Noesis

The Journal of the Noetic Society

(Issue 39, June 1989)

Editorial

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A Convention of the Members of the Noetic Society: Scheduled for the weekend of August 5-6, in Chicago, is a meeting of the members of our society. This will afford us all another chance to see one another and to display our respective noetic abilities, formal exhibitions of which via articles for the journal, etc., are so easily precluded by familial and professional obligations. Chris Cole, who will publish the next Noesis, and I expect to have arranged a place at which to meet and conduct our business in time for the details to be announced in the next issue.

The agenda (I pause to consider the means by which I can didactically employ this much-abused word without appearing to do so.) Chris and I discussed will probably be less structured than they were last July in New York. We agree that a good idea might be for the group to try to solve some heretofore unsolved problem(s). I understand that we still lack a proof of the generally accepted answer to the intersecting-cubes problem #36 on the Mega Test. Several people in our society, myself included, have investigated various aspects of this fascinating problem. It is highly likely that the maximum number of cells generated by n-intersecting platonic polyhedra of the same kind has been found by someone sometime; but even if this much has been, or is known, I expect that little else has been done in this specific area of study. Other suggestions for agenda should be submitted very soon to Chris Cole whose address and telephone number remain: P.O. Box 9545/Newport Beach, CA 92658/(714) 855-3923. I don't know how soon he wants to have the next Noesis finished.

PLEASE! Notify me of your intentions to attend or not to attend this function, either by postcard or telephone. Should you consider not doing so, I remind you that I know where your post office box is!!!

Content of Noesis: I realize that there is often a preponderance of reprintings (illegal?) in Noesis, but I justify this, as Ron Hoeflin did, simply by noting that the Noetic Society remains extant. I doubt very much that it would, were the journal compiled only when some member had the time to write an article for publication in Noesis, i.e., with irregularity.

I am publicly grateful to Ron for his continually sending me material relating to the society, the Mega Test, and intelligence in general. Several items in this issue were submitted by him.

Chinese Boxes Error Correction: "Ego mé absolvo." ought to have read, "Ipse ego absolvo." Silly, anyway.

Change of Address: Anthony J. Bruni temporarily resides at:
4527 Donalbain
Spring, TX 77373
(713) 353-0622

GUINNESS BOOK OF RECORDS

DMcF/TR

Mr R Hoeflin
P.O. Box 7430
New York
NY 10116
U.S.A.

24th May 1989

Dear Mr Hoeflin,

Many thanks for your letter of 17 May and the latest information regarding the Mega test.

I had been meaning to write to you for some time to tell you that I have decided to drop the entry for highest I.Q. and to explain my reasons.

It is not that I am in any way against I.Q. tests, nor that I am 'anti-elitist' (although I am sure that I will be accused of that). Simply, I feel that to include an entry for the 'Highest I.Q.' implying, as it does, that this is the world's most intelligent person, is invidious. Also, unlike the process of putting someone on a racetrack against a stopwatch, there are many different types of test, and we are talking about such minute differences between individuals that I feel we could not be considered to be making valid comparisons.

I'm not sure if you will agree with my thinking but I am sure that The Guinness Book of Records is not in a position to monitor the highest I.Q.

Yours sincerely,

Donald McFarlan

Donald McFarlan
Editor

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Dear Eric,

I solicited cooperation from about ten other test or problem designers in compiling a book to be known as Super Tests.

Tab Books expressed an interest in publishing such a book but wanted to include all the answers, which made the project less appealing to me. Also, I was unable to get permission to use some of the better tests by amateurs.

So I suggested an alternate book idea to TAB to be titled Beyond Mensa to consist of essays from the journals of the higher-IQ societies. But Tab was less than thrilled with this new proposal as the enclosed letter indicates.

If any members of the Noetic Society wish to put together a book such as TAB would like, feel free to contact them.

Of the ten test or problem designers I contacted, three--Cole, Raniere, and Hajicek--are members of the Noetic Society, but possibly other members as well might have an interest in pursuing the project of compiling a book of logic puzzles or the like and submitting it to TAB for consideration.

