Expressing Critical Thinking through Disciplinary Texts

Insights from Five Genre Studies

Ian Bruce

Expressing Critical Thinking through Disciplinary Texts

Also available from Bloomsbury

Academic Writing and Genre, by Ian Bruce
Academic Writing in a Second or Foreign Language, edited by Ramona Tang
Acquiring Metaphorical Expressions in a Second Language, by
Chris Mengying Xia
On Writtenness, by Joan Turner
Reflective Language Teaching, by Thomas S. C. Farrell

Expressing Critical Thinking through Disciplinary Texts

Insights from Five Genre Studies

Ian Bruce

To find out more about our authors and books visit www.bloomsbury.com and
sign up for our newsletters.

To Carolyn

Contents

Tables

Preface

This book came about because of my work in three areas: teaching university courses, doctoral supervision and genre research. In each area, a central requirement is for writers to express critical thinking through the texts that they must create. In exploring how writers fulfil this requirement, I bring together in this book five published studies in which I used genre analysis to identify how critical thinking is expressed in texts from different domains. Turning these studies into a book has involved revisiting and re-evaluating their findings and considering their commonalities and differences as well as the wider contextual influences of the different academic and professional domains to which the genres belong.

I begin the book by reviewing theory and research from two areas, those of 'critical thinking' and 'genre studies'. In Chapter 1, I examine the historical origins of, and different approaches to, conceptualizing critical thinking as well as the different ways in which it has been taught. In Chapter 2, I review previous studies that have examined how critical thinking is expressed through written texts, most of which have focused on the use of a single linguistic feature and have used corpus methods. I then argue that the use of genre as an analytical framework provides a more holistic, multivariable approach to this type of research. In developing this approach, I review different theories of genre and outline the particular genre model that I use in my investigations. In each of the following five chapters (Chapters 3–7), I use this model to examine how critical thinking is expressed in a particular academic or professional genre. In the final chapter, drawing together the findings of these studies, I propose key principles that emerge about how critical thinking is communicated through text.

In addition to my research focus on how critical thinking is expressed through texts, I have also tried to provide some suggestions about how the findings of these studies can be used pedagogically by those tasked with teaching academic, research and professional writing. To this end, I include a section towards the end of four of the genre studies where I relate the findings to the teaching of writing and, in particular, teaching how critical thinking is expressed through writing. In a section in the final chapter, I draw these pedagogic implications threads together, summarizing the ideas and principles discussed in previous chapters.

This book is not the final word on how critical thinking is expressed through writing, nor is it the final word on how this should be taught. However, I hope that the approach that I take and the insights and suggestions that I offer will contribute to the ongoing discourse that relates to this challenging pedagogical issue.

Critical thinking

Definitions, origins, controversies

1.0 Overview

My overall aim in this book is to explore how critical thinking is communicated through written text. While most books that deal with the subject of critical thinking are concerned with how it is formulated, and draw on the disciplines of philosophy, logic or rhetoric, my focus here is on understanding how critical thinking is expressed through the written texts of different disciplines. As a framework for this enquiry, I use genre analysis and bring together the findings of five previously published studies to provide insights into the textual means employed.

In this chapter, I establish the context of the book, first, by defining the key terms that I use, second, by briefly considering the origins of critical thinking in Western scholarship and science, and third, by discussing the different approaches to the teaching of critical thinking. In Chapter 2, I outline the genre model that I use as an analytical framework to investigate how critical thinking is expressed through specialist writing from different disciplines. In Chapters 3, 4 and 5, I explore how critical thinking is expressed in academic writing, specifically in undergraduate essays, PhD discussion chapters and research article (RA) literature reviews. In Chapter 6, I examine its expression in an example of business writing, the online genre of the fund manager commentary (FMC), and in Chapter 7, I explore how it is expressed in journalistic opinion writing, exemplified in a political commentary column from *The Guardian* newspaper. Finally in Chapter 8, I review the discussions and findings of the previous five chapters. I consider how they contribute further to understanding how critical thinking is expressed through writing and how this may be taught by writing instructors.

