



Richard Brualdi



Chris Godsil



Ivan Gutman



Willem Haemers



Steve Kirkland



Euler, Master of Us All

What a Year!

- **Rumi** is 800 years old.
- **Euler** is 300 years old (see page 3).
- **Gabriel Garcia Marquez** is 80 years old.
- **Samad Hedayat** is 70 years old (see page 2).



Out beyond ideas of wrongdoing and rightdoing,
there is a field. I'll meet you there. —Rumi—

Dance, as though no one is watching,
Love, as though you've never been hurt before,
Sing, as though no one can hear you,
Work, as though you don't need the money,
Live, as though heaven is on earth.



The Waste Land

April is the cruelest month, breeding
Lilacs out of the dead land, mixing
Memory and desire, stirring
Dull roots with spring rain.
Winter kept us warm, covering
Earth in forgetful snow, feeding
A little life with dried tubers.

T.S. Eliot (1888–1965).
The Waste Land. 1922.



Elena V. Konstantinova



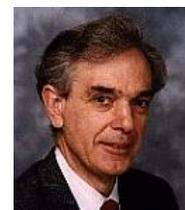
Jack Koolen



László Lovász



Bojan Mohar



Peter Rowlinson

Samad Hedayat is a distinguished professor of statistics at the University of Illinois at Chicago (UIC). Prof. Hedayat was born in Jahrom, Iran and will be seventy years old this year. He has been a great friend of IPM and staunch supporter and a contributor to the development of combinatorics in Iran since the beginning. It gives us a great pleasure and honor to dedicate this conference to him.

We asked Prof. John Stufken a prominent x-PhD student of Prof. Hedayat to write for our "Daily News" about his advisor.



Samad Hedayat: A Friend and Mentor

John Stufken, Professor and
Head Department of Statistics
University of Georgia
Athens, GA 30602, USA

It is truly an honor and privilege for me to write this note on Samad Hedayat's monumental scholarly contributions at an occasion to celebrate his 70th birthday. Since, in a short note like this, it is virtually impossible to do justice to his many contributions, drawing from personal experience I will mainly focus on the incredible impact that he has had on me as a friend and mentor.

I could easily spend many pages on Sam's creativity and perseverance in the pursuit of knowledge and solutions to important practical problems. I know of these attributes firsthand since I have collaborated with Sam on many papers and on a book. His seminal contributions to such topics as optimal crossover designs, optimal designs for nonlinear models, fractional factorial experiments, orthogonal arrays, the support of BIB designs, and survey sampling, to name just a few, have resulted in a long list of high quality publications in the very best journals of the profession and in three outstanding books. The impact of his work can also be seen through the continual funding that he has received during his long career from various government funding agencies and through his continued interaction with the pharmaceutical industry, government regulatory agencies, and medical researchers. He has also held many editorial positions for the very best journals of the profession, including currently as Associate Editor for the Journal of the American Statistical Association. His impact through these activities is simply of gigantic proportions and was recognized in 2003 with an appointment as Distinguished Professor at the University of Illinois at Chicago (UIC).

Nevertheless, I would like to place the emphasis in this note on Sam's impact as a mentor for new researchers. More than anybody else that I know, Sam has the ability to advise, stimulate and motivate new researchers – his own students and others – and to help them reach heights that might not have seemed possible. I have been extremely fortunate to benefit from this, perhaps more so than anybody else.

Sam has an inexhaustible passion for statistics and its role in science. This is vividly reflected in his teaching. After I came to UIC from the Netherlands to work as a PhD student in Game Theory, taking one of Sam's classes prompted me to switch to Statistics. His lectures are lively and inspiring, with valuable background information, motivation, and anecdotal stories, and with many challenging problems for students. I remember working many hours on challenging homework problems that, in some cases, turned out to be open research problems. It is only fitting that he received the 2003 UIC Premier Award for Excellence in Teaching.

Before I started interviewing for an academic position in early 1986, Sam provided me with advice that was of immeasurable value. Being only vaguely familiar with the US educational system and with the history of statistics – a field that I had after all entered only recently – I needed all of it. His wisdom and his generosity to spend time with me were overwhelming. I later realized that he put in a similar effort for all of his other students, which I had not thought possible given the time and effort he spent on me. He continued to be available for me over the years, has helped me tremendously to further my career, and has truly remained an inspiration. Now, more than 20 years after I graduated, Sam is one of my very best friends and a person I often seek out for advice. He is available at any time for any problem that I might want to discuss. He has been absolutely instrumental in my success. I was therefore delighted that, finally, in 2007 he was recognized with a Graduate Mentoring Award from the Graduate College at UIC. This was an award that was long overdue. I know from talking to the many other former students of Sam that they can tell a similar story to the one that I have tried to convey here, and that Sam has been just as instrumental in the success of their careers as in mine.

Attaining the high standards set by Sam as a scholar, teacher and mentor remains an aspiration for me, though I have no illusion that I will ever come close. Just last year, around the time of his 69th birthday, I traveled with Sam and two of his other former students (Hegang Chen, University of Maryland, and Min Yang, University of Missouri) through parts of China. That trip confirmed to me that Sam is now turning 70 years *young*, and that there are potentially many new researchers who will be fortunate enough to benefit from his wisdom, motivation and advice. Led by his passion, Sam will continue to inspire – he just can't help himself!

Euler, Master of Us All

This year marks the 300th anniversary of Euler's birth. Euler is undoubtedly among the ten greatest mathematicians of all time. He worked on geometry, analysis, number theory, combinatorics and many other fields. He seems never to have met a math problem he did not like. The first volume of his collected works (called *Opera Omnia*) was published about a hundred years ago and now more than 70 volumes are in print which constitute over 25,000 pages. In his book "Euler, The Master of Us All", William Dunham explains two of Euler's contributions to combinatorics.

