

# RUBIK'S CUBE

By



## NEWSLETTER

VOL. 1 NO. 4

AUGUST 1983

## RUBIK'S CUBE NATIONAL CHAMPIONSHIPS

**T**he time had come to determine a new National Rubik's Cube Champion and six determined new regional champions headed to Los Angeles to see who would be fastest.

by Bob Weisman

I enjoyed running the 1981 and 1982 Rubik's Cube-A-Thons around the country. I was sure, though, that several of our 1981 Regional winners would repeat in 1982. This was not to be, as Jeff Verasano and Lance Ahrens were eliminated in early going. We ran the contests in 19 cities around the country and the result was a fresh new group of 6 regional winners. Needless to say, the fastest times had improved dramatically over last year, with David Maez of Sacramento recording the fastest time ever in U.S. competition — a remarkable 20:49 seconds!

Ideal, the tournament's sponsor, brought all these regional winners together for four fun-filled days in Hollywood. We added a new dimension to the 1982 Rubik's Cube Championship. Minh Thai, reigning world champion, was invited to play off against the new U.S. Champion for a special grand prize on the THAT'S INCREDIBLE! show.

We all met at the Hyatt Wilshire Hotel on the evening of November 4th, 1982. As we got to know one another, we noted many similarities among the contestants. They are all bright students, 16-19 years of age with similar academic and extracurricular interests. In fact, Robert Jen, Eugene Pan and David Maez (a top merit scholar) may all wind up as classmates at MIT!

All of our finalists brought collections of their favorite Cubes with them to practice with and they soon took to exchanging notes on their various methods of solving the Cube or producing colorful patterns.



As the host of the first night's dinner meeting, I explained the rules in detail and told them what to expect during the taping of the "That's Incredible!" show. They all listened nervously, but the fun really began when we brought them to the front of the room to try out the electronic timer that would be used in the show. They mixed up each other's Cubes and watched to see who would register the fastest times. Most of them were a little tentative but David Allen and David Maez both showed their blazing speed immediately. In fact, no fewer than 3 of the finalists were capable of solving the Cube in less than 20 seconds!

Minh Thai arrived late, but as soon as he entered the room all attention focused on him. After all, Minh is the reigning World Champion, having beaten the Hungarians at their own game. All

the finalists knew he had the reputation for having the coolest head in the heat of competition. Everyone gathered around him and introduced themselves, but they couldn't wait to see him solve a Cube. Minh was characteristically reserved and had to be coaxed to give it a try. He finally did and ripped off a mid 20 second time and it looked as though he wasn't trying very hard. In fact, he was more preoccupied with his coursework at UCLA in the months prior to the national event. He hadn't even been practicing, so we didn't know if he still had the competitive edge needed to win.

We then brought out over 300 Cubes and asked each finalist to pick four Cubes they would use in the competition. The finalists never saw so many loose Cubes in one place and they had great fun wading through them to find the ones they felt were "just right."

*Continued on next page*



# RUBIK'S CUBE NATIONAL CHAMPIONSHIPS

Continued from previous page

The highlight of the evening came when they brought out the cake for dessert. I had asked the caterer to make up a cake shaped and colored like a Rubik's Cube. I told them to make it 12" x 12" x 12". I didn't realize that this would yield a cake big enough to feed an army of cubists!

I imagine it was pretty hard for our contestants to sleep that night. The next morning we were off to the studio for the taping of the "That's Incredible!" show. We were one of the last segments to be taped that day, but it was very exciting to watch as various incredible feats of skill and daring were performed and taped for future shows. We sat in the audience and watched a 5-year-old pool shark perform, a man swallowed 8 stainless-steel swords at once, another used a slingshot to shoot a nickel out of a donut and knock an apple off his brother's head, and in yet another act a boy with a bow and arrow put out candle flames at 10 paces. We were able to talk to Cathy Lee Crosby, Fran Tarkenton and John Davidson, the hosts of the show.

Finally, it was our turn onstage. The contestants competed 3 at a time. They were placed in their heats based on their winning times in their respective regional competitions. Each group would compete twice. In both heats each contestant would be trying to solve the

same exact Cube problem. The contestant with the best time in either of the heats would be the new National Champion and would go on to face Minh Thai in a grand championship playoff for an additional cash prize.

The first group included Dan Kroc, Eugene Pan and Brian Shipman. Of these three, *Brian Shipman* scored the lowest time of 32:83 seconds. The David Allen, David Maez and Robert Jen came on stage for their first problem and things began to speed up. Robert Jen took the lead with a time of 28:95 followed by David Maez at 29:71 and David Allen at 30:98. In the second problem, Eugene Pan won his heat in 33:18 seconds. The final showdown came as David Allen, David Maez and Robert Jen faced off for the last time. The twisting and turning of Cubes was furious and David Allen proved victorious with an excellent winning time of 22:48 seconds.

