

## BOOK REVIEWS

### Writing Across the Curriculum: A Collection of Short Guides

I frequently describe to my students the apparently inverted nature of textbook supply, in that when you are a student (especially a poor, struggling graduate student) you are required to expend a sizeable portion of your savings or graduate stipend to purchase books. When the degree is finally conferred and you begin to draw a salary, publishers then provide gratis copies! From time to time one of these unsolicited freebies turns out to be a classic and a widely-used addition to one's personal library. The first volume of that sort added to my library was Borror's *Dictionary of Word Roots and Combining Forms*, which has been recommended to students in my classes for over 15 years. The most recent was Pechenik's *A Short Guide to Writing about Biology*, the reading of which provided impetus for the reviews that follow. On scanning the book, I noticed that the series also contained guides to writing about literature, history, film, and social sciences. The guide to writing about biology impressed me sufficiently to feel that the *OJS* readership might profit from a review of each volume in this series. Although some of the subject matter areas are outside those encompassed by The Ohio Academy of Science, the idea of "writing across the curriculum" is of enough importance that those of us who read the *OJS* are likely to communicate information about writing guides to colleagues in other fields. Thus, the other books in this series were requested from the publisher, were then distributed to appropriate experts, and the collected reviews appear below. I hope they are of some help to you in making decisions about resources for improving the writing skills of students, employees, and others with whom you work.

LEE A. MESERVE  
Editor, *OJS*

#### **A Short Guide to Writing about Biology. Jan A. Pechenik. 1987. Little, Brown and Company, Boston, MA. 194 p. \$11.00 paper.**

The writing guide by Jan Pechenik carries a 1987 copyright date which, to some, might seem to make it outdated, particularly as the subject of a book review in 1991. However, the suggestions and advice provided in this little volume are largely timeless and, I suspect, will survive through several printings. Through the liberal use of examples from his own teaching experience, Pechenik has captured the frustration of both the student given a writing assignment, the purpose of which (s)he does not understand, and the teacher who must read the product of said absence of understanding. He then provides insights to minimize this frustration.

The book is subdivided into nine chapters with each giving consideration to a particular writing task which might, and likely will, be expected of students in biological sciences at one point (or perhaps many points) in their lives. Following an introductory chapter containing general rules of writing, Pechenik details the writing of lab reports, essays and term papers, research proposals,

summaries and critiques, and letters of application. Guidance for preparing a paper for presentation, revising what has been written, and writing answers on essay exams are covered in separate chapters. Each of these chapters is packed with excellent advice and examples. The following items were particularly memorable to this reviewer.

Pechenik includes a section in the introduction regarding the use of word processing computers in writing. He points out the benefits and pitfalls of reliance upon computer technology in the writing process. Among the former is the obvious ease of revision and modification of early drafts. Among the latter is the inability of the computer to think, organize, proofread, and spell (especially scientific terms) for the author, regardless of inflated advertising claims. Pechenik suggests writing the first draft, on paper, by hand, with a scientific dictionary close by, and then transferring the first revision to a word processor. I confess to being old-fashioned enough to use this technique to what I construe as advantage.

Two points stand out from Pechenik's discussion of writing lab reports. The first is that the student should understand that they are not being made to perform this task as a new high in cruel and inhuman punishment, but as a preparation for routine employment tasks down the road of life. The second is that, although it makes intuitive sense to compose the sections of a report in front-to-back order, it makes much more logistical sense to begin with a section other than the Introduction. This latter advice would be well taken by those preparing manuscripts for publication as well. Pechenik also does an excellent job of describing appropriate components of Results and Discussion sections.

While other segments of the guide are also well done, the chapter that made a direct hit with me was that concerned with writing answers for questions on essay exams, perhaps because student efforts in my classes over the past 20 years have run the gamut from completely disorganized floundering to near-publication quality. Specifically, Pechenik lists the following four points to be used in writing the successful answer:

- "1. Read the question carefully before writing anything.
2. Present all relevant facts.
3. Stick to the facts.
4. Keep the questions in mind as you write."

If all my students remembered these points, their performance on essay exams would improve.

