this review is also interesting, suggesting a series of possible new research directions, almost exclusively interdisciplinary, which would help to improve existing models of interlinked sediment–tectonics systems.

One third of the research papers in this volume focus on fold-thrust belts and the related areas of sediment accumulation. These papers deal with reconstructions of plate-tectonic configurations (Golonka et al.), palinspastic restorations (Lamarche et al.,), subsidence analysis (Carrapa et al.), provenance of piggy-back basin fills (Cibin et al.), and synkinematic sedimentation (Nalpas et al.). The sedimentation styles of graben to rift systems are exemplified by the work of Fernandez et al., Derer et al., and McCann et al. Three case studies of foreland systems focus on the sequence stratigraphy (Lazauskiene et al.), basin migration (Christophoul et al.), and thermal history of related orogens in such settings. Two intracratonic basins are examined in terms of facies distribution and paleogeography (Rieke et al.), and subsidence rates and mechanisms (Artyushkov and Chekhovich). Papers revealing the subsurface geometry and tectonic development of a fore-arc basin using geophysical data (Wartenberg et al.,), and the tectonic setting of a divergent margin based on a combination of provenance, geochemical and isotope studies (Augustsson and Bahlburg) complete the collection of case studies in this volume.

All papers are well illustrated with high-quality black-and-white diagrams, and the presentation of the volume in general is very good. I can conclude that in spite of unavoidable limitations, as argued above, this Special Publication is yet another fine product of the Geological Society of London, which captures the insight of one of the most significant topics in the modern research of sedimentary basins – the issue of linked tectonics and sedimentation. The volume should be of interest to a wide range of readership, from sedimentologists and structural geologists to geochemists, geophysicists and computer modelers.

The Sedimentary Record of Sea-Level Change

Edited by Angela L. Coe (Open University, UK)
Cambridge University Press
40 West 20th Street
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This colourfully illustrated book, edited by Angela L. Coe (Open University), with contributions by Dan W.J. Bosence (Royal Holloway, London), Kevin D. Church (Open University), Stephen S. Flint (Liverpool), John A. Howell (Bergen) and R. Chris L. Wilson (Open University), is based in part on a third-year level course in sequence stratigraphy developed at the Open University. In this textbook the authors use a highly rhetorical approach, with numerous posed questions and answers to reinforce their lessons. This may be effective in distance education courses delivered on DVD and videotape, but does not work well in print. Arguments are presented using well drafted, but over-simplified case models, with too few citations of the pertinent literature. Although short bibliographies are provided at the end of each section, they lack context. In keeping with the distance education model of the Open University, the text is supported by a website with downloadable examples of selected illustrations, worked examples and links to other resources.

The book is divided into four parts, each with numbered subsections. In the first part Coe presents a brief introduction to sedimentary rocks as a record of Earth processes, using an imaginary meandering river in flood as a metaphor for sedimentary processes. The angular unconformity at Jedburgh, UK, first described by James Hutton, is then used to introduce concepts of time within the sedimentary record. This is followed by a brief discussion of the methods for division of the stratigraphic record and geological time, with reviews of litho- and biostratigraphy, radiometric dating, magneto- and chemo-stratigraphy. She also examines astronomic influences on stratigraphy through climate change, and implies that Milankovich processes can only be extended with confidence to 35 Ma. To illustrate how sea-level change can be detected in the rock record, Coe and Church use Ryan and Pitman's observations on the catastrophic flooding of the Black Sea, which may have been the historic event that formed the basis for later accounts of Noah's Flood. They show how, at least during glacial intervals, oxygen isotopes can be used as a proxy for eustatic sea-level change, and how the stratigraphic record of sea-level change is also influenced by tectonics and sediment supply.

In part 2, Coe and Church provide a clear explanation of their version of sequence stratigraphy, which incorporates the use of the Falling Stage System Tract (FSST) to record sedimentation between the onset and end of base level fall. In their model the sequence boundaries are placed between the peak of the High Stand System Tract (HST) and the FSST, consistent with the nomenclature of Haq et al., rather than that of Hunt and Tucker, who established the FSST nomenclature and placed the sequence boundary between the FFST and Lowstand System Tract. The authors manage to avoid much of the inherent confusion in current scientific literature on sequence stratigraphy by not fully explaining the background and evolution of sequence stratigraphic nomenclature and models. This may make it easier to explain how the sedimentary record can be used as a proxy for sea-level change, but does not prepare students for the subtle differences in meaning of terms in the current spectrum of sequence stratigraphic models.

