Catalogue of artificial intelligence techniques (3rd Edn) by Alan Bundy (Ed.), Springer-Verlag, 1990, pp 181, DM49.

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At first sight this seems to be a completely admirable publication, the sort of book that every worker, however remotely connected with artificial intelligence, should have within easy reach, an index to the somewhat bewildering lexicon of terms and techniques that have sprung up in the field, and a point of departure for forays into the literature. This is indeed what is promised both by the Preface and the backcover blurb which summarize how the book is intended to be used so neatly that I have no hesitation in quoting:

> "The purpose of this catalogue is to promote interaction between members of the AI community. It does this by announcing the existence of AI techniques and by acting as a pointer into the literature. Thus the AI community will have access to a common extensional definition of the field, which will promote a common technology, discourage the re-invention of wheels, and act as a clearing house for new ideas and algorithms. As well as this descriptive role, the catalogue also has a prescriptive purpose to assist in the maturation of the field by identifying techniques and clarifying its terminology."

So its intentions are of the best, and the organization of the catalogue is both logical and makes it easy to consult. There are 256 techniques catalogued from $2\frac{1}{2}$-D sketch to vowel quadrilateral, with no less than three indexing systems for locating them. The main body of the catalogue is an alphabetically ordered list of the techniques, each complete with a short description and one or two references. Looking up "Prolog" in the catalogue, entry 187, we find a short description, a mention of logic programming and resolution theorem proving, name checks for Colmerauer and Warren and references to Clocksin and Mellish (1984) and Sterling and Shapiro (1986). The index is another list of techniques, giving the numerical position in the list of descriptions of both the entry describing them, and subsidiary entries which refer to them. Thus looking up "Prolog" again we find not only entry 187, but also, amongst other things, entry 131 for logic programming. Finally, there is the logical table of contents which partitions the techniques into as many different classes as possible. Here we find "Prolog" listed under logic programming, programming languages and theorem proving.

Given all these points in its favour, I was about to recommend the catalogue as highly as the publisher when I started to notice one or two little problems. The first is the incompleteness of the index. For a catalogue with only a couple of hundred entries it does seem a little slack to have an index which neglects to mention that sensory feedback has a section of its own (215), locating it only in the entry for numerically controlled machine tools. Similarly, NETL is not given an entry in the index yet is included as an alias for Marker-passing (134), and Hintikka who appears as a reference gets a mention, while next door Feigenbaum doesn't. Secondly, not all the entries have references which seems a severe oversight in a book intending to be "a pointer into the literature". Anyone wanting more than a brief description of dynamic programming (68), distance transforms (66), associative databases (9), breadth first parsing (25), hooks (104), perceptrons (170), pattern matching (169) or vocoder representations (255) had better try elsewhere.

There are further problems with the content of the descriptive entries. These seemed plausible enough when I looked at techniques applicable to fields such as vision that I know nothing about. However, when I turned to more comprehensible methods, such as those for non-monotonic reasoning and reasoning under uncertainty, anomalies started to emerge. Firstly, the quality of the entries varies enormously. The entry for fuzzy set theory (88) is concise, well written, and references the original article, while (139) metalevel inference (139) is a lengthy exercise in obscurity, (169) pattern matching is baffling, and (32) certainty factors refers to an article that is critical of the original technique. Secondly, for a work that claims to provide a common definition of terms it does nothing to clear up existing confusions of nomenclature. For instance, entry 54 equates default logic, one of several techniques which model human reasoning, with default reasoning which is a type of human reasoning. These errors are hardly serious in themselves, but

they do serve to undermine my confidence in the catalogue as a whole. Since I know that some of the entries on topics I understand are flawed, how can I trust those on topics about which I know nothing?

Perhaps most disconcerting of all as far as this discouraging line of thought goes is the entry for Fortran (81). I had to read it several times before I realized its mirthful intent, though others, I am sure, will catch on as soon as they read "*Fortran is the programming language considered by many to be the natural successor to Lisp and Prolog for AI research*" and be splitting their sides by the time they reach the contributor, Aloysius Hacker. What worries me is that now I know that some of the descriptions are booby-trapped in this way, how can I ever trust the entries for such outlandish sounding techniques as viewer-centered co-ordinates (252)?

To be fair, most of these quibbles are largely due to the fact that the entries are unsolicited contributions which have been arbitrarily altered by the reviewers, so the problems with them cannot be laid directly at anyone's door. This style is inevitable in a document that attempts, as this does, to present an ever-changing picture of the state of AI with readers urged to write in with improvements and updates. I believe, however, that it would improve the catalogue if some kind of quality control was applied to the entries to ensure a more even standard even if this means slowing down the turnover of editions. It would also make the catalogue more useful and a more worthwhile purchase. Who is going to buy a reference book that cannot be fully trusted and which they are expected to make redundant by picking holes in, unless of course a discount on the next edition is offered to contributors?

Computational logic by JW Lloyd (Ed.), Springer-Verlag, 1990, pp 211, DM46.

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This book consists of the proceedings of the "Symposium on Computational Logic" held during the 7th ESPRIT Conference Week in November, 1990, and according to the foreword, inspired by the work of Esprit Basic Research Action 3012 (COMPULOG). The book seems to be intended as the first of a series with the admirable aim of disseminating results obtained by basic research actions which might otherwise be hidden away in stacks of unpublished deliverables. Unfortunately, in their eagerness to attract international names, no doubt to boost the profile of their work, the organizers of the symposium have to some extent marginalized those supported by the basic research action.

There are two sections to the book. The first consists of ten research papers detailing the work of invited luminaries, both from COMPULOG and North America, including such well known figures as Bob Kowalski, Alan Bundy, John McCarthy and Dana Scott. These cover topics as diverse as the study of open defaults and the teaching of symbolic computation. The second section contains five position papers for a panel discussion on "Programming in 2010: The Role of Computational Logic". This seems, at first, a formidable line up, but its impact is considerably reduced when one takes into account the fact that seven of the papers, two research papers (those of Scott and McCarthy) and all five of the panel papers, are only available as abstracts. There is, nevertheless, sufficient material in the remaining papers to make the book both interesting and useful. However, the diversity of the work described suggests that no individual is likely to be interested in more than a couple of the contributions, making this a book for the library rather than essential desktop reference.

The volume opens with papers by Bob Kowalski and Alain Colmerauer on developments in computational logic. This is a term which, as Kowalski notes, has no universally agreed definition although that used by COMPULOG, namely "*the use of logic for all aspects of computation*", seems reasonable enough. Kowalski's paper discusses the ways in which logic programming may be extended. He shows how fault diagnosis and default reasoning may be tackled by abduction, and discusses how metareasoning may be used to implement knowledge assimilation, reflection, and