# VLSI DESIGN

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Have the proponents of so-called "silicon compilers" seen the light?

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VLSI DESIGN was founded to explore, expand, and define the interrelations between very-large-scale integrated circuits (VLSI) and computer architecture, design strategies, costs, and aids, as well as the electronics industry as a whole. VLSI DESIGN is unique in that it is written by and for the participants in this dynamic field. VLSI DESIGN intends to be the communication focus of a new VLSI design community, encourage its development, and help define its directions.

## Cover

Some people are calling the "silicon compiler" a *breakthrough* in the field of VLSI design. These advocates liken the present state of VLSI design tools to the early days of assembly-language computer programming, and believe the silicon compiler is the obvious next step. Its detractors contend that "silicon compiler" is a buzz-phrase—and little else. Cover illustration by Mike Shenon, Palo Alto, California.

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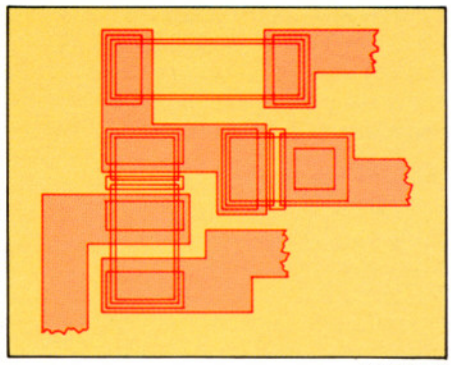

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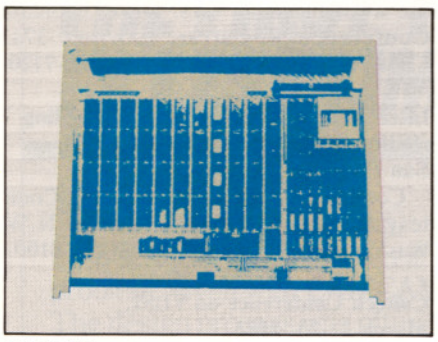

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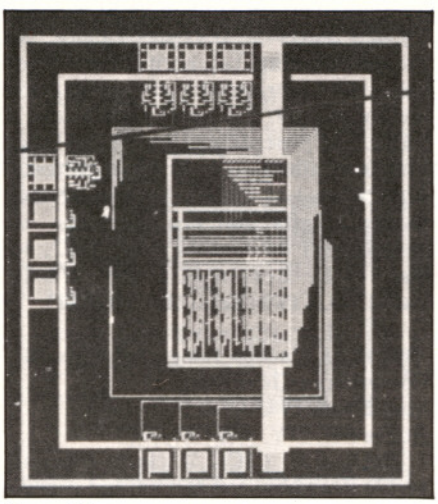
## 16 Conference Preview: The 1982 International Test Conference

This annual event (still commonly referred to as the "Cherry Hill Test Conference") is "cherry" in another respect: It deals in large part with the problems and issues of VLSI testing.

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## 20 VLSI CAT: Filling the Void Between CAD and Testing

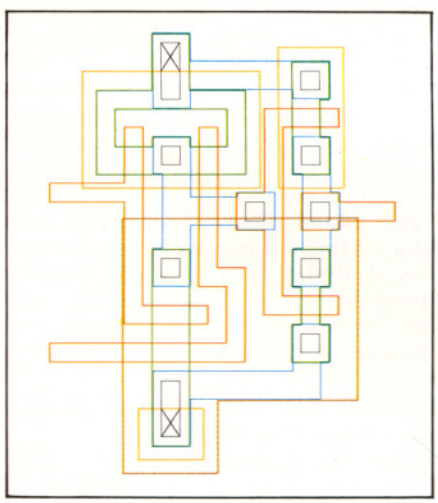
**Robert Albrow,** *GenRad Semiconductor Test, Inc.*
**Gordon Robinson,** *Cirrus Computers, Ltd.*

The authors believe that computer-aided testing (CAT) for VLSI has been largely ignored. They explain why an integrated approach to computer-aided design (CAD) and CAT could reap significant rewards.

## 27 Running RISCs

**John K. Foderaro, Korbin S. Van Dyke, and David A. Patterson**
*Computer Science Division, University of California at Berkeley*

Last fall, the folks at U.C. Berkeley described the RISC processor, and predicted that it would be faster than both the Z8000 and the VAX. In this issue, they report their experience in implementing the RISC chip, and explain why some of their predictions panned out—and others didn't.

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## 46 The Silicon Compiler: Panacea, Wishful Thinking, or Old Hat?

**Jerry Werner,** *Editor-in-Chief*

Hardly an IC or CAD conference goes by, nowadays, without a paper (or even a full session) devoted to the "silicon compiler." This article defines the "ideal" silicon compiler, and explains the differences between approaches to so-called "silicon compilation."

## 62 Portable Design Rules for Bulk CMOS

**Thomas W. Griswold,** *Caltech Jet Propulsion Laboratory*

VLSI designers have used portable, simplified design rules for nMOS ICs for about two years. However, CMOS does have specific performance advantages over nMOS. This article proposes a straightforward set of CMOS geometrical design rules that should be palatable to designers who are used to nMOS rules.