In part 3, Howell and Flint provide an extensive and well-illustrated discussion of the Cretaceous siliciclastic sequences at Book Cliff, Utah. This begins with a comprehensive description of the stratigraphy and sedimentary facies, using modern

analogues, followed by a discussion of parasequences, sequences and systems tracts. This forms the basis for their final section on the sequence stratigraphic evolution of the Book Cliff succession.

In the final section Bosence and Wilson discuss the complexities of sequence stratigraphy in carbonate settings and introduce the use of numeric stratigraphic modeling for facies prediction. Bosence then illustrates the application of these sequence models using the Late Miocene of Mallorca as an example of a rimmed platform, and the Upper Jurassic of Spain as an example of a carbonate ramp.

Although this book is intended for undergraduate and graduate courses, as well as professional geoscientists, I would not recommend it as an upper year undergraduate or graduate text. Despite the exemplary use of simplified case studies, and excellent coloured photographs and diagrams, it lacks the scope of the GAC's Short Course Notes 16, which in my opinion provides a far more comprehensive coverage of the topic.

Mine Water Hydrogeology and Geochemistry

Edited by P.L. Younger and N.S. Robins

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This book comprises 26 papers derived from a meeting of the Hydrogeological Group of the Geological Society of London in February 2001 and some additional contributions. Neither the theme of the meeting nor the exact number of additional papers is revealed. The topics range from in-depth reviews and detailed case studies on the hydrogeological and/or geochemical aspects of both operating and closed metal and non-metal mines to cursory accounts of modeling exercises and environmental impact assessments. As such, the papers vary in quality and the collection as a whole, in the absence of a preface providing synoptic comments on the individual papers, appears to be unorganized. With a few exceptions, the more than 200 illustrations are generally easy to understand and the papers relatively free of typographic errors. However, North American readers may have to contend with a few unfamiliar mineral names (some of which are obsolete) without a given chemical composition and the rather odd usage of some familiar terms (e.g., petrological instead of petrographic analysis; mineralogy in place of minerals, tailings dam meaning tailings impoundment, etc.).

Upon closer perusal, it appears that the editors have tried to strike a balance among papers with a focus on coal mines (9 papers), metal mines (9 papers) and miscellaneous topics of general interest (8 papers, including two dealing with both coal and metal mines). Particularly outstanding in the first group of coal papers are an overview on the effects of longwall mining on aquifers (Booth), and a case study on the assessment, prediction and management of long-term, post-closure water quality at a South African coal mine (Hattingh et al.). In lucid terms, Booth first elaborates the mechanisms and impacts of the hydrogeological response to longwall mining. With reference to long-term investigations at two sites in Illinois, USA, he then illustrates the application of the derived general conceptual model and demonstrates that different responses could result from minor variations in geological setting within the same coalfield. From another continent, Hattingh et al. documents an exemplary multidisciplinary effort that integrates situation analysis, hydrology, hydrogeology, mineralogy, predictive geochemical modeling and systems environmental management, to address residual impacts after mine closure at the Hlobane Colliery. The remaining seven papers are derived from case studies at UK coalfields, with three focused on hydrogeological aspects (such as mine water recovery rate and impacts), two on hydrochemical issues (mine water fingerprinting and iron release modeling) and two attempting to integrate both aspects. In general, an empirical approach is emphasized in these case studies with the consequence that the conclusions drawn may not necessarily apply to coalfields elsewhere with different geological settings.

The second group of papers on metal mines are based on case studies of mostly abandoned or closing mines in Europe (4 in UK and 1 in France), Africa (2) and South America (2). Among these, three hydrogeological modeling papers address the issues of water rebound in an underground tin mine, depressurization of a pit wall in an open-pit copper mine and structural control of contaminant migration in a tailings impoundment of a lead-zinc mine. Integrating hydrogeological and hydrochemical observations at large-scale gold mines and a silver-tin mine, two other papers emphasize the importance of collecting relevant data for environmental-impact and risk assessments. The remaining four papers focus mainly on water-quality issues, with topics ranging from geological materials as a source or sink of metal contaminants to arsenic removal by oxidizing bacteria. With the exception of the modeling papers, most articles are well referenced with conclusions clearly supported by the data furnished.

The last group of papers of miscellaneous interest is apparently intended to expand the scope of the conference volume and includes several interesting, albeit somewhat controversial, articles. As an opening overview paper, Younger and Robins (the editors) discuss challenges in characterizing and predicting the hydrogeology and geochemistry of mined ground, apparently perceived as