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## Preface

This book started life as a basic post-graduate course taught at the Institut Fourier during the academic year 1994–1995. It is intended as an introduction to the theory of holomorphic functions in several variables on both  $\mathbb{C}^n$  and complex analytic manifolds, aimed mainly at advanced Masters students or beginning thesis students. We assume that the theory of holomorphic functions in one complex variable is known, but the basics of differential geometry and current theory needed in multivariable complex analysis are summarised in Appendix A and Chapter II.

We use integral representations together with Grauert’s bumping method. The advantage of this point of view is that it offers a natural extension of single variable techniques to several variables analysis and leads rapidly to important global results whilst avoiding the excessive introduction of new tools. Once these techniques (presented here in the pseudoconvex setting) are mastered, it will be fairly easy for the reader to tackle Andreotti–Grauert theory for both complex analytic manifolds and CR manifolds (cf. [He/Le2] and [L-T/Le]). Our choice of applications focuses on global extension problems for CR functions, such as the Hartogs–Bochner phenomenon and removable singularities for CR functions.

Most of the subjects discussed in this book are classical, since they are part of the foundations of Complex Analysis, so it is difficult to be original. This book is therefore heavily influenced by previous work: the source material is quoted at the end of each chapter, along with some historical notes. The bibliography does not claim to be in any way encyclopædic, so many important works on the subject are not included. The reader looking for precise historical notes and a more exhaustive bibliography might do well to consult the end of chapter notes and the bibliography in R.M. Range’s book [Ra].

Parts of this book (Sections 5 and 6 of Chapter IV, Section 5 of Chapter V and Chapter VIII) owe a great deal to the work of Guido Lupacciolu, who died before his time in December 1996.

And finally, I would like to thank all those who helped writing this book, particularly Alain Dufresnoy and Jürgen Leiterer. If this book has reached its

final form, it is largely thanks to their comments on both the form and the content.

Many thanks also to Myriam Charles for having typed a text which is particularly rich in mathematical formulae and Arlette Guttin-Lombard for her T<sub>E</sub>X-nical advice.

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An Introduction

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