PREFACE TO THE SECOND EDITION

This edition contains a new chapter, entitled Logical Geometry, which is intended to introduce the reader to the theory of *geometric morphisms* between Grothendieck topoi, and the model-theoretic rendering of this theory due to Makkai and Reyes. The main aim of the chapter is to explain why a theorem, due to Deligne, about the existence of geometric morphisms from **Set** to certain "coherent" topoi is equivalent to the classical logical Completeness Theorem for a certain class of "geometric" first-order formulae.

I have also taken the opportunity to correct a number of typographical errors, and false assertions, most of which have been kindly supplied by readers. In particular there are changes to Exercises 9.3.3, 11.5.3, 11.5.4, 14.3.4, 14.3.6, 14.3.7. Also, the statement as to the nature of the Cauchy reals in Ω-**Set** on page 414 requires qualification – it holds only for certain **CHA**'s Ω. For spatial **CHA**'s (topologies), Fourman has given a necessary and sufficient condition for the statement to be true, which, in spaces with a countable basis, is equivalent to local connectedness (cf. M. P. Fourman, Comparison des réelles d'un topos; structures lisses sur un topos élémentaire, Cahiers top. et géom. diff., XVI (1976), 233–239).

No doubt more errors remain: for these I can only crave the indulgence of the reader.

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