IEEE Information Theory Society Newsletter

President's Column

Andrea Goldsmith

I am deeply honored to serve as your society president for 2009, and I look forward to a great year for the society and its members. I would first like to express my sincere thanks to Dave Forney for his outstanding leadership of the society this past year. The society has benefitted much from his wealth of experience, sage wisdom, and management acumen. His tireless efforts on behalf of the society have led to several new initiatives and smooth operations of all our activities and finances. His presidency will be a tough act to follow.

I write this column on the same day that the US inaugurated its first African-American president. Today is a historic day in America and the world, a day of hope and promise despite the challenges of global conflicts and financial turmoil. Does information theory have a role to play in addressing some of these great challenges? I believe it does, and that Obama was speaking to us and other technologists in the following quote from his inauguration speech. "Greatness is never a given. It must be earned. Our journey has never been one of short-cuts or settling for less. It has not been the path for the faint-hearted - for those who prefer leisure over work, or seek only the pleasures of riches and fame. Rather, it has been the risk-takers, the doers, the makers of things who have carried us up the long, rugged path towards prosperity." Clearly information theorists are risk-takers and doers, but are we makers of things? Perhaps more than we realize. I just returned from a two-year sabbatical building wireless chipsets at a startup, and part of the motivation for that adventure was to determine how much information theory impacts what actually gets built. It was extremely gratifying to see that so many of today's commercial technologies have their roots in information theory, from next-generation wireless standards to high-performance compression techniques to cryptographic methods. Moreover, many of our society members have founded successful companies or played visionary roles in established ones. While the technology transfer from theorems to practice may take decades, it is clear that the prosperity from the tech boom owes much to the papers and authors published in our Transactions. So, if you are worried about the economy, go prove some more theorems. It may not pay off immediately, but will help to boost the financial outlook for our children and grandchildren.

Our society enters 2009 in excellent shape. We have healthy reserves and a strong income, so are well-poised to weather the short-term impact of market turmoil on IEEE's finances, although the long-term impact remains to be seen. The Information Theory Transactions is viewed as highly prestigious and consistently ranks as one of the most cited IEEE journals. Our field is becoming more interdisciplinary, embracing related and complementary disciplines through conference sessions, dedicated workshops, and Transactions special issues. Our members are frequently honored for their work with IEEE medals, technical field awards, and other international prizes, as well as with election to rarified national academies of engineering or science. The annual symposium and workshops on Information Theory are well-attended and of very high quality. The yearly decline in our membership over the last several years seems to have been reversed; we had more members in 2008 than in the previous year. Our student committee provides dynamic events, networking, and leadership opportunities for our students and postdocs, and has been held up as a model to other societies by the IEEE leadership. Many of our chapters are extremely vibrant and growing, hosting a range of activities for local members. Indeed, our 2009 ISIT will be organized in part by our Seoul chapter, a relatively new chapter that received our 2007 chapter of the year award for its many activities.

Despite these strengths, there are a number of areas where we could do better, and these are the focus of several new initiatives. While our Transactions are highly prestigious, the time from submission to publication (sub-to-pub) is much longer than that of many IEEE journals. The IEEE has recently made reducing the sub-to-pub time for all its journals a top priority, and thus it is important that we take some action to do so for our own journal before it is forced upon us. While the nature of our papers may require a longer review time than that of

IEEE

From the Editor

Daniela Tuninetti

Dear IT society members,

Three years go by really quickly! Today I find myself writing my last "From the Editor" column. My first issue, after Lance Perez' tenure, was in March 2006. I cannot believe I'm now editing the March 2009 one! It has been a privilege for me to be trusted with the editorship of our newsletter. It is with a bit of heavy heart that I pass the relay to Tracey Ho, who will be the EiC as from the June 2009 issue. Being in charge of the newsletter was a great and novel way for me to interact with you all, to have an 'inside' look at how our society is managed, and to learn from all the people who so actively work for our society. I would like to thank all the authors who contributed to the newsletter over the past three years, for putting up with my deadlines and requests with a kind smile; to the three IT presidents I very much enjoyed working with –Dave Neuhoff, Bixio Rimoldi, and Dave Forney—for their help, mentoring and continuous support and encouragement; and to all the BoG member who offered very constructive feedback and suggestions all along the way. I hope you had the same pleasure in reading the newsletter as I had in serving as EiC. The editorship of the newsletter is a lot of work – even though no one ever refused his/her help when I needed it. I know how much effort the newsletter requires and I thank Tracey for volunteering her time. I have no doubt that the newsletter is in very capable hands with Tracey. As Dave Forney once told me "the newsletter is the glue that bonds our society together." I could not agree more. Tracey, the glue tube is yours, use it abundantly!

Let me now quickly glance at the content of this newsletter: We sadly mark here the passing away of David Middleton and Robert Price. Their outstanding contributions to our field are remembered in the obituaries presented right after the regular columns by our president Andrea Goldsmith, and our historian Tony Ephremides. In this issue, you will also read an account of a workshop that was held on the occasion of Tony's 65th birthday. Happy birthday Tony, and congratulations on all your achievements! And thank you for your witty Historian's columns! In addition you will find the announcement of prestigious awards recently awarded to our society members, as well as the list of newly elevated members to IEEE fellows. Congratulations to all! As Andrea mentioned in her President's Column, this issue reports on a thought-provoking reflection of scholarly reviewing, co-authored by IT Transactions' Editor in Chief Ezio Biglieri. You will also find the call for participations for the Second North American Summer School of Information Theory to be held in Evanston, IL in August 2009, and a report about the Coding Days Workshop that took place in St. Petersburg, Russia this summer.

Please help to make the Newsletter as interesting and informative as possible by offering suggestions and contributing news. The deadlines for the next few issues of the Newsletter are as follows:

Issue	Deadline
June 2009	April 10, 2009
September 2009	July 10, 2009

Electronic submission in Ascii, LaTeX and Word formats is encouraged. Potential authors should not worry about layout and fonts of their contributions. Our IEEE professionals take care of formatting the source files according to the IEEE Newsletter style. Electronic photos and graphs should be in high resolution and sent in as separate file.

From now on, please send your contributions to:

Dr. Tracey Ho
California Institute of Technology
1200 E. California Blvd., M/C 136-93
Pasadena, CA 91125
Email: tho@caltech.edu

My warmest regards to all,
Daniela Tuninetti

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other journal papers, this does not justify 9-12 months (or more) to complete a first review round, as many of our paper authors experience. There are many reasons for these long delays, as is artfully and comprehensively articulated by our EIC Ezio Biglieri and Comsoc's Director of Journals Larry Greenstein in this newsletter. While we have limited power to address some of these issues, there are certainly many concrete steps which can be taken to improve our Transactions sub-to-pub time without compromising quality. I plan to work closely with Ezio to implement as many of these steps as possible to improve our publication timeliness. Another important initiative for this year is an expanded charter for the membership and chapters committee, including a new distinguished lecturer program and efforts to promote more participation from and activities in countries currently lacking a large presence in information theory. We have also initiated an outreach committee to address issues and plan events with a focus on our women and minority members. While many see our society as welcoming and inclusive, we still have only about 6% women members (versus about 7% in the IEEE overall), and very few minorities. Until recently these members were poorly represented on the BoG, on our technical program committees, and in leadership roles in the society. We also have a weak record of nominating these members for IEEE Fellow and other distinctions. As our society's first woman president, I fully support the goals of the outreach committee, and hope that in this respect we can serve as a role model to other societies within the IEEE. Other ongoing initiatives include soliciting outside nominations for the Shannon Award winner for the first time, significant investment in a new website developed by the online committee which should be live by the time this article is published, as well as support for two student schools in 2009, one in Europe and one in the US. We are also debating ways to provide more tutorial material to our members, possibly through an on-line magazine. I welcome your thoughts on any of these initiatives.