In summary, there are as many styles of writing, and schemes of organization of material, as there are writers. Nonetheless, there are common points of reference for those extracting from and adding to the literature of a given discipline. Pechenik has done a commendable job of capturing those reference points important to writers in the biological sciences. This book has helped, and will continue to help, my students. I recommend it to your use.

LEE A. MESERVE

Department of Biological Sciences  
Bowling Green State University  
Bowling Green, OH 43403-0212

**A Short Guide to Writing about Film. Timothy Corrigan. 1989. Scott, Foresman and Company, Glenview, IL. 194 p. \$7.75 paper.**

This volume of the series *A Short Guide to Writing about...* aims to guide students through the experience of writing an essay of film criticism, that is, an essay interpreting, analyzing, and evaluating a film. To that end, the author offers several chapters about film and writing on film, and two chapters applicable to essay-writing in general. Most helpful are sections on such practical—and yet crucial—matters as taking notes during films, writing effectively, doing research on motion pictures, and preparing a manuscript. The major problem with the book lies in Corrigan's attempt to weld together two approaches to film criticism, which are predicated on different assumptions about film meaning, and about the role of the critic.

The best parts of *A Short Guide to Writing about Film* are Corrigan's advice as a seasoned teacher and researcher of cinema studies. He encourages students to think of film analysis as a pleasurable process in which their personal expectations and responses can form the basis for an essay of film criticism. Corrigan stresses conscientious note-taking during film viewing so students can offer concrete details to support the generalizations they make in their papers. Modeling this practice, he provides numerous examples of student writing to illustrate points in his book. Sections on taking notes from secondary sources and preparing a manuscript contain many practical suggestions that instructors may incorrectly assume students already know. He points out, for example, that "separate title pages are normally unnecessary, and fancy accessories (such as folder-cover or clear plastic binder) merely waste money and add bulk to the instructor's load of essays" (p. 163).

Unfortunately, the *Guide* suffers from an attempt to layer parts of a teachable approach to film criticism on top of a traditional approach that provides students with few tools. The traditional approach assumes that good critics perceive the true theme of a work which is not apparent to the average viewer. Corrigan cautions students not to treat the "moral" of a story or an obvious "message" as a theme. Instead, "look into the more subtle or troublesome manipulations involved in [certain] films" (p. 98). For what does one look? Corrigan defines themes as "the large and the small ideas that help explain the actions and events in [a film]" (p. 39). One should ask, for instance, what characters represent: "the importance of individuality or society? Human strength or human compassion?" (p. 40).

Students are to watch and listen for themes in films, not so much in dialogue but as expressed subtly through the film techniques of *mise en scène* (setting, costume, acting, lighting), editing, cinematography, and/or sound. Corrigan's examples of themes expressed through style involve simplistic plays on words; he extrapolates abstract meaning from concrete terms. In the films of Robert Bresson, for example, "offscreen space suggests a type of spiritual reality his characters are unable to grasp or understand because it is literally beyond the frame of their world" (p. 66). Corrigan encourages students also to deal with film style in terms of realism. He suggests that students evaluate the degree to which particular stylistic features

are realistic. Corrigan fails to explain how this relates to themes, and fails to define "realism." He leaves students to evaluate style against their own (most likely unarticulated) standards. This results in superficial thinking and writing.

Unstated, but implied through Corrigan's use of examples, is the fact that the universe of themes remains inaccessible to most students. The films, filmmakers, and scholars cited throughout the book imply a canon, familiar to film scholars but not to most undergraduates. Only students who know about filmmakers Trauffaut, Chabrol, Fuller, and Herzog will understand Corrigan's point about the relative usefulness of the notion of authorship as applied to film directors (p. 94). Roland Barthes and Andre Bazin are major figures in film theory, but the passages Corrigan cites from their work remain incomprehensible without explanation (p. 56, 92). The same is true for obscurely relevant quotations from filmmakers Jean-Luc Godard and Rene Clair (p. 140). Rather than teach, such references intimidate and alienate students not "in the know." How can they learn from or emulate models they haven't been prepared to understand? The traditional, theme-centered approach to film criticism that dominates the *Guide* is not especially teachable, except to students who already share with their instructor a familiarity with the canon of the Euro-American intelligentsia.

