Unit Eight

Constructing a Research Paper II

In this final unit, we deal with the remaining parts of a research paper in this order:

Introductions

Discussion sections

Titles

Abstracts

Acknowledgments

Introductions

It is widely recognized that writing Introductions can be slow, difficult, and troublesome for many writers. A very long time ago, the Greek philosopher Plato remarked, "The beginning is half of the whole." Indeed, eventually producing a good Introduction section always seems like a battle hard won.

Writing the Introduction of an RP is particularly troublesome. In some kinds of texts, such as term papers or shorter communications (including case reports), it is possible to start immediately with a topic or purpose statement, as in these examples.

The purpose of this paper is to . . . .

This paper describes and analyzes . . . .

My aim in this paper is to . . . .

In this case report, we discuss . . . .

However, this kind of opening is increasingly uncommon in longer and more substantial RPs (only a small percentage of contemporary published RPs start in this way). In fact, statements like these typically come at or near the end of an RP Introduction. Why is this? And what comes before?

We believe that the answer to these questions lies in two interconnected motivations. The first part of the answer lies in the need to appeal to the readership. When a paper is written to fulfill a course requirement, the reader is set and known. (Indeed the reader is *required* to read and evaluate your paper!) On the other hand, a paper that is designed for the external world needs to appropriately situate the work within the existing body of related research and attempt to attract an audience. We can illustrate the importance of these purposes by taking the case of one of those few published papers that actually does start by announcing the present research. Here is the opening sentence of the Introduction.

> In this paper, we address the problem of scheduling and balancing sports competitions over multiple venues (Urban and Russell, 2003).

The Urban and Russell paper, "Scheduling Sports Competitions over Multiple Venues," was published in a journal called the *European Journal of Operational Research,* a journal whose audience is researchers and practitioners working in the area of Operational Research/Management Science. Doubtless, the very specific opening to the Urban and Russell paper will appeal immediately to those researchers actively involved in this specific topic. On the other hand, it may "turn off" many other readers of the journal—readers who have no direct interest in the actual scheduling of sporting events.

To explain the second half of the answer as to why simple purpose statements are uncommon first sentences, we believe a metaphor—that of *competition* as it is used in Ecology—is relevant for the writing of RP Introductions. Just as plants compete for light and space, so writers of RPs compete for acceptance and recognition. In order to obtain this acceptance and recognition, many writers will employ a widely used organizational pattern. In this first task, we would like you to try to identify this pattern.

TASK ONE

Read the Introduction and then discuss the purposes of the sections on page 330 with a partner.

Who Says We Are Bad People?
The Impact of Criticism Source and Attributional Content on Responses to Group-Based Criticism

Rabinovich, A., and Morton, T. A. (2010)
Personality and Social Psychology Bulletin, 36, 524–526.

❶ Criticism is an important tool for stimulating change within groups. ❷ Criticism provides objective information about the behavior of one's group, and—provided that criticism is taken on board—it has the potential to initiate reform of sub-optimal behavior and practices. ❸ However, previous research has noted that criticism is often met with defensiveness and rejection, meaning that criticism is more often a "missed opportunity" for creating positive change (see Hornsey, 2005). ❹ This is because criticism threatens the group's positive self-image and may undermine collective self-esteem. ❺ Other research, however, suggests that threat to the public image of one's group can elicit actions intended to reform the group rather than simply defend its current practices (e.g., Iyer, Schmader, & Lickel, 2007). ❻ Thus, it seems that group-directed criticism might sometimes provoke negative reactions but that at other times it might stimulate positive change. ❼ From both theoretical and practical points of view, it is important to understand the factors that determine which of these two responses occurs in response to group-directed criticism.

❽ One key factor that determines responsiveness to criticism is the identity of the critic. ❾ Research on the intergroup sensitivity effect shows that ingroup critics are generally received more positively than outgroup critics—even when the content of their criticism is identical (Hornsey, Oppes, & Svensson, 2002). ❿ The reason behind this effect is that ingroup critics are perceived to have different motivations than outgroup critics (Hornsey & Imani,

2004). ⓫ Ingroup critics are attributed with constructive motives (i.e., genuine desires to improve the group), facilitating acceptance of their message. ⓬ Outgroup critics are instead attributed with destructive motives (i.e., attempting to demoralize the group or struggling for inter-group supremacy), leading to resistance and rejection. ⓭ Thus, responses to criticism are said to be driven not by what people say but by why they are perceived to be saying it.

⓮ In most situations, however, this process of attribution is likely to go in both directions; just as targets make attributions about their critics' motives, critics typically make attributions about the causes of the targets' behavior. ⓯ These attributions may be explicitly communicated, or they may be merely implied by the criticism. ⓰ Although previous research has examined the attributions that targets make about their critics, research has not yet investigated the attributions that critics make about and communicate to their targets. ⓱ With this in mind, the primary aim of the present research was to explore how the attributional content of criticism might further moderate responsiveness to group-directed criticism.

Sentences 1–2 _____

Sentences 3–13 _____

Sentences 14–15 _____

Sentence 16 _____

Sentence 17 _____

How would you evaluate the flow of information? Does the organization seem familiar to you? Does it resemble the Introductions in your field in any way? Does it resemble the moves in Figure 16 on page 331?

Creating a Research Space

As you may have discovered in Task One, the Introductions of RPs typically follow the pattern in Figure 16 in response to two kinds of competition: competition for readers and competition for research space. This rhetorical pattern has become known as the create-a-research-space (or CARS) model (Swales, 1990).

FIGURE 16. Moves in Research Paper Introductions

Move 1—Establishing a research territory

a. by showing that the general research area is important, central, interesting, problematic, or relevant in some way (optional)

b. by introducing and reviewing items of previous research in the area (obligatory)

Move 2—Establishing a niche[**]

by indicating a gap in the previous research or by extending previous knowledge in some way (obligatory)

Move 3—Occupying the niche

a. by outlining purposes or stating the nature of the present research (obligatory)

b. by listing research questions or hypotheses (PISF[***])

c. by announcing principal findings (PISF)

d. by stating the value of the present research (PISF)

e. by indicating the structure of the RP (PISF)

* The one exception to this occurs in certain RPs that deal with "real world" problems, as in Engineering. In some cases, Move 1 deals with these problems without a literature review and the previous research on attempted solutions is postponed to Move 2 (see the text on pages 335–336).

** In ecology, a niche is a particular microenvironment where a particular organism can thrive. In our case, a niche is a context where a specific piece of research makes particularly good sense.

*** PISF = probable in some fields, but rare in others.

TASK TWO

We begin our more careful analysis with an Introduction to an RP from the humanities. The paper has been adapted from one John wrote for a History of Art seminar he audited on nineteenth-century realism. Read it and answer the questions on page 333.

Thomas Eakins and the "Marsh" Pictures

❶ Thomas Eakins (1844–1916) is now recognized as one of the greatest American painters, alongside Winslow Homer, Edward Hopper, and Jackson Pollock. ❷ Over the last thirty years, there have been many studies of his life and work,[1] and in 2002 there was a major exhibition devoted entirely to his art in his home city of Philadelphia. ❸ His best-known pictures include a number of rowing and sailing scenes, several domestic interiors, the two large canvasses showing the surgeons Gross and Agnew at work in the operating theater, and a long series of portraits, including several of his wife, Susan McDowell. ❹ The non-portraits are distinguished by compositional brilliance and attention to detail, while the portraits—most of which come from his later period—are thought to show deep insight into character or "psychological realism."[2] ❺ In many ways, Eakins was a modern late nineteenth century figure since he was interested in science, in anatomy, and in the fast-growing "manly sports" of rowing and boxing. ❻ In his best work, he painted what he knew and whom he knew, rather than being an artist-outsider to the scene in front of him. ❼ Among Eakins' pictures, there is a small series of scenes painted between 1873 and 1876 showing hunters preparing to shoot at the secretive marsh birds in the coastal marshes near Philadelphia. ❽ Apart from a chapter in Foster (1997), this series has been little discussed by critics or art historians. ❾ For example, these pictures

[1] Book-length studies include Hendricks (1974), John's (1983), Fried (1987), Wilmerding (1993), Foster (1997), and Berger (2000).

[2] The question of what actually makes a work of art "realistic" is, of course, one of the most discussed issues in the history of art, and will not be directly addressed in this paper. For analyses of realism, see, among others, Nochlin (1990).

were ignored by Johns in her pioneering 1983 monograph,[3] perhaps because their overall *smallness* (physically, socially and psychologically) did not fit well with her book's title, *Thomas Eakins: The Heroism of Modern Life.* ⑩ These pictures are usually thought to have come about simply because Thomas Eakins used to accompany his father on these hunting/shooting trips to the marshes.[4] ⑪ However, in this paper I will argue that Eakins focused his attention on these featureless landscapes for a much more complex set of motives. ⑫ These included his wish to get inside the marsh landscape, to stress the hand-eye coordination between the shooter and "the pusher," and to capture the moment of concentration *before* any action takes place.

1. Divide the text into the three basic moves.
2. How many paragraphs would you divide the text into? And where would you put the paragraph boundaries?
3. Look at Figure 16 again. Where in this Introduction would you divide Move 1 into 1a and 1b?
4. What kind of Move 2 did you find?
5. What kind of Move 3a did you find?
6. Underline or highlight any words or expressions in Sentences 1 through 4 that have been used "to establish a research territory."
7. How many citations are there in the text and footnotes?
8. Footnotes and endnotes are widely used in the humanities. Consider carefully the four footnotes in this Introduction. Do you think that this information is rightly footnoted, or do you think sometimes it would have been better in the main text? Conversely, is there material in the main text that you would have put in footnotes? What do your decisions tell you about the use of notes?

[3] Johns' book is an example of the "new" art history with its detailed attention to the *social* conditions and circumstances that give rise to a particular form of art.
[4] Eakins contracted a bad case of malaria on one of these trips, and this brought his visits—and this series of paintings—to an end.

In the opening section of Unit Seven, we argued that RPs were not simple accounts of investigations. If you now look back at the Introduction to the Eakins paper, you will note that it does not explicitly state the motive or rationale for the study. Rather, the study seems to emerge as a natural and rational response to some kind of gap in the literature on Thomas Eakins.