The lifeblood of our society is its dedicated volunteers. Much thanks is due to our outgoing second past president Dave Neuhoff for his extensive efforts over the five-year window of his officer service. He brought tremendous patience, wisdom, and attention to detail in each of the officer positions he has held during that time, and we are all very grateful for his exceptional service. I am very fortunate to be working with a prestigious, dedicated, and energetic group of fellow officers this year; in addition to Dave Forney stepping into the junior past president role, we have senior past president Bixio Rimoldi, Frank Kschischang as 1st VP,

and our newest officer Giuseppe Caire as 2nd VP. In addition to the elected officers, Anant Sahai will continue as treasurer and Joao Barros as secretary. Ezio Biglieri will lead the publications committee and Transactions as EIC, Alex Grant will manage conferences through his leadership of the conference committee, and Nick Laneman will continue his efforts to energize and modernize our website as on-line editor. Tracey Ho is taking over as newsletter editor from Daniela Tuninetti, whose creativity and proactive solicitation of articles has significantly improved the newsletter during her term. We also have Aylin Yener leading the student committee, and Muriel Medard heading the outreach committee. Outgoing BoG members Rob Calderbank, Alex Grant, Ralf Koetter, Shlomo Shamai, and David Tse have contributed much time and many ideas to the leadership of the society. Due to a delay in the ballot mailing, their replacements on the BoG are not known at the time of this writing, but will be in place by mid-February. I very much look forward to working with the continuing and new BoG members on the governance of the society. All of these volunteers deserve our thanks for their time and efforts on behalf of the society.

I would like to close by encouraging all of you to get more involved in the society. We are very open to new ideas and initiatives to improve the society, and in need of dedicated and energetic volunteers to bring them to fruition. For the last three years I served simultaneously on the BoG for Comsoc and for our society. The difference in the governance of these societies is striking. Comsoc is a much bigger society, with meetings closed to outsiders, and many layers of bureaucracy to make changes or start new initiatives. By contrast, many of our most dynamic new initiatives were started by an energetic volunteer who proposed a course of action to the BoG and received approval to move ahead. BoG meetings are open to all, so feel free to attend any or all if you wish, to propose a new initiative, see how the society is governed, or participate in the discussion about something on our agenda (2009 BoG meetings will be March 18 at CISS in Baltimore, June 28 at ISIT in Seoul, and October 11 at the ITW in Taormina: agendas will be posted on the ITSoc website in advance of the meetings). You can also join society mailings lists to be informed about recent events or participate in ongoing discussions. Alternatively, you can contact me (at andrea@ee.stanford.edu) or the other officers with your ideas, thoughts, or concerns.

Thanks again for entrusting me with the presidency of this great society.

The Historian's Column

Anthony Ephremides

In "history" terms ten years is only an instant. However, since our field is only sixty-some years old, ten years can qualify as "modern history". So, in anticipation of the Information Theory Workshop in Volos, Greece, that is coming up in June, it is interesting to reminisce of the only other Information Theory Society-sponsored event that took place ten years ago (June 1999, to be exact) in Metsovo, Greece. Strangely, an ISIT had been scheduled to take place in Greece in 1968, when there were hardly any Information Theorists in that country, but had to be cancelled and switched over to San Remo, Italy, after the famous coup of the colonels on April 21, 1967, installed a short-lived dictatorship in Greece.

So, in 1999, our Society showed its flare for holding events in exotic and unlikely locales by holding an unprecedented "double header" of two ITW's, back-to-back, in Metsovo, Greece, and the Kruger Park in South Africa. These were two separate workshops separated by two days in time and five thousand miles in space. A handful of our members managed to actually attend both and experienced the incredible "reach" and vitality of our field around the globe. The only thing Metsovo and Kruger Park share is a common time zone. Thus, those who traveled from Metsovo to South Africa did not encounter any "jet-lag".

But the focus of this column is the Metsovo event. Nestled in the mountains of Northwestern Greece at an altitude of 1100 meters (around 3600 feet), Metsovo is a model village of pristine beauty and surprising wealth. Thanks to the loving care of a family of millionaires that has its roots in the village, Metsovo developed into an almost alpine resort of immense beauty and a thriving community that supports a diversified economy of agriculture, woodworking, long-distance transport, and tourism. It sports a small but delightful conference center, an art museum, numerous small and picturesque hotels with distinctive local architecture, and restaurants that feature traditional cuisine of lamb, goat, cheese, yogurt, and local vegetables and fruits along with good quality regional wines.

In this beautiful setting, and blessed with a streak of perfect weather (bright sunshine, highs around 30°C and lows around 16°C with soft day breezes), one hundred or so Information Theorists gathered to present their research and interact with each other. One noteworthy technical feature in the program was a talk by Raymond Yeung that presented for the first time to our community the seminal ideas of Network Coding. No one at the time appreciated the potential that their ideas proved to possess. Even the speaker prefaced his talk with self-effacing disclaimers that the subject had no theoretical or practical significance whatsoever and that it represented only a whimsical idea with a different view of what a network really is. Thus, the famous by now, "butterfly" network example was born and grew to become the coat-of-arms of Network Coding.

But there were other memorable events in that workshop. One of them involved a mini-international-incident. In the auditorium of the conference center where the workshop was taking place a set of flags of a few dozen countries adorned the backdrop of the podium. Among them was of course the Greek flag prominently positioned in the forefront, and the Turkish flag, somewhat obscured in the back row. During a break, a prankster (nobody knows who, to this date) exchanged the positions of the two flags. So, in the beginning of the next session the Greek flag had disappeared in the rear section and the Turkish flag was in the front. Apparently, this exchange was not well received by the hosts and owners of the Center. At the next intermission, the host lady and wife of the gentleman who was (and is) the current prominent citizen and benefactor of the village, went to the podium, placed the flags in their original positions and informed dryly the assembly of the attendants that this "joke" was unwelcome.

Another noteworthy event was the strike of Olympic Airways that commenced during the week of the workshop. To reach Metsovo, the canonical route taken by most participants involved flying from Athens via Olympic Airways to the nearby town of Ioannina. Some hardy souls either drove or found alternative means to get there. But the majority relied on the airline that was founded by tycoon Aristotelis Onasis and became eventually legendary for a unique combination of bad service, frequent delays, unprofitable operation, and routine strikes. Thankfully, the airline is in the process of being privatized under a new banner and has been eclipsed by the world-class Aegean Airlines.

In any event, the strike was a fact and many people were desperate knowing that they were likely to miss their connections out of Athens and stay marooned in the beautiful isolation of Metsovo. A silver lining to the Olympic Airline strikes was the fact that not all flights were cancelled. So the question was whether the flights out of Ioannina would take place on the day after the workshop. Here is where Greek hospitality showed its best face. The host family of John and Elena Averoff who made sure meticulously that all our needs were well attended to would not leave us stranded. Being well-connected with the authorities of the country they made sure that one flight would operate out of Ioannina on the crucial day of departure. And to be sure that all participants would be accommodated, they persuaded the airline to switch the aircraft type to a Boeing 747! Then the workshop finished with a happy ending as everyone left on time (and some started their long journey to South Africa).

So, as the next ITW in Volos is taking shape, we hope that all details will be taken care of equally well by the able team of Leandros Tassiulas and that perhaps another landmark technical development (like Network Coding) will leave its mark on it.

Tribute to David Middleton 1920 - 2008

David Middleton, 88, Pioneer of Modern Statistical Communication Theory

Julian Bussgang

Dr. David Middleton, a physicist whose original research led to major advancements in the understanding of communication systems from radar during World War II to the wireless communication systems of our present age, died on November 16, 2008 at Lenox Hill Hospital in NYC after a lengthy illness. He was 88.

Dr. Middleton, born on April 19, 1920 in New York, started his career at Harvard's Radio Research Laboratory in 1943 as a special research assistant to Professor J.H. Van Vleck. He received the A.B. (summa cum laude) degree in Physics in 1942, from Harvard College; and the A.M. in 1945 from Harvard University. Simultaneously, but independently of D.O. North (RCA, Princeton), he developed the fundamental matched-filter concept critical to detecting signals in noise. Middleton earned his Ph.D. in Physics in 1947, also at Harvard, with Prof. Van Vleck as his advisor.

