

## Book Review

Troelstra, A. S. and D. van Dalen. *Constructivism in Mathematics*, Volume 1. *Studies in the Logic and the Foundations of Mathematics*, Volume 121. North-Holland Press, Amsterdam, 1988. 376 pages.

Troelstra, A. S. and D. van Dalen. *Constructivism in Mathematics*, Volume 2. *Studies in the Logic and the Foundations of Mathematics*, Volume 123. North-Holland Press, Amsterdam, 1988. 552 pages.

This is a two-volume work, which the authors intend as an “all-round introduction to constructivism”. Constructive mathematics can be approached from at least four directions: philosophy, logic, mathematics, and computer science. Each field has something to contribute to the subject, and the proper understanding of it requires all four. That doesn’t make it an easy subject to learn, as some background in all four disciplines is essential for a clear understanding. (The difficulty of acquiring this multi-disciplinary background is why the subject is so often misunderstood!) A proper “all-round introduction” to the subject should provide the necessary background in all four areas. Obviously, this is a difficult task.

In the preface, the authors point out that there are now available many introductory texts and monographs dealing with constructive mathematics in its various forms. Most of these books emphasize one or another of the four aspects. For example, approaching constructive mathematics from the mathematician’s viewpoint, with no logic or computer science and very little philosophy, we have *Constructive Analysis* by Bishop (revised version by Bishop and Bridges), and *Varieties of Constructive Mathematics* by Bridges and Richman. Similarly, we have Aberth’s and Kusner’s books presenting work of the Russian constructivists (who use recursion theory in their mathematics). These works on analysis have been followed by *A Course in Constructive Algebra* by Mines, Richman, and Ruitenberg. On the more philosophical side, but making use of logic, we have *Elements of Intuitionism* by Dummett. On the logical side we have Beeson’s *Foundations of Constructive Mathematics*, as well as Troelstra’s earlier work (Springer Lecture Notes 344). Finally, there is *Computer Algebra*, by J. Davenport, which represents the practice of constructive mathematics in the

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