In fact, this is not how the study started at all. The course John audited was an advanced seminar in nineteenth-century realism, and he was already familiar with the paintings of Thomas Eakins. John is also a keen amateur birdwatcher. As he started to read the books on Eakins, he noticed that the critics sometimes misidentified and mislabeled the birds in Eakins' marsh pictures and sketches. This then was what made him focus on these pictures; however, he soon realized that the mistakes about the birds would not make a suitable main theme for a history of art paper—they could only be a small part of the story.

TASK THREE

What is your response to these questions? Discuss them with a partner.

1. **Do you think the "true" story behind the paper should be built into the Introduction? If so, where and how?**
2. **Alternatively, do you think it should be made part of the Discussion? Or dropped in a footnote? Or could it be omitted altogether?**
3. **Do you have comparable experiences to relate—perhaps stories about how pieces of research started almost by accident but are described as if they were planned?**
4. **In any investigation, certain events take place in a certain order. Do you think it is necessary to keep to that order when writing an RP, or is an author free to change that order to construct a more rhetorically effective paper?**

The Introduction we have just examined is firmly located in the scholarly world of Art History. The rationale for the paper is found in John's belief that art historians had given insufficient attention to one group of Eakins' pictures.

Elsewhere, the rationales for journal articles may lie in problems, issues, or uncertainties that have arisen in the real world. So next, we look at an Introduction of this type from an Engineering journal. Read the adapted text and the analysis.

Durability Monitoring for Improved Service Life Predictions of Concrete Bridge Decks in Corrosive Environments

Cusson, D., Lounis, Z., and Daigle, L. (2011).
Computer-aided Civil and Infrastructure Engineering, 26, 524–541.

I INTRODUCTION

❶ Many reinforced concrete (RC) bridges in Canada and the northern United States are short- and medium-span bridges that exhibit serious deterioration due to the use of de-icing salts during winter. ❷ Approximately 25% of them are considered deficient in terms of structural capacity and functionality (U.S. DOT et al., 2007) as a result of increased traffic loads, changing environmental conditions, and more stringent design codes.

❸ The widespread deterioration and some recent collapses of highway bridges (Inaudi et al., 2009) have highlighted the importance of developing effective bridge inspection and maintenance strategies, including structural health and durability monitoring, which can help identify structural and durability problems before they become critical. ❹ The implementation of structural health monitoring (SHM) programs can provide useful information on the physical health of bridges and their structural performance (Cruz and Salgado, 2009; Moaveni et al., 2009; Soyoz and Feng, 2009; Huang et al., 2010). ❺ Durability monitoring can supply valuable data that can be used to calibrate service life prediction models.

❻ Currently, the majority of highway bridges are inspected at regular intervals through visual inspection, which is followed by a mapping of the observed damage to a qualitative rating scale. ❼ More detailed and in-depth inspections using non-destructive evaluation methods are conducted less frequently to supplement the data obtained from visual inspection, especially for critical bridge elements, to assess the level of corrosion-induced deterioration.

The Introduction for this paper has other sections, which we have not included so that we can focus on the move structure. The omitted sections are *1.1 Toward multi-objective management of highway bridges; 1.2 Toward structural health and durability monitoring of highway bridges;* and *1.3 Objectives.*

Sentences 1–2 establish the research territory. They do this by providing information about the seriousness of the problem, largely without references.

Move 1a

Sentence 1: *Many reinforced concrete (RC) bridges . . . exhibit serious deterioration . . . .*

Sentence 2: *. . . 25% are considered deficient . . . .*

The next five sentences establish the niche.

Move 2

Sentence 3: The widespread deterioration and some recent collapses of highway bridges . . . *highlighted the importance of* effective . . . inspection and maintenance

Sentence 4: SHM programs *can* provide useful information

Sentence 5: Durability monitoring *can* supply valuable data

Sentence 6: Current visual inspection procedures

Sentence 7: Rarer, more in-depth on-site inspections

Implications (not explicitly stated in Move 2)

1. SHM and durability monitoring could be improved
2. Inspection procedures could be improved (especially when we learn that this article appeared in a journal called *Computer-aided Civil and Infrastructure Engineering*).

Sections 1.1 and 1.2 are quite extensive and quite technical. The final section of the Introduction (*1.3 Objectives*) is short.

TASK FOUR

Given what you now know, write two or three sentences for Move 3 in order to complete the Introduction to the bridges text. Use your imagination if necessary.

Our third illustrative Introduction section offers a social science approach to the provision of health care.

TASK FIVE

Reconstruct these sentences from the Introduction into their original order, numbering them from 1 to 11? Work with a partner.

University-Community Agency Collaboration: Human Service Agency Workers' Views

Tiamiyu, M. (2000).
Journal of Multicultural Nursing and Health, 6, 29–36.

____ a. Furthermore, governments, foundations, non-profit organizations, and other stakeholders continue to work on how to provide cost-effective community-based services to members of the society including the elderly.

____ b. In particular, the study sought to provide an avenue for them to communicate their understanding of university–community agency collaborations and identify how their agencies can work collaboratively with the university.

____ c. According to the U.S. Bureau of the Census, it is anticipated that if this trend in growth continues, by the year 2030 there will be approximately 70 million Americans aged 65 or over.

____ d. One approach has been an emphasis on community collaborations to address the planning and delivery of such services.

___ e. Little, however, is known about participants' views of university-community collaborations.

___ f. Several studies have examined issues related to the present and future provision and quality of community-based services for the elderly (Kelly, Knox & Gekoski, 1998; Buys & Rushworth, 1997; Damron-Rodriguez, Wallace, & Kington, 1994; Krout, 1994; Kuehne, 1992; Benjamin, 1988; Soldo & Agree, 1988; and Mahoney, 1978).

___ g. Human-service agency workers are major participants of university-based collaborations; hence, the purpose of this study was to investigate their views of community-based services to the elderly in northwest Ohio.

___ h. Funding agencies (e.g., U.S. Department of Housing and Urban Development [HUD]) have encouraged university-community collaborations.

___ i. The growing size of America's population of seniors has drawn attention to its economic and social well-being.

___ j. America's population is growing older.

___ k. An example is HUD's Community Outreach Partnership Centers initiative, which involves university faculty, staff, students, and community residents and agencies/groups as partners in the development and implementation of research/community programs.

Which sentences were the most difficult to place? Why?

SK SIX

xamine the Introductions to 3–5 journal articles from your refer-nce collection. To what extent do their Introductions follow the ARS model presented in Figure 16? If they do not, do you have n explanation for this? Keep in mind that there may be good easons for alternative structures. Be prepared to discuss one of ie Introduction sections with a partner.

Claiming Centrality

In the "University-Community Agency Collaboration" passage, *claiming centrality* (Move 1a) was achieved by stressing the *growing* problem of coping with the elderly in Sentences j, c, and i. In the Eakins text, centrality was created by stressing the artist's growing status and the growing amount of literature devoted to his work (Sentences 1–2). In the bridges text, the authors assert centrality by establishing the "serious corrosion-induced deterioration" in many concrete bridges in northern North America (Sentences 1–3).

In Move 1a certain fixed phrases (or small variants of them) tend to recur. In many cases, the present perfect is used, often with a time expression such as *In recent years.* We list some with the number of Google Scholar hits we found in May 2012.

TASK SEVEN

Update the numbers in the table, and try and find two more opening expressions with more than 1,000 hits.

Phrase	Hits Spring 2012	Hits Now
. . . has been extensively studied . . .	214,000	
. . . there has been growing interest in . . .	17,800	
Recent studies have focused on . . .	17,400	
. . . has become a major issue . . .	7,290	
. . . remains a serious problem . . .	7,280	
. . . there has been increasing concern . . .	4,680	
. . . has been investigated by many researchers.	4,270	
. . . has become an important aspect of . . .	2,470	
		Number of Hits
One of your own		
One of your own		

Now look at the Introduction openings in your reference collection. How many have a Move 1a? Do they use any of the phrases in the table or similar ones? If not, how do your authors *claim centrality?*

Reviewing the Literature

The CARS model states that Move 1b is the place to assemble and review items of previous research relevant to the topic. In fact, in the original version of the CARS model, back in 1981, this was the only place where citations were thought to occur. However, we now know (e.g., Samraj, 2002) that citations can occur anywhere in an Introduction, partly as a consequence of the huge increase in the number of researchers and research papers in recent decades. You may have noticed in the Introduction of the bridges text, for example, that there are more citations in Move 2 than in Move 1.

TASK EIGHT

Once more, review three Introduction sections in your reference collection, highlighting all the citations. (This highlighting will also be useful later.) How are they distributed? Be prepared to discuss your findings with a partner.

Motives for Citing

There are, in fact, a surprisingly large number of theories about the role and purpose of citations in academic texts. These include

- acknowledging the intellectual property rights of earlier authors
- showing respect for previous scholars
- giving your arguments greater authority
- helping (promoting) your friends and colleagues
- showing that you are a member of a particular disciplinary community

However, a more recent consensus among those senior scholars who have studied citations for many years, such as Blaise Cronin and Howard White, suggests that the primary motive for citing remains *perceived relevance.* As Cronin neatly puts it, "Content counts for more than connections" (2005, 1506).

Of course, citation is a surface phenomenon, and there may well be in some cases social and psychological motivations that are not apparent. Even so, in the great majority of situations, it seems clear that well-known scholars and researchers are cited because they have done important work, not simply because they are famous.

Swales and Leeder (2012) studied the citations to the 154 articles published in the 1990s in the *English for Specific Purposes Journal*—a journal that incidentally figures prominently in the references in this volume. They found that the two most-cited articles

- were written by women.
- were written by non-native speakers of English.
- were not by authors working in Anglophone countries.
- were not by authors working at famous universities.

In other words, Swales and Leeder found no evidence of bias; rather, the two papers were highly cited because they had something important and something new to say.

If the role of citations is better understood and accepted these days, this is not true of a subclass of references usually known as *self-citations*. These are citations to an author's own previously published or presented work. In an era when numbers of citations are becoming increasingly important in the evaluation of individuals, self-citations remain controversial. There are two main reasons for this: one is whether they should "count" in evaluations; the second is whether the motives for self-citing are somehow different from those of citing others.