1.1 Definitions

To establish a definitional framework for the following chapters, I begin by introducing the key terms that are used, those of *critical thinking, enacting criticality, text* and *discourse.* The concepts related to these terms are presented briefly here and discussed again in greater detail at the beginning of Chapter 2. For the purposes of this book, the term 'critical thinking' is used to describe an evaluation made within any field of human activity about some aspect, object or behaviour of that field according to the 'standards of judgment of that field' (Swales & Feak, 2012, p. 328). This definition accords with the ideas of McPeck (1981), who states: 'the criteria for the use of scepticism are supplied by the norms and standards of the field under consideration' (pp. 7–8). The adjunct term 'enacting criticality' refers to the actual process of the communication (transmission and reception among interlocutors) of such an evaluative judgement. A core idea in the definitions of McPeck (1981) and Swales and Feak (2012) underpins the approach to critical thinking taken here, which is: when expressing critical thinking, writers (or speakers) communicate evaluative judgements on some aspect of their particular area of specialist activity according to the values and standards of the discipline, profession or area of activity within which the evaluation occurs. In Western societies, critical thinking is usually regarded as a central element of engagement with any field of specialist human activity, such as academic scholarship, research, professional practice, business, manufacturing, art, sport, entertainment or politics. It is seen as essential to the development and refinement of the knowledge, skill, product, service or other outcome of the specialist field within which it occurs.

Following this definitional approach, an underlying requirement for any credible enactment of criticality is for an interlocutor to be an insider within, or possess a certain threshold level of knowledge about the field of activity within which a judgement is being made. In relation to academic subjects, the philosopher Hirst (2009) calls this type of disciplinary insider knowledge the logical grammar of a subject, or as he states, 'the logical grammar of its key concepts' (p. 37), which I suggest involves the epistemology and specialist knowledge of a particular subject discipline. Brookfield (2012) further defines this type of fundamental insider knowledge as 'the building blocks of knowledge that every student of that subject needs to know in order to be regarded as well versed in it' (p. 28). Brookfield goes on to say that 'what counts as content grammar is determined by scholars and institutions and [is] often codified by professional associations in standards and lists of best practices' (p. 28). However,

since the focus of this book is on how critical thinking is expressed through written text (as part of the larger process of enacting criticality), the terms 'text' and 'discourse' are also central to this definitional framework.

Text, as Widdowson (2004) states, is 'the linguistic trace of a discourse process' (p. 69). Thus, text here is taken to mean the words on the page, which may be a written document or the written transcription of a spoken monologue or dialogue. Discourse, on the other hand, refers to the interpretations that relate to a text, involving the transmission and reception of ideas among interlocutors. Therefore, while a written text is the linguistic medium through which ideas are encoded and decoded, creating discourse involves the application to the text of socially constructed knowledge, interpretive frameworks and personal strategies along with a working knowledge of the different elements of the linguistic system used. Here discourse is seen as involving both social and cognitive processes within which texts may play a central and integral role. Where specialist written texts are involved, enacting criticality occurs among interlocutors (writers and readers) engaged in co-constructing discourse within particular disciplinary contexts.

Thus, the central idea that underpins the approach to critical thinking of this book is that enacting criticality is a contextually situated, discursive process, involving a wide range of types of knowledge that may include disciplinary, social, procedural and linguistic elements. Therefore, in exploring the genres discussed in Chapters 3 to 7, it is important that the theoretical approach used to examine the written expression of critical thinking is able to account for, and integrate the elements of, both the actual text and the discursive intentions and meanings that relate to the creation and interpretation of the text. In addressing this need for an encompassing theoretical approach, Chapter 2 outlines the genre model used to examine the different categories of texts of the subsequent chapters. However, to first establish a context for these investigations of expressing critical thinking through writing, Section 1.2 briefly considers the historical origins of critical thinking in Western scholarship and science.

