CHAPTER 4

Grammatical variation among university registers

4.1 Introduction

Many studies of academic registers document the use of individual grammatical features. As described in Chapter 1, most previous studies have focused on written academic prose, especially research articles. As a result, we know relatively little about the grammatical characteristics of the wider range of university registers that students encounter: are there systematic patterns of linguistic variation among university registers, associated with differences in mode, purpose, situation, and academic discipline/level?

The last chapter began to answer this question by considering patterns of vocabulary use across university registers; the present chapter describes the patterns of use for grammatical and syntactic features, including the general distribution of content word classes (nouns, verbs, adjectives, and adverbs), as well as the semantic categories of nouns and verbs. The chapter ends with a discussion of variation within the verb phrase (tense, aspect, and voice) and the distribution of dependent clause types across registers.

4.2 Content word classes

One of the most striking linguistic contrasts among university registers is the differential reliance on the four content word classes (nouns, verbs, adjectives, adverbs). Chapter 3 included some discussion of these differences by considering the breakdown of word types across word classes (see especially Figures 3.4 and 3.5). Figure 4.1 shows that there is also a fundamental difference in the overall frequencies of these word classes. Written registers use nouns to a much greater extent than any other word class. In contrast, spoken registers use nouns and verbs to about the same extent. As a result, verbs are much more common in the spoken registers than in the written registers. Adjectives and adverbs are distributed in a similar way: adjectives are used more commonly in the written registers, while adverbs are favored in the spoken registers.

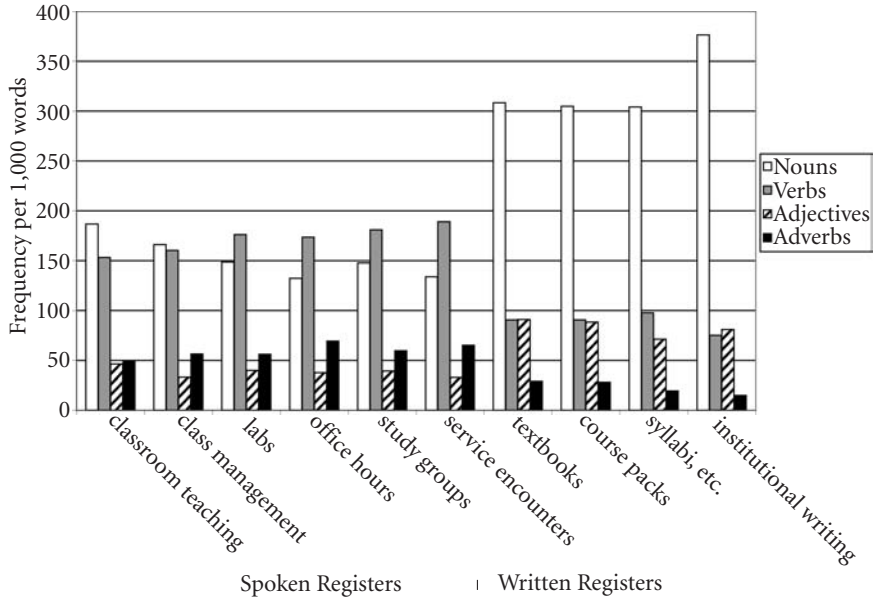

Figure 4.1 Content word classes across registers

Text Sample 4.1, from an ecology textbook, illustrates the heavy reliance on nouns in written university registers; Text Sample 4.2, from a service encounter in a copy shop, illustrates the dense use of verbs in spoken registers. (Nouns are underlined, and ***verbs*** are given in bold italics.)

Text Sample 4.1: Ecology Textbook, lower division (tbeco1.own)

Wildlife photography ***represents*** the nonconsumptive use of wildlife, which ***is*** the use, without removal or alteration, of natural resources. For much of this century, the management of wildlife for the hunter has been ***emphasized*** by wildlife managers. In recent years, however, management for nonconsumptive uses such as wildlife photography and bird-watching has ***received*** more attention.

Text Sample 4.2: Service Encounter, copy shop (servencs_n115)

clerk: Hey there.
customer: Hi.
clerk: How's it ***going***?
customer: OK. I ***want*** these, uh, ***copied***, just as they ***are***.
clerk: Mhm.
customer: [2 sylls] and the holes ***punched*** and the whole bit.
clerk: OK. How many copies?

customer: Tabs, you don't have to ***worry*** about the tabs I'll ***worry*** about the tabs. ***Wait*** you ***need*** to ***mark*** where the tabs ***go*** though. I'd ***put*** a pink sheet or something where every tab ***is***.
clerk: OK.
customer: Or something. So I ***know*** where the tabs ***go***.
clerk: All right.

The basic grammatical characteristics of these two text samples are extremely different. The textbook sample has only three main clauses (*Wildlife photography* ***represents****…; management has been* ***emphasized****…; wildlife photography has* ***received****…*) and one dependent clause (a relative clause: *use of wildlife, which* ***is****…*). The four main verbs in the textbook sample – *represents, is, emphasized, received* – convey little information. Instead, their primary function is to connect long and complex noun phrases, which convey most of the new information in the passage (e.g., *the management of wildlife for the hunter; management for nonconsumptive uses such as wildlife photography …*).

In contrast, the service encounter relies heavily on verbs and short clauses, a total of 8 main clauses and 7 dependent clauses in this short interaction. In this interaction, the verbs communicate much of the essential information: the required actions (*copied, punched, mark, put*) and the speakers attitudes and desires (*want, worry, need, know*). In contrast, nouns are rare and add relatively little new information to the exchange. Note, for example, how the single noun *tab*(*s*) is used repeatedly in the sample.

Classroom teaching is more similar to the written registers than most other spoken registers, in that it relies on nouns to a slightly greater extent than verbs (see Figure 4.1). Text Sample 4.3 illustrates the mixed use of nouns (underlined) and verbs (in **bold**) in classroom teaching.

Text Sample 4.3: Business Classroom Teaching, upper division (busbaleudln049)

Uh, one of the U.S. Court District Judges, I ***think*** it ***was*** W. C., in the CITY U.S. District Court, ***made*** a statement one time that in his opinion, one half of the lawyers who were, uh ***presenting*** cases before him were incompetent. And he wasn't ***saying*** mentally incompetent, he was just ***saying*** they weren't ***practicing*** law with a skill that ***was*** professional. Now, now, I'm not ***trying*** to ***scare*** you, you ***know*** what I'm ***trying*** to ***do***? I'm ***trying*** to ***let*** you ***know*** that you, you better ***pay*** attention to who your lawyer ***is***, and ***get*** someone who ***has*** respect. Uh, or it could ***affect*** the outcome of your case. You ***know***, and uh again, that***'s*** not what the system was ***designed*** to ***do*** and I don't ***think*** it should ***be*** part of the system, I'm just ***saying***, in fact, it ***is***.

At the other extreme, institutional writing represents the densest use of nouns (underlined), at the expense of verbs (in **bold**). Text Sample 4.4, from a brochure for a graduate program, illustrates these patterns:

> **Text Sample 4.4:** Institutional Writing, brochure for forestry graduate programs (Otbroa.pha)
>
> Graduate education and research opportunities in the School of Forestry ***provide*** motivated individuals with the knowledge and expertise necessary to successfully ***pursue*** their career objectives in forest land management or research. The School of Forestry and the Department of Geography and Public Planning are ***located*** in the College of Ecosystem Science and Management.

We might expect the linguistic style of institutional writing to be highly accessible, since these are probably the first university texts that a student encounters, with the primary goal of informing (and sometimes recruiting) incoming students. Despite these goals, the style of discourse in this register is at the opposite end of the spectrum from everyday conversation: there are few verbs and clauses, while nearly all important information is packaged in noun phrases. In fact, this register is even more extreme than textbooks in this regard. This same general pattern emerges repeatedly in the following sections and chapters: for a wide range of linguistic features, institutional writing is more complex than any other university register.

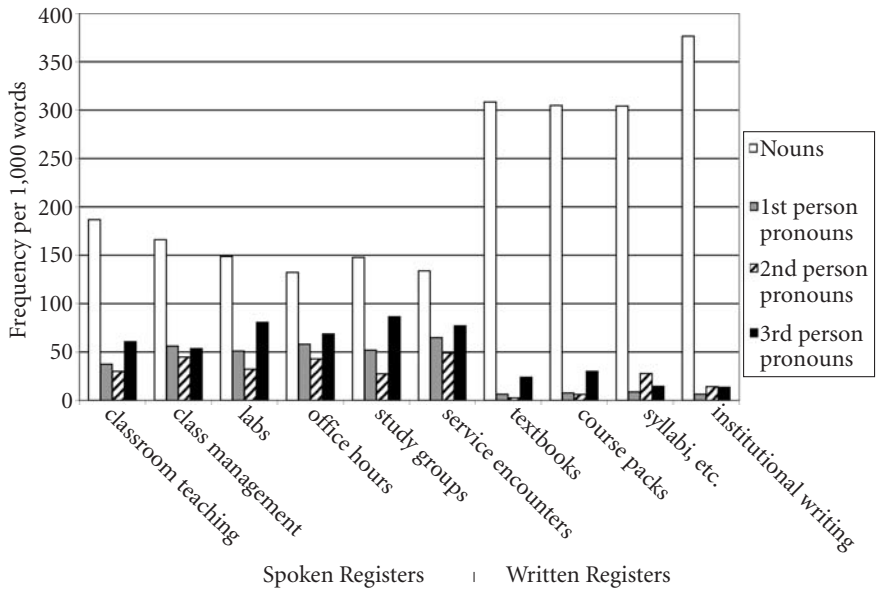

Figure 4.2 Nouns and pronouns across registers

4.3 Nouns and pronouns

Figure 4.2 shows that spoken university registers rely on pronouns to a greater extent than the written registers. It turns out that all registers have roughly the same number of referring expressions and noun phrases (see LGSWE, p. 578), but these expressions are realized in dramatically different ways: heavily elaborated noun phrases in the written registers (often noun-noun sequences, such as *career objectives, forest land management*), versus a reliance on simple nouns and pronouns in the spoken registers. Text Samples 4.1–4.4 above illustrate these characteristics. Notice in particular how third person pronouns are often substituted for full noun phrases in the spoken registers (e.g., *it, these*, *they, he*).

