Foreword

The late Dr. M. Eugene Merchant, then director of research planning of Cincinnati Milacron Inc., made an interesting Delphi-type technological forecast of the future of production engineering at the General Assembly of CIRP in 1971. Five years later, he made another report on the "Future Trends in Manufacturing – Towards the Year 2000" at the 1976 CIRP GA. He reported that between now (1976) and the then (2000), the overall future trend in manufacturing will be towards the implementation of the computer-integrated automatic factories. More than 30 years have since whisked past, most heartedly, manufacturing technology had progressed even faster than Dr. Merchant's prediction.

One of the forerunners of automated manufacturing is the CAD/CAM technology which had made its debut more than 30 years ago. Numerous research papers and books have since been written on the topic. As new technologies constantly emerge and efficient IT tools, and faster and affordable computing facilities become more pervasive, the demand for updating the development of this field is clear. The author of this book has put together a comprehensive perspective of computer-aided design, manufacturing and numerical control, addressing their retrospective developments, present state-of-the-art review and future trends and directions.

Design, in particular, underpins all manufacturing activities at an early stage of a product development process. The design stage is well known to have the capability of locking in most of the subsequent costs, and any changes made will prove to be unwise and expensive. Concurrent engineering has provided a solution to this problem to some extent, but not a panacea. The intricacy and interactions of all the related activities, such as business needs, time-to-market requirement, ecological aspects of manufacturing, and so forth, would need to be thoroughly understood. This book has elucidated many connected aspects of automated manufacturing such as CAD, CNC, CAD/CAM, CAPP, STEP, PDM, PLM, expert systems, evolutionary computing techniques, and so forth, in a single volume. In particular, the theoretical and practical aspects of these technologies, which may be integrated effectively, have been addressed. It provides an invaluable updated text and reference for senior students,

researchers, and practitioners. I am delighted that the author has generously shared years of his own research expertise, as well as those of the others with such a fine effort.

I congratulate the author on having produced this splendid new book.

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