1.2 Critical thinking in Western scholarship

The idea of expressing critical thinking through argumentation and reasoning, and the need for educated people to enact criticality when engaging with knowledge or scientific discovery are concepts that have a long history in Western scholarship – concepts that began with the approaches to philosophy

and the theories of rhetoric, dialectic and logic of ancient Greece and Rome. In this section, I attempt to illustrate, very briefly, the historical development of the concept of exercising critical thinking through reference to a small number of landmark works.

During the classical period, theories advanced for the discovery of knowledge consisted of rules or patterns for deductive reasoning, such as the 'syllogism'.[1] Closely related to the theories of knowledge discovery of this era were proposals for principled approaches to the oral evaluation and communication of knowledge, specifically 'rhetoric' and 'dialectic'. For example, Aristotle's famous work *Rhetoric* provided a set of rules for persuasive speech-making. Similarly, dialectic, as a type of oral debate, was made popular by Plato in the *Socratic Dialogues*, its purpose being to establish the truth of a matter by following a prescribed set of principles as an approach to resolving a disagreement. Separate approaches for exclusively written communication emerged later during the early medieval period. Then the selective and pragmatic use of classical principles called 'rhetorica nova' was applied to a wide range of written texts, including letters, legal documents, sermons and verse. At this stage, the idea that written texts may be structured differently from spoken texts also began to be considered. This development is exemplified by Thomas Aquinas in the thirteenth century in his work *Summa Theologica*, which employed empirical reasoning and systematicity in addressing counter-arguments in religious debates.

During the Renaissance, the ideas and publications of the scientists and philosophers of the sixteenth and seventeenth centuries represented changing orientations towards the discovery of knowledge and how newly discovered knowledge should be reported. In his work *Novum Organum*, the English philosopher/politician Francis Bacon (1561–1626) proposed that knowledge discovery should involve qualitative observations of nature that provide a basis for establishing natural laws or principles. In seventeenth-century England, meetings of groups of scientists in London from about 1645 led to the formation of the Royal Society. Drawing on ideas from published works of Francis Bacon, the members of the Royal Society proposed 'empiricism' as a basis for enquiry in all areas of science. In conjunction with this new scientific approach, the members also sought a suitable theory of communication for the reporting and dissemination of scientific findings, a theory that moved away from the deductive routines of traditional, persuasive rhetoric. The figure within the Royal Society who was most influential in developing this plain, direct form of communication – the New Rhetoric (NR) – was John Locke (1632–1704),

who proposed that argument should be based on factual content and supported induction as a means for presenting proof or evidence.

However, Bacon's ideas about the centrality of observation to knowledge discovery differed from those of the French philosopher Descartes (1596–1650), who proposed that knowledge is solely developed by means of human reasoning. In his work *Discourse on the Method*, Descartes proposes four principles for systematically evaluating knowledge, sometimes referred to as 'principles of systematic doubt', according to which reasoning about anything begins with doubt or scepticism. As a result, ideas about critical thinking or scepticism also came to be considered to be an integral part of the processes of the discovery of knowledge and its communication.

The critical approach to knowledge of British empiricism was further extended in the eighteenth century by the Scottish philosopher David Hume (1711–76), who was a strong empiricist who also belonged to the 'sceptical' philosophical tradition. Hume argued that human knowledge was based on what is observable, but also that humans had inbuilt capacities to form conceptions and make deductions about empirically observed knowledge. Later, in the early nineteenth century, empiricism as a basis for scientific investigation further evolved into the positivist approach, and was extended into the human sciences by the French philosopher Auguste Comte (1798–1857), who also emphasized the importance of the relationship between theory and empirical observation in order to gain a greater understanding of the world: 'If it is true that every theory must be based upon observed facts, it is equally true that facts cannot be observed without the guidance of some theories' (Comte, 1974, p. 27). Thus, from the ideas of Comte, the combination of inductive and deductive reasoning that characterizes 'positivism' or the 'scientific method' emerged. Some elements of this approach can also be seen in the writings of the German philosopher and physicist Ernst Mach (1838–1916) and the American philosopher and logician Charles Peirce (1839–1914).