First person pronouns (*I, we*) are found in all spoken university registers, although they are slightly less common in classroom teaching. Second person pronouns (*you*) are also found in all spoken registers, although they are most common in class management, office hours, and service encounters. The dense use of first and second person pronouns in service encounters reflects the directly interactive nature of that register, illustrated in Text Sample 4.2 above. Second person pronouns in class management and office hours are often used for directive purposes, as in the following:

> **Text Sample 4.5:** Business Classroom Management, lower division (**busbacmld_n054**)
>
> You're making it too hard, you're making it too hard. and you're doing that in two directions, one is you're doing an awful lot of work that you don't have to do. On the one hand it's good that you know how to do that work and you know how to get the numbers, but as we'll as [unclear] go through this in a second several of you are doing the work, you're doing it wrong, it's right there in front of you, OK you have all the numbers you need, there's nothing to calculate, so some of you are making it too hard by doing a lot of work that's not necessary work – and then you're making it too hard because you're forgetting about the fundamental rule and, you're thinking too much…

Interestingly, second person pronouns are relatively common in written course syllabi and other written class materials, where they serve a similar directive function, for example:

> **Text Sample 4.6:** Engineering Syllabus, upper division (cmeng2.syl)
>
> In this course you will learn how to develop instructional software and articulate the issues involved in using the computer for instruction. This can only be achieved if you are actively engaged in lesson development. Therefore, most of your instruction will consist of reading relevant documentation on the computer and completing assigned projects on your own. […] While this instructional for-

mat is interesting and rewarding, it requires that you be more responsible for your own learning than in the lecture-test format you may be used to. Not everything you need to know will be told to you. You will need to access available resources to find answers to your questions and be willing to ask when you can't find them.

4.4 Semantic classes for nouns

Figures 4.3–4.5 show the breakdown of nouns across semantic domains. Figures 4.3 and 4.4 are based on a semantic classification of all nouns occurring more than 20 times per million words in the T2K-SWAL Corpus; the full list of nouns is given in Table A.8 (in Section 4.4 of Appendix A). While the classification of individual nouns can be problematic (because some nouns have multiple meanings from different semantic domains), this perspective is useful for comparing the general patterns of use across registers.

Figure 4.3 shows that many of the common nouns in university registers have abstract/process meanings: nouns that refer to intangible, abstract concepts or processes, like *system, factor, design, difficulty,* and *problem*. Abstract/process nouns are especially prevalent in the written registers, where they constitute over 50% of all nouns. As the following extract from an upper division syllabus shows, com-

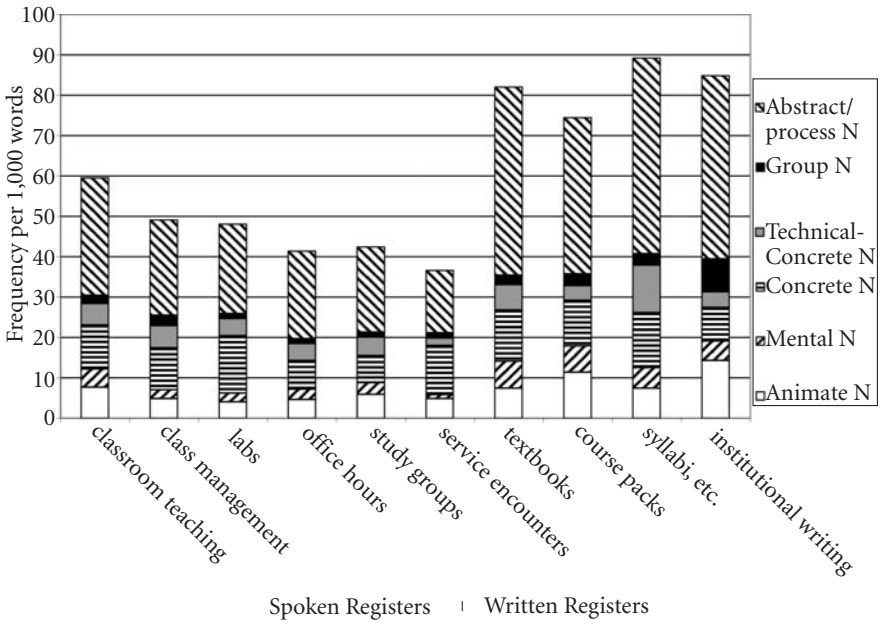

Figure 4.3 Breakdown of common nouns across semantic domains, by register

mon abstract/process nouns (marked in **bold**) often co-occur with less common nouns from the same semantic domain (underlined), nouns like *sophistication, complexity*, *functionality*:

> **Text Sample 4.7:** Business Syllabus, upper division (cmbus2.syl)
>
> Comprehensive **System** Sophistication: **Factors** we will look for related to judging sophistication include the total number of tables; the complexity represented in the **design** and functionality of the **system**; and the **difficulty** of the original **problem** (e.g., did you tackle a trivial or complex **problem** to begin with?). Part of the grading of this **project** will be based on my judgment of and perceptions about the overall sophistication of the **system**; therefore there is clearly a subjective component.

It is interesting that the spoken registers also rely heavily on abstract/process nouns. In fact, abstract/process nouns account for c. 50% of common nouns in all registers. (Only service encounters show a slightly lower proportion.)

There are also interesting patterns for some of the other noun classes. For example, animate nouns and group nouns are especially prevalent in institutional writing, where they are used to refer to the students, instructors, and institutional entities in academic programs. The following examples are taken from university catalogs and program brochures (animate nouns are underlined; group nouns are in **bold**):

> The chair of the Retention **Committee** will prepare a report of the faculty decision for the chair of the **department** and the student. The student will receive a copy of the faculty's decision by certified mail.
>
> The **College** of Education offers admission to applicants who hold baccalaureate degrees from regionally accredited **institutions**.
>
> CPS 9660 Applied Practice III: Students work in an appropriate psychological counseling with clients under supervision. Pre: consent of instructor.
>
> Students are only reserved a place in a particular class section by making arrangements with the **department** Graduate Advisor.

Figure 4.4 shows that there are also systematic differences across academic disciplines in their reliance on particular noun classes. For example, mental nouns (e.g., *decision, experience, conclusion, expectation, observation, recognition, assumption*) are somewhat more common in business and humanities textbooks than in the other disciplines. Abstract/process nouns – describing intangible, abstract concepts or processes – are especially prevalent in business and engineering textbooks. Surprisingly, concrete nouns are also common in engineering texts, but animate nouns are especially rare in this discipline. This combination reflects the dual focus in engineering on everyday entities described in technical terms. For example:

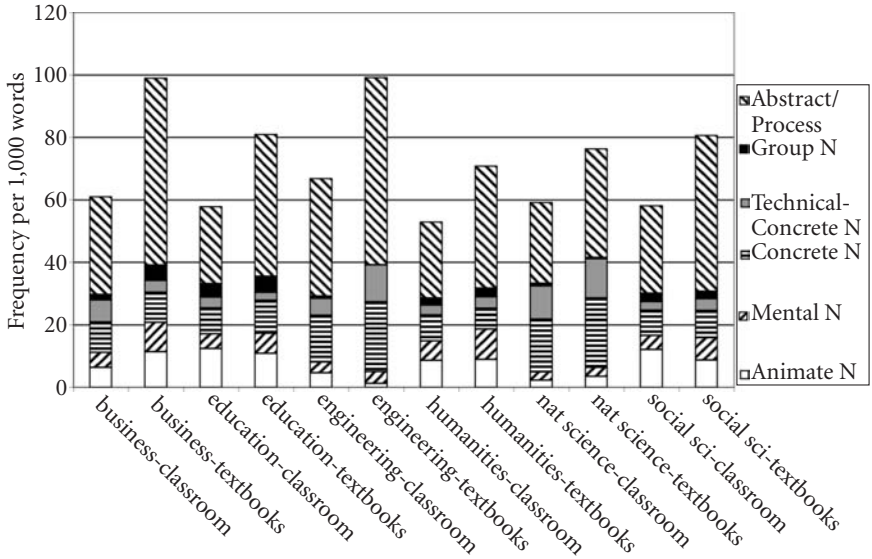

Figure 4.4 Breakdown of common nouns across semantic domains: classroom teaching and textbooks, by academic discipline

Text Sample 4.8: Engineering Textbook, graduate level (tbmce3.gvd)
Abstract/process nouns are underlined; concrete nouns are in **bold**.

Automobiles travel at high speed, and as a consequence experience a broad spectrum of vibrations. These are transmitted to the passengers either by tactile, visual, or aural paths. The term "ride" is commonly used in reference to tactile and visual vibrations, while the aural vibrations are categorized as "noise." [. . .] The vibration environment is one of the more important criteria by which people judge the design and construction "quality" of a **car**. Being a judgment, it is subjective in nature, from which arises one of the greatest difficulties in developing objective engineering methods for dealing with ride as a performance mode of the **vehicle**.

Figures 4.3 and 4.4 show the distribution of 'common' nouns across semantic classes, that is, nouns that occur more than 20 times per million words in the T2K-SWAL Corpus. Some of these nouns are specialized, even though they occur with high frequencies. This is especially the case with abstract/process nouns (e.g., *application, argument, development, function, method, process, criticism, evolution*) and technical-concrete nouns (e.g., *cell, gene, wave, ion, electron, chromosome, element*).

Rare nouns are even more likely to be highly specialized and technical in meaning, as noted in Chapter 3. One approach to studying rare nouns is to consider the nouns that occur in only one text. Figure 4.5 compares the use

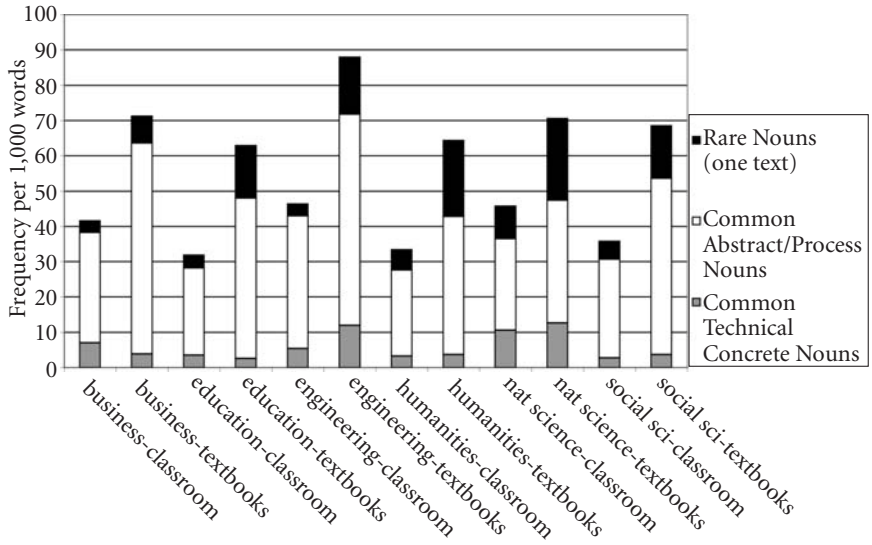

Figure 4.5 Breakdown of specialized nouns (i.e., nouns that occur in only one text) versus common technical nouns across disciplines

of these rare nouns with common technical nouns across disciplines. Interestingly, business and engineering textbooks show the greatest reliance on common abstract/process nouns, but humanities and natural science textbooks show the greatest reliance on rare specialized nouns (see also the vocabulary distributions discussed in Section 3.3.2 in the last chapter). For example, the first few pages of a chapter on deconstructive criticism (from a graduate level humanities textbook on literary criticism; tbeng3.llc) include the following highly specialized nouns:

> *phenomenology, deconstruction, grammatology, phenomenologists, hermeneuticists, logocentrism, phonocentrism, semiology, archicriture, signifieds, signifiers, solidifications, ontotheology.*

Chapter 3 (Section 3.3.2) discussed how many of the specialized words in Humanities referred to entities and concepts that could be readily described with a fuller phrase that combines common words. In contrast, the above list of 'rare' words – occurring in a single Humanities text – are abstract and highly technical, with meanings that cannot be defined by a simple equivalent expression.

