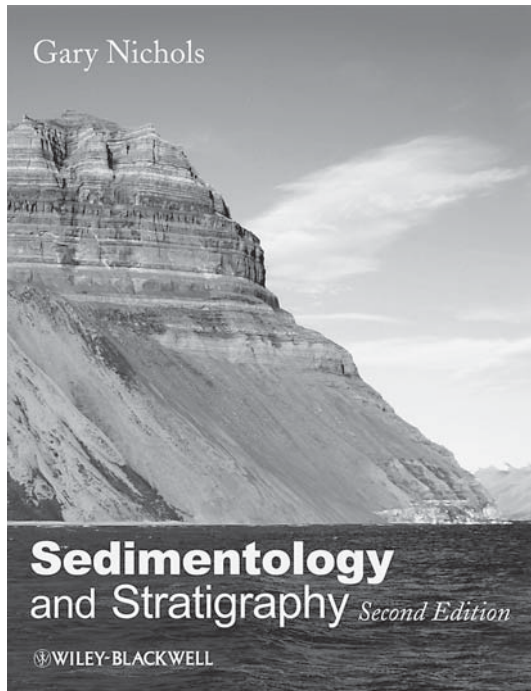


Sedimentology and Stratigraphy (2nd ed.), by Gary Nichols, 2009. Wiley-Blackwell, The Atrium, Chichester, West Sussex, PO19 8SQ, United Kingdom. 432 pages. Hardcover: price GBP 60.00; USD 120.00; EUR 72.00; ISBN 978-1-4051-9379-5. Paperback: price GBP 34.99; USD 89.95; EUR 42.00; ISBN 978-1-4051-3592-4.



Adequate education of, particularly undergraduate, students requires both good teachers who have a true overview of the subject of the course that they give, and good text books. The book by Gary Nichols, a completely revised edition of his earlier work on sedimentology and stratigraphy, is such a book. It is well written, clearly illustrated, and it covers (almost) all topics that are important in the two earth-science disciplines. As such it is a new, worthy successor of the first, famous book covering these two disciplines (Krumbein & Sloss, 1951). Obviously, it makes no sense any more to compare these two books. But it is certainly interesting to see how stratigraphy and – even much more – sedimentology have developed in only a few decades. And one should realize that such progress is for a large part a direct result of the great efforts made by experienced specialists who wrote thorough text books for students, thus providing a sound basis for their earth-science education.

After a first chapter that introduces the fields of sedimentology and stratigraphy, three chapters follow that deal with the various types of sediment, in a somewhat awkward combination (why combine biogenic, chemical and volcanogenic sediments in one chapter? And why dealing with “carbonaceous deposits” without mentioning them in the chapter’s title, and without referring to the more common term “organic sediments”?). Then follow three chapters dealing with general aspects (transport processes and sedimentary structures; facies and environments; and continents as sources of sediment). Here, too, one might question what is the reason behind the decision to include the practice of field sedimentology in the chapter about facies and environments.

The, in my opinion, main body of the book then follows: ten chapters about the various main environments (glacial, aeolian, fluvial/fan, lacustrine, marine, deltaic, coast/estuaries, shallow sandy seas, shallow-marine carbonate and evaporate environments, and deep marine). Once again one might ask questions about the order of the chapters. Why include a chapter about the morphology and processes of the marine realm in between chapters about environments?

Even more puzzling is the next chapter (17) about volcanic rocks and sediments. Why was this material not dealt with in Chapter 3 (Biogenic, Chemical and Volcanogenic Sediments)? Chapter 18 (Post-depositional Structures and Diagenesis) concludes the part of the book that is primarily devoted to sedimentology; it is therefore remarkable that the last chapter (24) deals again with a sedimentary topic (Sedimentary Basins).

Chapters 19–23 concern mainly stratigraphic aspects. After a chapter about concepts and lithostratigraphy follows a chapter about biostratigraphy. One might expect that a chapter about chronostratigraphy would follow, but instead a chapter (21) about dating and corre-

lation techniques is presented. This is followed by a chapter on subsurface stratigraphy and sedimentology, and a chapter (23) about sequence stratigraphy and sea-level changes.

After the already mentioned last chapter about sedimentary basins, 13 pages of references and a well-prepared 9-page index follow. This is not all, however: the book also contains a CD-ROM with photographs and drawings; the book can be used without this CD-ROM, but the CD-ROM is not useful without the book. Unfortunately, the maps with (figure) files on the CD-ROM have numbers, not titles, which makes finding the right material unduly time-consuming. I was also a bit disappointed about the quality of many photos. The colours do not only show that many are derived from old color slides, but too many photos are too dark to show sufficient detail. On the other hand, numerous photos show wonderful examples that students may remember long after they have graduated.

Apart from the structure of the book, which I do not consider as ideal, this new edition is impressive. It clarifies many topics that – for one reason or another – have led to quite useless discussions, such as the question whether turbidity currents are a form of mass transport or not (yes, they are: Nicols embraces the original meaning and refuses to follow a modern tendency to call only high-density flows forms of mass transport). It is also good to see that Nicols makes a clear distinction between the medium (a turbidity current) and its deposit (a turbidite): too often these terms are used in recent literature as if they were synonyms.

Having said this, I should mention, however, that not all Nicols' terminology is correct: his section (19.1.1) on geological time units, for instance, is confusing. He states correctly (Fig. 19.1) that geochronological units are intervals of time (measured in years) and that divisions should be indicated with the terms "Early", "Middle" and "Late", but it is at least confusing to read that the corresponding chronostratigraphic units are divided into "Lower", "Middle" and "Upper" (with capital initial letters) without mentioning that these formal divisions can be used only if datings are available, and that the informal terms "lower", "middle" and

"upper" (with lower-case initial letters) should be used if the age is just presumed. On the other hand, one should probably be glad that Nicols points out the difference between geochronology and chronostratigraphy: a quick scan of recent literature shows that less than 10% of the present-day authors (and editors!) seem aware of this difference. It is, in my opinion, also unfortunate that Nicols refers to the 1983 North American Stratigraphic Code that abbreviations such as "my", "m.y." or "m.yr" could be used for approximate ages. It is still the same attitude that leads to pressures being expressed as pounds per square inch, or length expressed in miles. When will Americans recognize the SI system and use – in addition to the unit Pa for pressure and the m for length – the abbreviation "Ma" (mega annum) for "million years"?

It is easy to find text parts that might be improved. Much easier than writing a book that covers such a wide spectrum of sedimentological and stratigraphic topics. Perhaps it should be mentioned explicitly here that I think that Nicols' book is most valuable, not only for students and teachers, but also for graduates and professionals who become involved in a sedimentological topic outside their own narrow specialism. This book will not only provide them with answers to most questions, but also places the various sedimentary and stratigraphic features in a wider context, so that a better understanding is obtained.

The well printed book is certainly worth its price, at least in the paperback edition. For libraries the hardcover may be better suitable, but I always wonder why, with modern equipment, the binding of a book must cost 30 euros (or 30 dollars, which is now much less!).

Reference

- Krumbein, W.C. & Sloss, L.L., 1951. Stratigraphy and sedimentation. Freeman and Co., San Francisco, 497 pp.

A.J. (Tom) van Loon
Geological Institute, Adam Mickiewicz University,
Poznań
e-mail: tvanloon@amu.edu.pl