particularly the approach to academic writing taken by Warwick's English and Comparative Literary Studies department.

The atypicality of the lecture is signalled by the lecturer himself, who starts by saying:

Lecture might be a rather grand title for what we will do today, this will perhaps be a few tips, perhaps pitched somewhere between a pep talk and a little bit of the reading of the riot act, but it is just to give you a sense a kind of bit of fine tuning, for how you might think about the work for us to read....

Once again, the lecturer does not seem to expect the students to take many notes.

Interestingly, only one of the lectures in the central cluster on the scattergram was delivered outside the context of an award bearing course, whereas three of the 'fringe' lectures (19, 13 and 23) were occasional, free-standing events.

Conclusion

The sample for this study was relatively small, and the excerpts chosen for close examination of speed and density were even smaller. For this reason, I have not been able to identify large groups of lectures displaying common characteristics – a number of lectures that are, for example, anecdotal, fast and sparse, or a number that are all slow paced to allow time for reflection or calculation.

I think I have, however, provided some evidence that lecture delivery style is affected by the context and the purpose of the lecture. There is evidence, as predicted, of a link between speed of delivery and lexical density, with faster lectures tending to be sparser and slower lectures tending to be denser. There is also evidence that lecturers produce faster or denser text when they do not expect their listeners to record much of what they say, and when they are not presenting new and complex propositions – when content is fairly predictable, for example, or merely anecdotal, or when the lecture is not part of an assessed course of study. On the whole the recorded extracts used in conjunction with published EAP teaching materials do not reflect this variation of purpose and style, and differ particularly in terms of density from those parts of authentic lectures that demand detailed note-taking.

This evidence may raise our awareness of the need to expose learner students to delivery styles appropriate to their needs. Authentic lectures come in many forms, and do not all require the same skills of their listeners; those of us who teach such skills ought to choose our texts and tasks in this knowledge.

Acknowledgements

The author wishes to thank Rod Revell of the University of Warwick and Andy Gillett of the University of Hertfordshire, who conducted the survey into international students' listening needs referred to in this paper.

References

Becher, T. 1989 **Academic Tribes and Territories** Buckingham: The Society for Research into Higher Education & Open University Press.

Benson, M. 1994 Lecture listening in an ethnographic perspective. In: Flowerdew, J (ed) **Academic Listening: Research Perspectives**. Cambridge: Cambridge University Press 181-198.

Choi, Y-H. and Nesi, H. 2000 Sending out the right signals: enumeration as a predictive category in the BASE corpus. Paper presented at the TALC conference, University of Graz, Austria. July <http://www-gewi.kfunigraz.ac.at/talc2000/Htm/index1.htm>.

Clerehan, R. 1995 Taking it down: Notetaking practices of L1 and L2 students *English for Specific Purposes* 14 (2) 137-155.

DeCarrico, J. and Nattinger, J. 1988 Lexical phrases for the comprehension of academic lectures. *English for Specific Purposes* 7 (2) 91-102.

Dudley-Evans, A. and Johns, T. F. 1981 A team teaching approach to lecture comprehension for overseas students. **The Teaching of Listening Comprehension** ELT Documents Special. London: The British Council 30-46.

Dudley-Evans, A. 1994 Variations in the discourse patterns favoured by different disciplines and their pedagogical implications. In: Flowerdew, J. (ed) **Academic Listening: Research Perspectives**. Cambridge: Cambridge University Press 146-158.

Ellis, R. 1994. Factors in the incidental acquisition of second language vocabulary from oral input: a review essay. *Applied Language Learning* 5 (1) 1-32.

Espeseth, M. 1999 **Academic Listening Encounters**. Cambridge: Cambridge University Press.

Fairfax, B. and Trzeciak, J. 1999 **Listening** Harlow: Longman.

Flowerdew, J. 1992 Definitions in science lectures. *Applied Linguistics* 13 (2) 202-221.

Flowerdew, J. and Miller, L. 1995 On the notion of culture in L2 lectures. *TESOL Quarterly* 29 (2) 345-373.

- Flowerdew, J. and Miller, L. 1997 The teaching of academic listening comprehension and the question of authenticity. *English for Specific Purposes* 16 (1) 27-46.
- Halliday, M. A. K. 1989 **Spoken and Written Language** Oxford: Oxford University Press.
- Hansen, C. and Jensen, C. 1994 Evaluating lecture comprehension. In: Flowerdew, J (ed) **Academic Listening: Research Perspectives**. Cambridge: Cambridge University Press 241-268.
- James, K., Jordan, R., Matthews, A.J. and O'Brien J.P. 1979 (revised 1991) **Listening Comprehension and Note-Taking Course** London: Collins ELT.
- Jenkins, A. 1992 Encouraging active learning in structured lectures. In: Gibbs, G. (ed) **Improving the Quality of Student Learning** Oxford: Oxford Polytechnic 46-58.
- Kelly, T., Nesi, H. and Revell, R. 2000 **EASE Volume One: Listening to Lectures**. CELTE, University of Warwick (CD-Rom).
- Lynch, T. 1983 **Study Listening** Cambridge, Cambridge University Press.
- Mason, A. 1994 By dint of: Student and lecturer perceptions of lecture comprehension strategies in first-term graduate study. In: Flowerdew, J (ed) **Academic Listening: Research Perspectives**. Cambridge: Cambridge University Press 199-218.
- McKnight, A. 1999 What do they do for two hours? International students in academic lectures. In: Crew, V., Berry, V. and Hung, J. (eds) **Exploring Diversity in the Language Curriculum** The Centre for Language in Education, Hong Kong Institute of Education 185-197.
- Olsen, L. and Huckin, T. 1990 Point-driven understanding in Engineering lecture comprehension *English for Specific Purposes* 9 (1) 33-48.
- Stubbs, M. 1986 Lexical density: a technique and some findings. In: M. Coulthard (ed) **Talking about Text** Discourse Analysis Monograph no 13, ELR, University of Birmingham 27-42.
- Strodt-Lopez, B. 1991 Tying it all in: asides in university lectures. *Applied Linguistics* 12 (2) 117-140.
- Tauroza, S. and Allison, D. 1990 Speech rates in British English. *Applied Linguistics* 11 (1) 90-105.
- Thompson, S. 1994 Frameworks and contexts: A genre-based approach to analysing lecture introductions. *English for Specific Purposes* 13 (2) 171-186.

Thompson, S. 1998 Why ask questions in monologue? Language choice at work in scientific and linguistic talk. In: Hunston, S. (ed) **Language at Work**. Clevedon: British Association for Applied Linguistics in association with Multilingual Matters 137-150.

Ure, J. 1971 Lexical density and register differentiation. In: Perren, G.E. and Trim, J.L.M. (eds) **Applications of Linguistics: Selected Papers of the Second International Congress of Applied Linguistics, Cambridge 1969**. Cambridge: Cambridge University Press 443-452.

White, G., Badger, R., Higgins, J. and McDonald, M. 2000 Good notes? A comparative investigation of note-taking practices. In: Ruane, M. and O'Baoill, D. (eds) **Integrating Theory and Practice in LSP and LAP** Dublin: Applied Language Centre, University College Dublin and the Irish Association of Applied Linguistics 29-40.

Young, L. 1994 University lectures - macro-structure and micro-features. in: Flowerdew, J (ed) **Academic Listening: Research Perspectives**. Cambridge: Cambridge University Press 159-176.