TASK NINE

Read these eight summaries of research papers on self-citing. Then organize a literature review.

1. Snyder and Bonzi (1989)
   Patterns of self-citation in six disciplines were examined. 9% of all citations were self-citations: 15% in the physical sciences, 6% in the social sciences, and 3% in the humanities.

2. Bonzi and Snyder (1991)
   A study of 51 authors in the natural sciences revealed only a few differences in motivation between citing oneself and citing others.

3. Phelan (1999)
   A study of the citing practices of 56 highly cited authors in the field of Education was conducted. Only 2 of the 56 did not cite themselves over a 12-year period. At the other extreme, 154 out of 280 citations (55%) received by one author were the outcome of self-citations.

4. White (2001)
   The most important citer motivation is to project one's own writing (and reading) by linking earlier work to later work. In this sense, a certain amount of self-citation is both natural and inevitable.

5. Hyland (2003)
   Self-citations may arise from three kinds of motivation: (1) a natural result of the cumulative nature of an individual's research; (2) a need for personal gratification; and (3) its value as a rhetorical device to increase an author's visibility and reputation.

6. Medoff (2006)
   This study of 400 Economics articles showed that an author's self-citations did not have a statistically significant effect on that article's total number of citations.

7. Falagas and Kavvadia (2006)
   Seventeen percent of references in Clinical Science were self-citations, a figure that rose slightly to 20% in Basic Science.

8. Fowler and Aksnes (2007)
   A macro study of more than a half million citations to articles by Norwegian scientists in the 1981–2000 period was undertaken. The average citation rate was 11%, although there were wide individual variations. They then showed that the more authors cite themselves the more likely they are to be cited by others. However, they note that there are currently no penalties for frequent self-citing. These results, they conclude, question the use of citations to evaluate performance.

As you will have noted, these eight studies have been listed in chronological order. Unless a topic has a clear, linear development over time, a chronological structure is rarely the best way of organizing a literature review, although it may work well enough with some subsets of the material. More generally, the key point about reviews of the literature is that they should clearly show an *organizing mind at work.* Several ways of organizing may be possible, but what readers, reviewers, and editors want to see is an author who imposes order on the material, rather than producing simple undigested lists of what has been done.

Now here is one student's approach to organizing self-citation material in an Introduction.

- I am going to do this specific-general, starting with basic facts.
- I will start with the self-cite percentages: so I'll start with references 1, 7, and part of 8.
- Then I will cover the explanations for self-citing and will use references 4 and 5.
- Then I will focus on individual variation and draw from reference 3 and mention 8.
- After this I will discuss research on self-citation effects using references 2, 6, and 8.
- Finally, I should say something about policy implications and the need for further studies.

Is this how you would do it? Can you suggest a better alternative? Discuss with a partner.

Language Focus: Citation and Tense

Tense choice in reviewing previous research is subtle and somewhat flexible. (It is also not very much like the "rules" you may have been taught in English classes.) The following, therefore, are only general guidelines for tense usage.

Several studies have shown that at least two-thirds of all citing statements fall into one of these three major patterns.

Pattern 1

Past—researcher activity as agent

Huang (2007) *investigated* the causes of airport delays.

The causes of airport delays *were investigated* by Huang (2007).

Pattern 2

Present Perfect—researcher activity not as agent

The causes of airport delays *have been* widely *investigated* (Hyon, 2004; Huang, 2007; Martinez et al., 2010).

There *have been* several investigations into the causes of airport delays (Hyon 2004; Huang, 2007; Martinez et al., 2010).

Several researchers *have studied* the causes of airport delays.[1-3]

Pattern 3

Present—no reference to researcher activity

The causes of airport delays *are* complex (Hyon, 2004; Huang, 2007, Martinez et al., 2010).

Airport delays *appear to have* a complex set of causes.[1-3]

Note the common uses of these patterns.

Pattern 1—reference to single studies—past

Pattern 2—reference to areas of inquiry—present perfect

Pattern 3—reference to state of current knowledge—present

Also note that in Patterns 1 and 2, attention is given to what previous researchers did, while in Pattern 3 the focus is on what has been found.

Finally, note that different areas of scholarship have somewhat different preferences. Patterns 1 and 2 are most common in the humanities and the

social sciences and least common in the areas of science, engineering, and medical research. However, all three patterns tend to occur in many extensive literature reviews since they add *variety* to the text.

We have said that these three patterns cover about two-thirds of the cases. The reason this proportion is not higher is because writers of literature reviews can have certain options in their choice of tenses. This is particularly true of Pattern 1. The main verbs in Pattern 1 can refer to what a previous researcher *did* (*investigated, studied, analyzed,* etc.). By and large, in these cases the past is obligatory. However, the main verbs can also refer to what the previous researcher *wrote* or *thought* (*stated, concluded, claimed,* etc.). With this kind of reporting verb (see Unit Five), tense options are possible.

Rogers (2004) *concluded* that business failure may be related to reduced working capital and retained earnings.

Rogers (2004) *has concluded* that . . . .

Rogers (2004) *concludes* that . . . .

The differences among these tenses are subtle. In general, moves from past to present perfect and then to present indicate that the research reported is increasingly *close* to the writer in some way: close to the writer's own opinion, close to the writer's own research, or close to the current state of knowledge.

The present tense choice is sometimes called the *citational present* and is also used with famous or important sources.

Aristotle argues that . . . .

Confucius says . . . .

The Bible says . . . .

The Constitution states . . . .

Comparable options exist in the subordinate clause.

Rogers (2004) found that business failure *was* correlated most closely with reduced working capital.

Rogers (2004) found that business failure *is* correlated most closely with reduced working capital.

The first sentence shows that the writer believes that the finding should be understood within the context of the single study. In the second, the writer implies that a wider generalization is possible. (However, it should be noted that some editors disapprove of the use of present tense here.)

TASK TEN

Review the previously highlighted citations in your reference collection. Which tenses are the most frequent? How does your data fit with the three patterns we have identified?

Variation in Reviewing the Literature

In the Language Focus on pages 344–345, we concentrated on the three main citation patterns. There are, of course, some others.

> According to Suarez et al. (2010), the causes of business failure are closely related to the ratio of working capital, retained earnings, and sales.
>
> Fang's research shows that reduced working capital and retained earnings are interrelated (Fang, 2007).

Can you come up with others?

Good writers of literature reviews employ a range of patterns in order to vary their sentences. Another form of variation involves the use of integral and non-integral citations. When the cited author is grammatically part of a sentence, the citation is referred to as integral. When the cited author is given in parentheses or referred to by a number, the citation is non-integral. Pattern 1 on page 344 contains integral citations. Non-integral citations appear in Pattern 2.

Most citations are non-integral. Under what circumstances would an integral citation be preferred?

TASK ELEVEN

Choose one of these tasks.

1. Write up a review of the self-citation literature.
2. Revise this passage.

The passage uses only the first citation pattern. As you can see, using the same structure all the time can cause the reader to lose interest. Re-write it to add more variety and provide a more apparent organization structure. Your version will probably be shorter than the original—another advantage!

The Origins of the First Scientific Articles

Banks (2011) describes the founding of the first scientific journals in London and Paris in the 1660s. Obviously, the first scientific articles had no direct models to build on, and several scholars have discussed possible influences. Ard (1983) and Valle (2000) suggest that the first articles developed from the scholarly letters that scientists were accustomed to sending to each other. Sutherland (1986) showed that early articles were also influenced by the newspaper reports of that time. Paradis (1987) described the influence of the philosophical essay. Shapin (1984) claimed that the scientific books of Robert Boyle were another model. Bazerman (1988, 1997) argued that discussions among the scientists themselves made their own contribution to the emergence of the scientific article. Finally, Gross (1990, 2008) ascribes their origins to inventories of nature and natural products.

Move 2: Establishing a Niche

In many ways, Move 2 is the key move in Introductions to longer research papers. (However, this move may not be needed in shorter communications.) It is the hinge that connects Move 1 (what has been done) to Move 3 (what the present research is about). Move 2 thus establishes the motivation for the study. By the end of Move 2, the reader should have a good idea of what is coming in Move 3.

Most Move 2s establish a niche by indicating a gap—by showing that the research story so far is not yet complete. Move 2s then function as a *mini-critique* (see Unit Six). Usually Move 2s are quite short, often consisting of no more than a sentence or two. Let us examine the Move 2s in the first three Introductions we have seen so far.

Thomas Eakins

Apart from a chapter in Foster (1997), this series *has been little discussed by critics or art historians.* For example, these pictures *were ignored by Johns* in her . . . .

Durability Monitoring (bridges)

The widespread deterioration and recent collapses of highway bridges . . . *have highlighted the importance of developing effective bridge inspection and maintenance strategies.*

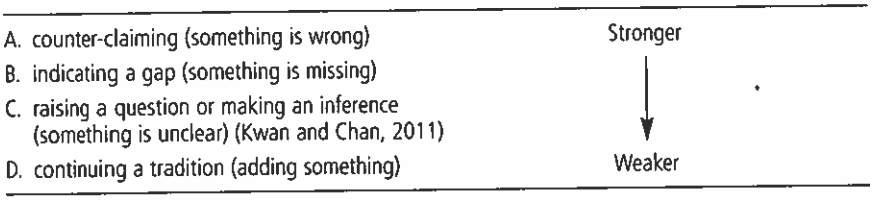
University-Community Agency Collaboration

Little is, however, known about participants' views of university-community collaborations.

As you can see, the first and third are straightforward gap indications. The second is rather more subtle. It implies, but does not directly state, that current bridge inspection strategies need to be improved.

A fuller range of options for Move 2 is presented in Figure 17.

FIGURE 17. Options for Establishing a Niche



TASK TWELVE

Here are eight Move 2 statements regarding the self-citation research. Would you characterize them as A, B, C, or D from Figure 17? There are two of each.