John Davidson awarded beautiful black plexiglass trophies topped with gleaming golden Cubes to the top three winners and presented a \$2,000 check to David Allen.

David Allen was now the new U.S. Champion, but he had one more test to face — a head-to-head challenge with Minh Thai for Grand Champion status and an additional cash prize. The problems were particularly difficult but Minh Thai kept a cool head and held off

David's challenge. Minh won the first problem in 26:23 and the second in 25:62 seconds. He became our Grand Champion and was awarded a \$2,000 check and another magnificent Cube trophy for his efforts.

That evening the contestants and their families gathered off stage for a gala dinner party hosted by Ideal. We all talked far into the night and I showed them all the problems again so they could see where they went wrong or right in the competition.

The next day started early as we all went for a full day of fun and sightseeing at Disneyland and Universal Studios. The trip concluded with a lavish dinner at Lum Fung's fabulous Chinese restaurant high in the Hollywood Hills. We ate and talked and got to know one another even better. This remarkable event left all the contestants and their families many wonderful memories.

As we all said our goodbyes, the contestants and their families all thanked us for our efforts in running a successful contest. They all got together and bought me a beautiful Mickey Mouse music box for my new son as to commemorate the event, and it has become one of my most cherished mementos. As far as I am concerned, they are *all* champions and I'm sure they will all excel in life as they have in their mastery of Rubik's Cube.

## The Regional Winners Were

Region	Name	Age	Time
East Central	David Allen	19	23.15
Midwest	Dan Kroc	16	30.68
East	Robert Jen	16	23.33
Southeast	Eugene Pan	17	31.76
West	David Maez	17	20.49
Southwest	Brian Shipman	16	30.38



## CUBISTS: A Career in Mathematics Could Be Waiting For You!



by Jack Eidswick\*

You don't have to be an expert to reap benefits from Rubik's Cube. Even small successes like "doing one side" could mean big future dividends for many people. The payoff comes in the form of a much-needed boost in confidence while struggling with life's many problems that require *logical thought* or *three-dimensional visualization*. The greater the success, the greater the payoff. For the Cubist, the payoff could even be a career.

By "Cubist" I mean sort of a Cube addict. Someone who already knows a lot about the Cube, but always feels the need to learn more. Not just a speed demon, but one who is sincerely interested in questions like: Which patterns are possible? Impossible? How? Why? How can you swap two pairs of edge cubes? Two pairs of corner cubes? How can you cycle three edge cubes? Three corner cubes? Why is it impossible to sway only one pair of edges or corners?

How can you rotate exactly one center cube 180°? How can you flip exactly two edges? All twelve edges? What is the *minimum number* of turns needed to make a prescribed move, say, to flip all twelve edges? What is the shortest possible solution algorithm? What happens when you apply a move-sequence *repeatedly* to an unscrambled Cube? Why? How many Rubik's Cubes would it take to exhibit all possible "6-checker-board" patterns (see below)? Does there

Continued on next page



# CUBISTS: A Career in Mathematics Could Be Waiting For You!

Continued from previous page

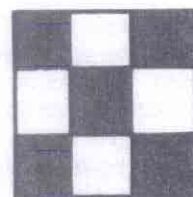
exist a "6-slant" pattern (see below)? What pretty patterns can be made by combining several Rubik's Cubes, each of which containing a pretty pattern?

If you enjoy questions like these and have had reasonable success in finding answers, you are a *potential mathematician*. By this, I don't mean just a person who manipulates numbers and juggles symbols; I mean an honest-to-goodness professional mathematician who studies specialized mathematical concepts and who, after a good deal of work (play?), makes brand new discoveries that advance the theory.

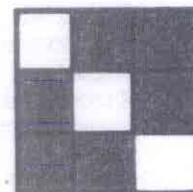
One specialized area of mathematics is called *group theory*. This subject is

usually not presented to students until after calculus because it is generally regarded as *too abstract and sophisticated*. It turns out that Rubik's Cube is a very nice geometric model of an enormous group which is loaded with interesting mathematics. The serious Cubist has, in effect, been doing group theory and consequently has had a taste of pure mathematics!

\* Jack Eidswick is a mathematics professor at the University of Nebraska-Lincoln and is the author of *Rubik's Cube Made Easy*, a solution book that explains the mathematics behind the Cube.



checkerboard pattern



slant pattern



## RUBIK'S CUBIK HALL OF FAME



by Tom Parks

When historians look back and analyze our civilization, they are bound to notice the abundance of moveable Cube-shaped objects we left behind.