Ron Hoeflin

TAB BOOKS Inc.
Blue Ridge Summit, PA 17294-0850
Telephone (717) 794-2191
Telex 820562
Facsimile (717) 794-2080

Roland S. Phelps
Electronics Acquisitions Editor

March 31, 1989

Mr. Ronald K. Hoeflin
P.O. Box 7430
New York, NY 10116

Dear Mr. Hoeflin:

I have received your proposal for a book to be tentatively titled **SUPER TESTS**. It looks like it would make a very interesting book. I do need some additional information. Enclosed is a copy of our author questionnaire. Please answer all of the questions as fully as possible. Your answers to the questionnaire may play a decisive role in determining whether our Editorial Board accepts or rejects your proposal. Please pay special attention to the questions about competition, and also the level and audience for your proposed book. Avoid statements like "level is beginning to advanced" and "the audience is anyone interested in the subject." Proposal with statements like those are certain to be rejected by the Editorial Board.

If you have any questions you may write to me at the address given above.

Sincerely,
TAB BOOKS Inc.

Roland S. Phelps
Electronics Acquisitions Editor

Squaring the Circle: New Light on Old Riddle

By GINA KOLATA

MATHEMATICIANS still cannot square the circle using only a compass and straightedge, a problem first posed by the ancient Greeks and later proved to have no solution.

But a Hungarian mathematician has done the next best thing. He has shown that it is theoretically possible to cut a circle into unimaginably small pieces and arrange them in a square of the same area.

It can even be done without rotating the pieces. They can be slid into place.

But no one can accomplish this feat by taking out a scissors and just starting to cut, mathematicians caution. The Hungarian mathematician, Miklos Laczkovich of Eotvos Lorand University in Budapest, proved theoretically that the circle must be cut into 10^{50} pieces. (The number of pieces — 10 with 50 zeroes after it — is about the same as the number of molecules in a million cubic miles of water, said Bradley Efron, a statistician at Stanford University.)

And the pieces are so bizarre, so full of holes and isolated odd points that they literally cannot be imagined.

Mathematicians who studied the problem had stongly suspected that there was no way to cut up a circle to make a square, without losing even a single microscopic point of the circle.

Mathematicians said the result bears on two fundamental questions in mathematics. What does it mean for two objects to have the same area? And what does it mean for a line to be curved? It indicates that the way people think of area is correct but that curves are so fundamentally different from straight lines that they can only be converted into each other by very strange and almost indescribable rearrangements.

"It's not a stupid question," said John Conway, a mathematician at Princeton University who works on similar problems. "It's a testing ground. If no one can answer it, it's a sign that we ought to sharpen our tools." He called the the solution "an important achievement."

The just-solved problem is related to a much older problem, devised by the ancient Greeks, that asks whether it is possible, using just a straightedge and compass, to draw a square with an area that is exactly the same as that of a circle. In 1882, mathematicians proved that such "squaring of the circle" is impossible because the area of a circle, pi times the radius squared, involves pi, and pi is not a rational number.

'No One Knew Where to Begin'

But the current problem, devised by the renowned mathematician and philosopher Alfred Tarski in 1925, is slightly different. It does not ask that a straightedge and compass be used but instead asks whether there is any way to cut up the circle and rearrange the pieces to make a square of exactly the same area.

"I was surprised" by the result, said Stan Wagon, a mathematician at Smith College in Northampton, Mass., who has written a book on the subject and is writing an article about the new proof for a mathematics journal. "A lot of people have thought about this problem over the years, but no one knew where to begin," Dr. Wagon said.

Excitement about the new proof has been growing over the last couple of months as Dr. Laczkovich's 40-page manuscript circulated among

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Squaring the Circle: New Light on Old Riddle

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mathematicians.

Twenty-five years ago, Lester E. Dubins, a mathematician and statistician at the University of California at Berkeley and his colleagues, Morris W. Hirsch and Jack Karush, proved that the problem could not be solved by cutting the circle into ordinary pieces and rearranging them. No matter how many pieces, "it wouldn't work," Dr. Dubins said.