In the philosophy of science in the early part of the twentieth century, there was a strong focus on theory-internal elements of critical/analytical thinking, involving the stringent application of logic to propositions as part of the development of scientific theory. This emerged when a number of philosophers of science (the Vienna Circle) developed a theory of scientific discovery termed 'logical positivism'. This theory emerged from the ideas of Frege (1848–1925), Russell (1872–1970) and Wittgenstein (1889–1951). Following this approach, rules of logic are applied to the analysis of scientific propositions, such as in Russell's 'logical atomism' whereby '[t]he truth or falsity of complex statements

might, it seemed, be assessed by the truth or falsity of their most simple (empirical) atomic constituents' (Oldroyd, 1986, p. 221).

The ideas of logical positivism of the members of the Vienna circle were challenged by Karl Popper (1902–94), who was less interested in the meaningfulness of the propositions expressed within scientific theories than in the efforts of scientists to test their theories. His idea of 'falsification' was that scientists should test their hypotheses by carrying out empirical work with the ultimate goal of examining the extent to which they are wrong: 'Scientific theories were not the digest of observations, but that they were interventions – conjectures boldly put forward for trial, to be eliminated if they clashed with observations' (Popper, 1963, p. 46). Following Popper's approach, scientific predictions are expressed as 'falsifiable' statements so that they can be tested empirically. If a theory, once tested by the examination of the appropriate empirical evidence, could not be falsified, it could be said to be 'corroborated'. Thus, Popper's influence on science was his emphasis on the critical scrutiny of theories and the rigour in approaches to the empirical work that sought to prove or disprove them.

In the social sciences, the Critical Theory School emerged from the Institute for Social Research, established in 1923 at the University of Frankfurt. Critical theorists claimed that previous approaches to research, such as positivism, ignored political and social issues, and they proposed that research in the social sciences (differing from that of the physical sciences) should fulfil social agendas in order to benefit the whole of society. The Critical Theory approach eventually became associated with particular research methods: action research (the investigation of professional practice for the purpose of improvement) and critical discourse analysis (ideology critique).

The second half of the twentieth century saw more radical challenges to theories of science and knowledge discovery. Thomas Kuhn (1924–96), an American physicist and philosopher, focused on the social dimensions of scientific enquiry. In his work *The Structure of Scientific Revolutions* (1962), Kuhn suggested that the history of scientific thought is actually one of discontinuities, and that any scientific method used for the discovery of knowledge is an artefact of the constraints placed around it by the practitioners of a particular scientific community, which he termed a 'paradigm'. Another philosopher of science, Paul Feyerabend (1924–94), whose book *Against Method* (first published in 1975) emphasized, even more than Kuhn, the time- and context-situatedness of scientific ideas, raises the issue that 'progress' is often only made when current, received, scientific understandings are challenged by new ideas or theories that,

by contrast, appear irrational – that is, outside of the current paradigm. Other theorists, such as those working in the field of the sociology of science (e.g. Gilbert & Mulkay, 1984; Latour & Woolgar, 1986; Knorr Cetina, 1999), have also argued that what is held to be scientific knowledge is the product of the thinking and values of historical periods, discourse communities and institutional environments within which such knowledge is developed, with these contextual elements influencing the ontological and epistemological views of researchers.

