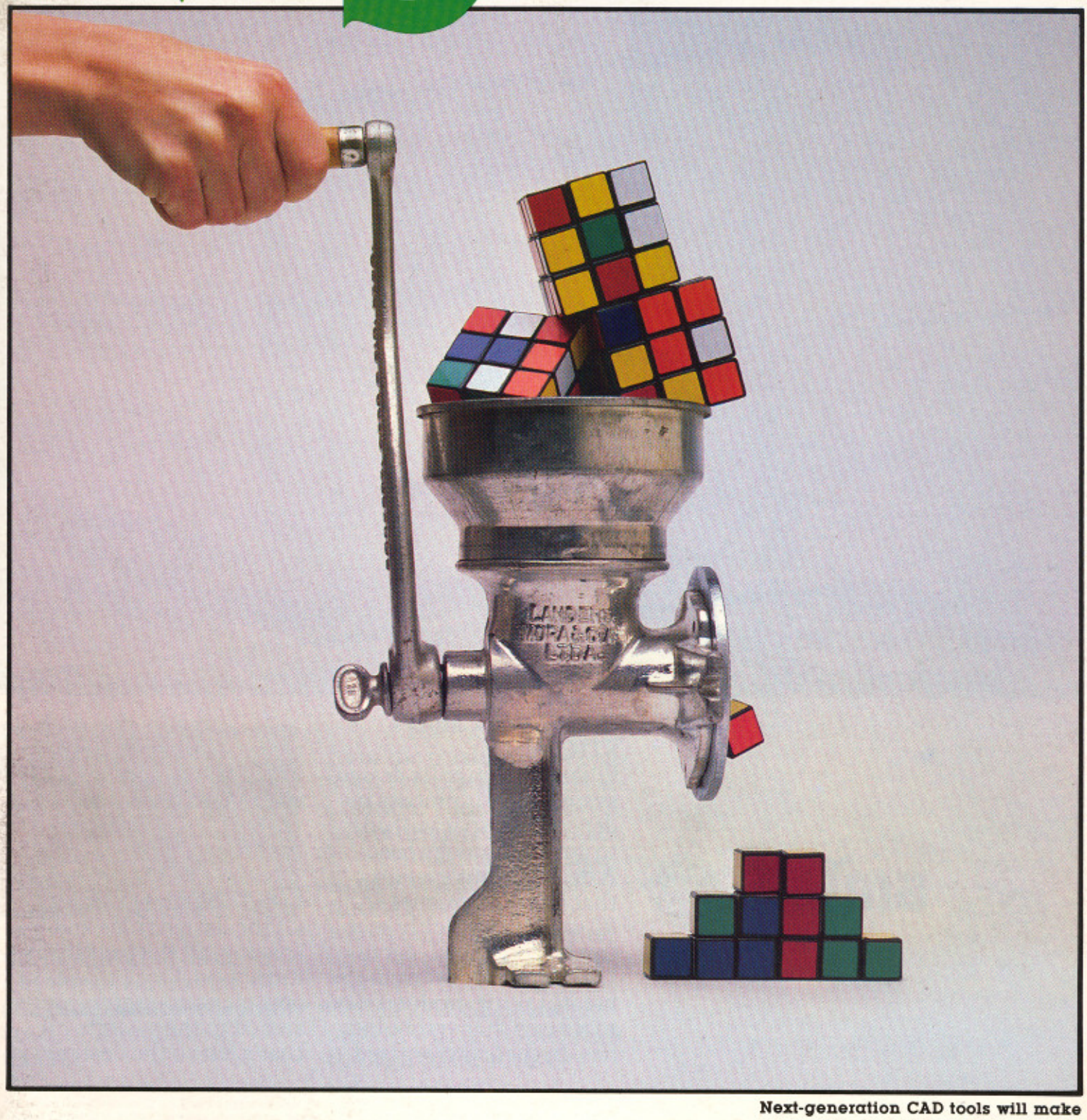
VLSI DESIGN

(FORMERLY LAMBDA)

MARCH/APRIL 1982



Next-generation CAD tools will make new sense out of the VLSI "puzzle."

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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.

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Cover

Using a Rubik's Cube™ analogy, forthcoming CAD tools will hasten the solution to the VLSI design "puzzle" by separating the problem into easier-to-handle pieces. (Cover photographed and copyrighted by Tim Davis, Mountain View, California.)

