Introduction

Over the years Forth has proved to be a flexible and efficient tool for solving a wide spectrum of problems. Yet it seems that one can always benefit from more tools for building these solutions. This issue of JFAR provides some new approaches on both the hardware and software fronts.

Dr. Tom Hand has long been active in the Forth community, first at the Florida Institute of Technology and now at Harris Semiconductor. In this issue, Dr. Hand provides us with an overview of the RTX 2000 and its suitability for real-time embedded applications. This microcontroller continues a series of stack processors optimized for high performance and particularly effective at implementing Forth. Understanding the workings of this chip will help you determine its applicability for particular problem domains.

Those of us who have used Forth for a while are well aware of its inherent mechanisms for building rich user languages. In *A User Definable Language Interface for Forth*, Dr. Ivanco and Dr. Hunter provide an in-depth look at formal mechanisms for creating user defined languages in Forth. Two meta compiler implementations (i.e., compiler compilers not Forth metacompilers) which allow language specification in standard Backus-Naur notation are presented, including complete source code for a Forth-79 system. Such tools allow formal extensions to Forth to be completely and easily defined. Moreover, their complete treatment of parsing techniques provides insight into methods easily implemented in Forth.

Many Forth applications have need for pseudorandom numbers either for test purposes or for internal use. Several Forth implementations have been examined in the past. Dr. Ferren MacIntyre explains the necessity for tools to generate not simply random numbers, but random numbers with a particular distribution. In *Marsaglia Revisited*, he goes on to provide a fast implementation of Marsaglia's method for attaining fitted data.

Dr. Noble's paper, *Data Structures for Scientific Forth Programming*, provides a complete implementation for creating typed data structures in Forth. Dr. Noble's experience with FORTRAN programming forms the basis for his treatment of the topic. His implementation allows for the creation of typed scalars and arrays which can automate the use of mixed-mode arithmetic in Forth.

An alternative approach to the use of multiple data types in Forth is presented by Dr. Wavrik in *Handling Multiple Data Types in Forth*. Dr. Wavrik examines an object oriented approach to processing different kinds of data while maintaining simple Forth syntax and semantics. A key part of the approach is creating a compact and efficient mechanism for handling intermediate results during calculations. This approach can be utilized for implementing a variety of data types.

We continue to span the world in Forth! Volume 6 provides more minutes of the important ANS Technical Committee meetings. In addition, this issue contains the abstracts of work presented at the 1988 FORML and the inaugural SIGForth workshop held in 1989.

The editorial staff and policies have been changed for Volume 6 to streamline the process of bringing a paper from conception to print. We have added three additional regional editors who will keep abreast of Forth in their regions and who will encourage ongoing submission of relevant work. We officially welcome Dr. Sergei Baranoff as Soviet Editor, Mr. Rod Crawford as United Kingdom Editor, and Dr. Nicholas Solntseff as Canadian Editor to the JFAR staff. They join Dr. Hans Nieuwenhuÿzen as European Editor in giving us access to Forth around the world.

In order to ensure our ability to keep authors informed, papers will now be submitted to the Institute offices under the auspices of the Publisher, Mr. Lawrence P. Forsley. As Editor, Dr. Mahlon Kelly will continue to handle the review process from submission to acceptance. As Editor-in-Chief, I will continue to be responsible for the actual content of each issue as well as overall editorial direction. The Author's Guidelines have been completely revamped to improve our ability to utilize electronic publishing. We ask your cooperation in following the guidelines [on page 95], so we can more effectively serve our readership.

We know that there are many exciting applications being undertaken in Forth as well as many creative techniques being employed. Please consider taking the time to organize your thoughts and submit a paper to JFAR: everyone benefits, and we can provide low cost reprints. You have the satisfaction of having your work pass review by your peers, and your co-subscribers learn from your work. Similarly, Forth's flexibility allows a myriad ways of implementing techniques and applications. If you don't agree with a point, have a better mousetrap, or think the author missed the boat, write a letter to the editor.

Keep us informed so we can keep you informed!

James Basile
Editor-in-Chief, JFAR