They may wonder how this Cube developed from an idea to a phenomenon in a very short time. This will all be unfurled before them when they discover Rubik's Cubik Hall of Fame, a project dedicated to remembering those who contributed their efforts to the cause of Rubik's Cube.

### The Inventor: Erno Rubik

The Hungarian Professor of Architecture who devised the Cube as a novel way for his students to visualize three dimensional objects.

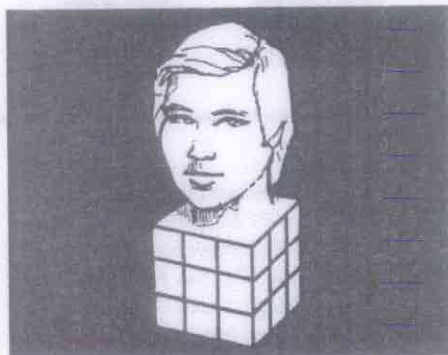
### The Prime Movers

Ideal's Marketing Team: Negotiated with Erno Rubik to bring Rubik's Cube to the United States. They then supervised the manufacture, marketing and distribution of the Rubik's Puzzles throughout the Western world.

Ideal's Sales Promotion Team: Conceived, planned and implemented the Rubik's Cube-A-Thons and were overwhelmed when 2,000 contestants showed up at the first one. They then worked out the competition format that crowned two American Champions and one World Champion on national television. They also founded the Rubik's Cube Club and this Newsletter.

### The "Philosophers"

David Singmaster: Professor of Mathematics at London's Polytechnic of the



South Bank. His book "Notes on Rubik's Magic Cube" has had five editions and his "Cubic Circular" sends Cube News around the world. He is the World's #1 Cube Authority.

3-D Jackson: Professor of Mathematics at the University of California. His Cube Dictionary gave us all of the moves and identities we could imagine and then some. He later developed theory on the Nth dimension Rubik's Cube.

### The Researchers

Drs. Bernard Greenberg and Richard Pavell of The Laboratory of Computer Science at Massachusetts Institute of Technology: Their work on computers and Rubik's Cube at MIT's Artificial Intelligence Laboratory was featured in Scientific American March 1981.

### The Authors

Bob Weisman: An editor of the R.C. Newsletter, wrote The Ideal Solution, the first easy-to-follow, language-free Cube solution, used by millions. Bob also devised the timing devices used in Cube-A-Thons and officiated at the two National Championships.

James Nourse and Don Taylor: These college professors each wrote Rubik's Cube solution books that were on the best seller list for many weeks.

### The Champions

Jeff Varasano: As a 15-year-old he wrote *Jeff Conquers the Cube in 45 Seconds and You Can Too* and then proceeded to set the American Record in 24.67 seconds on the weekend the book came out. Jeff developed the outstanding method of solving the corners.

Minh Thai: Won the American and World Championships. Teamed up with Herbert Taylor to release his method in *The Winning Solution*. Minh developed the outstanding method of solving the middle edge pieces.

David Allen: Current U.S. Champion, 22:48 seconds.

David Maez: Set the fastest time ever in U.S. competition, 20:49 seconds!

### The Spin Off's

Rubik's Pocket Cube™, a 2x2x2 version. Rubik's Revenge™, a 4 x 4 x 4 version. Rubik's World™, a global cube. Rubik's Cube® perpetual calendar, a perpetual calendar Cube. Rubik's Race™, a popular tabletop, Cube-resembling sliding game.

The Cubists and Cube Twiddlers: In short, everyone who gave a Rubik's Cube a turn or watched others Cube, especially those who helped others to make Cubic progress.

We are especially thankful to Rubik's Cube Club Members. We thank each of you for your interest and dedication.





Dear Tom:

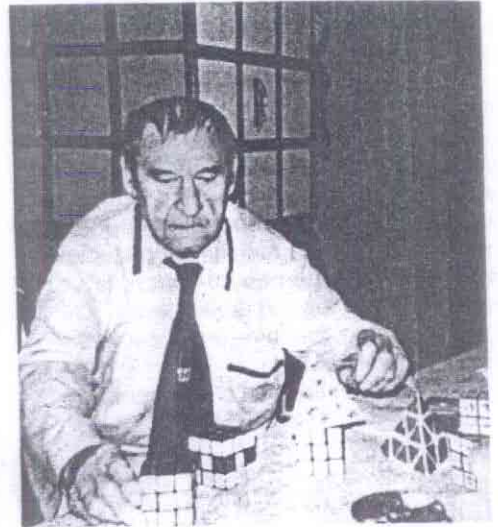
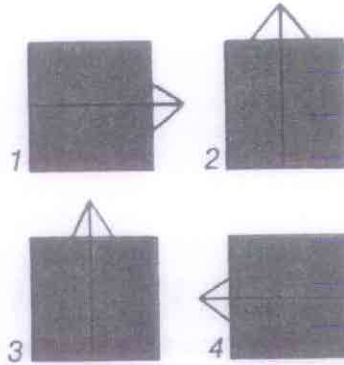
I would like to tell you about my grandfather, Walter Cickowski, age 77.