On top of this traditional approach, Corrigan layers portions of a more teachable method. For his chapter on "Film Terms and Topics," he borrows heavily from the textbook by David Bordwell and Kristin Thompson, *Film Art: An Introduction* (3rd ed., New York: McGraw-Hill, 1990). Bordwell and Thompson base their method on assumptions about film meaning and the role of critics different from those of the theme-centered approach. They assume that viewers make sense of films in terms of norms or sets of conventions for the structure and style of films. Norms vary from one culture to another, and change within cultures over time. The meaning of a given film will depend on what norms a particular viewer uses to understand a film.

One role of film critics is to facilitate comprehension and appreciation of films. Part of their job involves explaining norms relevant to particular films, perhaps from the past or from different national traditions. Their other duty is to show the structural and stylistic processes by which each film tries to affect viewers' thoughts or feelings. Bordwell and Thompson call those processes "narration." Style does not express pre-existing themes, but creates meaning according to the norms viewers know. Bordwell and Thompson advise students to begin analysis at the most concrete levels, and always to base abstract interpretations on concrete aspects of a film.

Corrigan provides an overview of *Film Art's* chapters on stylistic techniques without bringing up the concepts of norms or narration. This particular borrowing leaves him with problems he cannot solve. When he discusses editing, he cannot explain why certain cuts would seem to Hollywood film audiences "too obvious," or "archaic," or "logical and natural" (p. 69-72), since he has not talked about norms for Hollywood editing. Corrigan cautions students that films do not reproduce reality, but involve intentions to reach certain audiences through particular

styles (p. 22, 88). Without the concept of narration, students will be hard pressed to perceive how this operates in a film. Instead of encouraging students to work from what they see and hear toward more abstract interpretations, as Bordwell and Thompson do, Corrigan maintains: "Good essays usually proceed from the less debatable thematic points to more complex points about style and technique" (p. 132-133). As a teacher of an introductory film course, I disagree. In one course, students can learn concrete analysis of film style and structure; they cannot learn thematic criticism unless they are already familiar with the canons of film scholarship and the humanities in general.

Another factor affecting the usefulness of *A Short Guide to Writing about Film* is the author's philosophy of writing. Corrigan mentions concepts from the movement to incorporate writing across the curriculum: prewriting, writing freely, writing as a discovery process, and tailoring writing to different audiences. However, he does not focus on the writing process, and actually suggests students follow the more conventional steps of note-taking, outlining, writing a rough draft, and then a final draft. Corrigan assumes that most students will work in isolation, outside of class, on a vague assignment directed only at their teacher. Nothing in the book requires that instructors modify their approach to teaching the writing of film criticism.

The inconsistencies in the *Guide* make it difficult to imagine what sort of students would most benefit from the book. Corrigan's emphasis on discovery of subtly expressed themes detracts from what could be a quick and accessible introduction for newcomers to analysis of stylistic techniques. On the other hand, students familiar with the thematic approach to the film canon will likely find the partial adoption of concepts from Bordwell and Thompson disorienting. Students who operate successfully in the conventional model for writing probably do not need this book, and those who need another model will not find it fully explored here.

DENISE HARTSOUGH

Department of Radio-Television-Film  
Bowling Green State University  
Bowling Green, OH 43403

**A Short Guide to Writing about History. Richard Marius. 1989. Scott, Foresman and Company, Glenview, IL. 254 p. \$7.75 paper.**

*Writing about History* is the latest contribution in a long line of books aimed at helping the beginning, and even more advanced, student with the complexities of writing and thinking as a historian. Richard Marius, Director of the Expository Writing Program at Harvard and a historian, methodically guides the reader through the process of topic selection, research, organization, writing, and documentation of a historical essay. His approach is to present topics and then give examples; a technique that works rather well. The text is organized in a logical sequence so that an individual can read completely through the book and gain a good comprehension of the entire research and writing process. On the other hand, the text is ordered in

such a manner that specific topics are easily found. One of the most helpful parts of the book is the inclusion of a 30-page research paper in which Marius intertwines editorial comments about style, organization, and mechanics.