____ 1. These findings suggest that the number of co-authors might affect the self-citation rate.

____ 2. However, in all three cases, the methodologies used for analyzing self-citations are flawed.

____ 3. One discipline that has been neglected in self-citation studies is history.

____ 4. Studies so far lead to a question that has as yet no clear answer: Do self-citations pay?

____ 5. It would therefore be interesting to have further information about the citation practices of Norwegian scientists.

____ 6. That said, little is known about how many times individual authors cite their earlier publications.

____ 7. Recent arguments (e.g., Fowler and Aksnes, 2007) for excluding self-citations from performance assessments rest on a number of false assumptions.

____ 8. There is obviously value in extending these studies to cover more disciplines.

Of the four Move 2 options, gap-indications are very common in many fields. Option D, however, is typically chosen by research groups in sciences and Engineering as they offer refinements and extensions of their previous work. This is a case of the common "adding another brick to the wall of knowledge" metaphor. At the other pole, regular employment of *counter-claiming* is only likely in contested areas such as Philosophy and Law. Since Option B is widely used, we now explore it a little further.

Language Focus: Negative Openings in Move 2

Probably the most common way to indicate a gap is to use a "quasi-negative" subject. Presumably, such subjects are chosen because they signal immediately to the reader that Move 1 has come to an end. Note the uses of *little* and *few*.

Non-count	However, little information . . .
	Little attention . . .
	Little work . . .
	Little data . . .
	Little research . . .
Count	However, few studies . . .
	Few investigations . . .
	Few researchers . . .
	Few attempts . . .

Note the differences in the following pairs.

There is little research. (negative, i.e., not enough)

There is a little research. (neutral, i.e., maybe enough)

The department has few computers. (negative, i.e., not enough)

The department has a few computers. (neutral, i.e., maybe enough)

Note also the use of *no/none of*.

No studies/data/calculations to date have . . . .

None of these studies/findings/calculations have . . . .

Use *no* when your conclusion is based on (but does not directly refer to) the cited literature. If you want to refer directly to the previous research, use *none of*.

However, you may want to avoid using a full negative like *no studies*; chances are that somebody will find an exception to your strong statement. Alternatively, you could add *To the best of our knowledge, . . .*

TASK THIRTEEN

Here are some "negative" verbs and adjectives that tend to cluster in Move 2. Work with a partner and decide how "negative" they are. Mark them as seeming definitely or strongly negative (- -) or only slightly negative (-).

Verbs

However, previous research on deforestation has _____ ....

___ a. concentrated on
___ b. disregarded
___ c. failed to consider
___ d. ignored
___ e. been limited to
___ f. misinterpreted
___ g. neglected to consider
___ h. overestimated
___ i. overlooked
___ j. been restricted to
___ k. suffered from
___ l. underestimated

Adjectives

Nevertheless, these attempts to establish a link between dental fillings and disease are at present _____.

___ a. controversial
___ b. incomplete
___ c. inconclusive
___ d. misguided
___ e. questionable
___ f. unconvincing
___ g. unsatisfactory
___ h. ambivalent

Of course, not all RP Introductions express Move 2 by indicating an obvious gap. You may prefer, for various reasons, to avoid negative or quasi-negative comment altogether. In such cases, a useful alternative is to use a contrastive statement.

> Research has tended to focus on . . , rather than on . . . .
>
> These studies have emphasized . . , as opposed to . . . .
>
> Although considerable research has been devoted to . . , rather less attention has been paid to . . . .

Cumulative and Recycling Move 2s

Sometimes, however, Move 2s can be quite complicated. Consider, for example, the Move 2 from the Introduction section of a paper by Schwer and Daneshvary (2000) entitled "Keeping Up One's Appearance." After an opening paragraph that claims centrality, Schwer and Daneshvary devote the next five short paragraphs to a literature review, concluding that "there appears to be an economic incentive to appear attractive" (209). Now here is their seventh paragraph (italics added).

> *Previous research has not addressed* whether or not people who are employed in some occupations rate the maintenance of overall appearance more important than do people who are employed in other occupations. *Moreover, research has not fully considered* the behavioral consequences of individuals putting more or less emphasis on physical appearance (e.g., does it affect grooming habits or maintenance rituals?). *Nor has it addressed if* they patronize a beauty shop, a barbershop, or a beauty salon in maintaining their appearance.

Notice the strategy here—as shown by the italicized stretches of text—of making a series of quasi-negative statements about "previous research." Also, notice that as the three sentences progress, they increasingly narrow down to the precise research question that Schwer and Daneshvary will be attempting to answer. This type of Move 2 we have called *cumulative* because the gap statements form a series.

The other type involves chopping the more specific earlier references to the previous research into sections and then making a series of Move 2 comments about them. We can illustrate this by introducing the text in Task Fourteen, which focuses on energy harvesting.

As you will see, discussion of previous work is spread out and handled in two paragraphs. One method is discussed in Sentence 3 and critiqued in Sentence 4, while the second method is critiqued in Sentence 11.

TASK FOURTEEN

Read part of the Introduction section for the energy harvesting text (containing Move 2) and then answer the questions on page 354.

Soft Capacitors for Wave Energy Harvesting

Ahnert, K., Abel, M., Kollosche, M., Jørgen Jørgensen, P., and Kofod, G. (2011). *Journal of Materials Chemistry, 21,* 13392–14497.

❶ The problem of adequately supplying the world with clean, renewable energy is among the most urgent today. ❷ It is crucial to evaluate alternatives to conventional techniques. ❸ One possibility is energy harvesting from ocean waves, which has been proposed as a means of offsetting a large portion of the world's electrical energy demands.[1] ❹ However, the practical implementation of wave energy harvesting has met with obstacles, and the development of new methods is necessary.[2] ❺ Oceanic waves have large amplitude fluctuations that cause devices to fail due to excessive wear or during storms. ❻ A strategy to overcome these catastrophic events could be to base the harvesting mechanisms on soft materials.

❼ Soft, stretchable rubber capacitors are possible candidates for energy harvesting,[3–8] that have already been tested in a realistic ocean setting.[9,10] ❽ They were originally introduced as actuators,[11–14] capable of high actuation strains of more than 100% and stresses of more than 1 MPa. ❾ With a soft capacitor, mechanical energy can be used to pump charges from a low electrical potential U to a higher one, such that the electrical energy difference can be harvested.[3] ❿ This is made possible by the large changes of capacitance under mechanical deformation. ⓫ Although the method is simple and proven,[3–10] it is still not clear to what extent the approach is practically useful, which is the concern of this paper. ⓬ Of the many electro-active polymers, it appears that soft capacitors could have the highest energy densities.[15]

1. How many "critique" expressions can you find in the passage? Underline or highlight them.
2. Look back at Task Thirteen. Are these phrases strongly negative or slightly negative?
3. What word signals that Move 1 has ended and Move 2 has started? What other words or expressions could also indicate this shift?
4. Can you now anticipate what Sentence 13 will do?

We can see a slightly different case in the Move 2 of the bridges Introduction (see pages 335–336).

Do you agree (A) or disagree (D) with these comments? Mark (?) if you are unsure.

____ 1. The first reference (Inaudi et al., 2009) helps to establish the seriousness of the problem and therefore has a different function to the others.

____ 2. Earlier Swales and Feak said that this Move 2 paragraph was a subtle form of gap indication. In fact, it fits better with the "continuing a tradition" option. SHM monitoring in Sentence 4 contains references, but durability monitoring in Sentence 5 does not. This is because

____ there is no published research on this topic.

____ the authors simply forgot.

____ durability monitoring is the topic of this paper.

____ or some other reason.

3. The use of *can* in Sentences 4 and 5 indicates

___ that both kinds of monitoring are able to get the job done.

___ that both kinds only have a potential to get the job done.

Occupying the Niche

The third and final step in the typical RP Introduction is to make [illegible] fill the gap (or extend the tradition) that has been created in Move [illegible]. The first element in Move 3 is obligatory. It has two main variants:

Purposive (P)	The author or authors indicate their main purpose [illegible] purposes.
or	
Descriptive (D)	The author or authors describe the main feature of their research.

TASK FIFTEEN

Here are the beginnings of ten opening Move 3 sentences. Decide in each case whether they are purposive (P) or descriptive (D). The first two have been done for you. Complete at least three of the sentences.

P 1. The aim of the present paper is to give . . . .

D 2. This paper reports on the results obtained . . . .

___ 3. In this paper we give preliminary results for . . . .

___ 4. The main purpose of the experiment reported here was to . . . .

___ 5. This study was designed to evaluate . . . .

___ 6. The present work extends the use of the last model . . . .

___ 7. We now report the interaction between . . . .

___ 8. The primary focus of this paper is on . . . .

___ 9. The aim of this investigation was to test . . . .

___ 10. Our primary objective in this paper is to provide . . . .

Note that Move 3 is typically signaled by some reference to the present text, such as the uses of *this, the present, reported,* and *here.* If the conventions of the field or journal allow, it is also common for the authors to switch from the impersonal to the personal by using *we* or, more rarely, *I.* Also note that metadiscoursal references come early in the sentence. It is more common to find

In this paper we present the results of three experiments.

rather than

We present the results of three experiments *in this paper.*

Language Focus: Purpose Statements and Tense

Students sometimes ask us whether they should use *was* or *is* in purpose statements. Indeed, both were used in the phrases in Task Fifteen. The answer to this question depends on how you refer to your work. You have two choices.

1. Referring to the type of *text* (or genre)—paper, article, thesis, report, research note, etc.
2. Referring to the type of *investigation*—experiment, investigation, study, survey, etc.

If you choose to refer to the type of text, present tense is quite common. If you write *The aim of this paper was to . . .* in some fields, this would mean that you are referring to an original aim that has now changed. In other fields, such as Biomedical Research, *was* is typical and simply refers to the aim when the research was conducted.

If you choose to refer to the type of investigation, you can use either *was* or *is.* However, there is an increasing tendency to choose the present, perhaps because it makes the research seem relevant and fresh and new. A safe rule here is to check the journal in which you want to publish your paper to determine the tendency.

Completing an Introduction

Sometimes more than one sentence is necessary to complete Move 3a, as in Sentence b from the paper in Task Five. Here are two examples of Move 3, one from a paper entitled "The Development of Culturally-Sensitive Measures for Research on Ageing" and the other from an Aerospace Engineering article entitled "High Angle-of-Attack Calculations of the Subsonic Vortex Flow in Slender Bodies."