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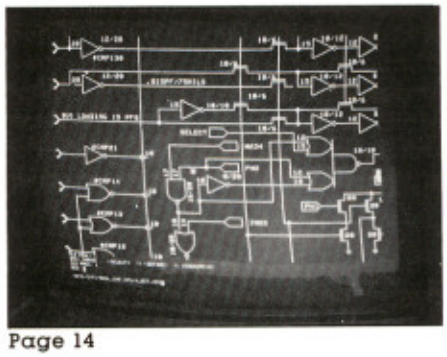

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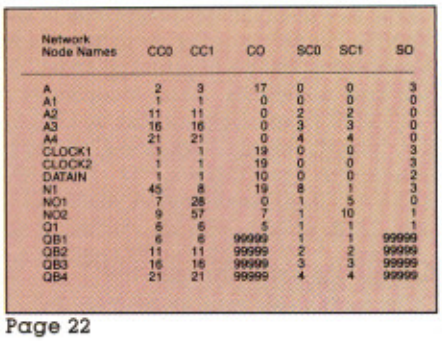

Network Node Names	CC0	CC1	CO	SC0	SC1	SO
A	2	3	17	0	0	3
A1	1	1	0	0	0	0
A2	11	11	0	2	2	0
A3	16	16	0	3	3	0
A4	21	21	0	4	4	0
CLOCK1	1	1	19	0	0	3
CLOCK2	1	1	19	0	0	3
DATAIN	1	1	10	0	0	2
N1	45	8	19	8	1	3
NO1	7	28	0	1	5	0
NO2	9	57	7	1	10	1
Q1	6	6	5	1	1	1
QB1	6	6	99999	1	1	99999
QB2	11	11	99999	2	2	99999
QB3	16	16	99999	3	3	99999
QB4	21	21	99999	4	4	99999

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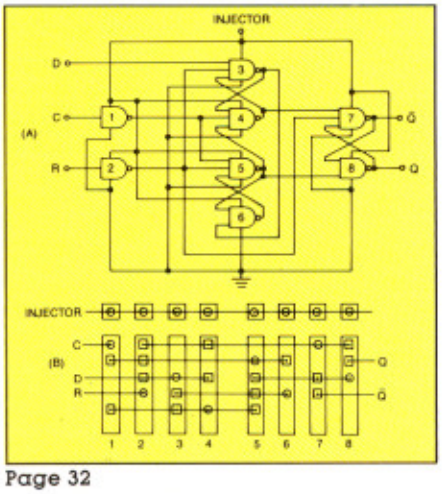

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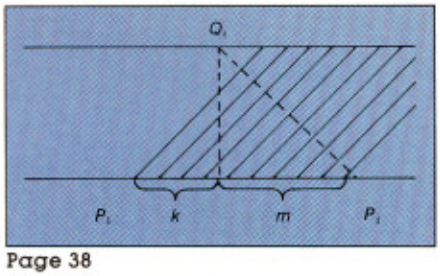

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Articles

14 Managing VLSI Complexity: A User's Viewpoint

David C. Jenné, *Data General Corporation*
David A. Stamm, *Daisy Systems Corporation*

Data General is one of the beta-test sites for Daisy Systems' recently introduced LOGICIAN workstation. Daisy and DG team up to describe how the workstation will be used at DG to help design VLSI chips for a next-generation processor.

22 Testability Analysis: An Alternative to Structured Design for Testability

Robert D. Hess, *United Technologies Microelectronics Center*

UTMC is integrating a testability analysis program called COMET into its HIGHLAND design system. The author explains what COMET is, why it is a valuable tool, and where it fits into the overall design process.

32 Structured VLSI Design on I^2L Gate Arrays

David E. Fulkerson, *Custom Integrated Circuits*

I^2L gate arrays are flexible and work well with structured layout techniques. CIC uses simple CAD tools (including an Apple II-based automatic placement and routing system) to design I^2L arrays with up to 9200 five-input gates.

38 Optimal Algorithms for Structural Assembly

Danny Dolev, Kevin Karplus, Alan Siegel, Alex Strong, Jeffrey D. Ullman, *Stanford University*

The authors analyze algorithms for interconnecting VLSI circuit blocks and conclude, among other things, that two-layer wirings are not always "better" than the single-layer alternative.

44 IC CAD Workstations: Entering the Engineer's Realm

Jerry Werner, *Editor-in-Chief*

IC CAD workstations are used most often by *layout* people, not by circuit or system designers. But those CAD tools are changing, and new workstations are emerging that address engineers' needs.

60 The 1982 CICC

The Custom Integrated Circuits Conference is a little off the beaten path (as usual, it will be held in Rochester, NY), but the content of this year's program may make it well worth the trip.