Thus, a thread that runs through Western theories of reasoning and knowledge discovery has been the emphasis placed on the scrutiny and critique of new knowledge, with different principled approaches to how new knowledge is validated being proposed during different historical periods. While earlier eras sought to articulate universal laws and principles that related to the discovery and communication of knowledge, a significant theme that emerged during the latter half of the twentieth century was recognition of the influences of historical, cultural, social and institutional contexts on the research methods of science and on how the process of scientific inquiry evolved. During this era, those writing about the philosophy and sociology of science began to challenge any idea of uniformity of method and structure, emphasizing the 'situatedness' of both scientific research and its reporting in texts. Situatedness refers to the influences of cultures, societies, discourse communities and institutions and their particular research methodologies on knowledge creation and on critical or evaluative thinking, which may differ according to context.

1.3 Operationalizing and teaching critical thinking

The brief historical overview of the previous section describes ongoing attempts throughout history to conceptualize approaches to analytical and critical thinking as a basis for undertaking both scientific investigations and knowledge communication. Given the underlying role and importance of these critical/ analytical traditions in Western scholarship and science, modern governments and educational institutions have long placed value on students developing the ability to formulate and communicate evaluative judgements – to express critical thinking through spoken and written texts in ways that are considered to be both intellectually sound and academically appropriate. This view of the importance of the development of critical thinking skills is often articulated as a core competency in state or national educational curricula, such as those of the province of British Columbia in Canada and the Republic of Singapore.

The importance of critical thinking is also identified in the mission statements of Western schools and universities. For example, the first core value of the University of Cambridge under the heading of 'Education' is 'the encouragement of a questioning spirit'. Similarly, Harvard's undergraduate college claims in its mission statement that it 'encourages students ... to rejoice in discovery and in critical thought'. Therefore, because critical thinking is identified as such an important fundamental academic attribute, it is often argued that it should be taught directly to students in schools and universities. However, when it comes to articulating what critical thinking is, how it is learned and how it should be taught, there is a considerable diversity of approaches. This section provides a brief outline of contemporary views and controversies about the pedagogical approaches to the development of critical thinking skills in students seeking to participate in higher education, with a particular focus on teaching critical thinking through writing.

Despite apparent widespread agreement on the importance of critical thinking in education (and especially in higher education), there are significant differences among educators in both how they define critical thinking and how they propose that it should be taught. Brookfield (2012) suggests that there are five intellectual traditions that are drawn upon for the teaching of critical thinking: analytic philosophy and logic, natural science, pragmatism, psychoanalysis and critical theory. He suggests that the most influential approach is that of analytic philosophy and logic, which appears to be about 'the mechanics of putting arguments together and taking them apart' (p. 33). This approach has its origins in classical philosophy and rhetoric, which were briefly considered in the previous section. The second tradition is the teaching of critical thinking based on the precepts of natural science, an approach that draws on empiricism and the tradition of hypothesis formulation and testing. As seen in the previous section of this chapter, this approach has a long history beginning with the sixteenth-century scientists of the Royal Society, nineteenth-century positivists, and logical positivism and Popper's principle of falsifiability in the twentieth century. Brookfield suggests that there are also critical thinking courses based on American pragmatism 'which constantly questions the tacit assumptions of earlier interpretations of the past' (West, 1982, p. 20). In addition, he suggests that courses on critical thinking in the fields of social work, nursing and education may draw on the tradition of psychoanalysis and psychotherapy, and that the critical theory approach of the Frankfurt school is employed in courses concerned with ideology critique, such as in the areas of education and critical discourse analysis. What emerges from Brookfield's overview is that

ideas about what critical thinking is, and how it should be taught, come from a number of philosophical and scientific traditions, and that there is no common source or canon of knowledge that informs its teaching.