> In this paper, I describe a field test of Krause's multi-method approach to the construction of a culturally-grounded measure for older people in Thailand. A step-by-step elucidation of the approach is presented, as well as an examination of the benefits and problems associated with this mixed-method approach. In addition, the paper discusses issues that gerontology researchers should consider when deciding whether and how to develop a measure that is grounded in the culture for which it is intended.
>
> Ingersoll-Dayton, 2011.

> The present work extends the use of the last model to asymmetric, body-vortex cases, thus increasing the range of flow patterns that can be investigated. In addition, an effort is made to improve the numerical procedure to accelerate the convergence of the iterative solution and to get a better rollup of the vortex lines representing the wake.
>
> Almosnino, 1984.

These secondary statements are often introduced by such language as

In addition, . . .

Additionally, . . .

A secondary aim . . . .

A further reason for . . . .

TASK SIXTEEN

Revise your Move 3a (Task Four). Be creative in terms of the research project you might undertake.

Read the table, which provides the Google Scholar hits for some Move 3a expressions obtained in May 2012. Then update the results for today's date. What might you conclude from both sets of figures? Look at some of the first examples for the *was to* and the *has been to* entries. Can you draw any conclusions?

Expression	Hits Spring 2012	Hits Now
The purpose of this paper is to . . .	340,000	
The purpose of this paper was to . . .	19,300	
The purpose of this paper has been to . . .	6,300	
The purpose of this paper will be to . . .	1,780	
The purpose of the present paper is to . . .	66,000	
The purpose of the present paper was to . . .	2,410	
The purpose of the present paper has been to . . .	248	
The purpose of the present paper will be to . . .	65	

In Figure 16 we listed four other elements that can be found at the end of Introduction sections. (There may be others, such as a depiction of the statistical measures employed.) The four elements are arranged in the most likely order of occurrence.

3b. by listing research questions or hypotheses

3c. by announcing principal findings

3d. by stating the value of the present research

3e. by indicating the structure of the RP

In all cases, remember the acronym PISF (probable in some fields but not in others).

TASK SEVENTEEN

In your field, is it probable or improbable that an RP would have any or all the elements listed under 3b–e? What does your reference collection indicate? Be prepared to discuss your conclusions.

Listing Research Questions

Here is Move 3 from the article entitled "Keeping Up One's Appearance," which includes this element. The authors' Move 3 includes both 3a and 3b.

Move 3a

> This paper uses a sample to investigate whether one's (a) occupational status influences the importance one attributes to maintaining overall appearance, and (b) occupation influences one's choice of type of hairgrooming establishment.

Move 3b

> Specifically, we test two hypotheses:
>
> Hypothesis 1. . . .
>
> Hypothesis 2. . . .

Announcing Principal Findings

There is some confusion as to whether RP Introductions should close with a statement of the principal results. One early investigation (Swales and Najjar, 1987) found that physicists do this about half the time but that educational researchers hardly ever include such statements. One useful guideline is to ask yourself whether the RP will open with an abstract. If there is an abstract, do you need to give the main findings three times: in the abstract, in the Introduction, and in the Results section? We think not. If there is no abstract, you may wish to reconsider. Another suggestion would be to follow standard practice in your field—or ask your advisor.

Finally, we need to remember that as the number of research papers continues to increase, so does the competition for readers. As a result, the need for promotion has tended to increase this feature, perhaps especially in

Engineering papers. Further evidence for this comes from a recent requirement by a major publisher of scientific journals that all articles now list 4–5 highlights following the abstract.

Stating Value

You may also want to consider whether to mention at this stage anything about the contribution your research will make. Of course, you will do this in the Discussion section in any case. Note that, as is typical of many biomedical papers, the authors of a paper on vaccine monitoring squeeze a value statement into the Introduction.

> We show how this classification system might permit more accurate evaluation of safety concerns for rare immune-mediated adverse events that may occur following vaccination, thus enhancing our ability to properly identify and analyze associations in clinical trials and post-licensure surveillance.

If you opt for a value statement, it might be wise to be cautious and to use qualifications (see Unit Four).

Outlining the Structure of the Text

A final option is to consider whether you need to explain how your text is organized. This element is obligatory in dissertations and theses but is only included in RPs under certain circumstances. One such circumstance arises when your text is unusual in some way, such as not using a standard IMRD format. Such a field would be Economics. Another arises if you are working in a relatively new field. Cooper (1985) and a number of later researchers (e.g., Shehzad, 2007) have found, for example, that outlining the RP structure is common in Computer Technology and in many other technological areas. On the other hand, it is rare in Biochemistry (Kanoksilapatham, 2007). Ask yourself, therefore, whether your anticipated readers need to have the organization of the RP explained.

Here is a useful example of a textual outline, well-motivated by the unusual structure of the paper. Notice how it uses a good variety of sentence structures. The paper is about currency rates in the European Economic Community and was written by one of our students.

> The plan of this paper is as follows. Section II describes the current arrangements for regulating business mergers within the EEC. In Section III a theoretical model is constructed which is designed to capture these arrangements. Experimental parameters are then tested in Section IV. Finally, Section V offers some suggestions for the modification of the current mechanisms.
>
> Pierre Martin, minor editing

TASK EIGHTEEN

Read this textual outline by another of our students. Notice how it is different from the example. What, if any, changes would you make?

> The rest of the paper is organized as follows. Section 2 presents the theoretical concept of fuzzy expert systems. Section 3 discusses fuzzy-interpolative methodology. Section 4 presents the fuzzy-interpolative ADL matrix. Section 5 presents a numerical example of the FI-ADL matrix and graphical representations. Finally, the conclusion discusses how this tool may be implemented in any software environment.
>
> John Lebens, minor editing

We started this section with a complete Introduction from the humanities. We now close it with one from the field of Biostatistics. It comes from a journal called *Controlled Clinical Trials.*

TASK NINETEEN

Read the Introduction and answer the questions on page 363.

Fraud in Medical Research:
An International Survey of Biostatisticians

Ranstam, J., Buyse, M., George, S. L., Evans, S., Geller, N. L., Scherrer, B., Lesaffre, E., Murray, G., Edler, G., Hutton, J. L., Colton, T., and Lachenbruch, P. (2000).
Controlled Clinical Trials, 21, 415–427.

❶ The public awareness of scientific fraud has increased remarkably since the late 1980s when a controversy made front-page news, in which a paper investigated for fraud had as co-author a Nobel laureate [1]. ❷ During the 1990s scientific fraud was disclosed on numerous occasions [2]. ❸ In fact, it was recently suggested that fraud now is "endemic in many scientific disciplines and in most countries" [3]. ❹ However, the clandestine character and consequential lack of reliable information make it difficult to study scientific fraud. ❺ The characteristics and frequency of scientific fraud, therefore, are generally unknown, and its impact on medical research is unclear.

❻ Biostatisticians routinely work closely with physicians and scientists in many branches of medical research and have unique insight into data. ❼ In addition, they have the methodological competence to detect fraud and could be expected to have a special professional interest in the validity of results. ❽ Biostatisticians therefore could provide unique and reliable information on the characteristics of fraud in medical research.

❾ The objective of this study was to assess the characteristics of fraud in medical research by surveying members of the International Society of Clinical Biostatistics (ISCB).

1. Underline all words and phrases in the first three sentences that help establish the research territory.
2. What does *clandestine* in Sentence 4 mean?
3. Identify all the linking words and phrases. What are their functions?
4. Where and how is the gap established?
5. Using the analysis in Figure 16, it is quite easy to show how all of the sentences, except for Sentences 6–8, fit into the model. How would you interpret those three sentences?

TASK TWENTY

Write or re-write an RP Introduction of your own.

Discussion Sections

By the time you have reached the Discussion section stage in an empirical research paper, you might think that all your hard work is largely over. You might, for instance, be thinking: "All I have to do now is sum up what I have done and then make a few general remarks about what I did." Unfortunately, matters are rarely this simple. A main reason is that this part-genre can be very variable, both in labeling and in substance, due to varying expectations regarding what to include. We explore this further in the next task.

TASK TWENTY-ONE

Answer the questions with a partner.

1. The last parts of an RP might be labeled (and divided) in one of these ways. Do you know of any others?

   Results and Discussion (combined)

   Results and Discussion (separate)

   Results and Conclusions (separate)

   Results, Discussion, and Conclusions (all separate)

   Summary and Conclusions (separate)

   Other? _____

   In your reference collection which, if any, are the most common? Are there alternative labels or arrangements? Be prepared to discuss your findings.

2. Do you agree (A) or disagree (D) with these statements?

   ____ a. Discussion sections should be short and to the point. It is better to let Results sections speak largely for themselves.

   ____ b. A long Discussion section shows that the author or authors are able to reflect intelligently on what was found.

   ____ c. A long Discussion section is just an opportunity for authors to promote their own research and thus themselves.

   ____ d. Conclusions are rarely necessary. Readers can draw their own conclusions. If readers want a summary, they can always read the abstract.

   ____ e. In these days of rapidly increasing numbers of published research papers, Conclusions are valuable because they can highlight the "take home message" of the study.

   ____ f. There is no point in trying to decide whether short or long Discussion sections in a particular field are better. It all depends on the piece of research being reported. Some research projects will need an extensive Discussion section; others will not.

It is therefore not so easy to provide useful guidelines for writing Discussion or Conclusion sections. (We will not distinguish between these two terms since the difference is partly conventional, depending on traditions in particular fields and journals.)

A further factor that leads to variation is the position of the Discussion section in the RP. By the time readers reach the Discussion section, authors can assume a fair amount of shared knowledge. They can assume (if not always correctly) that the reader has understood the purpose of the study, obtained a sense of the methodology, and followed the results. Authors can use this understanding to pick and choose what to concentrate on in the Discussion section. As a result, they typically have greater freedom than in the Introduction.

Overall, in published research papers, Results sections deal with factual statements and their interpretation, while Discussion sections deal with the *claims* that might be made, especially *new knowledge claims*. Here is an extract from a recent study of Discussions sections in RPs in the field of Experimental Physics. In fact, the extract consists of the first two sentences in the author's own Discussion!