In summary, a detailed study of noun use in spoken and written registers is informative because much of the referential information of academic language is packaged in noun phrases. Taken together, these patterns indicate that textbook prose can vary widely across academic disciplines: for example, having a greater reliance on rare, highly specialized (abstract and technical) nouns in humanities

and natural science, versus a greater reliance on more common abstract/process and concrete nouns in business and engineering.

4.4.1 The noun *thing* in spoken university registers

Although nouns are relatively rare in the spoken university registers, there is one noun that occurs with an especially high frequency: *thing*. The noun *thing* is extremely common in all academic spoken registers (classroom teaching, class management talk, office hours, and study groups), occurring around 3,000 times per million words. In contrast, *thing* is relatively rare in all written university registers (only c. 300 per million words).

The noun *thing* occurs with an extremely wide range of uses and meanings in spoken university registers. Surprisingly, *thing* rarely refers to a physical object:

> And then he came back and his wife brought figs stuffed with nuts, and more fruit, and dates, and things like that.

Rather, *thing* usually refers to 'actions' or 'ideas'. The fixed expression *things like that* is often used for both meanings:

> OK, I grew up in a neighborhood, where like, you had a number of occupational choices when you grew up – you could go to prison, you could join the marine corp. uh, you know, things like that.
>
> We're not interested in comparing blue eyed people and brown eyed people. Right? That would be vertical differentiation. It's meaningless. It's irrelevant. It's not important, right? We're not talking about things like that.

In classroom teaching, these two uses of *thing* are extremely prevalent. In the first meaning, *thing* is used to refer to 'actions', 'activities', or 'events', as in:

> Terrible things can happen to you at an early stage of development and still you come out all right later on.
>
> So the only thing that could be done in that situation or that was done was you call in the local shaman – who performs an exorcism
>
> I should have known all along that she was a topless go-go dancer. Look at the way she used to dress. Look at how she used to dance at parties. You know, that kind of thing.

The second major use of *thing* refers to ideas or informational points to consider, as in:

> Well I, I think two things are going on. Again, it has in part to do with, public education, you know just what's common kind of quote on quote common knowledge or mythology in the public. And number two uh, the way it actually

gets promoted by educators . . .

I mean the first thing you guys all said was paranoid

This use of *thing* is especially important in classroom teaching because it helps to structure the flow of information. Often the word *thing* is used to identify the points of information that will be covered in a teaching session:

I'm not really going to lecture in your textbook on this chapter. I want to go through some things in the textbook though just to talk about them a little bit

I'm going to lecture on some of the things I want to talk about here.

But that – those are things that we'll discuss when we talk about the actual colonial period

Instructors also use *thing* to signal the introduction of new topics:

The country is big and strong, we have a good economy. OK. Now, one final thing about these – about these population questions. How do we stack up compared to other parts of the world?

So. Um. We have to talk about some basic concepts in here it says here. It says more basic concepts. And um, one of the things I want to talk about in terms of basic concepts is, classes. Let's call them class intervals. What we're, talking about is, grouping data.

This use of *thing* to signal informational packaging is commonly combined with an evaluative adjective, which reflects the instructor's stance towards a topic (e.g., *the interesting thing*). In many cases, instructors use *thing* in the focus construction:

the ADJECTIVE thing is + *that*-clause

This construction emphasizes the evaluative stance indicated by the adjective while focusing on the information provided in the clause after the copula *is*. For example:

Um, the brilliant thing is [that the I.M.F. is voting to give money to the only ally Serbia has].

And as you know they went to Tennessee, and the good thing is [that when they moved to Tennessee, they improved the living standard of the people in the area enormously]

Now, the interesting thing about this study, which just came out last year, is [that it questions that].

This use of *the thing* has become conventualized, so that even when it occurs without an evaluative adjective, it still has the sense of identifying an important consideration:

Now. The thing about Porfirio Villas is that he was a liberal. OK?

See that's the thing, because, because, uh, you would think everything would hinge on how he does as mayor but because it's an internal party decision, it's, it's, it's, his people are the people doing the voting within the party.

4.5 Semantic classes of verbs

As discussed in Appendix A, verbs can also be grouped into major semantic classes (building on the corpus-based investigations reported in LGSWE). Figure 4.6 shows that there are interesting differences across registers in their reliance on particular verb classes. The most obvious difference is between the spoken and written registers. Figure 4.1 (above) showed that verbs are much more common in the spoken registers than the written registers. Figure 4.6 shows that this frequency difference is largely due to an extremely heavy reliance on two semantic domains in the spoken registers: activity verbs and mental verbs. In contrast, the other four semantic classes (communication verbs, causative verbs, occurrence verbs, and aspectual verbs) are used with roughly the same frequency in the spoken and written registers.

Activity verbs are especially common in class management talk and in service encounters. Participants in service encounters are directly involved in physical activities, or in giving directions about future activities, as in Text Sample

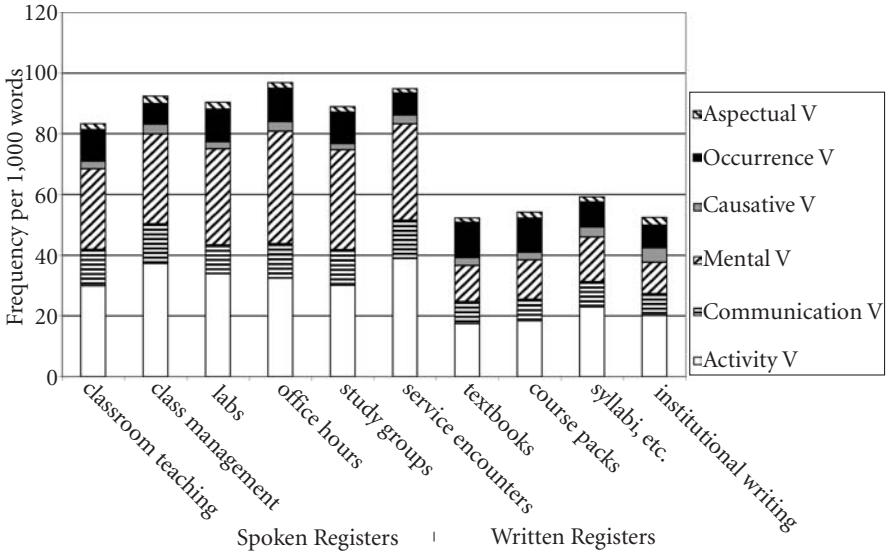

Figure 4.6 Breakdown of common verbs across semantic domains, by register

4.2 (above). Classroom management talk similarly involves discussion of future activities, for example:

Text Sample 4.9: Education Classroom Management Talk, upper division (edubecmud_n133)
Activity verbs are underlined.

Instructor: I'm going to be at Killup um, when you've signed up for your presentation on December first and December third and, um, I encourage you to get people involved in the activities, um, also, I'd also like to invite people to bring food. I was wondering if we could have the people who are not presenting, bring some snacks. Um, is that a good way to do it?
Student: Sure. That's fun.
Instructor: Get lunch that way. If it's not your turn to present, um, in that last week. And really that's great.
Student: Are you just going to leave a box up by your office?
Instructor: Yeah, you can just [unclear mix of voices]
Student: OK.
[general conversation and mixed voices]
Student: Cause I put mine like in the [unclear]
Instructor: There's a black thing on my door. Just stick it in there

In contrast, mental verbs are especially common in office hours, where they are used for problem solving and giving advice:

Text Sample 4.10: Natural Science Office Hour (natgloh_n0005)
Mental verbs are underlined.

Instructor: Yeah I think I finally, got Sarah, on a direction in her thesis is gonna go now, so I think we've got that figured out.
[. . .]
Student: OK. Great.
Instructor: Mhm.
Student: I-I guess that's it then. [unclear sentence]
Instructor: Have you done any more on your grad school?
[. . .]
Student: And, that reminded me, I'm totally glad you asked because I would have felt quite stupid, um if, if you wouldn't mind, I'd appreciate it, if you could, write a um, letter of recommendation for me.
Instructor: Mhm. Yeah just be sure to give me at least two weeks' notice.
Student: Yeah. Got plenty of time.
Instructor: OK. So what's the deadline?
Student: Uh, January sixth.

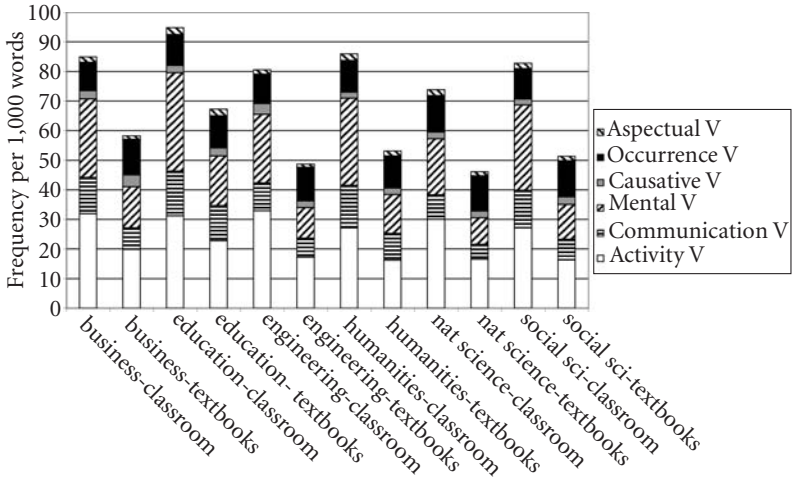

Figure 4.7 Breakdown of common verbs across semantic domains, by discipline

> Instructor: OK. That's what's critical is that I know that. Actually the other thing I was gonna recommend too is to uh, uh, give me a, if you want me to look at it sometime, your uh, your cover letter. . .