The first problem is on the number of a special kind of permutations called derangements. In fact, the problem had been posed and solved, decades earlier. It seems that Euler was unaware of the earlier pioneers and his work on the problem was original. The main reason for this is that the problem is an example of a problem occurring in many different contexts and therefore solved by many different authors, many of them unaware of the works of others. A *derangement* is a permutation with no fixed points. Euler first obtains the recursive formula $d_n = (n-1)(d_{n-1} + d_{n-2})$, where d_n is the number of derangements on n letters. Seems not satisfied with this "double" recursive formula, he goes further and finds that $d_n = nd_{n-1} + (-1)^n$. "It seems miraculous", Euler remarked, that both laws give the same result. This led him to find the explicit formula

$$d_n = n! \left[1 - \frac{1}{1!} + \frac{2}{2!} - \frac{3}{3!} + \cdots + \frac{(-1)^n}{n!} \right]$$

which recalls Euler's series expansion of e^{-1} .

The second problem is on partitions of natural numbers. The matter of partitions was brought to Euler's attention in a 1740 letter from Philippe Naudé. Euler solved many problems and developed a lot of ideas on counting partitions. We here address only one result. He proved that the number of partitions of a natural number into distinct summands is equal to the number of partitions into odd summands. In mulling over the problem, Euler somehow recognized a link between counting partitions and multiplying algebraic binomials. He noticed that the coefficient of x^n in the expansion of

$$Q = (1+x)(1+x^2)(1+x^3)(1+x^4) \cdots$$

is exactly the number of partitions of n into distinct summands whereas the coefficient of x^n in the expansion of

$$R = \frac{1}{(1-x)(1-x^3)(1-x^5)(1-x^7) \cdots}$$

is the number of partitions of n into odd summands. He then proved that $Q = R$. Euler's proof, almost delivered in return mail to Naudé just in a few weeks after being questioned, introduced the use of generating functions in counting problems.

Lima Bean with Dill Rice BAGALI SHEVID POLOW

Bagali polo

(Serves 6 to 8)

The following recipes are from "Secrets of Cooking" by Linda Chirinian (ISBN 0- 9617033-0-X Lionhart Inc. New Canaan, CT).

This exotic Iranian dish can be served with plain yogurt spooned over the rice, or with roast chicken, barbecued lamb chops, or steak. A straight-sided, non-stick, saucepan is the best kind of pot to use for this recipe.

Ingredients:

- **PREPARATION TIME: 20 MINUTES (plus soaking for rice)**
 - **COOKING TIME: 45 MINUTE**
 - 1 recipe Steamed Rice
 - 1 package (10 ounce) frozen baby lima beans, thawed
 - 14 tablespoons butter
 - 3 cups freshly chopped dill
 - 3 medium potatoes, cut into 1/2 inch slices (optional)
 - 1/4 teaspoon cinnamon threads crushed and steeped in 2
 - tablespoons hot water
 - Salt and freshly ground pepper to taste
- Prepare Steamed Rice . Melt 4 tablespoons butter in a non-stick 6-quart saucepan. Arrange potato slices in single layer in saucepan.
 - Spread one-third of prepared rice over potatoes. Salt and pepper. Cover with half of lima beans, and half of dill. Cover with half of remaining rice and remainder of lima beans and dill. Top with remaining rice. Keep ingredients mounded high in center so steam can circulate. Sprinkle 4 cup water over rice. Slice remaining butter, place over rice. Cover rice with waxed paper. Wrap cover of pot in kitchen towel and place over saucepan to keep steam inside.
 - Cook over medium-high heat 8 minutes, reduce heat to low, and cook 35 minutes or until rice is soft and fluffy.
 - Set 1 cup rice aside. Mound remaining rice on serving dish. Remove potatoes from saucepan with spatula and place around rice or in separate dish. Sprinkle reserved cup of rice with saffron and mix well. Spread saffron rice on top of plain rice. Season with salt and pepper.
- **VARIATION:** When layering rice, add 1 large onion, chopped and sauted in butter, 6 broiled lamb chops or 2 pounds cooked boneless lamb shoulder cubes, or 6 cooked chicken cutlets. Increase cooking time by 15 minutes.



DAILY NEWS

Saturday, April 21, 2007, First Issue

Daily Program

8:30-9:00	9:00-9:30	9:30-10:30	10:30-11:00	11:00-12:00
Registration	Welcoming Remarks	P. Rowlinson (1)	Coffee Break	L. Lovasz(1)
12:00-14:00	14:00-14:30	14:30-15:00	15:00-15:30	15:30-16:30
Lunch	B. Tayfeh Rezaie	E. Ghorbani	Coffee Break	S. Kirkland (1)
16:30-17:00	17:00-18:00	Chairman of the morning session: Richard Brualdi Chairman of the afternoon session: Willem Haemers		
B. Mohar(1)	Conference Reception			

General Talk

Development of Combinatorics in Hungary

Laszlo Lovasz

President of
International Mathematical Union (IMU)
&
Professor of
Eotvos Lorand University,
Budapest, Hungary
&
Senior Researcher
Theory Group, Microsoft Research

April 25, 2007, 15:30-16:30

Edited by: Tania Parsa
Information Center, IPM
P. O. Box: 19395-5746
Phone: +98-21-22287013
Fax: +98-21-22828755
Email: tania@ipm.ir