> *5. Discussion*
>
> I have argued above that the Discussion section provides an argument that leads the reader from the proof of the data (whose meaning is open to inspection in graphs and tables and is, if the author's method is uncontroversial) to the proof of the claim. The claim is not open to inspection by merely inspecting the data and requires careful argument concerning the cause of the results, and the conditions required by the results.
>
> Parkinson, 2011, 174.

Of course, this is Physics, and in most fields we would not expect actual "proof of the claim," but rather "support for the claim."

Discussions, then, often need to be more than summaries. They should go beyond the results. As Weissberg and Buker have noted, "In the discussion section you should step back and take a broad look at your findings and your study as a whole" (1990, 160).

, in contrast to Results sections, we might expect Discussion sections

more theoretical.
more abstract.
more general.
more integrated with the field.
more connected to the real world.
more concerned with implications and applications.
more likely to discuss the limitations of the study.

SK TWENTY-TWO

lere is an adaption of the final section of the bridges paper that we iscussed earlier in this unit (see page 335). It consists of an open- ıg paragraph and then eight short bulleted sections. (The "case tudy" referred to concerns a bridge the authors equipped with xperimental monitoring equipment.) We have deleted some short ections for ease of discussion. Answer the questions on pages 67–368.

4 SUMMARY AND CONCLUSIONS

❶ The corrosion-induced deterioration of highway bridges can have serious consequences. ❷ This article proposed a probabilistic modeling approach based on durability monitoring for improving the life cycle performance predictions of aging concrete bridge decks built in corrosive environments. ❸ Its application and benefits were demonstrated on a case study of rebuilt RC barrier walls on a highway bridge near Montreal, Canada. ❹ The following conclusions and recommendations are suggested.

- ❺ Given the uncertainties associated with these parameters governing the service life of RC bridges exposed to chlorides, the use of probabilistic analysis methods are [sic] required.
- ❻ The proposed approach can be used on any RC elements of bridge decks as long as the governing corrosion parameters could be monitored on site and fed to the probabilistic mechanistic prediction models.

- ❼ Recommendations were provided for applying the proposed approach to a given network of bridges.
  ❽ A two-level decision process based on two types of deterioration models were suggested, in which critically damaged bridges are first identified by using simplified Markovian cumulative damage models, and then analyzed using the proposed durability monitoring and probabilistic mechanistic modeling approach.

1. In your view, which of the sentences contains the authors' *major claim* (in terms of generality, etc.)?
2. The final section offers recommendations. If there were an additional bulleted section, what might it contain?
3. Would you say that the opening paragraph provides a general re-orientation for the reader to open the final section, a short abstract of the article as whole, or perhaps both?
4. Look at the final short sentence in the opening paragraph. Do you prefer either of these alternatives?
   a. *Below we provide conclusions, followed by recommendations.*
   b. *The following conclusions are offered and then some recommendations are made.*
5. The word *given* occurs at the beginning of Sentence 5 and again in Sentence 7. Do they have the same meaning? If not, how are they different?
6. The second sentence of the opening paragraph starts with *This article proposed . . .* . What do think of this tense usage?
7. One linguistic feature of this text (and of many similar texts) is the frequent use of past participles used as adjectival modifiers. In the opening paragraph, we can find *corrosion-induced* and *rebuilt.* What other examples can you find?
8. It is often said that the closing section of the Engineering papers are becoming increasingly "promotional." Do you see evidence for or against "promotionalism" in this section?

The Structure of Discussion Sections

There have been a fair number of studies on this topic since the original paper by Hopkins and Dudley-Evans (1988), such as Bitchener and Basturkmen (2006) and Parkinson (2011). To date, this research has covered Discussion sections in Biology, Biochemistry, Physics, Applied Linguistics, Education, and fields in the social sciences. These papers largely point to the same kinds of structure, but the terminologies used to describe the moves are rather different. Because of this, we have attempted to consolidate these findings in Figure 18.

FIGURE 18. The Structure of Discussion/Conclusion Sections

Move 1—Background information (research purposes, theory, methodology)	optional, but PISF
↓	
Move 2—Summarizing and reporting key results	obligatory
↓	
Move 3—Commenting on the key results (making claims, explaining the results, comparing the new work with the previous studies, offering alternative explanations)	obligatory
↓	
Move 4—Stating the limitations of the study	optional, but PISF
↓	
Move 5—Making recommendations for future implementation and/or for future research	optional

PISF = probable in some fields

Here are some thoughts on Figure 18.

1. The basic purpose of Move 1 in the Discussion is to contextualize the study and, in so doing, to consolidate the research space.
2. In most Discussion sections, the majority of the space is taken up by Moves 2 and 3. As we saw in Results sections, typically there are recycled sequences of Move 2 and Move 3. Berkenkotter and Huckin (1995) describe this process as working from "the inside out"; writers refer first to their study and then relate to previous work in their field.
3. Basturkmen (2009) found that one of the major differences between published and student work in language teaching research was that the former much more frequently offered alternative explanations. She offers a number of possible explanations for this difference: Published writers have a deeper knowledge of available theories; they are able to come up with cognitively challenging novel explanations; and they can increase the "news value" of their work by extending the narrow focus of their studies in these ways.
4. There is some evidence that in "big science," such as Pharmacology, *suggestions for further research* may be on the decline. Large research groups may not want to give ideas to their rivals!
5. At this point, you might want to observe that Moves 1–3 (except alternative explanations) and Moves 4–5 seem to be working in opposite directions. Why, you may ask, would authors build up something in order to apparently undermine it later? However, if we remember *positioning*, we can see that authors can position themselves very effectively by

   highlighting intelligently the strengths of the study

   and

   highlighting intelligently its weaknesses.

TASK TWENTY-THREE

Take three of the papers from your reference collection. What moves can you identify in the Discussion and Conclusions section? Prepare to discuss your findings with others.

Earlier in this unit we discussed some data from the Swales and Leeder paper that examined which of the articles published in *English for Specific Purposes* during the 1990–1999 period had received the most citations and attempted to explain why.

TASK TWENTY-FOUR

Here are six sentences (some are slightly edited) taken from the Conclusions and Implications section of the Swales and Leeder (2012) paper. Can you re-assemble them into their original order?

____ a. Further down the rankings, one could also note Myers' important conclusions of what a textbook is educationally good for and less good for.

____ b. Despite this uncertainty, we can recommend an alternative approach to a well-explored discipline, a standard study but of an under-researched area, or an unusual topic in a well-known genre.

____ c. Although it is hard in some ways to draw firm conclusions from our data, there is little doubt that three general factors have led to the citational success of the 15 articles in our core group: choosing academic English; using discourse analysis; and having something new to say.

____ d. Since this paper has investigated part of the story of the *English for Specific Purposes Journal* in the 1990s, comparable stories of the preceding and the following decade will likely turn out to be very different.

____ e. We can see this in Mauranen's innovative metaphorical contrast between her two groups of economists and in Salager-Meyer's powerful quantitative analysis.

____ f. In consequence, the implications for today's rising young scholars (both NS and NNS) must remain tentative.

Language Focus: Levels of Generalization

In the Results sections, some statements may be quite specific and closely tied to the data.

> As can be seen in Table 1, 84% of the students performed above the 12th grade level.
>
> Seven out of eight experimental samples resisted corrosion longer than the controls.

On the other hand, in the abstract or in a summary, space restrictions may lead to a high level of generality.

> The results indicate that the students performed above the 12th grade level.
>
> The experimental samples resisted corrosion longer than the controls.

In the Discussion section, we usually expect something in between these two levels. A common device is to use one of the following "phrases of generality."

> Overall,
>
> In general,
>
> On the whole,
>
> In the main,
>
> With . . . exception(s),
>
> The overall results indicate . . . .
>
> The results indicate, overall, that . . . .
>
> In general, the experimental samples resisted . . . .
>
> With one exception, the experimental samples resisted . . . .

Limitations in Discussions Sections

We saw in Introduction Move 2s that extensive negative language was a possible option. In contrast, Discussion Move 4s tend to use less negative language. The main reason is obvious; it is now your own research that you are talking about. Another reason is that many limitation statements in Discussions are not so much about the weaknesses in the research as about what *cannot be concluded* from the study in question. Producing statements of this kind provides an excellent opportunity for writers to show that they understand how evidence is evaluated in a particular field.

Language Focus: Expressions of Limitations

Here are some typical formulations for stating limitations in one's research scope.

It should be noted that this study has been primarily concerned with . . . .
This analysis has concentrated on. . . . .
The findings of this study are restricted to . . . .
This study has addressed only the question of . . . .
The limitations of this study are clear: . . . .
We would like to point out that we have not . . . .

Here are some typical openings for statements that firmly state that certain conclusions should *not* be drawn.

However, the findings do not imply . . . .
The results of this study cannot be taken as evidence for . . . .
Unfortunately, we are unable to determine from this data . . . .
The lack of . . . means that we cannot be certain . . . .

We said earlier that Move 4s are optional in Discussion sections. If you feel it is unnecessary to comment on your work in either of these two ways, a useful alternative is to place the limitation in an opening phrase. At least, it does express academic modesty.

Notwithstanding its limitations, this study does suggest . . . .

Despite its preliminary character, the research reported here would seem to indicate . . . .

However exploratory, this study may offer some insight into . . . .

TASK TWENTY-FIVE

Write a short limitations section for either the bridges text or a paper of your own. Be creative.

TASK TWENTY-SIX

Here we return to a paper dealt with in Unit Seven—the paper on how hospitalized children deal with pain by Pölkki et al. (2003). Read the Discussion one section at a time and then discuss the questions for each section (on the righthand side) before moving on to the next.