First of all, I'd like to thank you for your Rubik's Cube Puzzles. They have given my grandfather hundreds of hours of both frustration and fun. He works on his Cubes every day, both solving them and making patterns. He was not content with the printed methods of doing the patterns, so he figured out how to do the patterns in fewer moves. He has come up with a fantastic way to do the pattern OHIO in 4 moves rather than the 18 moves used in one instruction book.

Thank you Rubik's Cube for providing such enjoyment for my grandfather and hats off to my grandfather for his delight and amazing work with Rubik's Cube.

Bill Pozdell  
Chicago, Illinois

Thank you very much, Bill. I am very glad to say that Mr. Cickowski was glad to share his 4 step OHIO pattern with Cube Club Members. It is:

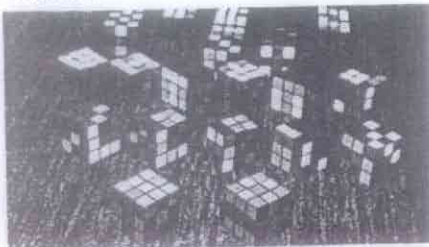


Dear Tom:

Do I hold a World's Record as I have 2057 Rubik's Cube Puzzles?

590 have different patterns with two-inch clear tape over them.

I got my first Rubik's Cube in December 1981 and started working seriously with patterns in August of 1982. I can solve the Cube in under 100 seconds most of the time, but discovering new patterns and shorter moves is my primary interest, rather than speed. I call it "working the Cube". I consider myself a Cube enthusiast, not a fanatic. I have named my favorite Cube "Twister".



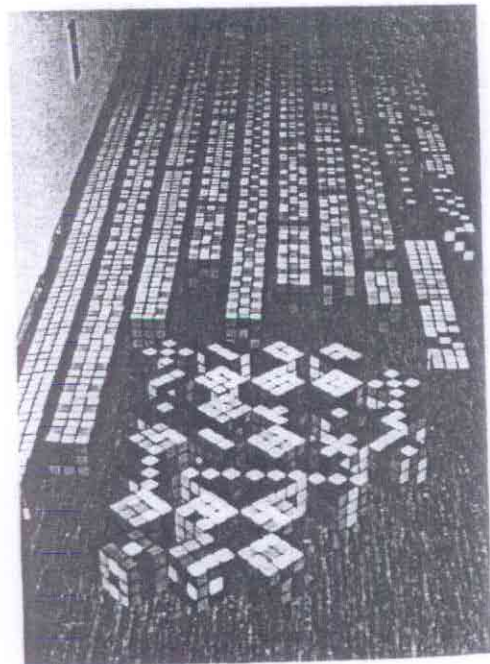
Of the 542 patterns I have on display, I can get over 400 from memory. My

favorite is two checkerboard Cubes within a Cube with six perfect diagonals. I can really do it! Others include: Yo-Yo, Two U's, Two S's, the Patriotic Cube and Santa's Laugh. I can do different patterns that have six colors on all six sides.

I will be glad to correspond with Cubists if they send a SASE. I am formerly from Delta, Colorado, but presently live in South Carolina.

Cecil Smith  
PO Box 90014  
Hanahan, South Carolina  
29410

We are not aware of anyone who even comes close to either the size of your Cube collection or your expertise on Cube patterns. Editors Note—Cecil and his Cube collection were featured on the 11 PM news from WCSC-TV Charleston, South Carolina on May 4, 1983.



Dear Tom:

For those who have already mastered Rubik's Revenge™, an even greater challenge is to paste something on the centers of each face (such as letters) to show if the centers have been rotated

with respect to the edges and corners. This makes a much more difficult puzzle to solve.

Keith Williams  
Florence, Alabama

Thank you very much, Keith. I'm sure many Cube Club Members will enjoy this excellent challenge.

Continued on next page





by Alan Kaltman

Well, this isn't exactly the article I had hoped to write for this issue. But as they say, "the best laid plans . . .". Because this issue is the final issue, this article is my final article. And it's just impossible to incorporate even a miniscule part of the material that I had planned over a series of articles.

In the first article, I mentioned three types of Rubik's Cube computer programs you can write. I've decided to use this article to discuss (if a bit superficially) the major considerations of the first type of program — namely, one in which the computer is simply acting as the Cube.