Similar to the patterns described in the last section for noun classes, these verb classes are also used in different ways across academic disciplines. For example, Figure 4.7 shows that Education exhibits the most frequent use of verbs, in both classroom teaching and in textbooks. The majority of these are mental verbs and activity verbs, with communication verbs also being relatively common. For example:

> **Text Sample 4.11:** Education Classroom Teaching (edubelegrmn188)
> Activity verbs are underlined; mental verbs are in **bold;** communication verbs are in *ITALIC CAPS*.
>
> Instructor: So we're *TALKING* about working together to **solve** problems. So when I approached this I **wanted** to develop a curriculum piece that would also be hands on and they would be **solving** a problem and working together to do it. So, to go into the problem. The problem was, well, oh, I **forgot** one important part, the community involvement. Um, you can't really develop as an Anglo teacher uh lessons on, you **know**, the culture of [unclear words] about it so I brought community members in to help me um **decide** what to do. I **chose** an area and it was area and perimeter, and I went to community members and I *SAID* let me **know** about area perimeter and how Navajo people use it. One woman *SUGGESTED* grazing areas and um that sounded like it would be interesting. But then um another parent *SUGGESTED* um hogan and that actually went with a problem

I had um kind of worked with for another conference, um basically **seeing** if the kids could **figure out** what shape has the biggest area within a perimeter.

Occurrence verbs (i.e., verbs that report events that occur apart from any volitional activity) are also relatively common in most of these disciplines. They are especially important in natural science teaching:

Text Sample 4.12: Natural science classroom teaching (natbileldmn062)
Occurrence verbs are underlined.

Instructor: Antibiotics are not for viruses, the viruses don't become resistant. Humans don't become resistant – bacteria become resistant. And uh uh a minor [unclear] kind of important point was that the the bacteria do not mutate in response to the, to the antibiotic some of them just happen to already have a mutation and that kind of question for sure will come up on your test so things, just keep it in your mind – things don't mutate in response but they're randomly mutating and some of them happen to have that mutation. Um and that's that's what in fact is happening is that with this with this dispensing antibiotics so freely they are becoming, the bacteria are becoming much more immune.

4.6 Variation in the verb phrase

Another perspective on the use of verbs in university registers is to consider variation in the marking of tense, aspect, and voice. Past tense is the marked choice in all university registers. This pattern is consistent in the spoken registers, which all use past tense verbs less than 20% of the time. The dis-preference for past tense is more variable in the written registers, ranging from 20% past tense in textbooks to less than 5% past tense in course syllabi and institutional writing.

Figure 4.8 shows that there are also interesting differences across academic disciplines in the extent to which they use present and past tense. At one end, only about 10% of the verbs in engineering and natural science classroom teaching are past tense. Engineering textbooks show the most extreme pattern, with past tense verbs accounting for only about 5% or all verb phrases. At the other extreme, past tense verbs are relatively common in education and humanities textbooks: over 30% of all finite verb phrases in education, and over 40% of all finite verb phrases in humanities. Text Sample 4.8 (in Section 4.4 above) illustrates the absence of past tense verbs in engineering textbooks. In contrast, Sample 4.13 illustrates the style of discourse common in education textbooks, which incorporate relatively frequent past tense verbs to report past events, often in association with personal narratives. (Sample 4.11, in Section 4.5 above, illustrates the similar use of past tense verbs for narrative purposes in education classroom teaching.)

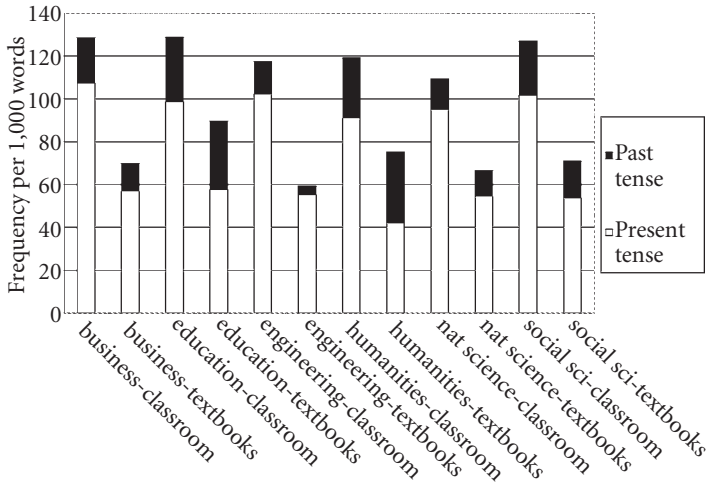

Figure 4.8 Verb tense across academic disciplines (classroom teaching and textbooks)

Text Sample 4.13: Education Textbook (tbele2.jpd)
Past tense verbs are in **bold**; non-finite verbs are underlined.

In one high school where I **was working**, one of the most respected English teachers **amazed** her colleagues when during training she **shared** a description of the first three days of the semester in her English class. As soon as the students **entered** the room, they **were given** a form upon which they **were** to put their name, address, and phone number. Any students who **did** not **have** pencils **were given** them with a private message that this would be the last pencil that they would ever be given and that they would be expected to bring their own pencil and paper in the future. As this task **was nearing** completion, with an overhead projector the teacher **showed** the class a list of basic rules for her class to be copied onto the first page of each student's notebook.

Humanities textbooks also use past tense verbs to report past events, but these tend to be historical recounts rather than personal narratives. Text Sample 4.14 illustrates this style of discourse in a history textbook.

Text Sample 4.14: History Textbook (tbhis2.kis)
Past tense verbs are in **bold**, and non-finite verbs are underlined.

Avid colonialists though they **were**, the British never **mastered** the art of decolonization. After finally granting India its freedom, the British **created** Pakistan in 1947 by carving off the Moslem areas.
Pakistan **had** two segments, separated by a thousand miles of Hindu dominated India between them. West Pakistan, inhabited largely by Punjabis, politically **dominated** the poorer East Pakistan, inhabited mainly by Bengalis. The only

> bond that **tied** the two Pakistans **was** their shared Islamic faith, which could not fully subsume their economic and ethnic differences.

Such historical recounts are often used to introduce a topic, as in the following passage from a textbook on technical writing. Notice how the historical background to the topic is presented with past tense verbs, while the switch to present tense verbs marks the transition to the more informational discussion of the topic.

> **Text Sample 4.15:** English Textbook, technical writing (tbrpc2.rte)
> Past tense verbs are in **bold**, present tense verbs are in *italics*, and non-finite verbs are underlined.
>
> When technical communication **emerged** as a career specialization during World War II, the typical technical document **was** mostly words. Furthermore, the page **was packed** with words. Narrow margins, scant interlinear spacing, and the lack of headings **let** the words crowd the page. Technical documents *have changed* dramatically since then as writers *have discovered* the power of graphics and format. Writers *use* typography and space to enhance comprehension and access, and documents without visuals *are* rare. Some documents *are* wholly visual, with illustrations substituting for text. The term illustrations *is* comprehensive: it *refers* to tables, . . .

A related grammatical distinction is the marking of verb aspect. Simple aspect is overwhelmingly the preferred option, in both spoken and written registers. Around 90% of all verb phrases are simple aspect in all spoken registers, while over 95% of all verb phrases are simple aspect in all written registers. Most text excerpts in the preceding sections illustrate these patterns.

When marked aspect is used, progressive aspect is somewhat more common than perfect aspect, especially in the spoken registers. Text Samples 4.3, 4.11, and 4.12 (above) illustrate the mixed use of simple and progressive aspect in classroom teaching. The following sentence, repeated from Sample 4.11 above, illustrates the typical mixing of aspects (simple aspect verb phrases are underlined; progressive aspect in **bold**):

> So when I approached this I wanted to develop a curriculum piece that would also be hands on and they would **be solving** a problem and **working** together to do it.

Here simple aspect verb phrases are used to narrate the researcher's intentions and a stative description of the situation, while progressive aspect verb phrases are used to describe the actions of participants that continue over an extended period of time.

In comparison to the other spoken university registers, progressive verbs are most common in lab sessions (almost 8% of all verb phrases). Lab sessions rely

on task-focused language, where participants are actually performing actions and observing events at the same time that they are talking about those actions and events. For example:

Text Sample 4.16: Natural Science Lab Session (natcmlbudhn276)
Progressive aspect verb phrases are underlined.

Instructor: It looks like we're still getting a single line with some. This is pretty interesting . . see it's starting to emerge the hydroplane splitting is starting to emerge but it's not – you're still probably at least a factor ten away in terms of concentration but see the bumps on this
Student: oh yeah
Instructor: so now you're starting to – that tells me almost certainly that the line you saw before was broadened by electron transfer. Between radical and neutral molecule and so now we're starting to bring this up the splittings must [be] relatively small
Student: so in other words this is too concentrated still
Instructor: still now you can see the effect that we're now starting to
Student: [unclear words]
Instructor: we're starting to resolve
Student: closer, we're getting closer [. . .] and they're attracting [unclear words]

In contrast to the relative preference for progressive aspect in the spoken registers, both marked aspects are rare in the written registers. However, perfect aspect verb phrases are occasionally used in course packs and textbooks (4–5% of all verb phrases), where they describe past events that have continuing consequences. For example:

Text Sample 4.17: Course Pack, lower division social science (cpami1.211)
Perfect aspect verb phrases are underlined.

In the Western world, where mind has been separated from body, where man has been extracted from nature, where affect has been divorced from "fact," where the quest for and focus upon the manipulation and accumulation of things has led man to exploit rather than to respect and admire the earth and her web of life, it is not surprising that art would be divorced from the more practical affairs of business and government and the more serious matters of science, philosophy, and theology.

Transitive verb phrases in English also allow a choice between active and passive voice. Similar to the preference for simple aspect described above, active voice is the unmarked choice in all university registers. All spoken registers use active voice verb phrases over 95% of the time. In contrast, the written university registers show a greater reliance on passive voice: c. 20% passive voice vs. c. 80% active

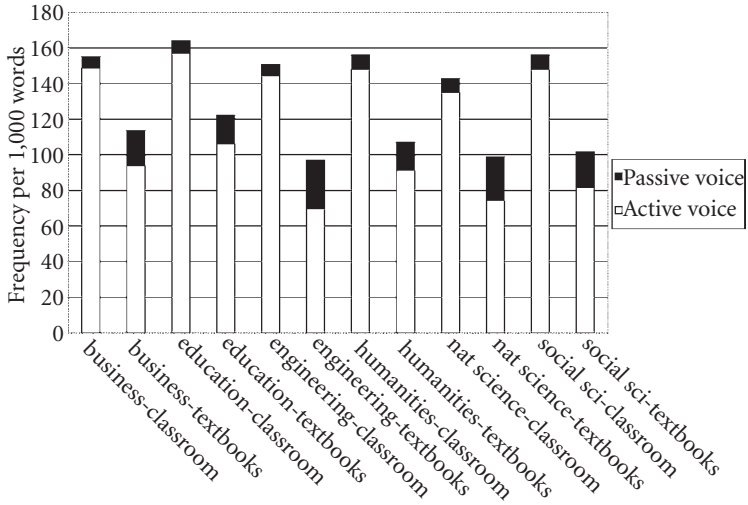

Figure 4.9 Active and passive voice across disciplines (classroom teaching and textbooks)

voice. Surprisingly, there is little variation across registers within speech or within writing: passive voice is extremely rare in all spoken university registers, while it occurs with moderate frequencies in all written registers, regardless of the particular settings or typical communicative purposes.