David Middleton

Dr. Middleton went on to teach (1949–54) at Harvard in the Department of Engineering and Applied Physics continuing his research on the statistical modeling of noise, of communication channels and of the processing of signals for radar and radio communications. He had a number of doctoral students with whom he worked closely on fundamental communications topics. His pioneering theoretical work on modeling communication channels and systems is closely related to the modern growth of data and wireless communications.

After 1954, he pursued his work as a consulting physicist to industry, and the U. S. Government, and teaching as Adjunct Professor at Columbia University, RPI, Rice University, University of Denver, University of Texas, and University of Rhode Island. In 1971, he moved from Concord, MA, to New York City.

Since 1968, his work expanded to include electromagnetic compatibility, with particular attention to non-Gaussian noise and interference models, and signal processing for man-made and natural electromagnetic and acoustic environments.

In 1960, Middleton published his groundbreaking book *An Introduction to Statistical Communication Theory*, which became the fundamental text for teaching stochastic processes and communication theory. Middleton published over 170 papers and a second book, *Topics in Communication Theory* (1965).

In 1958 he was elected Fellow of the IEEE "For contributions to the theory of noise in electronic systems." He was also Fellow, American Physical Society, 1951; Fellow Acoustical Society of America, 1978; Fellow, New York Academy of Sciences, 1991; Fellow, American Association for the Advancement of Science, 1959; and Member, National Academy of Engineering, 1998. He was awarded many other honors and prizes for his work and publications. From 1970 to 1977, Dr. Middleton served as a member of the U.S. Naval Advisory Research Committee, and from 1988-1991 on the Scientific Advisory Board of the Supercomputing Research Center, Institute of Defense Analysis ('88-'91).

In August 2008, the IEEE and Princeton University hosted a sym-

posium in honor of his long and distinguished career and numerous contributions to the field of statistical information theory. At the time of his death, he was actively working on the sequel to his first book, to be titled *Elements of Non-Gaussian Statistical Communication Theory: A Space-Time Treatment*, that summarizes his work of over sixty-five years in statistical communication theory as well as presents new results from more recent research by adding time analysis to earlier methods.

He is survived by his wife of 37 years, Joan Bartlett Middleton, and four children (Susan of Ashfield, MA., Leslie of Charlottesville, VA, David Blakeslee of New York City, and George of Carlisle, MA); three step-sons (Chris Reed of Philmont, NY, Andrew Reed of NYC, and Henry Reed of Paris, France); and three grandchildren.

Middleton's earliest papers appeared in the *Quarterly of Applied Mathematics* and in the *Journal of Applied Physics*, predating the *Transactions*.

D. Middleton, "Some General Results on the Theory of Noise Through Non-linear Devices," *Qtly. Appl. Math.*, V (4), 1948, pp. 445-498.

J. H. Van Vleck and D. Middleton, "A theoretical comparison of the visual, aural, and meter reception of pulsed signals in the presence of noise," *J. Appl. Phys.*, vol. 17, Nov. 1946, pp. 940-971. [This is the first paper in which the term "matched filter" appeared.]

D. Middleton, "The effect of a video filter on the detection of pulsed signals in noise," *J. Appl. Phys.*, vol. 21, Aug. 1950, pp. 734-740.

The three earliest papers in the *IEEE Transactions on Information Theory*:

Van Meter, D.; Middleton D., "Modern statistical approaches to reception in communication theory," IRE Professional Group on Information Theory, vol. 4, Issue 4, Sept 1954, pp. 119-145.

Middleton, D.; Meter, D., "On optimum multiple-alternative detection of signals in noise,"

IRE Transactions on Information Theory, vol. 1, Issue 2, Sept. 1955, pp. 1-9.

Bussgang, J.; Middleton, D., "Optimum sequential detection of signals in noise,"

IRE Transactions on Information Theory, vol. 1, Issue 3, Dec. 1955, pp, 5-18.

Many papers and the two books followed.

Tribute to Robert Price, 1929-2008

Communications Scientist

Dr. Robert Price died Wednesday, December 3, 2008, at the age of 79 in Lexington, MA, USA, where he had resided for more than 50 years. He made many seminal discoveries in the fields of communications and detection theory and magnetic recording. In addition to pursuing his own research, Bob always assisted those who worked around him, and was the source of many ideas helpful to his colleagues.

Bob received the A.B. degree from Princeton University in 1950, and the Sc.D. degree from MIT in 1953. He was a staff member at the MIT Lincoln Laboratory from 1951 to 1965, a research scientist and manager at the Sperry Research Center in Sudbury, MA, from 1965 to 1983, Chief Scientist at M/A-COM Government Systems (Lexington, MA office) 1983-1987, and a research scientist at the Raytheon Research Division from 1988 to 1993. After 1993 he remained active as an independent consultant.

At Lincoln Laboratory, he and Paul Green jointly conceived and built the first RAKE receiver/processor for communications in a multipath environment. First used for ionospheric HF communications, the RAKE concept has since been applied in many diverse areas, including undersea acoustic and mobile phone communications. The success of modern mobile phones depends heavily on the RAKE concept. At Lincoln Laboratory, he also developed radar signal detection techniques that contributed to the first radar detection of the planet Venus.

Bob published extensively, and was awarded numerous patents in the fields of spread-spectrum communication, detection theory, and high-density magnetic recording. He received many awards, including a Fulbright Fellowship in radio astronomy (1953-54), the

Robert Price

IEEE Communication Society Edwin Howard Armstrong Achievement Award (1981), and the IEEE Information Theory Society Golden Jubilee Paper Award (1988) for his paper "A useful theorem for non-linear devices having Gaussian inputs," IEEE Trans. Inform. Theory, vol. 4, pp. 69-72, 1958. He was elected a Fellow of the IEEE in 1962 "for contributions to communication system theory and its use in radar contact with Venus," and to the U.S. National Academy of Engineering in 1985 "for pioneering achievements in applying statistical communication theory to radio communication, radar astronomy, and magnetic recording."

Bob was internationally recognized for his historical research in the area of secure communications, and was invited to the opening of the Cabinet War Rooms in London for his research into the secret telephony between Roosevelt and Churchill. He was also very interested in the patent that movie star Hedy Lamarr and composer George Antheil received in 1942 for frequency-hopping spread spectrum secure communication (see R. Price, "Further notes and anecdotes on spread-spectrum origins,"* IEEE Trans. Commun., vol. COM-31, pp. 85–97, Jan. 1983). He visited Ms. Lamarr in New York, and communicated with her for many years.

Bob met his wife, Jennifer, on a ship sailing to England in 1954. They were married in England in 1958, and celebrated their 50th wedding anniversary on April 19, 2008. In addition to his wife, he is survived by three sons— Stephen L. Price of Huntington Station, NY, Colin L. Price of North Andover, MA, and Edmund H. Price of Wayland, MA— and four grandchildren.

IT Members Receive Prestigious Awards

Several members of our society received prestigious awards. Congratulations to all!

2009 IEEE ALEXANDER GRAHAM BELL MEDAL to ROBERT J. MCELIECE

Robert J. McElice is the Allen E. Puckett Professor and Professor of Electrical Engineering, California Institute of Technology, Pasadena, CA, USA for "For fundamental contributions to the theory and practice of error-correcting codes and to the design of deep space telecommunication systems."

In 1976, the IEEE Alexander Graham Bell Medal was established by the IEEE Board of Directors in commemoration of the centennial of the telephone's invention and to provide recognition for outstanding contributions to telecommunications. For more information please refer to http://www.ieee.org/portal/pages/about/awards/pr/bellpr.html.