When an individual is confronted by one more book on a particular topic, comparisons with previous works are inevitable. Two of the old standards in this genre are Wood Gray's *Historian's Handbook* and Sherman Kent's *Writing History*. Both of these books cover many of the same things that Marius does, but Gray manages it much more succinctly, and Kent does it with a greater felicity of style. While comparisons are reasonable, they are not always helpful. For example, in my view, Kent's work is in a class by itself but, alas, it is out of print; Gray's *Historian's Handbook* is disproportionately weighted toward bibliography and the mechanics of writing. The result of the comparison then is that *Writing about History* is a solid piece of work that accomplishes what its author states as his goal.

Some care needs to be exercised by anyone who contemplates using Marius's book in the classroom. He asserts that his book is geared to "...guide you through the major steps in writing papers in history for college undergraduate classes" (p. 9). While the text delivers on the promise, its length, detail, and level of writing are more suitable to advanced history majors and graduate students than to many beginning students. The title, *A Short Guide ...*, is misleading, also. Marius has written a book that may suffer the consequence of being so good, but long, that it will become a reference text and the basis for instructors' lectures, rather than a widely adopted classroom handbook. In any case, it is worth getting and perusing, for it might well fit the needs of you and your students.

STUART R. GIVENS

Department of History  
Bowling Green State University  
Bowling Green, OH 43403

**A Short Guide to Writing about Literature, 5th ed. Sylvan Barnet. 1985. Scott, Foresman and Company, Glenview, IL. 306 p. \$7.75 paper.**

Barnet's *Short Guide* is aimed at the college freshman or sophomore taking introductory courses in literature or literature and writing. In doing so, it speaks to reading, to response, and to the writing process in a comfortable and open manner, downplaying the hidden mysteriousness which students often sense about literature and writing. It furnishes plenty of examples, illustrations, special notes, and warnings, while anticipating many student pitfalls. It has handy reviews and keys to enable the user to find his way around. The style is kept at a level easy for the undergraduate to handle, without condescension.

Professor Barnet has directed the freshman English program and chaired the Department of English at Tufts University, and has published other short guides—one to art, one to Shakespeare. He has co-edited a number of textbook anthologies of literature and drama, and he was general editor of the *Signet Shakespeare*. These credentials testify to his deep involvement with teaching and learning, and to his preparation of materials to that end. The

continued issuing of new editions indicates considerable earlier acceptance.

The *Guide* divides into two large sections. Part One is a general overview of writing about literature, about style and format, with two practical applications. Part Two covers writing about fiction, drama, poetry, and film. There are two appendices: "Writing about Non-fictional Prose," and Faulkner's short story, "A Rose for Emily."

Barnet's basic approach is: overview, definitions with illustrations, models and examples with analysis. This is supplemented by notes, advice, and reminders, all written with a clear, sensible, and relaxed tone. For instance, in describing the writing of an explication, he defines it as "a line-by-line...commentary on what is going on in a text." He then provides a sample explication of a short Yeats poem. The mental process of developing the explication is shown with some sample notes, and the section closes with a pithy comment: "Explication, in short, seeks to make explicit the implicit" (p. 13). There is a suggestion, based on his experience, that the student provide a text for the reader.

There are useful sections on finding a topic, organizing, comparing, and evaluating; there are periodic reviews in the form of lists. He frequently urges revision as a normal course of action with such remarks as: "When you revise, you will be in the company of Picasso, who said that in painting a picture he advanced by a series of destructions" (p. 43). In Part Two, the discussions and illustrations are more difficult and complex, but they are still clear and interesting. Frequently, Barnet tries to show how the mind of the writer is working, how ideas evolve into formulation, how structure can be fitted together, how the writer can polish his essay. There are sections that help the student use the library, take notes, and deal with other practical matters. But he also shows the reader how to understand character and plot, setting and atmosphere, and other traditional elements of literature that are frequently written about. One device he uses is the analysis of the analysis; another is to insert rubrics beside the student-written sample essay. These elements show how conscious Barnet is in dealing with writing difficulties at the student's level.

There are, however, three serious problems with the *Guide*. The reader will notice that the range of references and allusions in the examples does not include many recent literary works that are currently taught in high school and college literature courses; for example, there are no works by women, Blacks, Hispanics, and Native Americans. It appears that the explosion of the "canon" in the last decade has not reached this *Guide*. Furthermore, many references are to works which are not likely to be part of the student's past or present literary experience: Dr. Johnson, John Dryden, Andre Malraux, and Thomas Hardy, are a few. The texts, too, have become a little dated, not so current: *Catcher in the Rye*, *Turn of the Screw*, 1984, *Hard Times*, *The Great Gatsby*.