First you need a routine to tell the computer which operation to perform on the Cube. The most basic of Cube moves is the quarter turn, in which one of the six faces (FRONT, UP, LEFT, RIGHT, DOWN, BACK) is turned 90 degrees counterclockwise or clockwise. The Cube can be solved using just these 12 basic moves (FRONT COUNTERCLOCKWISE, FRONT CLOCKWISE, UP COUNTERCLOCKWISE, etc.). In addition to these basic moves I also use four "middle" moves, where the front center piece is moved west, east, north or south. These moves, while not necessary for solving the Cube, are very useful for developing a quicker approach.

You must decide how to identify each move for the computer. One possible way is to use F, U, L, R, D and B to denote each face and the letters X and C to denote counterclockwise and clockwise movement respectively. So to tell the computer to move the right face clockwise, you could enter RC. For back face counterclockwise, you could enter BX. For the "middle" moves, you could simply use W, E, S and N (referring to the directions). Or, if you want to require two keystrokes for each move, you might decide on WE, EA, SO and NO. For that matter, you can use one keystroke for each of the face moves — you can tell the computer that A means FRONT COUNTERCLOCKWISE, B means FRONT CLOCKWISE, etc. The notation that you use is up to you. But I strongly suggest that you make your notation color-independent, for a multitude of reasons that space will not permit

## COMPUTER CUBING



me to describe. In other words, have your notation refer to the position of each face (for instance, FRONT) as opposed to the color of the center of the face (for instance, BLUE).

Once you've decided on a notation, you can then write a routine to accept a single move or an entire sequence of moves via a single line of input from the keyboard. An example of a sequence is:

**UXRXUCRC**

Whether you wish to allow or require commas between moves is strictly up to you.

Identifying the moves for the computer is of no use whatsoever unless the computer knows how to do each move. So for each of the 12 (or 16) moves, you will need to construct a routine to perform the operation. Of course, before you can do moves, you must first have a "Cube."

Since a Rubik's Cube has 54 individual squares (or FACETS), defining a "Cube" is simple. Just assign an area of 54 consecutive character positions. Each character position will contain one of six letters: B, G, R, O, Y, W. These of course represent each of the colors on a standard Rubik's Cube.

Let's assume that you decide to use the first nine characters for the front face (reading left-to-right and top-to-bottom), the next nine for the up face, and the subsequent characters for the left, right, down and back faces respectively. A possible initial value for your "Cube" (in undisturbed or "solved" state) may be BBBBGGGGGGGGGGRRRRRRRRROOOOOOOOOOYYYYYYYYWWWWWWWWWW. Although you may look at the "Cube" in this manner as a whole unit, your actual approach (depending on the programming language you use) may be to define your "Cube" as an array of 54 consecutive single-character fields. You can then reference each individual facet in a manner such as F(1), F(2) or F(54). If you set up your "Cube" in the order noted above, the first two examples refer to facets on the front face and the third refers to a facet on the back face.

The next thing you need to do is to define a second "Cube". We'll call it a "work Cube." The reason you'll need it is as follows. When you are physically turning an actual Cube, all the facets involved in a given move are moving to their new positions SIMULTANEOUSLY. But a computer does not execute instructions simultaneously . . . it executes them SEQUENTIALLY, one at a time.

Let's assume that we refer to the front face facets in the following manner:

F(1)	F(2)	F(3)
F(4)	F(5)	F(6)
F(7)	F(8)	F(9)

Now let's consider what happens to just the FRONT facets above when you perform a FRONT COUNTERCLOCKWISE MOVE. F(3) moves to F(1). F(6) moves to F(2). F(9) moves to F(3). F(2) moves to F(4). And so on. If you were to perform all the individual facet moves with a sequence of instructions operating on a single "Cube," you would have a problem. Because not only does F(6) move to F(2) but also F(2) moves to F(4). But here's the hitch. It's the ORIGINAL F(2) that moves to F(4). Once you execute the F(6) move noted above, you wipe out the ORIGINAL information that was in F(2), which would result in an incorrect result if you subsequently try to move the "new" F(2) to F(4).

The way around the problem is simple, requiring just a little work. That is, a "work Cube." Set it up the same way as your original "Cube," with the same number of character positions (54). You can refer to the characters on the "work Cube" as W(1), W(2), etc., with each one corresponding to the similarly-numbered character position on the original "Cube." Then at the outset of each move-operation to be performed (such as FRONT COUNTERCLOCKWISE), you copy all the character positions on the original "Cube" to your "work Cube." (Depending on the programming language and your facilities, you may be able to do this with a single "move"-type statement or be required to write a routine to do this.) Once you have done this (and thus have two duplicate "Cubes"), you can write your instructions to perform your entire move. If you're using the BASIC language, your instructions might be as follows:

LET F(1) = W(3);	LET F(6) = W(8);
LET F(2) = W(6);	LET F(7) = W(1);
LET F(3) = W(9);	LET F(8) = W(4);
LET F(4) = W(2);	LET F(9) = W(7);

Note that there is no instruction for F(5) since the FRONT-CENTER facet does not move. (Okay, technically it rotates, but it does not MOVE!)