2009 IEEE RICHARD W. HAMMING MEDAL to PETER FRANASZEK

Peter Franaszek is with IBM Research, Research Staff Member, Yorktown Heights, NY, USA "For pioneering contributions to the theory and practice of constrained channel coding."

The IEEE Richard W. Hamming Medal was established by the IEEE Board of Directors in 1986 'for exceptional contributions to information sciences, systems and technology.' For more information please refer to http://www.ieee.org/portal/pages/about/awards/pr/hampr.html.

2009 IEEE DONALD G. FINK PRIZE PAPER AWARD (Co-Recipients) to DANIEL J. COSTELLO and G. DAVID FORNEY, JR.,

for their paper entitled: "Channel Coding: The Road to Channel Capacity", Proceedings of the IEEE, Vol. 95, No. 6, June 2007, pp. 1150-1117

The IEEE Donald G. Fink Prize Paper Award was established by the IEEE Board of Directors in 1979. It is presented for the most outstanding survey, review, or tutorial paper published in the IEEE Transactions, Journals, Magazines, or in the Proceedings of the IEEE between 1 January and 31 December of the preceding year.

2009 IEEE ERIC E. SUMNER AWARD to ROBERTO PADOVANI

Roberto Padovani is Executive Vice President and Chief Technical Officer, QUALCOMM, Incorporated, San Diego, CA, USA for "pioneering innovations in wireless communications, particularly to the evolution of CDMA for wireless broadband data."

The IEEE Eric E. Sumner Award was established by the IEEE Board of Directors in 1995. It may be presented annually, to an individual or a team of not more than three, for outstanding contributions to communications technology. It is named in honor of Eric E. Sumner, 1991 IEEE President, who retired as Vice President, Operations Planning, AT&T Bell Laboratories after a long and distinguished career.

2008 OKAWA PRIZE to HIDEKI IMAI and ADI SHAMIR

Hideki Imai is Professor at the Faculty of Science and Engineering of Chuo University, Professor Emeritus at the University of Tokyo, and Director of the Research Center for Information Security (RCIS), National Institute of Advanced Industrial Science and Technology (AIST), Japan, for "outstanding contributions to research in coding theory, cryptography, and their applications."

Asi Shamir is the Paul and Marlene Borman Professor of Applied Mathematics at the Weizmann Institute of Science, "For Outstanding Contributions to the Creation of the RSA Public-Key Encryption System, and the Production of a Number of Cryptographically Important Advances."

The Okawa Prize was established by the Okawa Foundation for Information and Telecommunications in 1992 "to pay tribute to and make public recognition of persons who have made outstanding contributions to the research, technological development and business in the information and telecommunications fields, internationally." Since 1996, the Okawa Award has been awarded to two outstanding individuals every year.

BBVA Foundation Frontiers of Knowledge Award in Information and Communication Technologies to JACOB ZIV

Award Citation: The BBVA Foundation has awarded the 2008 Frontiers of Knowledge Award in Information and Communication Technologies to Professor Jacob Ziv. Jacob

Ziv's ground-breaking innovations in data compression have had a deep and lasting impact on both the theory and practice of communications and information technology. Ubiquitous in everyday life, Ziv's contributions enable efficient storage and transmission of text, data, images, and video. Computer memories, modems, software distribution, and file compression techniques all rely on Ziv's ideas and inventions. His seminal contributions to information theory have inspired generations of researchers and practitioners alike. This award recognizes the fundamental role of his work in creating technologies that widely and deeply impact the information age.

The BBVA Foundation supports knowledge generation, scientific research and the promotion of culture, relaying the results of its work to society at large. This effort materializes in research projects, human capital investment, specialization courses, grants and awards. Among the Foundation's preferred areas of activity are basic sciences, biomedicine, ecology and conservation biology, the social sciences and literary and musical creation.

New IEEE Fellows as of January 2008

The following list of IT Society members have been elected to the grade of IEEE Fellow as of January 2009. The society memberships and the endorsing society are indicated for each individual. Congratulations to all!

Claude Berrou　　　　COM, IT　　　　　　COM

for invention of turbo codes, generalization of the turbo principle in receivers, and influence in standardization

Helmut Boelcskei　　　COM, IT, SP　　　　　IT

for contributions to multiple input/multiple output wireless communication and filter bank theory

Char-Dir Chung　　　　COM, IT　　　　　　COM

for leadership in the broadband wireless communications industry

Gustavo de Veciana　　COM, IT　　　　　　COM

for contributions to the design of communication networks

Michelle Effros　　　　IT, SP　　　　　　　IT

for contributions to source and network coding

Gerhard Fettweis　　C, CAS, COM, IT, SP, VT　COM

for contributions to signal processing algorithms and chip implementation architectures for communications

Brendan Frey　　　　C, IT　　　　　　　　C

for contributions to information processing and machine learning

Bijan Jabbari　　　　COM, IT, VT　　　　　COM

for contributions to resource management and mobility in wireless networks

Ralf Koetter　　　　　COM, IT　　　　　　IT

for contributions to coding theory

Michael Luby　　　　　IT　　　　　　　　IT

for contributions to theory and practice of iterative coding

Narayan Mandayam　　COM, IT　　　　　　COM

for contributions to wireless data transmission

Ramjee Prasad　　　　BT, COM, IT, VT　　　COM

for leadership in developing personal wireless communications technologies

Hayder Radha　　　　COM, IT, SP　　　　　SP

for contributions to visual coding, communications and networking

Eero Simoncelli　　　C, IT, SP　　　　　　SP

for contributions to statistical models of visual images

Iickho Song　　　　COM, IT, SP, VT　　　VT

for application of signal detection theory to vehicular communication systems

Vahid Tarokh　　　　COM, IT　　　　　　COM

for contributions to communications and information theory

David Tse　　　　　IT　　　　　　　　IT

for contributions to wireless communications

Peter Vary　　　　CAS, COM, IT, SP, VT　SP

for contributions to digital speech processing and coding

Xiang-Gen Xia　　　IT, SP　　　　　　　SP

for contributions to signal processing for digital communications

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Nominations for IEEE Fellow

For (s)he's a jolly good (IEEE) Fellow!Do you have a friend or colleague who is a senior member of IEEE and is deserving of election to IEEE Fellow status? If so, consider submitting a nomination on his or her behalf to the IEEE Fellow Committee. The deadline for nominations is March 1st.IEEE Fellow status is granted to a person with an extraordinary record of accomplishments. The honor is conferred by the IEEE Board of Directors, and the total number of elected Fellows in any one year is limited to 0.1% of the IEEE voting membership. For further details on the nomination process please consult:http://www.ieee.org/web/membership/fellows/index.html.

Some Reflections on Scholarly Reviewing*

by: Larry J. Greenstein & Ezio Biglieri

God grant me the Serenity to accept the things I cannot change,
Courage to change the things I can,
And Wisdom to know the difference.

Reinhold Niebuhr, "The Serenity Prayer"

Introduction

In the last few years, we have been facing a paradigm shift in scholarly publishing, due to the easy availability of scholarly work on line, added to a substantial increase in the number of conferences, workshops, and seminars which publish their own proceedings. As one effect, new results are made available to scientists in a short time after their generation, which might lead to the conclusion that scholarly peer-reviewed publications, which suffer from a substantial time lag from submission to publication, have exhausted their role. We, however, do not believe that the role of these publications is being diminished, let alone exhausted. On the contrary, it will increasingly be that of providing a "quality stamp" to the best scientific results available, in contrast to the other, "read at own risk" sources. At the same time, to meet the challenge it is necessary, among other things, that the time elapsed from the generation of a result to its availability by the scientific community be not too long. This can help to avoid the spreading of results of dubious importance or accuracy, and to prevent the results themselves from being served after their freshness has faded.

To this end, a key metric might be the length of time from submission to publication (hereafter, sub-to-pub time). There are several major components which sum up to yield the sub-to-pub time: The promptness of the Editor-in-Chief (EiC) in assigning a submission to an Associate Editor (AE); the promptness of the AE in sending the manuscript out to potential reviewers; the reviewing time itself; the time for revision, resubmission, and second reviews; and the time spent in the publication queue once a paper is accepted.