'If you break up the circle into weird pieces, you can destroy the curve.'

But Dr. Laczkovich found that the trick is to cut the circle into what mathematicians call nonmeasurable pieces, that is, collections of points that are so irregular that they cannot be measured. The pieces "are riddled with holes; they're so erratic," said Ronald L. Graham, an adjunct director of research of the information sciences division at AT&T Bell Laboratories in Murray Hill, N.J.

Destroying a Curve

Dr. Wagon said one way to think of a nonmeasurable collection of points is "like saying, pick out all the points that are 100 feet above sea level."

"You really can't pick them out because they're scattered all over the place," he said. "And you can't measure the size of the set of points."

A nonmeasureable collection of points is "very peculiar," Dr. Dubins said. "It takes a leap of the imagination to realize there are sets much more peculiar than any you can imagine."

Dr. Wagon explained that the new result "is telling us something fundamental about curvature." He added: "People thought a curve seemed so hard to get hold of. But it turns out that if you break up the circle into weird pieces, you can destroy the curve and make it nice and straight."

Dr. Dubins focused on what the result means to the concept of area. Mathematicians want to know "what does it mean for two objects to have the same area," he said. "One notion is that if you cut one of them into pieces and rearrange them, you get the other." Dr. Laczkovich's result shows that "in a sense, the circle and square do have the same area," Dr. Dubins said.

Dr. Wagon said the new proof probably would be published within a year, but, in the meantime, he and others are free to discuss it. Unlike other fields, in which researchers keep data secret while waiting for it to be published in scientific journals, mathematicians informally pass their major proofs around and discuss each other's results, waiting to see if anyone can find a hole in their intricate logic.

So far, leading mathematicans say they are confident that this proof is correct.

THE NEW YORK TIMES, SATURDAY, MAY 27, 1989

Michigan U. Is Sued Over Anti-bias Policy

Special to The New York Times

DETROIT, May 26 — A graduate student has filed suit in Federal District Court against the new anti-discrimination policy of the University of Michigan, which the student contends violates his First Amendment right to discuss his research ideas in class.

Lawyers for the American Civil Liberties Union, which is representing the student, said the suit they filed here Thursday was apparently the first to oppose a university policy restricting speech deemed offensive to minority people.

The University of Michigan, in Ann Arbor, adopted the policy last year after a series of incidents in which blacks and other minority group members were harassed by other students. In one case, racially abusive jokes were played over the university's radio station.

Emory University in Atlanta also prohibits verbal harassment and several other universities are considering adopting similar policies.

'A Chilling Effect'

The suit asks the court to bar the university from enforcing its policy on the ground that its provisions are so broad that they prohibit speech clearly protected by the First Amendment. It asserts that the terms of the policy are so vague that they "create a chilling effect on the expression of certain ideas because of the content of those ideas."

A university spokesman, Walt Harrison, defended the policy as balancing the univeristy's commitment to First Amendment rights with its commitment opposing discrimination and discriminatory harassment.

The suit, which refers to the plaintiff as "John Doe" in order to protect his privacy, cited a university publication for students that defines discriminatory harassment to back up its contention. In the example of prohibited behavior, a male student remarks in class that women are inferior to men in a given field.

The suit argues that such a hypothesis is a legitimate subject of inquiry for the plaintiff, whose specialization in biological psychology has led him to consider the possible influence of sex, race, age and other characteristics on mental performance.

Punishment of those who violate the anti-discrimination policy include a reprimand, compulsory attendance in classes about the group a student insulted, eviction from university housing, suspension from the university and expulsion.