Once you've done this, you are only 3/4 done, because the FRONT COUNTERCLOCKWISE move changes the position of twelve additional facets (on the UP, RIGHT, DOWN and LEFT faces). Using the above method, you should have little trouble creating the additional necessary instructions.

*Continued on next page*



# LETTERS TO THE EDITOR

Continued from previous page

Dear Tom:

When Rubik invented the Cube he did a lot more than just invent a puzzle. I have been playing with it and the Revenge Puzzle ever since they came on the market and I keep on finding out new things about them. For instance, do you know you can pick out just about any series of starting moves, and by repeating those same moves over and over again without making any other moves, you will eventually come out to a full solution of the puzzle?

I found one series that takes over three thousand moves and hours of time but the puzzle came back out. However, I am now working on the least number of moves that will mix the puzzle under the following rule and still come back out. Rules are simply that no two squares can stay next to each other all the way through the series. The puzzle must be completely mixed at some point in the series.

I have enclosed a work sheet showing the shortest way through the Cube and Revenge. 48 moves for the Cube and 72 moves for Revenge. Using those moves it is possible to walk through the Revenge in just over a minute. A racer could probably do those 72 moves in less than a minute and not work up a sweat.

Course that isn't the object in this case. I am still trying to find a series of less than 72 moves that will do the same thing.

Maybe other cubers would be interested in looking for shorter ways to do it.

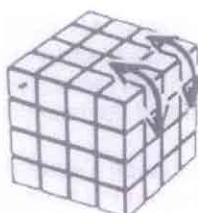


Fig. 1

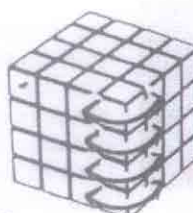


Fig. 2



Fig. 3

Walking through Rubik's Revenge in seventy-two moves: Starting with Figure 1, you move sections 2 & 4 one quarter turn. Direction of turn is optional except that whichever direction you use in the first move must be continued throughout the series. DO NOT REVERSE. In Figure 2, you turn the entire Cube one quarter turn right or left, keeping in mind to use only the one direction you start with for the rest of the series of moves. Figure 3 merely repeats Figure 1. You make this simple series of moves 36 times and Rubik's Revenge comes out the other side every square in place.

Below is the shortest walk through on Rubik's Cube I could come up with and still have the puzzle completely mixed during the series of moves. In Figure 1, you move the two outside layers one quarter turn, direction optional but no reversing as above. Then in the second figure you rotate the top and bottom layers one quarter turn in opposite directions. This completes the four moves used throughout the series. You repeat this series twelve times for a total of 48 moves and the Cube is back in place.

In this series it is important to use two control colors, and to always have these same colors facing you and on top before you make the next four moves.

Stephen J. Lisen  
Wyandotte, Michigan



The phenomenon you refer to in your letter is what David Singmaster and 3-D Jackson refer to as identities.

You did an excellent job describing identities with both Rubik's Cube and Rubik's Revenge. I am sure this will interest our readers.



## NEWS FROM CUBE CLUBS



From: Bob Cambell

Bridge Alternate Program, Tupper Secondary School  
419 East 24th Avenue, Vancouver BC, Canada V5V2A2

We held our class Rubik's Cube Tournament among our 20 students. The results follow:

1st	Lance Dickinson, 33.7	8th	April Davison, 1:50
2nd	Kevin Jackson, 42.2	9th	Tony Sanford, 1:52
3rd	Frank Rodgers, 45.7	10th	Andrea MacDonald, 1:54
4th	Shawn Hasselbach, 49.1	11th	Colleen Morrison, 2:46
5th	John Antufeay, 53.8	12th	Mavis Alexander, 5:00 (staff member)
6th	Andy Zsiak, 60.0	13th	Michele Holley, steps 1-4
7th	Elizabeth Yabut, 1:28.1		

Missing the tournament with best times of 39 seconds and 1:23 were Jason Hopes and Robbie Deacon. Those to learn the Cube since the tournament are:

Michelle Holley, Lolita Ehrhardt, Sandi Welton, and Paul Couture. These yet to complete the Cube but still working are: Delilah Brown, Campbell McGovern,

Roxanne Owens, and Arlene Henderson.

Second, we are planning a tournament for our entire high school in late

Continued on next page





*Continued from previous page*

In the manner described above, you can create a routine to perform every possible move on your "Cube."