Technology reduces some of these components to minor delay concerns, notably, the assignment of papers (thanks to semi-automatic processing, via web-based systems like Manuscript Central, at the submission stage) and the publication queue (thanks to the rapid conversion of papers to electrons, once accepted, via IEEE Xplore). This leaves the reviewing times as the major cause of unacceptable delays in the publishing process, and this is the issue we address here.

It is noteworthy that the IEEE Technical Advisory Board has recently weighed in on the subject of publication timeliness, striving to produce metrics by which IEEE periodicals can be measured in this regard. While that process continues, our two Societies should be establishing their own aggressive targets, including those for turnaround time on reviews. We believe, moreover, that our goals should address more than just median (or mean) review

times; they should also address the worst-case outliers, i.e., the 'horror stories' we've all heard of or—worse yet—been victims of. A sample goal might be stated as follows: "The mean turnaround time for first reviews should be 3 months, and in no case should a first review take more than 6 months."

While some publications have better track records than others in providing timely and competent reviews, most of them will need to improve their reviewing performance if such ambitious targets are to be met or exceeded. In this paper, we offer our thoughts on the causes and possible cures of unacceptable delays in the reviewing process. You will find no villains in this discussion; yet, if no one in particular is to blame for the problem, all of us are responsible for its solution.

The Problem

Simply stated, it takes much too long to get a submitted paper reviewed. This is not true for submissions to conferences or special issues, because they have clear timelines. The focus here, then, is on open submissions to journals and magazines. The problem is certainly not unique to the IEEE Communications or Information Theory Societies. We know from personal experience that it exists in other IEEE societies and, we suspect, to non-IEEE societies as well, but we focus on COM and IT because we know them best.

Reasons for the Problem

What is most peculiar about the worsening of review time statistics is that we live in an age where manuscripts can be sent around the planet with a few strokes on a computer keyboard; no packages lost in the mail, or sent by slow boat or mule train. Moreover, freed of this major component of delay, editors can readily avail themselves of a worldwide pool of competent reviewers. Then why are things worse? We can cite a few reasons that have been offered. We present them now, first without comment, followed by opinions and discussion.

Problems with Authors:

The number of submissions has grown dramatically, overwhelming the process.

Authors whose papers get rejected keep coming back with revisions, possibly sent to a different journal, thus stressing the system further.

Many authors are not taking sufficient care with the quality of their submissions, thereby making reviews more difficult to do well.

Problems with Editors:

Editors-in-Chief are not sufficiently demanding of area editors and associate editors, allowing poor performers to stay on the job.

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* This article is being simultaneously published in the IEEE Communications Magazine.

Editors are not diligent about getting papers into the hands of reviewers; do not demand better turnaround time from reviewers; do not provide detailed guidelines to the authors of papers which will be subject to a further round of reviews; and subject revised papers to needlessly long second rounds of reviews.

Problems with Reviewers:

The pool of capable reviewers is too small for the volume of paper submissions.

Reviewers are irresponsible about providing timely reviews.

The quality of reviews is poor and getting poorer with time.

Knowledge is fragmented, so that the pool of reviewers competent on a single topic is narrow.

Reasons for the Reasons, and Other Opinions

Now, let us discuss the above assertions. Regarding authors, we think there is no doubt there are more submissions these days. One reason is the enabling features of e-technology, which enlarge the worldwide pool of authors who can easily submit their papers to scholarly publications. In addition, there is added pressure to publish among academics who are seeking tenure and government grants in an atmosphere of increasing competition and decreasing opportunities. More conferences being held throughout the world increase the stimuli to generate scholarly publications.

As to whether there is increased author abuse of the process, i.e., by refusing to take "No" for an answer or by not taking sufficient care with submitted manuscripts, that's a hard case to prove. [If there is less care taken these days, it may be partly due to the ease of generating papers. In a not-too-distant past, the process was long and slow, moving from handwritten manuscripts (we should not forget that manuscript means literally "handwritten") to a paper typed by secretaries, and then back again to the authors for proofreading. All of this forced authors to read their manuscript over and over, and polish it up in the process.] In any case, what can be said is that the current overloaded system can less afford these behaviors, which have probably been around since the beginning of publishing. We believe that, if we fix some eminently fixable aspects of the process (see next section), these problems will matter less.

As for editors, there are certainly better ones and worse ones, at all editorial levels. We have heard (and sometimes uttered ourselves) complaints that some editors want their names on a journal masthead for the professional credentials, but don't care about actually doing a good job. Our view is that the vast majority of editors want very much to do a good job but suffer from overload--or worse--burnout. This is the 21st century, and most of us have too many commitments and responsibilities. We will have some suggestions on this score, as well.

Finally, that favorite of all villains—the reviewer, who is either insufficiently numerous, or exists but is irresponsible, incompetent, unfair, etc., etc. Where do we begin? Perhaps with the

Paradox of the Good Reviewer (GR), which states that *there can be no good (that is, accurate and timely) reviewers*. **Proof**: If one GR ever shows up, that reviewer will soon be overwhelmed by requests for reviews, which will force him/her to be late, or sloppy, or both, thus ending his/her membership in the GR club.

More seriously, let us consider the claim of too few reviewers. We observe that there are ~44,000 members of the Communications Society, ~3,600 of the Information Theory Society, and many more people than that in the communications field. Clearly, not all ComSoc and IT members publish and review papers, but there is a large, hidden sub-population of potential reviewers. They're called students. They are hidden, that is, to many editors, but the editors know the professors, and *they* know the students. This suggests a potentially very useful process we will describe later.

There is another factor that limits the supply of journal reviewers, and it falls under the Law of Unintended Consequences. We are referring here to the worldwide explosion of conferences, within IEEE generally, and, in fact, within the whole field of engineering. It might seem to some that there are too many conferences, but people are willing to attend them, and organizations or funding agencies are willing to pay for them. Since professional societies need money to remain vital and conferences make money, the marketplace prevails. The problem to the journal review process is that, to attract attendees, conferences need papers, which need reviewers—lots of them—which "sucks the oxygen" out of the reviewer pool. This adds to the overload felt by potential reviewers, which limits their willingness to take on papers, or to deliver timely reviews (cf., the Paradox of the GR, above).

As for the quality of reviews, there has always been a wide distribution in that area. We (the authors) certainly seen bad reviews, but we also continue to see very good ones, even from reviewers who are clueless enough to not appreciate our papers. In any case, competent reviewing of papers is not a talent that comes naturally to most of us. It can be learned, however, and so we would add this issue to the list of problems capable of remediation.

Possible Remedies

So much for the bad news; let us now consider ways to turn things around. In what follows, we outline a variety of procedures, attitudes and joint efforts that, we believe, can make a profound difference in the reviewing of journal articles.

Advice to and About Authors:

The worst thing an author can do is to stress the system with manuscripts and, at the same time, decline to take on a fair share of reviews. Members of the scholarly community should internalize the idea that the service they receive as authors from editors and reviewers implies an obligation to reciprocate. If an author has, on average, one co-author per paper, and each paper submitted garners three reviews, that author should be willing to review at least three papers for every two submissions; an author who works alone should be willing to review at least three papers per submission; and so on. It's called paying back. We do not recommend trying to enforce this principle, but it should be 'socialized' and

made widely understood. An easy way to do so is to enunciate this principle explicitly in the formal letter acknowledging receipt of a manuscript.

Other author abuses, such as repeated submissions, over-length and/or poorly written papers, etc., all add to the load and aggravate the reviewing problem. Each journal needs clearly stated policies on such matters, and these should be determined by the editorial board itself, not dictated from outside. Our suggestion is that the policies should be clearly stated and consistently enforced, by editors-in-chief, area editors, and associate editors. Editors handling papers that violate clearly stated guidelines should have the authority, and the gumption, to return them to the authors for the needed improvements. This brings us to the next category.

