Old favorite emerges as bright jewel

KAREL THE ROBOT for the Macintosh
Written by Dean Rosenhain
Angle Park Computing Centre

Reviewed by HARTLEY HYDE

The brightest jewel to emerge from Satchel Software's new range of products is a brilliant new implementation of an old favourite, Karel the Robot: this time for the Macintosh. Like previous versions for the Apple II, BBC and IBM, the software and documentation has been prepared by Dean Rosenhain. His new version makes full use of the Mac WIMP environment and provides access to all reserved words and user defined instructions from pull down menus.

The software is designed for use with the book Karel the Robot (Pattis, 1981) which is subtitled A Gentle Introduction to the Art of Programming with Pascal. It describes a micro-world in which a robot can be instructed about how to navigate a grid of streets, find a way around walls, disperse and retrieve objects called “beepers” and sense aspects of the environment such as direction. The purpose is to provide a command orientated language, similar in layout and structure to Pascal but having a limited, descriptive, non-mathematical set of instructions.

Where implementations of this language have been made available, teachers have found that Karel the Robot provides an excellent problem solving environment. For those students hoping to progress to Pascal, the experience proves invaluable. A key feature is the logically developed instructional sequence described in the Pattis text. When we first used the Apple II version, the text cost less than eight dollars - it now costs more than thirty dollars and only those teachers who know its value are prepared to pay so much for such a slim volume. To circumvent this problem Dean Rosenhain has prepared a small booklet which can be copied for each student and may prove adequate if the teacher studies the Pattis text provided. I will still budget for one Pattis text per student because a thorough treatment of the full text can provide a particular rewarding preparation for more serious programming using Pascal, or similar highly structured languages.

Users of other Karel implementations will be delighted with this release. Editing is now particularly easy within a complete wordprocessing environment. The Karel world is no longer limited to the confines of the screen as the user can scan a much larger window using scroll bars. World design is much more straightforward using the mouse and icons as illustrated. Execution can be extremely fast, and the user is therefore most grateful for the excellent control over execution such as speed control and step modes. When used in an 800K drive there is plenty of room for a large system folder as well as the comprehensive example folders provided. Students who are less familiar with Macintosh file structures may have fewer problems if program files and world files are copied into a single ‘examples’ folder rather than the two folders supplied. When set up in this way, Dean’s Macintosh Karel is the most trouble free and system transparent implementation available.

Punsters will be disappointed that the new Macintosh version avoids the tradition of MacDraw, MacPaint, MacLogo and MacPascal, preferring Karel the Robot: for the Macintosh. The package contains a 3.5 inch disk, an original Pattis book, and Dean’s documentation. The disk and documentation may be copied by educational institutions for student use. The package may be purchased from:

Satchel Software
Angle Park Computing Centre
Cowan Street
ANGLE PARK, 5th Australia, 5010
Telephone (08) 243 5559

LEFT: Title screen from Karel The Robot
Turtle going to heart of the matter

Turtle Confusion: Logo Puzzles and Riddles
Barry Newell, Curriculum Development Centre, Canberra

Reviewed by
PETER J. CARTER

Most Logo books fall into a range, from the simple 'recipe' books at one end to Brian Harvey's Computer Science Logo Style at the other. Turtle Confusion lies well outside that continuum. It contains not one Logo procedure, and virtually no explanation of Logo systems at all, yet perhaps more than any other Logo book since Mindstorms it reaches to the very heart of the Logo experience.

The name is not just a play on words (Why is it that Logophiles are fond of puns?), it highlights the purpose of the book; to stimulate, even provoke, interest, discussion and discovery. Perhaps Newell's own words express it best:

'The material in this booklet is intended to be somewhat confusing at first sight. In real life we cannot avoid being confused every now and then. A feeling of confusion is an indication that our understanding of a given situation is inadequate...in other words, confusion signals a chance to learn.'

Adults should recognise the danger of shielding young people from feelings of confusion. .. . We owe it to our students to allow them to feel confused sometimes; to allow them to learn how to cope with, and even benefit from, confusion; to allow them to develop responses, other than panic, to situations where they are initially 'out of their depth.' (p 43)

I cannot recall ever reading the Piagetian term 'equilibration' in any Logo book, but that is, after all, what 'debugging' is; unexpectedly finding weak spots in one's understanding and rebuilding the cognitive structures with new information. Readers of Turtle Confusion will be doing lots of that. Newell has set out to provide ample opportunities for equilibration; learning by examining, discussing, thinking about and the all important debugging of solutions to the puzzles and riddles.

There are no answers. As the Turtle says on page 38, 'there are no answers in the Book of Life', so readers are forced into adopting the methods of science and mathematics, devising hypotheses (Logo procedures) and testing them, and then never being certain. Therein lies a difficulty of course, and this book will not be well received by people who want everything cut and dried, or who believe that all computing in high schools should be based on data processing. The book has greatly frustrated some of my students who have clearly been 'spoon fed' in the past. It is perhaps a reflection on the state of science and mathematics education that a book like Turtle Confusion is needed.

Most of the book is in the form of a dialogue between the Turtle and the author, EBN, reminiscent of the dialogues between Achilles and the Tortoise in Hofstadter's Godel, Escher, Bach. The dialogues are lively and varied and are the ideal way to present the riddles which are an important part of the book, relating as they do to each other and to the puzzles. The first can serve as a sample:

'There was a young student named Myrtle, Who tried to converse with the Turtle, She later said, "Guys, The scales fall from your eyes, When you clear the homology hurdle."'

In my experience, young children clear the hurdle without realising it, but secondary students, for whom the book is intended, together with their parents and teachers, are often like Bucephalus, afraid of their own shadows and unwilling to take the leap. To help with the riddles, Newell recommends that students have available a dictionary, atlas, encyclopaedia and 'a modest collection of classical literature.' One of the riddles is enciphered. I used a couple of Logo procedures to help with the deciphering so that I can now read it (That doesn't mean that I understand it yet).

The forty puzzles are all fairly straightforward. I did them all in one evening, hardly the way the book was meant to be used. Newell emphasises group work and discussion. The puzzles begin with a simple (?) square and end with patterns with multiple axes of symmetry. They relate to each other in often subtle ways, and in many cases a procedure for one can be used as the basis for another, and there are clues to their solutions in the text and riddles. Most of them can be done in a number of ways, and, interestingly, none of them requires recursion. Several require careful planning and use of subprocedures. Newell points out that there's nothing wrong, at least at first, with 'brute force' solutions, but that the neat and elegant should be the eventual aim.

Newell is an astronomer at Mount Stromlo, fluent in FORTRAN and active with Canberra schools through the ACT Schools Authority. His book reflects a commitment to change science and mathematics education to the point where students understand, not because they read about things or watch predictable experiments, but because they are active researchers themselves. That has always been the real purpose of Logo, and Newell's book is a valuable tool to help develop the vital skills of problem solving and research.

As the Turtle says (p vii), 'You can regard the whole booklet as one big problem.' He might have added: 'a thoroughly fascinating and rewarding one'.

Turtle Confusion: Logo Puzzles and Riddles
Newell, Barry
Curriculum Development Centre, PO Box 34, Aus Capital Territory 2606
ISBN 0 642 53271 0