Finally, you need a way to display your Cube, most probably on a video screen but also possibly on paper (printing it out). The screen display is preferable, because you can literally see the Cube action taking place. The point is that the performance of Cube moves is of little value to you if you have no way of knowing what the Cube looks like at the start and end of each move – or, at least, of each sequence.

Your method of displaying the "Cube" may be very simple or highly complex. On the simple side, you can merely list out (display or print on a single line) the 54 consecutive color initials – and since you know the order of the facets repre-

sented, you can form a mental picture of what the "Cube" really looks like. Or, if you are more enterprising, you can display or print the color initials in a manner which resembles Cube faces, such as:

B	B	R
G	R	Y
W	Y	O

Or, if you really want to get fancy (and if you have the facility for displaying colors), you can actually draw and display a picture of a Cube and even make it "turn"!

Unfortunately, space does not permit any elaboration of the specifics of Cube display . . . but there are many available books which will provide you with ideas

as to how to go about accomplishing the task.

In these two articles, I have barely scratched the surface in terms of the volume of material I had hoped to present in many more discussions. But I do hope that, if nothing else, what I've presented here encourages some of you to try your hand at computer cubing. What I've provided here is simply a starting point, just some basic ideas. How far you decide to pursue it is up to you. With a bit of initiative, imagination and ingenuity . . . who knows? Maybe someday YOU'LL be the one to figure out routines to enable you to solve the Cube from any random position in 15 seconds or less!

At any rate . . . good luck . . . and happy computing!



by Tom Parks

People react to Rubik's Cube in many different ways – some with hands, some with feet!

I found out about one such group last summer when I saw a very tall stack of computer-printed paper on Bob Weisman's desk. He invited me to look it over and I was fascinated!!! There were hundreds of pages of communications and exchanges of ideas on Rubik's Cube. On these sheets I found many interesting Cube items. I was not familiar with many of these, although I had been making efforts to read everything available to me. The people communicating on these pages treated the Cube with reverence and respect in a far different way from any Rubik's Cube groups I had come across.

These sheets were the newsletter of a group which calls itself "The Cube Lovers at MIT". The newsletter is distributed to members by electronic mail. Dr. Richard Pavele of MIT, a founder of the group, had very kindly sent the printout to Ideal.

In May of 1980, Rubik's Cube first arrived in Boston. It was enthusiastically received by many engineers, mathematicians and computer scientists at MIT. They started a computer-mediated "newsletter". Members contributed articles or comments and the electronic mail

system distributed them to the rest of the group.

Members use computer terminals to read the electronic "newsletter". In a short time the group grew to over 200 members. At the beginning, the discussions centered around how long it would take to develop an algorithm that would consistently solve Rubik's Cube. (Pavele spent 100 hours finding an algorithm and another 100 hours to get it so that he could solve the Cube in under three minutes.)

The group discussed various types of transformations; such as swapping corners and flipping middle edges. They studied identities and also did extensive work with patterns and their cyclic structure.

The Cube Lovers worked on what most people consider to be the greatest challenge offered by Rubik's Cube. This is the attempt to determine "God's Algorithm", a hypothetical technique that would restore any mixed Cube in the minimum number of moves. The current value of the lower boundary is 22.

Many Cube books were discussed and, in essence, reviewed. I found out about a few terrific books, which I quickly ordered. I sensed that while the Cube Lovers appreciated many of the books, they were not overly happy when

the flood of solution books hit the market. It changed the challenge from figuring out the instructions in a solution book (which was no challenge for the people in this group). The Cube Lovers had a resurgence of challenge when Rubik's Revenge™ Puzzle arrived and enjoyed the same challenge that the smaller 3x3x3 Cube provided before its flood of books hit the bookstores.

I found out about "Games People Play" on the pages of the Cube Lovers newsletter. This is a fantastic puzzle store located between Harvard and MIT, which ships puzzles all over the country to people unable to get them in their own areas.

There were deep discussions into the math and physics theories for which Rubik's Cube is the primary illustration. Group theory from math and quarks from particle physics can be illustrated and explained by utilizing Rubik's Cube. Many universities are now offering courses involving Rubik's Cube.

Before we parted, I gave Dr. Pavele an Alexander's Star as a token of my sincere thanks for his kind assistance. Rubik's Cube sure has a terrific fan club in the Cube Lovers at MIT. Do you think there is a chance that they might get hooked on Alexander's Star and change their name?



## THE CUBE LOVERS AT MIT





May and will let you know the results. We also demonstrated the Cube and held a mini-tournament at a recent Alternate Schools Fair. We are participating in our school's talent show this week. Other goals are to teach kids at other schools in hopes of eventually holding inter-school competitions, and we have corresponded with the "Guinness" people to see if we could set a record of some sort (no luck with this . . . they said there is no universal format for any marathons).