Advice to and About Editors

A major boon to the editorial function is the introduction of web-based systems (WBSs) for submitting, assigning and tracking papers. Most ComSoc and IT Society journals are now using them, and their use should go far towards the maintaining of orderly processing of manuscripts and monitoring of the overall passage from submission to decision. Even so, the performance of the editorial system ultimately depends on human performance. One of our personal horror stories concerns a journal that has been using a WBS for some time, so no one should expect miracles from WBSs. Like everything else, in the end it comes down to people.

Needless to say, editors at all levels must be selected with care and monitored for performance, a process that is facilitated by the WBS. The criteria in all cases should include experience, technical knowledge, a track record of diligence, promptness, fairness, and all the other qualities that go into the effective and timely reviewing of papers. If those qualities don't reside at a given editorial level, the prospects for them residing below are lessened. The monitoring function is as important as the selection function. Good editors can go 'bad', for reasons of burnout, personal problems, loss of interest, and a host of other factors. Some editors under-perform from the beginning, signaling a mismatch that was not initially apparent.

Several remedies exist and should be used, though judiciously. For good editors in temporary difficulty, there should be a mechanism for temporary leaves-of-absence. With a properly sized pool of editors, other editors can fill in the space left by the one on leave. For chronic under-performers, removal is the only remedy, which should be exercised fairly but also firmly. Removal from an editorial position should not be viewed as a punishment, but rather a correction. Remember that an editing job position is not a right; it's a privilege that must be earned. The editorial hierarchy on any journal should be clear about its policies in these matters and conscientious in implementing them.

Finally, there is training. New editors should be mentored, e.g., by more experienced members of the editorial board. To augment the mentoring process, there should be some form of 'best practices' document (or 'how to' manual) that tells a newcomer how to do the job well. It would be highly valuable for IEEE Societies to acquire or commission such a document and make it required reading for anyone who would be an editor.

One item that should definitely be covered in the document is the handling of revised manuscripts. This part of the reviewing process can often be expedited by a technically knowledgeable editor who (1) examines the reviewers' comments; (2) reviews the changes made by the author(s), along with the accompanying reply comments; and (3) renders an editorial decision. Only if the paper is so heavily revised that it needs reviewer involvement, should the reviewers be contacted again, and they should be asked to complete the new round on a reduced timetable.

Advice to and About Reviewers

There should also be a 'how to' manual for reviewers, as we noted before. If one doesn't exist in the field, it could be written. IEEE Societies are not short on the talent and experience needed to create such a manual. Among other skills and virtues, the manual should 'teach' the professional obligation of keeping promises about time. On that topic, all potential reviewers should know two things: (1) If a review is solicited, they should respond promptly, whether the answer is Yes, No, or Maybe (e.g., proposing a turn-around time longer than the one requested, which the editor can take or leave). (2) If the paper is accepted for review, with an agreed-upon turnaround time, that is a solemn promise to be kept, barring floods or acts of war. If the 'how to' manual is well-conceived, it will provide very helpful tips to reviewers on how to do the job without excessive time being required, how to avoid the trap of procrastination, etc.

Editors usually ask that alternative reviewers be named by those declining a review. We note that these requests, while totally reasonable, might make the declining reviewer uncomfortable. As occasional decliners ourselves, we know that whoever we point to is going to be a person already on overload even before the next solicitation, which will arrive soon after we point to him or her! Sometimes, of course, the solicitation is welcome, because of an intense interest in the subject. Usually, however, it is just another intrusion. One solution to this Declining Reviewer's Dilemma is for the journal to develop and maintain an extensive database on reviewers, including keywords on subject matter expertise, and past performance. We realize this is easier said than done, but the major effort would be the initial one and it would reap huge dividends. One might even conceive of a rewards system devised to recognize exceptional performers on the list, although one past attempt made by the IT Society (dubbed by its critics "Pay per (re)view") did not lead to palpable improvements in the review process. The Communications Society is currently experimenting with an alternative approach, based on letters of appreciation for exceptional reviewers.

A "kibitz" review process is presently being implemented, on a trial basis, by the IEEE Transactions on Information Theory: If a paper is uploaded to arXiv, with the explicit indication "Submitted to the IEEE Transactions on Information Theory," then its readers are allowed to send the EiC comments about it. After verifying that these are not frivolous, or obviously biased, the EiC forwards them

to the editor in charge of the paper to supplement regular peer reviews. An upside of this procedure is a bigger involvement of the readership in the reviewing process (eager graduate students, unknown to the editor, could provide valuable insights, etc.). In the case of flawed results, these can be detected more reliably and in a shorter time. A downside is that the utmost care should be exercised by the EiC, who filters the unsolicited reviews, to prevent authors from "gaming the system", e.g., by having their buddies send in rhapsodizing comments. Similarly, competitors could try to hold up publication of papers by sending claims that need to be investigated. Inputs, while potentially valuable, have to be given less weight, and could in fact have a negative influence on the process unless they are carefully controlled.

Finally, we have a thought about professors accepting papers for review and assigning them to students. (The same remarks apply to the company setting, where the professor is replaced by a senior person (manager or mentor) and the student is replaced by a junior professional.) At first glance, this may seem like exploitation, even evasion of one's responsibility, but in fact it is neither. Here is what one of us wrote in an earlier version of this paper: "An editor asks me for a review. I, in turn, ask a student who is doing research in the general area to review it in, say two weeks, and to let me know if she's having any problems with it. When she brings me the review, we discuss the paper thoroughly enough for me to know if it's been properly understood and fairly reviewed. If I see any problems with the review, I give advice about how to do it better and ask for a revision. Once I'm satisfied, I might polish it a bit and then have the student submit it in her name. This is a good for the student, who learns from it both technically and professionally; it's good for the review process, which gets the benefit of two reviewers; and it's good for me, as it frees up some time to handle other reviews!"

Final Comments

The timely publication of high-quality papers, honed and refined through the filter of conscientious peer review, is an essential ongoing part of the purpose and value of professional societies. The IEEE is committed to improving the review process, a commitment that includes many key players in Society publications, most notably, the Editors-in-Chief together with their editorial boards. We should add that several members of the Boards of Governors of our two Societies have also been brainstorming on possible solutions, and this article is a beneficiary of those discussions.

The Boards can put their weight behind the solution to this problem in various ways. One way is to support the creating or obtaining of effective documents for training editors and guiding reviewers. Another is to engage in the sharing of ideas and information with similar societies, inside IEEE and outside, who most certainly have run into the same problems for the same reasons. Still another is to promote editorials in key publications, reminding members of our shared responsibility to do this job well. Managers, mentors, and professors can join in this process, too, by impressing the younger people they guide through their words and, more importantly, through their example.

We all know that the world is filled with problems that seem to defy solution. We are happy to say that the problem discussed here is not one of them. With the right set of editorial processes, professional attitudes and personal commitment, our two Societies can set a standard of performance in this area that makes us all proud. Let's dedicate ourselves to that end.

Acknowledgment

Larry J. Greenstein is the *Director of Journals of the IEEE Communications Society*. He has been a senior editor, associate editor and guest editor for numerous publications, and was an editorial board member of IEEE PRESS. He has been authoring and reviewing papers for close to 50 years.

Ezio Biglieri is the *Editor-in-Chief of the IEEE Transactions on Information Theory* and of the *Journal of Communications and Networks*. In the recent past, he was the Editor-in-Chief of the IEEE Communications Letters and of the European Transactions on Telecommunications.