However, Figure 4.9 shows that there are some interesting differences across academic disciplines in the extent to which they use passive voice verb phrases. Engineering textbooks (and to a lesser extent natural science textbooks) show the most frequent use of passive voice: almost 30% of all verb phrases. These forms are used to focus on actions, and the entities affected by actions, in cases where the agent is understood or unimportant. In many cases, the agent is simply understood to be the author or the general consensus of researchers in the field, for example:

> **Text Sample 4.18:** Textbook, upper division engineering (tbmce2.iht)
> Passive voice verb phrases are underlined.
>
> The heat flux from a horizontal nichrome wire to saturated water was determined by measuring the current flow 1 and potential, drop E. The wire temperature was determined from knowledge of the manner in which its electrical resistance varied with temperature. This arrangement is referred to as power-controlled heating, wherein the wire temperature, Tx (hence the excess temperature Te) is the dependent variable and the power setting (hence the heat flux qs) is the independent variable. Following the arrows of the heating curve of Figure 10.3, it is evident that as power is applied, the heat flux increases, at first slowly and then very rapidly, with excess temperature.

Table 4.1 Distribution of discourse markers across spoken registers (each '*' represents 1,000 occurrences per million words)

	Classroom Teaching	Class Management	Office Hours	Study Groups	Service Encounters
OK	*****	********	********	******	********
well	**	**	****	***	**
now	**	*	*	*	*
so	*****	*****	**********	**********	****

4.7 Discourse connectors

Discourse connectors are devices used to bridge between turns (in speech) and sentences, indicating the logical relations among the parts of a discourse, and providing an interpretive framework for the listener/reader. There are two major classes of discourse connectors: discourse markers and linking adverbials. Discourse markers – forms like *ok, well,* and *now* – are restricted primarily to spoken discourse. These forms have distinct discourse functions, but it is difficult to identify the specific meaning of the word itself. In contrast, linking adverbials – forms like *however, thus, therefore, for example* (*e.g.*), and *that is* (*i.e.*) – are found in both spoken and written registers, and they have greater inherent meaning than discourse markers. (The form *so* is intermediate, sometimes functioning more like a discourse marker and sometimes more like a linking adverbial. It is grouped with the discourse markers in the description below.)

4.7.1 Discourse markers in spoken university registers

Discourse markers rarely occur in written university registers, but they are common in all spoken university registers. Table 4.1 shows the distribution of these devices across spoken registers.

The discourse marker *so* is the most common, especially in office hours and study groups. (*So* can have other functions, for example as an emphatic. However, well over 90% of the occurrences of *so* in these two registers are functioning as discourse markers.) The discourse marker *ok* is also very common, again in office hours and also in classroom management. Interestingly, *ok* is the only discourse marker used with a high frequency in service encounters. *Well* is considerably less common than *so* and *ok*, but this discourse marker is also more common in office hours than the other spoken registers.

Text Sample 4.19 illustrates the dense use of these discourse markers in an advising session taken from an office hour:

Text Sample 4.19: Office hours (advising session), Business Administration (busbaoh_n156)
Discourse markers are underlined

Advisor: all right so say again what's the problem
Student: well I planned on getting out in December
Advisor: are you going to go to summer school?
Student: yes
Advisor: mhm
Student: and but management four thirty five, which I need, is not offered this summer or in the fall
Advisor: you're sure
Student: I'm – well it's not in the books
Advisor: yeah well then it's not in if if they should happen to offer it then you would pick it up at the time
Student: well obviously
Advisor: I don't know – I don't know if that's going to happen
Student: well my question is is it – I don't know if it's being offered right now but if it is I wanna know why I'm not in it
Advisor: we'll substitute something for management four thirty five
Student: we can do that
Advisor: I can do it
Student: OK
Advisor: yeah
Student: OK um what I have here for this the BA three forty and three ninety six I plan on taking it in the fall [. . .]

[. . .]

Student: and then also BA four ninety and uh
Advisor: history three eighty
Student: yes
Advisor: OK for BA four ninety by the time that second summer session rolls around will you be all done with the core other than BA four ninety. will you be all done with these courses above BA four ninety
Student: all these are done let's see I got that's done uh three oh one I'm taking this summer
Advisor: OK I I see that
Student: and three sixty yes so everything above four ninety

[. . .]

Advisor: all right you're done with that OK um
Student: so really I have – I want to take four this summer and then four in the fall is how it's working out

In the above excerpt from an advising session, almost half of all turns begin with a discourse marker. Although these forms do not have precise meanings, they serve to structure the overall discourse. For example, contrast the functions of *ok* and *well*. *Ok* is often used as a simple response, indicating that the speaker has understood and accepted the preceding utterance, as in:

Advisor: I can do it
Student: OK

In other cases, *ok* marks a transition to the next step in the discussion, initiating a new sub-topic, as in:

Student: OK um what I have here for this . . .

or

Advisor: OK for BA four ninety by the time that second summer session rolls around will you be all done. . .

The discourse marker *all right* is relatively rare, but it is similar in being used to initiate a new topic:

Advisor: all right so say again what's the problem

In contrast, the discourse marker *well* almost always marks a response to some previous utterance, rather than initiating a new sub-topic. Beginning the response with *well* often indicates that the information in the utterance is somehow counter to the expectations raised by the preceding utterance. For example, when the advisor asks whether the student is sure, she responds *well it's not in the books* (that is, she's not absolutely sure, but there's no indication that she's wrong). In another example, the advisor gives a directive to the student, but the student responds instead by showing him her notes:

Advisor: just tell me summer ninety nine what do you have
Student: well I have I have it written down in here

As noted above, the form *so* often functions more like a linking adverbial than a discourse marker. This use is prevalent in academic office hours, where *so* has a resultative meaning (similar to the meaning of *therefore*). For example:

Instructor: But China had this incredibly powerful culture that said we're the center of universe, and therefore nobody else matters. And they considered the rest of the world as being, the rest of the world as being, uh basically, barbarians, [. . .] And they had no interest in learning anything from them – they said just, stay away from us. So the Europeans would come and say hey you know we want to trade we want to learn these things from you, and they would say, you know, you're inferior to us. Go away. So the Europeans just came back, you know, and

said OK, now you're going to do what we want you to do, you know. Cos you don't wanna play nice.

This resultative meaning can also be detected in other uses of *so*, even when it is not used as part of an extended logical argument. For example, the first turn in Text Excerpt 4.19 initiates this discussion, and thus the form *so* here cannot indicate that this is a logical consequence of a preceding utterance:

Advisor: all right so say again what's the problem

Rather, this use of *so* indicates that the advisor is aware of the general circumstances, and as a result, aware that there is a problem.

Similarly, in the last turn from this excerpt, the student uses *so* to initiate a statement that summarizes the results of the preceding negotiations:

Student: so really I have – I want to take four this summer and then four in the fall is how it's working out

Notice that *ok* could have been used in this context instead of *so* to initiate the summary statement, but that discourse marker would not have carried the same resultative implications. However, because both of these discourse markers serve turn-initiating functions, they are commonly used together, as in:

Student: OK so I'm not that off base
Instructor: well on the contrary you seem to be very much on base

The discourse marker *now* is considerably less common than the other forms, but it is the only form that occurs more commonly in classroom teaching than in the other spoken registers. *Now* can be used as either a place adverbial or as a discourse marker; thus compare:

Time adverbial:
but for right now we'll restrict ourselves to conductors

Discourse marker:
Uh now the first aspect I want to talk about is convenience of the Internet.

(The frequencies reported in Table 4.1 include only occurrences functioning as a discourse marker.)

In classroom teaching, *now* is commonly used to initiate a new topic, usually as the next step in a logical progression. In many cases, *now* and *ok* could be used interchangeably for this function. However, *now* more consistently marks the introduction of a major new topic, and it is this function that results in the greater use of *now* in classroom teaching. For example:

Instructor: When you think about the proposition that lying is wrong, or one has an obligation to keep a promise, the mature mind, will see that this is self-

> evidently true. Now, remember the distinction he makes between prima facie duties and actual duties. The prima facie duties being the conditional duties. . .

Surprisingly, *now* is also occasionally used as a discourse marker in textbooks, as in:

> Now to find p*(T) you need only find T on the new abscissa scale.
>
> Now let's suppose that the observation had been made in a correlational study rather than in an descriptive one.

By adopting this spoken feature in textbook language, authors seem to be suggesting to the student reader that the material is not too difficult if they just follow along step by step. This message is reinforced in the above examples by the direct references to the reader: *you need only* and *let's suppose*.

4.7.2 Linking adverbials in written university registers

Linking adverbials can be considered as a parallel system to discourse markers. Both sets of features function to connect propositions in discourse. However, linking adverbials are primarily characteristic of the written registers. The linking adverbials *therefore, for example*, and *that is* are used occasionally in classroom teaching (about 200 times per million words), and *for example* is used with roughly the same frequency in office hours and study groups, but otherwise these forms are rare in the spoken registers. In contrast, Table 4.1 shows that linking adverbials are relatively common in the written university registers.

Linking adverbials are much less frequent in absolute terms than discourse markers. The most common linking adverbials – *however* and *for example* – occur c. 1,000 times per million words in textbooks. In contrast, Table 4.1 shows that the most common discourse markers – *ok* and *so* – are 10 times more frequent in the spoken registers.

Linking adverbials further differ from discourse markers in that they have more specified meanings and functions:

Contrast	*however, in contrast, on the other hand, alternatively*
Result/inference:	*thus, therefore, consequently,* (*so*)
Apposition/exemplification:	*that is, for example, for instance, in other words*

Table 4.2 gives the frequencies of the most common linking adverbials in university registers. Textbooks show by far the greatest use of these devices, although they are also surprisingly common in course syllabi. In contrast, institutional writing has a much lower use of these forms (except for the contrastive adverbial *however*).