6.1. Relevance of the results to nursing practice

❶ This interview study indicated that hospitalized children, aged 8–12 yrs. old, are capable of describing the methods for relieving pain. ❷ The results are consistent with earlier studies conducted among pediatric patients (Savedra et al., 1982; Pölkki et al., 1999; Pederson et al., 2000). ❸ In order to achieve the children's own perspective, however, the children should be asked about the methods that could

Questions for 6.1

1. What is the purpose of the opening sentence? Does this kind of opening seem effective or would you suggest something else? For example, should the authors have restated what they did? Explain.

potentially alleviate their pain, as well as their suggestions regarding the implementation of pain relief measures. ❹ Due to their tendency to be independent, school-aged children may conceal their pain and be reluctant to request help from others (cf. Lutz, 1986; Woodgate and Kristjanson, 1995). ❺ This phenomenon in the children requires specific attention, despite the fact that a certain level of cognitive maturity is achieved during the school-aged period, and a much broader array of non-pharmacological methods are appropriate to use at this age (Vessey and Carlson, 1996).

❻ All of the children reported that the nurses had used at least two pain-relieving methods and that parents used at least one method. ❼ Almost all of the children related that administering pain medication and helping with daily activities were the methods most frequently used by nurses to relieve their pain. ❽ Conversely, the methods of distraction, presence, positive reinforcement and helping with daily activities were the most popular methods used by the parents according to the children's descriptions. ❾ While 38 children reported that the presence of their mother/father helped them to feel less pain, only four children reported that this strategy was implemented by nurses. ❿ This may be explained by the nurses' lack of time to sit beside the child, but also by different roles between the nurses and the parents in a child's care. ⓫ On the whole the parents seemed to provide more emotional support

2. Why is Sentence 2 important? Can you think of other ways to show how new work favorably compares with old? What could the authors have written if they had found something quite different from previous studies?
3. What seems to be the purpose of Sentences 3–5?

4. What verb tenses are used? Can you explain why each was used? Is this similar to Discussion sections in your field?

5. How many of the sentences in 6.1 refer to previous literature? Does this seem like too many, too few, or just the right amount? Why?

6. How strong are the claims? Does this seem appropriate? Why?

to their hospitalized children than the nurses. [The last two sentences have been omitted.]

⑫ Many children had suggestions to the nurses, but only a few to the parents concerning the implementation of surgical pain relief measures. ⑬ This may indicate that the children expect the nurses to know how to care for them and relieve their pain (cf. Alex and Ritchie, 1992), whereas the children do not have specific expectations of their parents other than simply to "stay with me more." ⑭ In order to improve nursing care for children with postoperative pain the recommendations provided by children to nurses, such as creating a more comfortable environment (especially minimizing noise problems), giving more or stronger pain medication without delay, as well as visiting regularly or staying with the child more, should be taken seriously into account in nursing practice.

6.2 Reliability and Validity

⑮ Use of the interview as a data collection method allowed the children to express their own perspectives regarding the methods of relieving their pain in the hospital; ⑯ however, there were some defects that may potentially prevent the attainment of purpose. ⑰ First, some children may have tried to provide favorable answers during the interview even though the researcher reminded them that there were no right or wrong answers. ⑱ Secondly, there were practical problems that may have disturbed

7. Where do the authors try to clarify what the results mean?

8. How should we understand *cf.* in Sentence 13?

9. How important is Sentence 14? Why?

Questions for 6.2

10. What is gained by including this section? How important do you think this section is?

11. How strongly do the authors present their concerns? Do you think that they have reason to be concerned? Why?

some children's ability to concentrate on relating their experiences. ⓳ For example, practical issues independent of the researcher included conducting the interviews just prior to the child's discharge, and use of the unfamiliar hospital room as the place for conducting the interviews. ⓴ An interesting question is whether the results would have been different if the children had been asked open-ended questions as opposed to forced-choice questions regarding the methods of pain relief (cf. Branson et al., 1990). ㉑ The use of triangulation, such as observing the children during their hospitalization, may have increased the validity of the results. ㉒ Talking with the children after the data had been analyzed may also have increased the validity of the results (face-validity) (Downe-Wamboldt, 1992; Polit and Hungler, 1999). ㉓ However, the children were asked during the interview to clarify unclear responses by questioning such as "What do you mean by this" or "Could you tell me more about this." ㉔ The researcher also often summarized or paraphrased the responses to the children at the end of each theme in order to make valid interpretations of the data.

㉕ In order to improve the validity and reliability of the study the researcher attempted to establish a confidential relationship with the child and minimized noise problems during the interview. ㉖ The researcher personally collected and analyzed the data, and coded the formed categories three times at 1-month intervals

12. Would you characterize their concerns as *defects*? Can you think of any alternatives to *defects*?

13. What is the order of information in Sentence 15 and the clause in 16? Good news first and then bad news, or the reverse? Why did the authors choose this pattern? And why did they choose to use a semicolon between the two points?

14. In Sentence 20 the indirect question is described as *interesting*. Does this sentence state a limitation or a topic worth thinking about? Do the authors offer an answer? Why?

15. In Section 6.1, the authors wrote *This may indicate that . . .* (Sentence 13). In Section 6.2 they wrote . . . *may have*

(intrarater reliability). ㉗ The discrepancies in the categories were resolved through discussion with two independent researchers (panel of experts). ㉘ The data were quantified, which is justified in the use of content analysis, in order to give the reader a tangible basis for assessing what the analyst claims are the important patterns in the data and improve on impressionistic judgements of the frequencies of categories (Morgan, 1993). ㉙ The validity of the formed categories in this study was supported by previous relevant research in the area of pain relieving methods in pediatric patients (Downe-Wamboldt, 1992).

6.3 Challenges for future research

㉚ This study provided new information regarding the implementation of pain relieving methods from the children's perspective in a hospital setting; ㉛ however, more research is required in this area in order to validate and expand on the discoveries of this study. ㉜ More research is required on the children's experiences regarding help received from nurses and parents for relieving pain. ㉝ Also, it would be interesting to investigate the roles of the other family members and friends in the child's pain relief. ㉞ One of the challenges for future research is to test effective interventions for surgical pain relief in pediatric patients, which should not be restricted only to the non-pharmacological methods implemented by nurses in the hospital.

tried . . . (Sentence 17). How do you explain the difference in the verb forms?

16. In Sentences 21–22, are the authors talking about what they *did* or what they *might have done*? How did you decide?

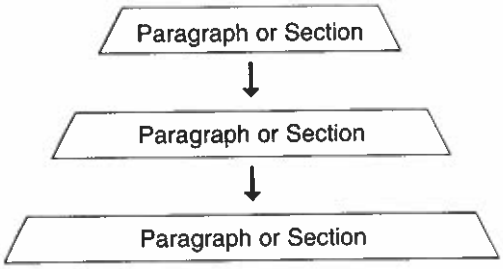
Questions for 6.3

17. How important is this section to the overall Discussion? Can you think of good reasons for and against including such a section?

18. Review the moves provided in Figure 18. Which moves can you find in this Discussion? Do they follow the order proposed in the figure?

you wish to write a longer Discussion section, follow the shape recommended in Figure 19. Begin with specifics and then move toward the more general.

FIGURE 19. Shape of a Longer Discussion



TASK TWENTY-SEVEN

Write or re-write a Discussion section for your own research. If you are working with others, collaborate with them. If your original paper lacked a Move 4 and/or a Move 5, add these to your new draft.

Unfinished Business

Although we have now gone through the four main sections of the RP, there remain some other matters to be attended to. Obviously, there is the question of a title. Then there is an abstract. You may need a short acknowledgments section. Finally, the references have to be in good order.

Titles

Although the title comes first in an RP, it may sometimes be written last. Its final form may be long delayed and much thought about and argued over even if some authors prefer to think of a title early in the writing process to have a clear focus. Regardless of when titles are created, authors know that they are important. They know that the RP will be known by its title, and they know that a successful title will attract readers while an unsuccessful

one will discourage readers. What, then, are the requirements for good IEEE titles? In general, we suggest these three.

1. The title should indicate the topic of the study.
2. The title should indicate the scope of the study (i.e., neither overstating nor understating its significance).
3. The title should be self-explanatory to readers in the chosen area.

In some cases it may also be helpful to indicate the nature of the study (experiment, case report, survey, etc.), but this is not always required. Notice that we have so far not mentioned anything about the language of titles, such as the number of words and the presence or absence of colons or of verbs or of qualifications, such as *A preliminary study of. . . .* This is because there are marked disciplinary preferences when it comes to titles. Further, each journal makes available author guidelines, which may dictate what you can do.

Civil Engineering (and similar fields)

In the journal that published the bridges text, the article titles in more than 90 percent of the cases consist of only noun phrases and prepositions. Here are six examples.

- On-Site Measurements of Corrosion Rate of Reinforcements
- Bridge Reliability Assessment Based on Monitoring
- Chloride Corrosion in Danish Bridge Columns
- An Engineering Approach to Multicriteria Optimization of Bridge Structures
- Influence of Cracks on Chloride Ingress into Concrete
- Chloride Profiles in Salty Concrete

Surgery (and similar fields)

There are 39 original articles in the September 2011 issue of the *Annals of Thoracic Surgery*. Most of their titles are also in the nominal style we saw in Engineering, such as these examples.

- Efficacy and Safety of Aprotinin in Neonatal Congenital Heart Operations
- Thirty-Year Experience with the Artificial Switch Operation

However, there were ten that contained finite verbs and so looked like sentences (or questions). Here are four examples. Note that in the first three the title provides the conclusion of the study and the fourth simply poses a question.

- Long-Term Survival and Quality of Life Justify Cardiac Surgery in the Very Elderly Patient
- Small Prosthesis Size in Aortic Valve Replacement Does Not Affect Mortality
- Anemia Before Coronary Artery Bypass Surgery as Additional Risk Factor Increases the Perioperative Risk
- Should Heart Transplant Recipients with Early Graft Failure Be Considered for Retransplanation?

Applied Language Studies

If we turn to the 15 article references in the Parkinson paper cited on page 365 in our focus on Discussion sections, we see another disciplinary preference—the use of colons. In fact, seven of the 15 article titles cited by Parkinson have colons. Here are four.

- An Exploration of a Genre Set: RA Abstracts and Introductions in Two Disciplines
- Genre Analysis: An Approach to Text Analysis in ESP
- Methods Sections of Management RAs: A Pedagogically Motivated Qualitative Study
- Engineering English: A Lexical Frequency Instructional Model

There are two further options in titles that are worth pointing out. One is the use of verb + *ing* particles, as in these examples.