Third, we are hoping to stage an open tournament for Vancouver or British Columbia.

Before closing I'd like to add a couple

of personal items of pride to me. First, my son, Mark-Andrew, age 5, has conquered the Cube and has a best time of 3:45. He is eager to learn all the short-



cuts now and should be around 1 minute in 2 months or so. Second, I have finally reached 2 personal goals, which for my age, 38, I'm quite proud of. I did 50 consecutive Cubes with an average time of 29.9 seconds, and I've broken 20 seconds twice without any major flukes.

Well, once again, thanks for your support. We really appreciate it!

*Thank you Bob and students. Your club is one of the finest in the world. We are delighted that Rubik's Cube is the focal point of your enthusiasm. Thank you so much for sharing it with us.*

by Tom Parks

There is only one thing in life that we can be sure of and that is Change. Fads are born, grow to excite the public, and then fade away. That is what has happened to Rubik's Cube. From its zenith as a household word (and a household item—at one point, there was a Cube in 75% of American homes), it has declined. And because of this, the Rubik's Cube Club, newsletter and Official Cube-A-Thons will be discontinued.

Rubik's Cube arrived on the world scene quickly and had considerable impact during its short reign. The transition from an idea in the mind of a professor of architecture to one of the most popular toys in the history of the world—which then developed into a competitive sport with national championships in 19 countries and a bonafide World Championship covered by NBC's Sports world—took less than ten years.

There is a possibility that efforts to obtain sponsors for future Cube competition will be successful. If so, Rubik's Cube Club Members will be notified by mail. At this time my efforts to organize a Third Annual Rubik's Cube-A-Thon do not look promising.

This predicament is not new for me. I have fallen head over heels for just about every skill toy that has come along

and have spent considerable time working on trying to master each one. Over the years I've been involved with 15 puzzles, Yo-Yo's, Spinning Tops and Diablos before Rubik's Cube, and Tsukuda's Square, Trillion® and Alexander's Star® during the time I was involved with Rubik's Cube. Time has taken its toll. The former have faded and the latter never took hold enough to warrant competition. Therefore I am at a crossroads that many of you may occupy with me at this time.

I think I have found my next challenge. It's Othello®. A few months ago I was given a copy of *Othello Quarterly*, the official publication of the United States Othello Association. I found out that they have tournaments and a ranking system. And, best of all, there will be Othello Challenge Contests at malls throughout the United States in the near future.

I joined the U.S.O.A. (\$5 a year includes membership, voting rights and four issues of the *Othello Quarterly*—PO Box 342, Falls Church, VA 22046) and am working on perfecting my game. I invite Rubik's Cube Club Members, looking for a challenge, to do the same.

Othello is just four years older than Rubik's Cube. In 1971 Japanese salesman Goro Hasegawa invented a simple board game. His father, a Shakespear-

ean scholar, suggested the game be named Othello because it is based on a series of "dramatic reversals." Othello is the national pastime of Japan and is growing in popularity in England and the United States.

Othello takes "a few minutes to learn, a lifetime to master," and once you start playing Othello I am sure you will want to work on mastering the game.

So there you have it. The era of Cube Competition is coming to an end. I myself am taking up Othello, but whatever challenge you take on next, please don't neglect your education and career planning. Younger Cube Club Members who have not completed your schooling: please, put your schoolwork first and your game challenges second. Enjoy your hobbies, but be sure you have a good solid background that will lead to a promising career. May both your careers and hobbies be rewarding to you in the years to come.

I extend my best wishes to all Cube Club Members. Thank you so much for sharing the era of Rubik's Cube Competition with us.

Everything in the cosmos is cyclical. It is not beyond the point of possibility that the Cube will stage a resurgence one future day. I will certainly welcome it.

## IDEAL RUBIK'S CUBE NEWSLETTER VOL. 1 NO. 4

The Rubik's Cube® Newsletter is published by CBS Toys, A Division of CBS Inc., Secaucus, NJ 07094, and is sent to each current member of the Rubik's Cube Club.

No material may be reproduced from this newsletter without written consent from CBS Toys.

© 1983 CBS Toys, A Division of CBS Inc., Secaucus, NJ 07094.

Rubik's Cube®, Trillion®, Alexander's Star® and Othello® are Registered Trademarks of CBS Inc. Rubik's Pocket Cube™, Rubik's Race™, Rubik's Revenge™ and Rubik's World™ are Trademarks of CBS Inc.

Editor..... THOMAS PARKS  
Editor..... BOB WEISMAN  
Technical Editor..... MARVIN SILBERMINTZ  
Feature Editor..... DAVE TILBOR