The more frequent use of linking adverbials in textbooks reflects the primary purposes of informational presentation in this register: contrasting arguments

Table 4.2 Distribution of linking adverbials across written university registers (each '*' represents 100 occurrences per million words)

	Textbooks	Wr. Course Management	Institutional Writing
however	**********	*******	*****
for example/e.g.	**********	*******	**
thus	*******	**	*
that is/i.e.	****	****	*
therefore	****	***	*

Table 4.3 Distribution of linking adverbials across disciplines, textbooks only (each '*' represents 100 occurrences per million words)

	Business	Engineering	Humanities	Natural Science	Social Science
however	**********	**********	********	**********	**********
for example/e.g.	**********	**********	*******	**********	**********
thus	*********	**********	*****	********	********
that is/i.e.	****	*********	**	***	***
therefore	****	*******	****	*****	***

(*however*), exemplifying a concept (*for example, that is*), and presenting logical inferences (*thus, therefore*). For example:

> The value of p*(t) will be located at the same abscissa value, and the curve of p* versus Pr* may then be used to determine p*(T). Notice, however, that there is no longer a need for the p* scale, since once you find T on the abscissa you can proceed directly to the curve. The p* scale can therefore be omitted.
>
> People, especially young ones, get better at a lot of things as they get older. For example, we would expect kindergarten students' vocabularies to increase over the course of time whether we gave them special vocabulary lessons or not. Thus, if a researcher reported that kindergarten students increased their vocabularies by 15% when they were exposed to an enrichment program for a year, we wouldn't know whether to be impressed or not. [. . .] That is, we would need to measure vocabulary gains over the same period in a control group of students who did not have the enrichment program.

It is interesting to further compare textbooks from different academic disciplines for their reliance on linking adverbials (see Table 4.3). Business and Engineering textbooks show the greatest reliance on linking adverbials. In both disciplines, linking adverbials are most common in technical discourse that explains the derivation or application of mathematical formulas or procedures. The following excerpt, from a graduate level economics textbook, shows the use of several less common linking adverbials working together with the more common forms

listed in Table 4.3. In this style of discourse, nearly every sentence is linked with an adverbial specifying the logical relationship to the other sentences in the discourse:

> **Text Sample 4.20:** Textbook, graduate business (economics; tbecn3.dec)
> Linking adverbials are underlined.
>
> Hence, from our theoretical standpoint, (2.5) suffers from the same drawbacks as does the Friedman model. Note, however, that the two models are not identical. [. . .] there is nothing in utility theory used as a descriptive device that precludes interactions between the behavior and tastes of different consumers. On the contrary, it seems unrealistic to suppose that preferences' are exogenous, God given, and unchangeable. Rather they are socially inherited and-conditioned and are governed by the conventions of technology and social institutions. At the same time, goods have social functions, particularly in communicating between people, see for example Becker <(1974)>. Individuals need to define themselves vis a vis others and to communicate these definitions so that they are treated as they would wish; a consumption life style is thus part of this definition of identity. Since belonging to certain social groups and not belonging to others is part of the sense of identity, it is inevitable that, to some extent, households will pattern their consumption and market behavior on that of other households. Conversely, there will be some kinds of behavior from which a household will consciously wish to dissociate itself.

4.8 Dependent clauses

Dependent clauses are often considered to be a type of linguistic complexity, and as a result, they have been associated with writing rather than speech. However, Figure 4.10 shows overall patterns of use that run exactly opposite to these prior expectations, with dependent clauses overall being more common in the spoken university registers than in the written registers. When we consider the different structural types of dependent clause, we find that the patterns are more complex: relative clauses are much more common in the written registers, while adverbial clauses and complement clauses are much more common in the spoken registers.

4.8.1 Relative clauses

Relative clauses have two primary functions: to specify the reference of the head noun, or to provide elaborating information. In many cases, a single relative clause will serve both functions. As Figure 4.10 shows, relative clauses are much more common in written university registers than in the spoken registers, as exemplified in the following.

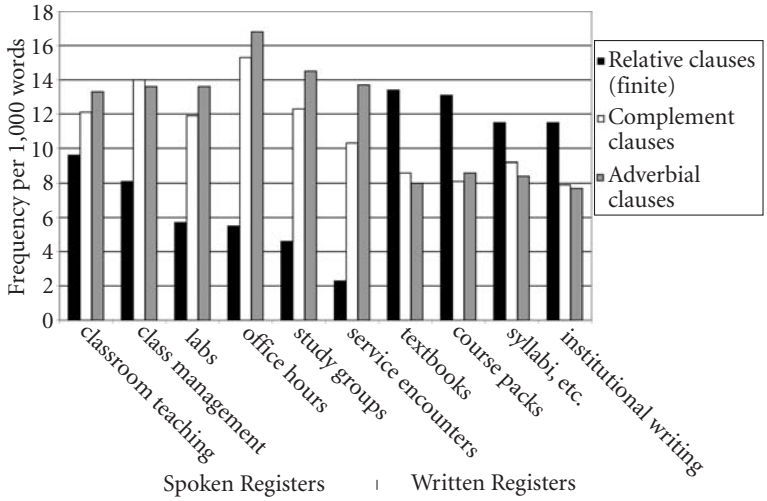

Figure 4.10 Dependent clause types across registers

Relative clauses specifying the reference of the head noun:

> Each gene has a regulatory region upstream from the sequence **which determines the structure of the protein**. [Natural science textbook]
>
> In another detail from this manuscript are the same curious geometric rock forms **that we saw at Ajanta**. [Humanities textbook]

Relative clauses that provide elaborating information (in addition to specifying the reference of the head noun):

> This isolation from the effect of selection is also true of some introns and pseudogenes **[which are able to accumulate changes [which have no effect on either the phenotype of the organism or the function of the DNA]]**. [Natural science textbook]
>
> Most firms use hybrid structures, **in which two of the three departments typically report to the same executive.** [Business textbook]

In addition, there are also frequent 'reduced' (nonfinite) relative clauses in the written registers; these clauses often have passive voice verbs. The following textbook excerpt illustrates the dense use of both types of relative clause:

> **Text Sample 4.21a:** Textbook, graduate social science (tbsoc3.sjh)
> Finite relative clauses are in **bold;** passive voice nonfinite relative clauses are underlined
>
> As we shall see below, the structural components of the lifeworld become subsystems of a general system of action, **to which the physical substratum of the**

> **lifeworld is reckoned along with the "behavior system."** The proposal **I am advancing here**, by contrast, attempts to take into account the methodological differences between the internalist and the externalist viewpoints connected with the two conceptual strategies. From the participant perspective of members of a lifeworld it looks as if sociology with a systems, theoretical orientation considers only one of the three components of the lifeworld, namely, the institutional system, **for which culture and personality merely constitute complementary environments**. From the observer perspective of systems theory, on the other hand, it looks as if lifeworld analysis confines itself to one societal subsystem specialized in maintaining structural patterns (pattern maintenance); in this view, the components of the lifeworld are merely internal differentiations of this subsystem **which specifies the parameters of societal self maintenance**.

Although relative clauses are a major feature distinguishing between spoken and written registers, they are also relatively common in some spoken registers. In particular, the academic classroom registers – classroom teaching and class management talk – use relative clauses to a greater extent than the interpersonal academic registers (labs, office hours, and study groups). The following text excerpt illustrates the relatively dense use of relative clauses in classroom teaching:

> **Text Sample 4.22:** Classroom teaching, upper division, natural science (natglleudln105)
> Finite relative clauses are in **bold;** sentence relatives are in ***bold italics.***
>
> So [. . .] eventually we're going to lose a lot of water **that's stored in the system**. Now, why is this an issue? Well, [. . .] you might be concerned with does Arizona have a water supply **which is sustainable *which means the general definition is will there be enough to meet the needs of the present without compromising the ability of the future to have the availability to have the same resources***.
> [. . .]
> The Colorado river is no longer sustainable, the system **that used to depend on the discharge of the Colorado river down the gulf** is no longer sustainable. So I think it's really inappropriate term to call the Colorado river a sustainable resource. It may be for humans but it's not for other parts of the earth's systems **that were dependent on the Colorado river**. So we've got to think about all parts of our systems when we look at sustainability just not the human dimensions ***which is what this term safe yield considers***.

Many of the relative clauses in classroom teaching are 'sentence relatives'. These are actually a type of adverbial clause rather than a postnominal modifier (see LGSWE, p. 867). That is, sentence relatives provide a comment on a whole proposition, rather than modifying a particular head noun. Sentence relatives are often used for clarification, as in Sample 4.22 above. (The first sentence relative provides a

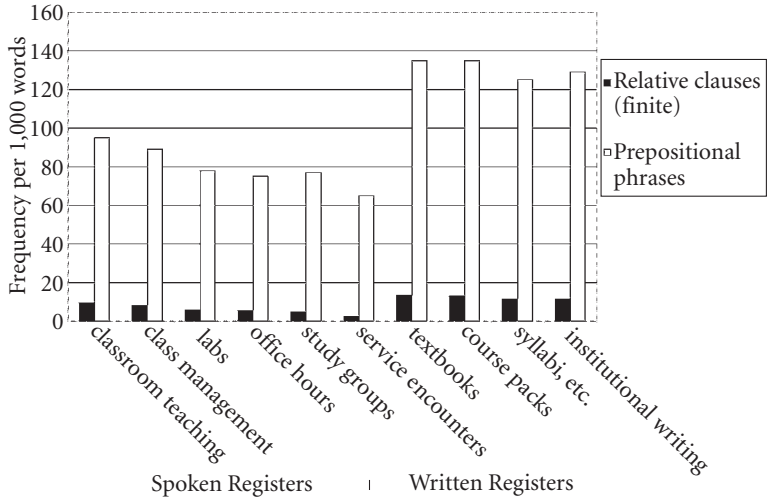

Figure 4.11 Relative clauses and prepositional phrases across registers

definition of the term 'sustainable'; the second sentence relative clarifies the use of the term 'safe yield'.)

In addition, sentence relatives are often used to express personal attitudes, as in the following examples from classroom teaching:

> And underneath his clothes he had on a union suit, long underwear, one piece. [He] Stripped it off, used that as a rope, lowered it down to Powell, and pulled him up by his longjohns, OK? **Which I always thought was a great story**. [upper division humanities; humhileudmn084]
>
> Um, the way, it sounds, it's, not as much as it should be. Or, they would like it to be. **Which I guess is not saying a whole lot because that's always the way it is**. [upper division humanities; humenleudhi087]

The more frequent use of relative clauses in the written university registers is related to the general reliance on noun phrase structures in those registers (see Figures 4.1 and 4.2 above). Prepositional phrases are another feature that occurs commonly with noun phrases in informational, written prose. Similar to relative clauses, prepositional phrases are commonly used to modify a head noun, identifying the reference or providing elaborating information. However, as Figure 4.11 shows, prepositional phrases are actually much more common than relative clauses. (Prepositional phrases can also function as adverbials. However, their use as noun modifiers is considerably more common than their use as adverbials in expository written registers; see LGSWE Chapters 8 and 10.) Sample 4.21b repeats Sample 4.21a above, highlighting the use of prepositional phrases as nom-

inal modifiers. The majority of these forms are *of*-phrases, but other prepositions (such as *with*, *between*) function in similar ways to modify a head noun.