The critics and scholars for the most part are the New Critics, the Trilling, Auden, Pound, Eliot generation (and they tend to quote the Arnold, Parrington generation). There are no other special critical approaches offered, such as the Psychological, Formalist, Marxist, Feminist,

Reader Response, or Deconstructionist.

The *Guide* also surprisingly ignores the use of the word processor as a tool for writing, as well as the universal use of the computer in doing research. Most students are now taught to go straight to the library's computer to find information and to seek out the sources for their papers. They are often counseled to draft their papers using a word processor since it is so very useful for making revisions, rearrangement, and final formatting.

These puzzling omissions make the *Guide* less useful as a text in the classroom, although it can still be a valuable reference tool for the instructor because what it does, it does well.

THOMAS L. KINNEY

Department of English  
Bowling Green State University  
Bowling Green, OH 43403

**A Short Guide to Writing About Social Science. Lee J. Cuba. 1988. Scott, Foresman and Company, Glenview, IL. 164 p. \$10.30 paper.**

This book addresses a variety of writing concerns faced by instructors of courses in the social sciences. These concerns include the writing, editing, and rethinking of drafts of a paper, summaries and literature reviews, papers based on either quantitative or qualitative original research, library research papers, oral presentations, written essay examinations, use of the library, the proper form for presentation of manuscripts, and revisions. It is based on the following assumption, as stated in the preface (ix):

"As teachers of social science, instructors tell their students to question the taken-for-granted world and to challenge the assumptions that are the foundation of everyday life. They do this so that their students might come to see the world in a new way or discover that, on close inspection, things are not always as they seem. Ironically, these same teachers adopt quite the opposite approach when it comes to student writing: they assume that their students know how to write...."

The book is specifically designed to supplement the curricular material in social science courses which require research papers. From Becker to Homans, to Gerth and Mills, to Seeman, Cuba uses numerous relevant examples to illustrate the nature of proper writing in the social sciences.

At first glance, this book appears to fill a major void in the instructional literature in social science courses. However, further examination raises serious questions about the usefulness of this volume. Specifically, the book is a jack-of-all-writing-trades. Some of the book attempts to instruct the student concerning how to persuasively present crosstabulated frequencies and transcripts of discussions; other parts of the book are relevant to general writing assignments that are the stock-and-trade of Freshman English courses. As such, the book is unsatisfying on any specific topic. For example, in a course that requires

papers based on original research, the 30 pages on that topic, split between quantitative and qualitative research, do not justify the cost of the volume. Moreover, my students would not be capable of translating what Cuba says in that chapter into coherent discussion of either crosstabilated frequencies or discussion transcription.

I am puzzled by the woefully inadequate reference and index list in a guide to social science writing. While Seeman (1954), Jones (1972), Richardson (1955), and Stubbs (1986) appear in the book, they do not appear either in the references or in the index; McCormick (1977), Maimon et al. (1981), Strunk and White (1979), and Zinsser (1976) do appear in the reference list but not in the index. Whether by oversight or design, this feature detracts from the quality of the book.

Finally, I get the idea that Cuba really wanted to write a book on writing about original research. The back cover indicates that the book was designed to help students "...bridge the gap between collecting empirical data and presenting the final research results" (my underlining); but, major sections of the book focus on activities beyond the collection of empirical data. I suspect that this was Cuba's real interest and his editors "suggested" a more comprehensive volume. Thus, what was potentially a fine volume emerged as a camel. Consequently, while I like the idea that spawned this volume and wish that it had been done in a useful and helpful form, I am sadly unable to recommend it for classroom use.

RICHARD A. ZELLER

Department of Sociology  
Bowling Green State University  
Bowling Green, OH 43403

**Molecules to Models: Advances in Neuroscience. Edited by Katrina L. Kelner and Daniel E. Koshland, Jr. 1989. American Association for the Advancement of Science, Washington, D.C. 456 p. \$37.50 paper.**

The essential message that emerges from *Molecules to Models* is that recent advances in molecular, cellular, and imaging methodologies have been a watershed for neuroscience research. Collectively, the articles assembled in this volume convey not only a feeling for the remarkable progress in neuroscience research during the past ten years, but they also excite the reader's curiosity about those advances that will take place in the next ten years.