Foundations of Wireless Networks and Beyond: A Symposium in Honor of Tony Ephremides on His 65th Birthday

Brooke Shrader and Eytan Modiano

On October 16-17, 2008, members of the information theory community gathered in celebration of the 65th birthday of Tony Ephremides. Tony is known by many newsletter readers for his Historian's Column that appears regularly in these pages. At the symposium we celebrated Tony's many contributions as a researcher, educator, mentor, and scholar. Originally from Greece, Tony earned his PhD at Princeton in 1971 and has been a professor at the University of Maryland ever since. He has made early and consistent contributions to research in the field of multihop wireless networks through the related disciplines of information theory, control and optimization, queueing models, and signal processing. He has served as advisor to 27 PhD students; a group of them worked together in organizing the symposium. Tony has served the Information Theory Society in multiple capacities: as President of the Society in 1987, as General Chair of the Information Theory Symposium in 1991, and as Technical Program Chair of the Symposium in 2000. Tony is also a lover of fine wine and of the opera – both featured prominently in the celebrations.

After a welcome reception on the evening of October 16, a full-day workshop was held on October 17 at the Inn and Conference Center at the University of Maryland. The workshop consisted of technical presentations by a distinguished group of speakers as listed below.

- John Baras, "Cross-Layer Methods for Wireless Networks: Potentials, Games, Components and Optimization"
- Tamer Basar, "Efficiency Through Active Pricing in Multi-User Communication Networks"
- Richard Blahut, "Source Coding and Communications Networks: An Unconsummated Union"
- Ian Blake, "Comments on Identity Based Encryption"

- Daniel J. Costello, "Network Coded Cooperative Diversity for Wireless Channels"
- Georgios Giannakis, "Optimal Layering for Wireless Networks"
- Andrea Goldsmith, "Consummating Unions In Wireless Network Theory and Design"
- Bruce Hajek, "An Application of Riesz's Rearrangement Inequality"
- J. Rockey Luo, "Fountain Communication with Linear Complexity"
- Jim Massey, "Greek Networking"
- Vince Poor, "Security in Wireless Networks: A Cross-Layer Perspective"
- Sergio Verdu, "Shannon and Poisson"
- Jeff Wieselthier, "Early Days of Wireless Networking: Reminiscences on Three Decades of Collaboration with Tony"

Tony's former PhD students served as session chairs. The workshop concluded with a delightful audio-visual presentation by Joachim Hagenauer on "Communications Theory and the Opera."

The symposium banquet was held on the evening of October 17 in the beautiful Warne Lounge at the Cosmos Club in Washington D.C.. Ramesh Rao served as the master of ceremonies and Ken Vastola gave a highly entertaining presentation entitled "Travels with my Uncle." At the end of the evening, Tony was presented with a plaque representing his academic "family tree."

We'd like to thank all of the attendees, whose participation made the symposium a truly memorable occasion. We invite all members of the community to view the presentation slides and photos posted online at the link below.

http://www.ece.umd.edu/ephremides/

Tony Ephremides with a group of his former and current students.

Second Annual North American School of Information Theory

Following on the success of the First Annual North American School of Information Theory at Penn State in 2008, this year's Second Annual School will move to the middle of the continent and be held Sunday, August 10, to Thursday, August 13, 2009, at Northwestern University in the Presidential State of Illinois. Participation is open to graduate students and postdoctoral researchers working in information theory and related areas.

We are please to announce that, as of the time this note is being written, we have confirmed that Prof. Bruce Hajek of the University of Illinois at Urbana-Champaign, Prof. Dan Costello of Notre Dame, and Prof. Robert Gallager of MIT will be participating as speakers. We are also pleased to announce that, as last year,

there will be no registration fee to attend the school.

If you are an advisor reading this note, we hope that you will encourage your students and postdocs to file their applications by the March 31 2009, deadline. If you are a student, we hope that you are as excited about this great opportunity for you as we are. Please see the Call For Participation below to learn more about the details and how to apply for the school. If you have any questions, do not hesitate to contact us: Randall Berry, Dongning Guo, Daniela Tuninetti, Aylin Yener, and Gerhard Kramer.

We look forward to seeing you in August at Northwestern!

2nd Annual North American School of Information Theory

Northwestern University
August 10-13, 2009

General Chairs
Aylin Yener (yener@ee.psu.edu)
Gerhard Kramer (gkramer@usc.edu)

Program and Local Arrangements
Randall Berry (rberry@eecs.northwestern.edu)
Dongning Guo (dGuo@northwestern.edu)

Program and Applications
Daniela Tuninetti (daniela@ece.uic.edu)
Natasha Devroye (devroye@ece.uic.edu)

Web and Publicity
Yalin E. Sagduyu (y_sagduyu.northwestern.edu)
Matthieu Bloch (matthieu@gatech.edu)

The Second Annual North American School of Information Theory will be held Sunday, August 10, to Thursday, August 13, 2009, at Northwestern University, IL. The school will build on the successes of last year's school to provide graduate students and postdoctoral researchers the opportunity to learn from leading experts in information theory through short courses and talks as well as the chance to present their own work.

Graduate students and postdoctoral researchers in North America working on problems of information theory in a broad sense are encouraged to apply with the title and a short (less than 250 words) abstract of a talk/poster they would like to present.

The application deadline for the school is **March 31, 2009**.

To apply to the school, and for more information on the format, program, accommodations, and travel, please refer to

http://school.itsoc.org/2009

Workshop Report: Coding Theory Days in St. Petersburg

October 6-10 2008, Saint-Petersburg, Russia

Sergei Fedorenko

The workshop "Coding Theory Days in St. Petersburg" was held on 6-10 October 2008 at the Saint-Petersburg State University of Aerospace Instrumentation (Saint-Petersburg, Russia). The Saint-Petersburg State University of Aerospace Instrumentation (SUAI) with the Institute for Information Transmission Problems of the Russian Academy of Sciences (Moscow, Russia) co-organized the event with the technical co-sponsor of the IEEE Information Theory Society.

About thirty participants from six countries attended the workshop, sixteen papers on the following problems were presented: Error-correcting codes, Combinatorics of coding theory, Code-based cryptography, Spherical codes and designs. Two plenary sessions with invited lecturers were held: "Coding theory and uniformly distributed point sets" by Maxim Skriganov, from the Steklov Mathematical Institute at St.Petersburg, Russia, and "Upper bounds for packings, the Lovász theta number and harmonic analysis of compact groups" by Christine Bachoc, from the Université Bordeaux, France.

Four lectures (by Sergei Fedorenko, Peter Trifonov, Martin Bossert et al.) were devoted to the problem of decoding Reed-Solomon codes. The presentation "On decoding of interleaved codes" by Grigory Kabatiansky and Stanislav Osmolovsky summarizes the 20 years of the research in the field of decoding of interleaved codes. Two reports from Sobolev Institute of Mathematics, Novosibirsk State University, Novosibirsk, Russia (Denis Krotov, Anton Los') cover the theme of the perfect codes. The lecture "On the Expanding Properties of Gallager's LDPC Matrices" by Victor Zyablov (Institute for Information Transmission Problems, Russian Academy of Sciences, Moscow, Russia) et al. investigates expanding properties of ensembles of random bipartite graphs whose adjacency matrices are Gallager's low-density parity-check matrices.

The Proceedings of the Workshop are available at http://k36.org/codingdays/index.php

Although the scientific discussion has been the main part of the symposium program, it has not been the only one. The participants had also the chance to take part in the rivers and canals boat trip, then see the city sights with the comfortable bus excursion, and of course visit Peter and Paul Fortress, Mariinsky theatre, Hermitage and fascinating Catherine's Palace.

The Organizing Committee of the workshop invites all the specialists in the field of communication and data transmission to take part in the XII Symposium "Problems of redundancy in information and control systems" that will be held on the board of the comfortable cruise ship on 26-30 May, 2009 in Saint-Petersburg. For more information and general inquiries please visit http://k36.org/redundancy2009/index.php or send your requests to redundancy2009@vu.spb.ru.

Workshop participants.