> **Text Sample 4.21b:** Textbook, graduate social science
> Prepositional phrases as nominal modifiers are in ***bold italics.***
>
> As we shall see below, the structural components ***of the lifeworld*** become subsystems ***of a general system of action***, to which the physical substratum ***of the lifeworld*** is reckoned along with the "behavior system." The proposal I am advancing here, by contrast, attempts to take into account the methodological differences ***between the internalist and the externalist viewpoints*** connected with the two conceptual strategies. From the participant perspective ***of members of a lifeworld*** it looks as if sociology ***with a systems, theoretical orientation*** considers only one ***of the three components of the lifeworld***, namely, the institutional system, for which culture and personality merely constitute complementary environments. From the observer perspective ***of systems theory***, on the other hand, it looks as if lifeworld analysis confines itself to one societal subsystem specialized in maintaining structural patterns (pattern maintenance); in this view, the components ***of the lifeworld*** are merely internal differentiations ***of this subsystem*** which specifies the parameters ***of societal self maintenance***.

Although they are less noticeable, prepositional phrases are much more pervasive than relative clauses in academic written registers. Further, because they are so compact, prepositional phrases are often used in sequence, resulting in highly complex noun phrases with multiple modifiers. The head nouns in these structures are often relatively general terms, while the important new descriptive information is usually provided in the following prepositional phrases. For example:

> This **patterning** [of behavior] [by households] [on other households] takes time.
>
> Each new **level** [of system differentiation] opens up **space** [for further increases [in complexity]], that is, [for additional functional specifications and a correspondingly more abstract integration [of the ensuing subsystems]].
>
> This may indeed be **part** [of the reason [for the statistical link [between schizophrenia and membership [in the lower socioeconomic classes]]]].

Learning to understand, and eventually to produce, such structures is one of the main linguistic challenges that students encounter as they progress through a university education and learn to deal with written academic registers.

4.8.2 Adverbial clauses

Unlike relative clauses, adverbial clauses are overall more common in spoken university registers than in the written registers (see Figure 4.10). There are many specific meanings expressed by adverbial clauses, depending on the choice of ad-

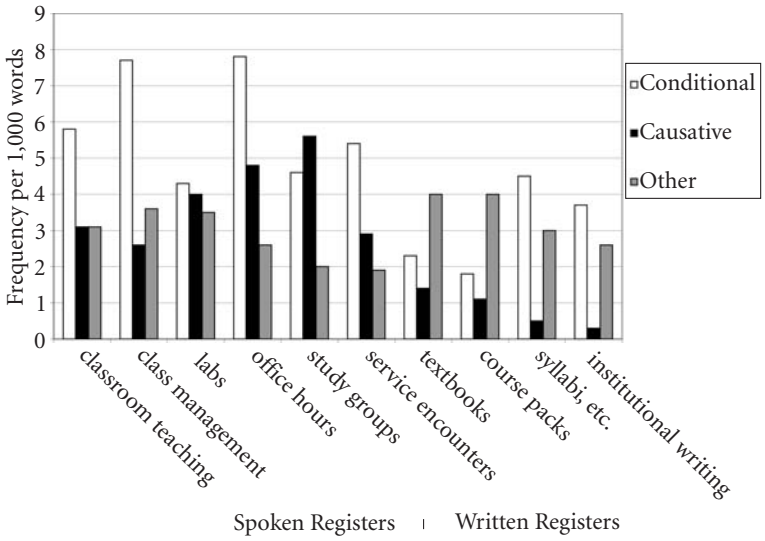

Figure 4.12 Breakdown of finite adverbial clause types across registers

verbial subordinator. The present analysis divides these into three major meaning domains: conditional (*if*), causative (*because*), and other (e.g., *after, before, while, until, as, since, so that*).

Figure 4.12 shows the breakdown of finite adverbial clauses across these semantic classes. Conditional clauses are by far the most common, especially in class management talk and in office hours. These registers can be very directive, and conditional clauses cushion the force of these directives by providing possible options and anticipating alternatives. For example:

Text Sample 4.23: Office hours, business (busbaoh_n156)
Conditional adverbial clauses are **in bold**.

Instructor:	Now here's what you should do **if you want me to go over your graduation papers** you gotta do it this semester because **if you wait until the summer or the fall**
Student:	uh huh
Instructor:	then you'll have to go through somebody else and it'll just take longer
Student:	yeah so I can do that then and what do I – do you just file
Instructor:	go down to Rosemary's office and get the papers, two sets of papers one for the college of business and one for NAU.
Student:	and I can do it now
Instructor:	mhm you can do it this semester and **if she says no**, you tell her why
Student:	OK [unclear]

In addition, office hour sessions often involve intensive individualized teaching, and conditional adverbials support the explanations in those discussions. For example:

> **Text Sample 4.24:** Office hours, business (socpooh_n222)
> Conditional adverbial clauses are **in bold**.
>
> Instructor: Um, yeah that's, I mean that's a good point that you make – like for example **if you look in**, **if you look in Chaco canyon**, **if you**, **if you read about the history of the Anasazi**, from what little of it I understand, uh, there had been, Native Americans living in Chaco canyon for, thousands of years
> [. . .]
> And some people argue that, you know other societies don't have this kind of perspective toward, the world around them, although I would always, you know, caution people that often individuals who are critical of western society, want to believe that other societies live in some way harmoniously, but I mean **if you look at**, **if you look at indigenous populations in Native America**, they engage in all kinds of desertification and they, I mean **if you, you know, why did Chaco canyon fail** well **if you go to Chaco canyon** and you talk to them, you'll find that they cut down all the trees in the area and that didn't help very much.

It is interesting to note that almost 50% of all conditional clauses in office hours begin with 'if you. . .'. In directive contexts, this is a polite way of telling the student what to do, but this form is used more commonly in teaching contexts, encouraging the student to adopt a particular point of view or supposition for the sake of the argument.

Among the written registers, conditional adverbial clauses are most common in written course management (syllabi, etc.) and in institutional writing. Many of these clauses also begin with 'if you' and serve directive functions similar to classroom management talk and office hours:

Examples from course management writing:

> None of the questions are intended to be tricky, please ask if you have questions.
>
> If you work in a group, be sure to indicate which student's input numbers you used.
>
> Show your work! If you don't show your work, or you have errors in the work, I may take off points even if you have the correct answer.

Examples from institutional writing:

> If you believe you qualify, obtain a Request for Application Fee Waiver form from the Graduate Center.
>
> If you have not completed the writing proficiency requirement at CSUS or another CSU campus, you should do so during your first semester. If you have

questions regarding when the writing proficiency exam is offered throughout the school year, contact the Testing Office or visit their home page.

Causative adverbial clauses are generally less common than conditionals. However, study groups are exceptional here: Figure 4.12 shows that causative adverbial clauses are actually more common than conditionals in this register. Students often partake in intense negotiations in study groups, and causative adverbial clauses are used to provide supporting arguments or justifications for proposed answers or explanations; for example:

Text Sample 4.25: Study Group, natural science (natcmsgldgn016)
Causative adverbial clauses are in **bold.**

A: So it would be seconds squared times seconds
B: yeah times seconds **because it should be joules seconds**.
[. . .]
A: Doesn't that just make it one second?
B: Yeah he wants [unclear] yeah it makes it one second.
A: OK.
B: Yeah it makes it one second.
A: Alright.
B: **Because the one cancels it out over there**.
A: OK
B: There. **Cos that cancels th- cancels – cos the top, you're making this**.
[. . .]
A: Actually that I rounded it that's probably why I got a different answer. And then I multiplied that by one minute over sixty seconds and I got two point five minutes. Maybe its just cos of my rounding. [long pause] I think so **because I see I you have to ch- she told me to change miles**
B: OK. So 3S would have
A: So 3S would – could have most it no it could have at the most two electrons. **Cos in each orbital you can have the two**.

The 'other' adverbial clauses (e.g, *as, since, while*) are more common in the written registers, especially textbooks and course packs. Interestingly, these dependent clauses are often vague or imprecise, because they begin with adverbial subordinators that have multiple meanings. For example, the subordinator *as* can express manner, reason, or time meanings; the subordinator *since* expresses reason and time meanings; and the subordinator *while* expresses concession/contrast and time meanings (see LGSWE 846-50). Subordinators like *so that* and *such that* express the circumstances or result of an event. All of these subordinators are found most commonly in the written academic registers; the following examples are from textbooks:

> As you will see in this chapter, many behavioral differences among organisms, both within and across species, correspond to genetic and other biological differences.
>
> The process continues interminably, as the signifiers lead a chameleon-like existence, changing their colours with each new context.
>
> For one thing, such an agreement could be very costly since similar agreements would have to be negotiated with all users.
>
> The sparse matrix can be represented as a graph, such that each node represents a row or column of the matrix [. . .]

In addition, non-finite adverbial clauses – especially *to*-clauses expressing purpose meanings – are found more commonly in the written registers; the following examples are from a course pack:

> In order to understand designs you will need to learn their explanations as well as their identifications.
>
> To really understand a design we must make sure we are thinking about what it was intended to be. . .

4.8.3 Complement clauses

Similar to adverbial clauses, complement clauses are considerably more common in the spoken university registers than in the written registers. In fact, Figure 4.10 (above) shows that complement clauses are even more common than adverbial clauses in the interactive spoken registers (office hours, study groups, and service encounters).

When we consider the different types of complement clause, we find a more complicated pattern. Figure 4.13 shows that the overall greater frequency of complement clauses in speech is mostly due to a single clause type: *that*-clauses. WH-clauses are also much more common in speech than in writing, but the overall frequencies of WH-clauses are much lower than *that*-clauses. In contrast, *to*-clauses are about equally common in the spoken and written registers.

Most of these complement clauses are controlled by verbs. *That*-clauses and *to*-clauses controlled by adjectives and nouns have much lower frequencies, and they have the opposite distribution: more frequent in the written registers.