- Exploring the Deterioration Factors of Bridges
- Analyzing Genres: Functional Parameters

The other is the use of qualifying elements: What differences do you see between the following pairs of titles?

1a. On the Use of the Passive in Journal Articles
1b. The Use of the Passive in Journal Articles

2a. A Study of Research Article Results Sections
2b. A Preliminary Study of Research Article Results Sections

3a. An Analysis of Errors in Period Placement
3b. Toward an Analysis of Errors in Period Placement

4a. The Role of Urban Planners
4b. A Possible Role for Urban Planners

TASK TWENTY-EIGHT

Analyze these ten titles of papers that we have either used or cited in one of the eight units of this book. Record your findings in the chart on page 382. The first one has been done for you.

1. Does Self-Citation Pay?
2. A Duty to Forget? The 'Hitler Youth Generation' and the Transition from Nazism to Communism in Postwar East Germany, c. 1945–49
3. Fog-Water Collection in Arid Coastal Locations
4. A Piezoelectric Frequency-Increased Power Generator for Scavenging Low-Frequency Ambient Vibration
5. Caffeinated Energy Drinks—A Growing Problem
6. Design of a Haptic Gas Pedal for Active Car-Following Support
7. So, What is the Problem this Book Addresses? Interactions in Book Reviews
8. Consumer Decisions in the Black Market for Stolen or Counterfeit Goods
9. The Increasing Dominance of Teams in Production of Knowledge
10. Keeping Up One's Appearance: Its Importance and the Choice of Type of Hair-Grooming Establishment

Title	Number of Words	Any Verbs?	Punctuation	Field
1.	4	does . . . pay	question mark	information science
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

TASK TWENTY-NINE

Look at the article references in at least one of the papers in your reference collection. What tendencies can you find in the titles of the cited papers?

- Average length in words?
- Presence of finite or *+-ing* verbs?
- Use of colons?
- Use of qualifications?
- Use of questions?

If colons were used in any of the titles you analyzed in Tasks Twenty-Eight and Twenty-Nine, what is the relationship between the pre-colon and post-colon information? You may like to consider these possibilities.

Pre-Colon	*Post-Colon*
Problem:	Solution
General:	Specific
Topic:	Method
Major:	Minor

Finally, at this stage in your career, we advise against "clever," "joke," or "trick" titles. These can be very successful for undergraduates and for senior scholars, but in your case, such titles may simply be interpreted as mistakes. An example of such a title follows. The author of the paper was Professor Hartley, a well-known professor of Psychology who conducted many experiments on what makes English texts easy or difficult to read. In this instance, he had been comparing texts that have "ragged right" or "unjustified" margins at the end of the lines with those that have straight, or "justified," margins. Here is the title.

> Unjustified Experiments in Typographical Research and Instructional Design (*British Journal of Educational Technology* [1973] 2: 120–31)

In this case, we can assume that Professor Hartley, who is a very prolific scholar, is making a joke. But if you wrote it?

Depending on your field, you may wish to consider using qualifications in your titles. In nearly all cases, the process of arriving at the final form of a title is one of narrowing it and making it more specific. Qualifications can be helpful in this process.

TASK THIRTY

Bring the title of one of your papers to class and be prepared to discuss its final form and how you created it.

Abstracts

This penultimate section includes a brief look at RP abstracts. Note that a much more extensive treatment is available in *Abstracts and the Writing of Abstracts*, published by the University of Michigan Press (Swales and Feak 2009).

Unless you are in true humanities, your RP will probably require an abstract. Abstracts have been shown to be very important parts of an RP because of increasing competition to publish. Among certain important journals, manuscripts may be rejected after a reading of the abstract alone. While we need to emphasize that such rejections will be largely based on the perceived lack of research merit, it remains the case that a coherent abstract can only help a manuscript reach the next step of external review. We also know that if readers like your abstract, they may read your paper—or at least part of it. If they do not like it, they may not.

There are two main approaches to writing RP abstracts. One we will call the *results-driven* abstract because it concentrates on the research findings and what might be concluded from them. The other approach is to offer an *RP summary* abstract in which you provide one- or two-sentence synopses of each sections of the paper.

RP abstracts can be characterized as either *indicative* (describe what was done) or *informative* (include the main findings). In some very complex papers or those that are very theoretical (as in mathematics), it may be impossible to report findings and for those we would expect more informative abstracts. Some journals require structured (labeled with section titles), while others may not. However, we should note that structured abstracts have been spreading beyond the medical field (e.g., Hartley and Betts, 2009).

Structured abstracts have subheadings similar to those in a paper.

Background

Aim

Method

Results

Conclusion

Now here is the abstract for a paper we referred to in Task Nine of this unit.

TASK THIRTY-ONE

Read the abstract for the paper in Task Nine and answer the questions on page 386.

Does Self-Citation Pay?

Fowler, J. H., and Aksnes, D. W. (2007).
Scientometrics, 72, 427–437.

❶ Self-citations—those where authors cite their own works—account for a significant portion of all citations. ❷ These self-citations may result from the cumulative nature of individual research, the need for personal gratification, or the value of self-citation as a rhetorical and tactical tool in the struggle for visibility and scientific authority. ❸ In this article we examine the incentives that underlie citation by studying how authors' references to their own works affect the citations they receive from others. ❹ We report the results of a macro study of more than half a million citations to articles by Norwegian scientists that appeared in the Science Citation Index. ❺ We show that the more one cites oneself the more one is cited by other scholars. ❻ Controlling for numerous sources of variation in cumulative citation from others, our models suggest that each additional self-citation increases the number of citations from others by about one after one year, and by about three after five years. ❼ Moreover, there is no significant penalty for the most frequent self-citers—the effect of self-citation remains positive even for very high rates of self-citation. ❽ These results carry important policy implications for the use of citations to evaluate performance and distribute resources in science and they represent new information on the role and impact of self-citations in scientific communication.

1. A first impression suggests that this is an RP-summary type of abstract. Can you show this by aligning the sentences with the IMRD structure?
2. What tense is used consistently throughout the abstract? Is this usage common and conventional in your field? If so, why? If not, why not?
3. The middle portion of the abstract uses first-person pronouns (*we* and *our*). Do you find these in the abstracts in your reference collection?
4. The authors of this abstract approximate their numbers. They refer in the abstract to "more than half a million citations," while the actual number examined was 692,455. What do you think of this?
5. Suppose somebody remarked, "Fowler and Aksnes are really quite promotional in this abstract." What evidence can you find for and against this observation?
6. In November 2011, Google Scholar indicated that this paper had been cited by 45 papers. This is a respectable total for this field. Why do think this is?

It seems clear that tense usage in abstracts is fairly complicated. First, the conclusions are nearly always in the present. Second, RP summary abstracts often use the present or present perfect for their opening statements. Third, there appears to be considerable disciplinary and individual tense variation in sentences dealing with results.

Although descriptions of methods and results are often expressed through the past tense, it is not difficult to find exceptions to this pattern. Here is a short abstract from the "Rapid Communications" section of the journal *Physical Review A* (Vol. 48, R1–R4).

Nuclear-Structure Correction to the Lamb Shift

Pachucki, K., Leibfried, E., and Hänsch, T. W. (1993).

In this paper the second-order nuclear-structure correction to the energy of hydrogen-like systems is estimated and previous results are corrected. Both deuterium and hydrogen are considered. In the case of deuterium the correction is proportional to the nuclear polarizability and amounts to about -19 kHz for the 1S state. For hydrogen the resulting energy shift is about -60 Hz.

Our investigations suggest that the shift to the present tense is more likely to occur in the physical sciences, such as Physics, Chemistry, and Astrophysics, and less likely to occur in the social sciences. We also found that physicists and chemists were—perhaps surprisingly—more likely to adopt a personal stance. Indeed, we have found occasional abstracts, particularly in Astrophysics, which contain sequences of sentence openings like these:

We discuss . . . .

We compute . . . .

We conclude . . . .

It would therefore seem that choice of tense and person may again be partly a strategic matter in abstracts. Choosing the present tense option—if permitted—can produce an effect of liveliness and contemporary relevance. Choosing *we* can add pace, by making an abstract a little shorter. We have seen, of course, many of these features in the Fowler and Aksnes abstract.

TASK THIRTY-TWO

Draft an abstract for one of your research projects.

Acknowledgments

Acknowledgments have become an integral part of most RPs. Indeed, one well-known professor of our acquaintance reported to us that he always reads the acknowledgments of an RP first. When we asked him why, he replied, "Oh, the first thing I want to know is who has been talking to whom." While we do not think that this is standard reading behavior, it does show that acknowledgments can be more than a display of necessary politeness.

Acknowledgments occur either at the bottom of the first page, following the Discussion, or sometimes at the end of the RP. They provide an opportunity for you to show that you are a member of a community and have benefitted from that membership. Acknowledgments sections, therefore, allow you to "repay your debts" (Giannoni, 2002). At the same time, however, they allow you to highlight that you are also "intellectually responsible" for the content of the publication (Giannoni, 2002). Here we list some of the common elements in an acknowledgments section.

1. Financial support

   Support for this work was provided by [sponsor].

   This research was partially supported by a grant from [sponsor].

   This research was funded by Contract (number) from [sponsor].

2. Thanks

   We would like to thank A, B, and C for their help. . . .

   I wish to thank A for his encouragement and guidance throughout this project.

   We are indebted to B for . . . .

   We are also grateful to D for . . ..

3. Disclaimers (following the first two elements)

   However, the opinions expressed here do not necessarily reflect the policy of [sponsor].

   The interpretations in this paper remain my own.

   None, however, is responsible for any remaining errors.

   However, any mistakes that remain are my own.

We believe that, if permitted, the acknowledgments should be written in the first person—using *I* for a single author and *we* for co-authors. While it is possible to find phrases like *the present authors*, we consider them overly formal for this situation.

As far as we can see, financial support tends to come first, followed by thanks. Disclaimers seem optional. Mentions of other matters, such as permissions or sources of materials, may also occur.

TASK THIRTY-THREE

Write a suitable acknowledgments section for one of your pieces of work. If necessary, invent some forms of assistance to expand the section.