From Newsweek June 16, 1989:

SCIENCE

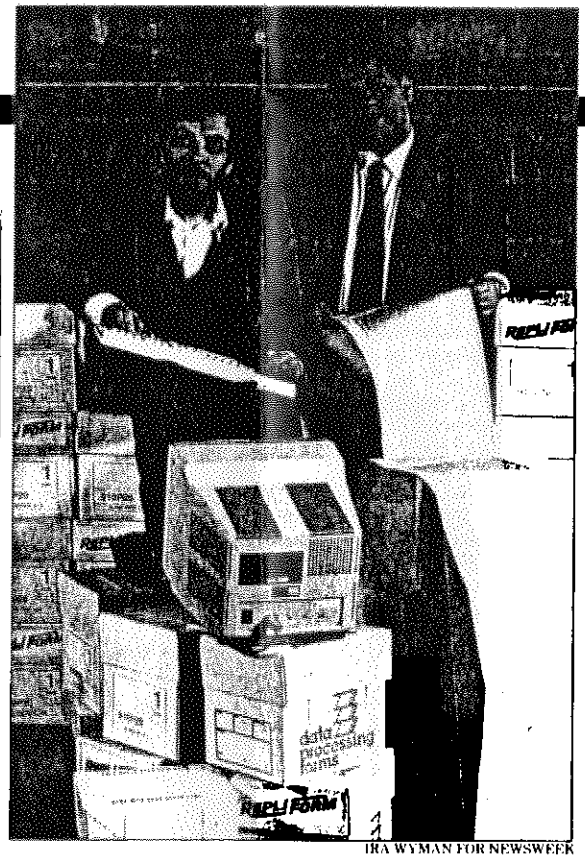
As American as Apple Pi

A new record for π

Three point one four one five nine, block that tackle, hit that line!

3.14159, the first part of the number pi, has long done service as a football cheer at such athletic powerhouses as Caltech. But pi has an appeal way beyond its ability to fit into trochaic tetrameter. This number is, most prosaically, the ratio of any circle's circumference to its diameter. But it also crops up in equations of electromagnetism, atomic physics and other fields, almost as if the number were magically embedded in the very processes of nature. To mathematicians, though, the greatest lure is simply that pi has an infinite number of digits. That's why number lovers since Archimedes have regarded pi as a sort of arithmetic Mount Everest, a test of their computational prowess. The previous world record, set by the Japanese in 1988 using an NEC supercomputer, was 201 million digits. Now mathematicians at Columbia University have claimed the crown.

Last week, at the International Conference on Computers and Mathematics at the Massachusetts Institute of Technology, David and Gregory Chudnovsky announced that they had calculated pi to 480 million decimal places. To accomplish this, they used two supercomputers; printed out, the digits would run 600 miles. While the feat may seem akin to winning the record for flagpole sitting, it has important practical applications, offering a way to expose errors in computers' hardware, software and memory.



IRA WYMAN FOR NEWSWEEK

600 miles of digits: *Gregory and David Chudnovsky*

Calculating pi challenged the Babylonians 4,000 years ago, and even today it remains "the most horrible test you can put to a computer," says David Chudnovsky. That's because it takes trillions of complex operations to generate millions of digits of pi, making the task a rigorous test of a computer's capabilities. The Chudnovskys had two ways to detect errors made by their computers, an IBM 3090/VF and a CRAY-2. The most obvious way was to compare the two machines' calculations. But the Columbia mathematicians also used a special algorithm they had invented. This algorithm, or series of mathematical steps, includes a "self-correcting" feature that verifies the accuracy of any piece of pi. Specifically, it points up errors when any digit does not conform to predictions made by something mathematicians call the Chinese Remainder Theorem. "We can check the integrity of the hardware and software at every step," says David Chudnovsky.

Star Wars: The algorithm can thus be used to trouble-shoot any computer. Just program the machine to calculate pi using this formula, and check for errors: analyzing the mistakes will reveal whether the flaw lies in the hardware, software or memory. This feature could prove literally lifesaving if computers are ever required to control a nuclear battlefield or a Star Wars defense. Planners in the Pentagon have long known that computers are as prone to error as their human programmers—a line of software may have a typo, a cosmic ray or speck of dust may blitz out some memory, the manufacturer may inadvertently install faulty hardware. By challenging computers with pi, defense brass would be able to ferret out glitches in their pricey hardware. In other words, our nation's defense may depend on a piece of pi.

SHARON BEGLEY