There are even more specific differences in the use of complement clauses across registers. For example, in office hours *that*-clauses usually occur without the complementizer *that*; the controlling clause usually has the pronoun *I* as subject; and the main verb is *think*, *mean*, or *guess*. These constructions are used to

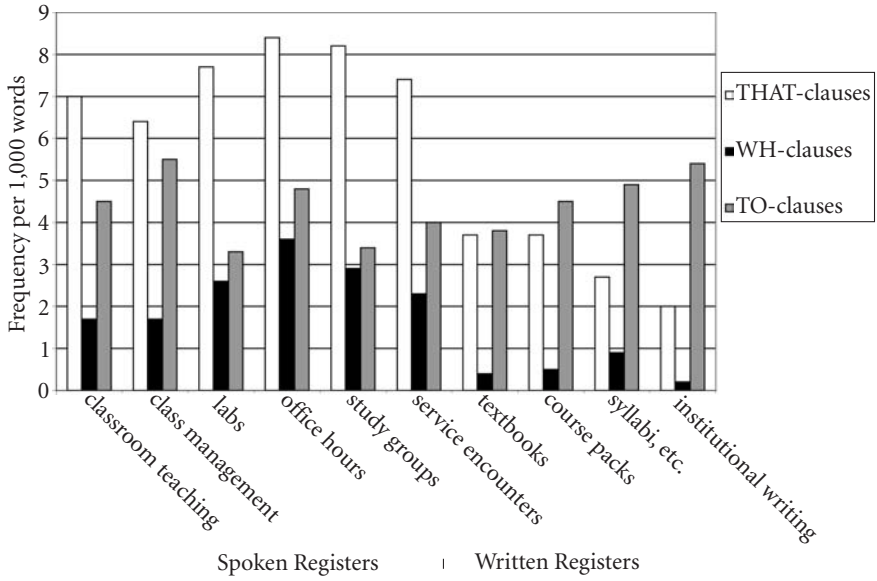

Figure 4.13 Breakdown of complement clause types across registers

express a generalized kind of hedging or lack of certainty about the proposition contained in the *that*-clause:

> **Text Sample 4.26:** Office Hour, natural science (natgloh_n003)
> *That*-clauses are marked in [ ]; the controlling main clause is underlined; <0> marks omitted complementizers.
>
> Student: I mean [<0> if you were going to be running the test for four days you'd look at it for four days] and I think [<0> that's what you said in class] is [that you should do it at least as long as you're going to run the test].
>
> Instructor: Yeah .. yeah I guess [<0> I just hadn't seen when I read it [that um you defined those two things very well]], but um but um I guess [<0> you could have meant that].
>
> [. . .]
>
> Student: P4 is right here, which is pretty close to the D2. Yeah D9. So I think [<0> those are the only ones that match]. The only P that's on here is P, well P3 and P4.
>
> Instructor: mhm, and where are they plotted on your paper?
>
> Student: There's P4. I think [<0> that's the only one on there].

That-clauses have somewhat different characteristics in classroom teaching: the complementizer *that* is usually retained, and the complement clauses occur with a much larger set of controlling verbs in the main clause (e.g., *argue, assume, believe,*

claim, decide, feel, find, hope, mean, notice, realize, see, show, think). Three of these controlling verbs are especially common in classroom teaching: *know, say*, and the copula *BE*.

The combination *know* + *that*-clause in classroom teaching is used most commonly with the subject pronouns *we* or *you*. This structure introduces statements that have the status of background information. That is, the statements have the implicit assumption that they do not require further supporting evidence. In some cases, these statements are simply reminding students about information that has previously been presented:

> We don't like to work with conductances or admittances, we like to work with resistances, and impedances, but sometimes we have to work with the other one, we – you know [that conductance is one over R].
>
> If we're talking about break-even in units, we know [that each one of the units has a contribution margin of twenty-four dollars].

In other cases, these constructions are used to identify cultural background knowledge that students should share:

> Now we know [that in our classrooms that kids come to the classroom from many different homes].
>
> Most of you know [that once, once a trial is underway jurors are not supposed to discuss the case among themselves until the point of deliberation]

In the above examples, the instructor presents the information in the *that*-clause as if it were established fact that the students should already know. Because it has this function, instructors can further exploit this complement clause construction to present their own knowledge and beliefs, giving the statements the status of accepted fact that should not be challenged, even in cases where the student might not already 'know' the proposition. For example:

> Now we know [that multi-ethnic literature is important for students from all backgrounds]. We know [that multi-ethnic literature helps students of diverse backgrounds gain pride and confidence . . .]
>
> Are people really always reporting accurately what's happened? Well we know [that varies a lot depending on the nature of the survey, the kinds of questions asked, even the way the questions are worded].

That-clauses controlled by the verb *SAY* have somewhat different functions. In most spoken registers, these constructions are used to simply report what someone has 'said', as in the following example from a study group (reconstructing what the instructor had said in class):

> She said [we have until the last week to get it done].

However, in classroom teaching, *say* + *that*-clause is usually used in to rephrase an idea or to present a hypothetical position, rather than actually reporting previous speech:

> if I value something as a means to something else, we could also say [that is has instrumental value]
>
> if I were to combine all of those together add all those numbers up we can say [that the series combination of all those resistors together behaves in exactly the same way]
>
> Look if you want to compare it you can say [that um the rate of female uh victimization by homicide is about one point five per hundred thousand.
>
> So let me start to ask you some questions along these lines – let's say [that we know that these are social perception categories] – let's say [<0> we haven't been particularly effective in the past] and let's say [<0> we're trying to make change in schools relative to working with these kids] – why is change coming so . . hard? why is change so slow?

The copula *BE* is also extremely common as a controlling verb with *that*-clauses in classroom teaching. This construction is used for information packaging and the expression of 'stance': The subject of the main clause identifies the status of the information (e.g., an 'explanation', 'argument', or 'claim'), and then the new information itself is presented in the *that*-clause following *BE*. For example,

> An alternative explanation is [that muscle movement may simply be an overflow from a cortex].
>
> The other argument is [that people moved around in mass like they do now]
>
> The basic claim is [that these unlearned behaviors that are relatively universal within a species are instincts].
>
> Sartre's point here is [that we confront the world in a questioning mode]
>
> but the only issue here that we're talking about is [that observability depends only on the A matrix and the C matrix]

In textbooks and course packs, *that*-clauses occur with lower frequencies, but they are used with a wider array of different controlling verbs. For example, the following verbs all occur with moderate frequencies controlling *that*-clauses in course packs: *admit, argue, assert, assume, believe, claim, conclude, decide, demonstrate, estimate, find, imply, is, know, maintain, mean, note, realize, recognize, remember, report, require, say, show, state, suggest, suppose, think, understand*. *That*-clauses are comparatively rare in course management writing and institutional writing.

WH-clauses are generally less common than *that*-clauses, but they are similar to *that*-clauses in being primarily a feature of spoken registers. WH-clauses are

especially common in office hours, occurring with controlling verbs like *believe, explain, know, remember,* and *see*:

> You know [what I'm saying]?
>
> I didn't know [how to put together the points], well cos that's [what you gave me] and I I I didn't I didn't know [how to connect em].

The verb *BE* is the most common form controlling WH-clauses in office hours. This construction usually occurs with a demonstrative pronoun as subject and functions to focus attention on the new information contained in the WH-clause:

> Ah, OK. So we need to, OK, so this is [what we needed to do].
>
> So what things were important to us? Well one of the things was naval power, and that's [why we had that conference], to help control naval power.

To-complement clauses are relatively common in both spoken and written registers. They are most common in the directive registers which share the primary purpose of telling students what they should be doing: classroom management, course syllabi and assignments (written course management), and institutional writing. *To*-clauses are actually one of the major linguistic devices used for giving directives. However, the specific forms used vary across registers.

In spoken classroom management, only a few verbs are commonly used controlling a *to*-clause – *get, is, would like, try/trying*, and especially *want*:

> You're supposed to make a survey, an interview, to get [to know a child]. Next September, you're gonna have twenty-five charges in front of you. Lisa, when the kid walks in the room, you're gonna have to get [to know the child].
>
> and so one of the last, uh topic or the last requirement is [to do a movie review]
>
> Uh what I would like [to do with you today] is try [to jump ahead about one week and get caught up].
>
> I want [to remind you again that Tuesday we will not be meeting]
>
> You might want [to jot this will down for future reference].
>
> For next class I want you [to do two things], and we can start talking about them today.

Most of these same verbs can also be found controlling *to*-clauses in written course management and institutional writing (except the verb *get* + *to*-clause, which is restricted to speech). Of these, the copula *be* is especially common with this function in the written directive registers.

Course syllabi and assignments:

> Your job is [to explain the code as fully as possible].

> Attempting the homework is one way to gain practice and confidence in the material. Another way is [to attempt homework problems not assigned].

Institutional writing:

> The goal of the program is [to help keep students in the University through graduation].
>
> The purpose of our doctoral residency requirement is [to provide you with opportunities for conferences, seminars . . .]

This construction functions in a similar way to other complement clause constructions controlled by the copula *BE*. In this case, the grammatical subject identifies how this information is relevant to the student (e.g., *your job, the goal, the purpose*), while the new information is given in the *to*-clause following *BE*.

Many other verbs can control *to*-clauses in the written registers, with similar directive functions, including: *choose, continue, desire, expect, fail, intend, plan, seek,* and *wish*.

Course syllabi and assignments:

> Students should expect [to spend approximately six to eight hours each week. . .]
>
> You may choose [to work with her book and your questions, probings, and ponderings of what she has to say].

Institutional writing:

> You should not plan [to support yourself by working while enrolled].
>
> International students who desire [to pay all or a portion of their non resident tuition fees on the installment plan] must visit the CSUS Billing Services Office. Students wishing [to pay on an installment basis] will be required [to execute an agreement at the time of registration at the Billing Services Office].
>
> Biological Sciences majors who intend [to pursue a teaching credential] must complete the science subject matter program which is described in this catalog. [. . .] The Science Teaching Credential allows graduates [to teach all four of the sciences . . .]

Passive verbs are also common controlling *to*-clauses in the written directive registers: *be allowed, be asked, be authorized, be designed, be encouraged, be expected, be intended, be permitted, be required*.

Course syllabi and assignments:

> You are encouraged [to take advantage of this service].
>
> Students are expected [to arrange their schedules to leave time for the all too normal delays that one encounters on Atlanta's highways].
>
> You are required [to attend all of the final project oral presentations].

Institutional writing:

> All students are invited [to become involved with the student media organizations on campus].
>
> All new international students are required [to attend a formal orientation program just before the beginning of the semester; the program is designed [to welcome you to the University . . .]
>
> All students are required [to earn a high school diploma on or before their original graduation date . . .]

I return to the directive functions of these complement clause constructions in Chapter 5, which focuses on the expression of stance in university registers. Similarly, complement clauses controlled by nouns and adjectives are used mostly to express stance, and so they are also described in Chapter 5.

4.9 Chapter summary

This chapter has surveyed linguistic differences across university registers and disciplines with respect to a number of grammatical and syntactic features. Additional descriptions of individual linguistic features are provided in the investigations of stance (Chapter 5) and lexical bundles (Chapter 6). Chapter 7, then, investigates how these linguistic features work together to define systematic patterns of variation among university registers.

The present chapter has shown that even at the level of basic grammatical features – content word classes; noun and verb semantic categories; variations in verb tense, aspect, and voice; discourse connectives, and dependent clause types – different registers and different disciplines at the university manipulate the linguistic resources of English in quite different ways, reflecting a range of important functional considerations.