EDITORIALS

This Fall issue marks the first time we have devoted the AI Magazine to a single theme. The idea originated a couple of years ago, and I'm pleased to see the actual implementation. Mark Fox, Special Editor for this issue, is to be congratulated for a fine job of selecting some of the best authorities in the field and working with them to produce an excellent survey of the current state of the art in AI for manufacturing. In fact, Mark exceeded our expectations and solicited more articles than we could reasonably fit in one issue. The quality of all the articles was so high that we didn't want to exclude any of them. Consequently, there will be more articles on AI in Manufacturing in future issues, as Mark explains in his editorial.

Due to a variety of circumstances, there was an unusually large number of errors in the last issue of the AI Magazine. We discovered the hard way that trying to produce the Summer and Conference issues within about one month of each other strained our editorial and production resources beyond the elastic limit. The primary victims of these errors are the authors, who worked very hard to produce articles of which they could be proud. I sincerely apologize to them, and to all of you readers as well. We learned our lesson, and, with the concurrence of the AAAI Publications Committee, have decided to return to our original schedule of four issues per year.

You will notice an errata sheet inserted with this issue. Please keep it tucked inside the Conference issue.

The number of errors in Penny Nii's second installment of her survey of blackboard systems went well beyond what can be corrected with a list of errata. Consequently, we are reprinting Parts One and Two, hopefully without errors this time, and making them available as a package to members. If you wish to receive these reprints, free of charge, please send a request to the AAAI Office, 445 Burgess Drive, Menlo Park, CA 94025.

Bob Engelmore, Editor-in-Chief

The application of Artificial Intelligence to manufacturing problems has undergone significant growth over the last five years. A review of the literature reveals that during the 1970s, little research was being performed. However, the 1980s has witnessed the application of AI to all phases of the manufacturing product life cycle:

- Design
- Planning
- Training
- Production
- Distribution
- Field Service
- Reclamation

Figure 1 summarizes the results of a survey I ran in 1985. It depicts the number of AI based systems in the various stages of research, development, field service and production use. It is my guess that the survey represents about 15% of the systems currently under development. The incursion of AI into the manufacturing world has reached the point that discussions of expert systems in manufacturing circles has become commonplace, along with CAD, CAM and CIM.
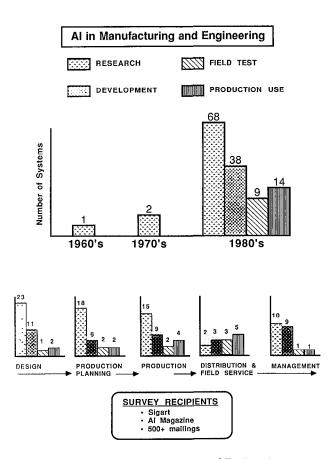

Figure 1. AI in Manufacturing and Engineering.

While it is industry's concern over their competitiveness in world markets that has forced them to investigate AI, AI researchers are turning to manufacturing as a source of problems for other reasons. One reason is the increased funding available from industry and government. A second more important reason is that manufacturing is a rich source of problems requiring significant advances in AI theory and technology. For example, the complexity of product design and the combinatorics of scheduling represent a challenge for AI.

The next two issues contain a selection of articles which demonstrate the application of artificial intelligence across the product life cycle. They were selected because of the

"realness" of the problem being solved. Many of the articles describe systems which have been field tested and/or are in production use.

In this issue, there are articles covering facility layout (Fisher), job shop scheduling (Smith et al.) process diagnosis (Pan & Tenenbaum), and product diagnosis (Osborne). The following issue contains articles on process planning, engineering project management, and the order processing life cycle. Finally, the following issue will contain a review of AI in Manufacturing research.

Mark Fox, Special Issue Editor

MOVING

Address changes should be sent to: Membership, American Association for Artificial Intelligence, 445 Burgess Drive, Menlo Park, CA 94025-3496.

Replacement issues will be sent only upon request for a fee of $2.50 (which covers first class postage and handling).