Preface

Deformation theory has the reputation of being a difficult subject, for which no good literature is available. The main obstacle to understand most of the existing texts is their level of generality. But many of the problems one has to confront already occur in the by now well established theories of deformations of compact complex manifolds (Kodaira–Spencer theory) and of universal unfoldings of function germs (Thom–Mather theory). When I wrote my Habilitationsschrift in Hamburg, of which these notes are an outgrowth, I decided to start with some introductory chapters on deformation theory. The warning to prospective authors of popular books on science, that each mathematical formula will cut down the readership by half, applies mutatis mutandis to the use of cofibered categories. They seem abstract nonsense, but in fact versality has its most natural formulation in these terms. There is a certain incongruity between general theory and practical computations, of which I have been doing quite a lot during the last years. One point I want to make, is that both can be understood as the problem of solving a deformation equation.

Having one’s papers (since 1989) on file, tempts one to ‘recycle’ old work. But I do hope that the slow process of revising, which lead to the present text, at least removed some of the mistakes.

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I could not have computed so many examples without computer use, more specifically the computer program Macaulay [BS]. Therefore thanks to Dave Bayer and Mike Stillman, and David Eisenbud for his scripts. I managed to
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enliven the text with some real pictures thanks to the program *surf* by Stephan Endraß [En].

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