*Molecules to Models* collects into one volume 37 neuroscience research articles that appeared in the journal *Science* from 1986 to 1989. The goal of the book is to give the reader an overview of recent progress and current direction of neuroscience research; it succeeds remarkably well. The book is divided into seven topic areas: "Ion Channels," "Neural Development," "Learning and Memory," "Cortical Function and Behavior," "Neural Modeling," "Addiction," and "Neurological Disease." Within each topic area, the articles are integrated nicely, providing the reader a sense of continuity. The book as a whole, however, emphasizes just how diversified neuroscience has become, and one is often struck by the difficulty in relating the various sub-disciplines with each other. The volume succeeds in familiarizing the reader with many of

the critical theoretical issues associated with well-defined topics such as the specificity of receptor proteins, patterning of neural projections during development, long-term synaptic potentiation, and schizophrenia, as well as more general subject areas such as computational neuroscience and drug addiction.

The book is a collection of research articles; as such, the reader should have some neuroscience background before attempting to read it. In my opinion, *Molecules to Models* is not for individuals seeking to familiarize themselves with neuroscience, but for students of neuroscience seeking to gain a fuller understanding of progress outside their immediate area of interest. This volume should be required reading for any graduate student in the neurosciences. Portions of the book are well suited for graduate seminar courses that focus on discussion of current research issues. I have been very pleased with a number of articles that I have used for a course on the molecular and cellular mechanisms of learning and memory.

The only major criticism I have of this volume is that it is unattractively packaged. Figure legends are often awkwardly placed on pages and difficult to follow. The 22 color plates, which are useful, are placed together near the beginning of the book, making it troublesome to move to and from the plates and the article being read. One could quibble about the inclusion of one or two articles, for example Chapter 35, "Breaking the Cycle of Drug Addiction," that do not focus on issues in neuroscience, or about the absence of an article focussing on the explosion in pathway tracing techniques that permit one to explore connections within the central nervous system. These are, nonetheless, minor criticisms.

Overall, *Molecules to Models* has done the field of Neuroscience a true service by conveniently bringing together in one book a sampling of articles that discuss some of the most important advances in neuroscience over the past ten years. Perhaps the finest compliment I can give this volume is that it leaves the reader feeling very excited about being a neuroscientist.

VERNER P. BINGMAN

Department of Psychology  
Bowling Green State University  
Bowling Green, OH 43403

**Climate Change and U.S. Water Resources. Edited by Paul E. Waggoner. 1990. John Wiley and Sons, New York, NY. 496 p. \$69.95 hardcover.**

Several anomalous weather events during the 1980s have focused the attention of scientists, politicians, and the public on issues of climatic change. Foremost among these issues is potential warming caused by increased concentrations of "greenhouse gases," such as carbon dioxide, in the atmosphere. While the title of this book indicates a general treatment of the impacts of climate change on water resources, it actually focuses more narrowly on the potential impacts of the much-discussed "greenhouse effect" on our climate and water resources.

This is the third volume published in the Wiley Series in Climate and the Biosphere and is a report of the AAAS Panel on Climatic Variability, Climatic Change, and the

Planning and Management of U.S. Water Resources. The AAAS panel, composed of 27 scientists and policy experts from universities and government agencies, was formed in 1986 and met several times to formulate the issues discussed in this book. The result is 19 chapters, divided into four sections.

The book begins with six pages of summary and specific recommendations for scientists, public bodies, and private persons. This is a refreshing change from the tradition of saving the summary and recommendations for the end. For readers who faithfully read a book in the sequence given, providing the end of the story at the beginning of the text allows a context in which subsequent chapters may be read and interpreted.