While also acknowledging, like Brookfield, the diversity of the theoretical origins of critical thinking and how it is conceptualized, Davies and Barnett (2015) attempt to identify the types of pedagogical focus that arise from these different intellectual traditions; they categorize them within three broad approaches. The first is the 'critical thinking movement', whose pedagogy has the aim of developing critical thinking skills as a 'reflective basis for decision making and judgment calls' (p. 11). Ennis (1989) defines this approach as 'reflective and reasonable thinking that is focused on deciding what to believe or do' (p. 45). This approach to teaching critical thinking has its origins in analytic philosophy and logic, and tends to predominate in the types of formative courses that governments and universities demand, such as in freshman critical thinking and writing and rhetoric courses. The second broad pedagogical approach that Davies and Barnett identify is 'the criticality movement', which includes a focus on developing the critical thinking dispositions of students. Like the previously mentioned 'thinking skills' approach, it is concerned not only with the judgements that students form but also with the interactions in which they engage. This involves developing student critical thinking dispositions arising in relation to self, to others and to the world, and it sees critical thinking as involving reflection and action: 'This is a sense of "critical thinking" that extends beyond the individual and his or her cognitive states and dispositions to the individual's participation in society as a critically engaged citizen in the world' (Davies & Barnett, 2015, p. 16). The third approach is the 'critical pedagogy movement' with a focus on participating critically in society, such as in understanding and resisting power relations in institutions and in the wider society. According to Davies and Barnett (2015), the aim of this approach is 'not simply educating for critical thinking or even enabling individuals to embody a critical spirit, but educating for *radical* transformation of society as well' (p. 20). They suggest that, in addition to developing skills and dispositions, it also involves incitement to action. Specifically, critical pedagogy aims to educate students to identify and take action against inequitable power structures of institutions and undemocratic tendencies in society, such as manifest in the power and influence exerted by large corporations.

While critical thinking is taught in introductory courses in philosophy and logic, it is also a focus of courses concerned with the teaching of writing, usually academic writing. In this field, Atkinson (1997) claims that attempts to define

critical thinking are based on two broad definitions. The first is the application of logic to argument, a definitional approach that sees critical thinking as a well-defined, rational, transparent teachable set of behaviours related to argumentation and problem-solving. This definitional approach accords with Brookfield's view of the approach of courses based on analytic philosophy and logic, with its focus on argumentation and Davies and Barnett's classification of pedagogy that focuses on 'thinking skills'. Atkinson proposes that a second definitional approach that is used in some writing courses sees critical thinking as social practice – an organic part of a particular academic culture that differs according to the ontology and epistemology of each discipline. According to this view, exercising critical thinking is a behaviour that is largely tacitly acquired rather than overtly taught and learned. Supporters of this view also contend that academic thinking behaviours specific to one particular disciplinary context do not necessarily transfer into other contexts. This definitional approach appears to draw upon later twentieth-century theories that emphasize the situatedness of intellectual and scientific inquiry within specific cultures, disciplines and institutions, and would appear to relate to Davies and Barnett's criticality movement.

Atkinson (1997) suggests that these two different approaches to defining critical thinking give rise to two different approaches to its actual teaching in writing courses. One approach he terms the 'teachable skills' approach, which draws on the logical argument definition of critical thinking, and the other he terms the 'cognitive apprenticeship' approach, which draws on a social practice definition. Traditionally, writing and rhetoric courses (and also introductory critical thinking courses taught within philosophy programmes) have promoted the first, the teachable skills approach. Such instruction is concerned with the development of a set of fairly abstract, cognitive skills relating to argumentation, skills that are not specifically bound to any particular context. It was thought that the training of writers in the use of a set of generalizable reasoning and problem-solving skills may be transferred later into disciplinary contexts (e.g. Ennis, 1989; Glaser, 1984; Halpern, 1998, 2001). However, a number of studies refute the idea that students who are overtly trained in these allegedly generalizable skills will transfer their use into specific domains and disciplines. Much of this body of research is brought together in the extensive, meta-analysis of Huber and Kuncel (2016) who, on the basis of their findings, 'argue against investing additional time and resources in teaching *domain-general* critical thinking' (p. 460). Moreover, in relation to the teaching of academic writing, I argue that there are two fundamental problems with this particular approach.