The four chapters of the first section discuss the issues involved in climate change and water resources, future water use in the present climate, prospects for climate change, and an introduction to decision-making under conditions of uncertainty. Waggoner makes clear in the first chapter that the book is about one facet of climate change—the greenhouse effect. He also makes clear that the supposition upon which the book is written is that higher concentrations of CO<sub>2</sub> will cause the climate on Earth to increasingly warm in coming decades, causing increased global evaporation and precipitation. As Waggoner acknowledged (p. 10), the public consensus that climatic warming is almost certain came after a media blitz in which “a spectrum of publications from *Sports Illustrated* to the publications of the National Academy of Sciences...spread the news...” In contrast, since this book was published, several scientists have written that there is little, if any, evidence to indicate global warming in recent decades despite an increase of 30% in CO<sub>2</sub> concentrations. The European arctic, where models showed the greatest greenhouse warming should occur, has recently been shown to be cooling. Skeptics have also noted that the uncertainties are so great in the models currently used to forecast the climate of a CO<sub>2</sub>-enriched atmosphere, that warming is not assured in the near future. Table 3.1 in the text is especially telling of the uncertainty. As CO<sub>2</sub> doubles by the middle of the 21st century, the table shows that regional precipitation may fall by 20% or increase by 20%; solar radiation may fall by 30% or increase by 30%; evapotranspiration may fall by 10% or increase by 10%; and so on. This is a safe prediction in any scenario of climate change and is virtually useless information to planners.

As can happen when science issues become political issues, the supposition upon which the book was based seems to have been weakened during the past year or two. This does not reduce the value of the discussions presented in the book or the recommendations given, since they are appropriate for a range of climatic changes. The meaning of the map in Figure 3.2 is unclear from the caption given. Chapter 4 is an attempt to introduce statistical uncertainty, but is full of jargon and does not fit well into the style of other chapters (example: “In the Bayes case the updated prior or posterior distribution is used in averaging the regret associated with each choice, and the minimization follows trivially” [p. 83]).

The second section deals, in six chapters, with the relation between climate and water resources. The first two

of these chapters introduce climate forecasting with computer models and the statistical analysis of trends in data. Figures are abundant in Chapter 5, but their value is not always clear and captions are not always sufficiently descriptive. Figure 5.14, for example, does not accurately depict a composite of Figure 5.13 as described, especially in the Louisiana area. On Figure 5.15, the lines are not well identified, temperature units are presented in Fahrenheit units, and the term “normal climate” is not defined. Figure 5.17 indicates model results for CO<sub>2</sub> concentrations of four times the present levels, but the description in the text (p. 120) states that Figure 5.17 shows results for a doubling of CO<sub>2</sub>.

The remaining four chapters of the second section discuss impacts of climate on evapotranspiration, stream flow, water shortage, and system vulnerability. The use of inches in Chapter 8 is unfortunate when most of the scientific community accepts only metric units. Much of the content of Chapter 8, “From Climate to Flow,” seems based on the map of average annual precipitation in Figure 8.2. This is obviously a computer generated map with a small set of input data points. The wet southern Appalachians do not appear in the pattern, and the rainfall in the Rio Grande Valley is much less than the mapped value. These errors lead the reader to be skeptical of subsequent maps of modeled changes in runoff and flood levels in a changed climate.

The third and largest section covers impacts of climate change on floods and droughts, irrigation, water quality, recreation, urban water, and hydroelectric power. The political response to changes in climate and water resources, and the reallocation of water by markets and prices, are covered in the final chapters of this section. These chapters are perhaps the most useful of the book and serve as a good reference text for persons who were drawn to the book by its title. Impacts of climate change on water resources are drawn from historical examples and case studies. The writers of these chapters are sensitive to the uncertainties in predictions of climate change and in predictions of water use and demand. Political and technological options for adjustment to climate change are presented in these chapters without the jargon of the climatologist and engineer that may slow the reader in earlier chapters.

The last section is a summary chapter by editor Waggoner and Roger Revelle, Chairman of the AAAS Committee on Climate. They again emphasize that the book is about greenhouse warming and acknowledge that whether such warming has occurred yet is uncertain. This is a good review chapter and is a fair summary of the contributions of the submitting authors.

This book contains some of the difficulties of style and consistency that are expected in a volume with 27 authors. Although a good selection of modern references is provided with each chapter, and there is a thorough subject index, a more careful selection of figures was warranted for some chapters. Yet, it is well-written, overall, and is a useful reference for persons in a wide range of disciplines.

THOMAS W. SCHMIDLIN

Department of Geography  
Kent State University  
Kent, OH 44242