GOLOMB'S PUZZLE COLUMN™

EQUIVALENCE RELATIONS
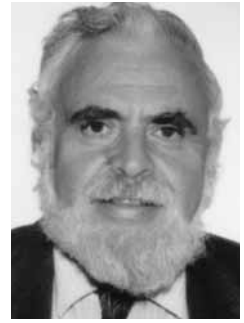
Solomon W. Golomb

A *binary relation B(x, y)* on a set *S* is a statement about pairs of elements $x \in S$, $y \in S$, that is either *true* or *false* for every ordered pair (*x,y*).

The binary relation *E(x, y)* is an equivalence relation if it has these three properties:

R: *Reflexive. E(x, x)* is *true* for every $x \in S$.

S: *Symmetric.* If *E(x, y)* is true then *E(y, x)* is true.

T: *Transitive.* If *E(x, y)* and *E(y, z)* are both true, then *E(x, z)* is true.

The equivalence relation *E(x, y)* on a set *S* partitions the elements of *S* into *equivalence classes* (*E*-classes), where (by definition) *x* and *y* are in the same *E*-class if and only if *E(x, y)* is *true*.

Familiar examples of equivalence relations include: similarity of figures in plane geometry; similarity of $n \times n$ matrices in linear algebra; and congruence modulo *n* in number theory.

Here are your puzzles.

1. Give $2^3 = 8$ examples of binary relations *B(x, y)* on the set Z^+ of positive integers to show that each subset of the properties **R**, **S**, and **T** (including *all three* and *none*) can apply.

2. Show (by verifying **R**, **S**, and **T**) that each of the following is an equivalence relation on Z^+.

   (a) $x + y$ is even.

   (b) *xy* is a (perfect) square.

   (c) As binary numbers, *x* and *y* end in the same number of 0's.

   (d) *x* and *y* have the same smallest prime factor (or no prime factor at all).

   (e) $x^y = y^x$.

   (f) *x* and *y* have the same largest perfect-square factor.

3. Describe the equivalence classes (*E*-classes) for each equivalence relation in question 2., by indicating the smallest member (the *leader*) of each *E*-class, and then the other elements that are in the same *E*-class with the leader. Which examples have infinitely many *E*-classes having infinitely many elements each?

GOLOMB'S PUZZLE COLUMN™

# Solutions: Proofs by Dissections, Tiling, Etc.

Solomon W. Golomb
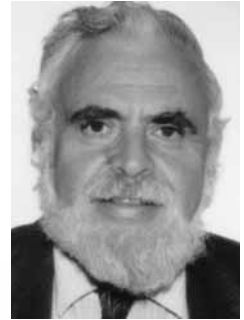
1. To show that a rectangle inscribed on the base of an acute triangle has an area no more than half that of the triangle, we fold the three little triangles outside the rectangle over onto the rectangle and observe that they cover the rectangle completely. Here we illustrate the three cases.

    a. The height of the rectangle is exactly half the height of the triangle. The three triangular flaps exactly cover the rectangle.
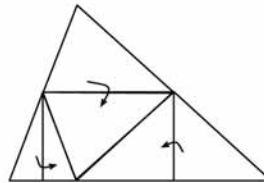
    b. The height of the rectangle is less than half the height of the triangle. The three flaps completely cover the rectangle, and the folded-over top flap extends beyond the bottom of the rectangle.
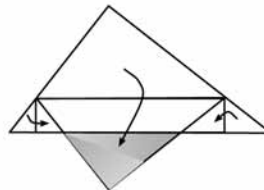
    c. The height of the rectangle exceeds half the height of the triangle. The three flaps again completely cover the rectangle, but now the folded-over side flaps overlap, and as illustrated, one (or both) may even protrude beyond the triangle.
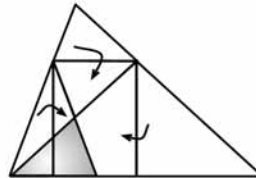
    Note: The more general result is true: the area of *any* rectangle, inscribed in *any* triangle, cannot occupy more than half the area of the triangle.

2. To show that $(1+2+3+\cdots+n)^2 = 1^3+2^3+3^3+\cdots+n^3$, we fill up a big square of side $1+2+3+\cdots+n$ with one square of side 1, two squares of side 2, three squares of side 3, $\cdots$, up to n squares of side n, for a total area of $1\cdot 1^2 + 2\cdot 2^2 + 3\cdot 3^2 + \cdots + n\cdot n^2 = 1^3 + 2^3 + 3^3 + \cdots + n^3$. For even $k = 2j$, we get a $j \times j$ overlap (shaded) of two of the squares, equalled by a $j \times j$ empty region (dotted).
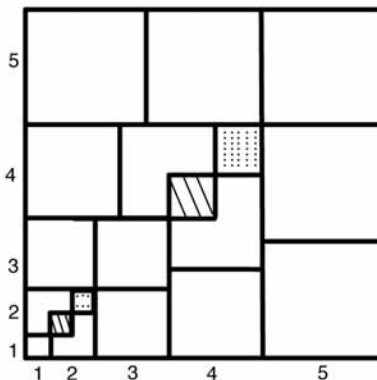
3. My geometric tiling proof of the Theorem of Pythagoras is illustrated here: A tiling with squares of side c is superposed on a periodic tiling using squares of sides a and b. The square of side c has the pieces A, B, C, D, E. The square of side a has the pieces B, D, while the square of side b has the pieces A, C, E.
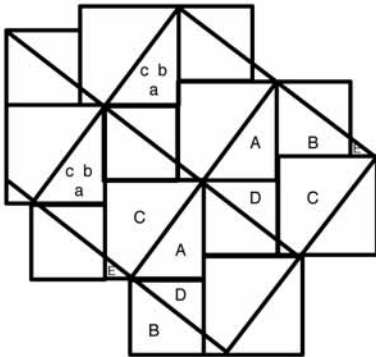
4. To prove $pt^k(n) = pt_k(n)$, where $pt^k(n)$ is the number of partitions of n into at most k parts, and $pt_k(n)$ is the number of partitions of n into parts not exceeding k, we depict each partition of n counted in $pt^k(n)$ by left-aligned dots corresponding to the parts in that partition, and then count the dots vertically to get the parts counted in $pt_k(n)$. Here is the illustration for $n = 5, k = 3$.
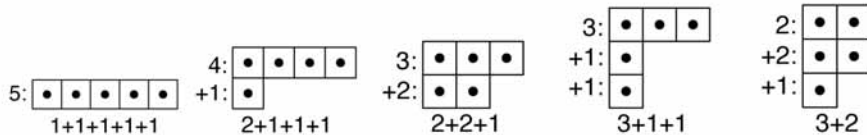
(This proof is due to Euler, who proved many partition identities.)

5. To show geometrically that the determinant $ad-bc$ of the matrix $\left(\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}\right)$ equals in absolute value the area of the parallelogram with vertices $(0,0), (a,b), (c,d), (a+c, b+d)$, we draw the picture:
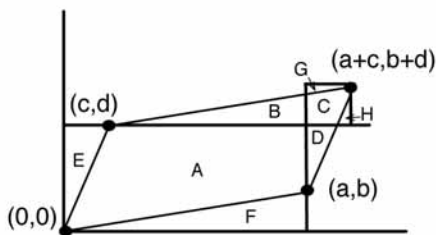
The area of the parallelogram is $A + B + C + D$. The area of the "big" rectangle, ad, is $A + E + F$, where by congruent triangles, $E = C + D + G$ and $F = B + C + H$. The area bc of the "little" rectangle is $C + G + H$. Thus, geometrically, $ad - bc = (A + E + F) - (C + G + H) = A + (C + D + G) + (B + C + H) - (C + G + H) = A + B + C + D$, the area of the parallelogram.

Notes: Except for Problem 3 (solution by Euler) the other proofs are my own. Problem 2, with my solution, appeared in *Math. Gazette*, May, 1965, pp.198-200. Problem 5, with my solution, appeared in *Math. Magazine*, vol. 58, no.2, March, 1985, p. 107. My solutions to Problem 1 and Problem 4 have not been previously published, and I cannot guarantee that these proofs have not been anticipated elsewhere.

Call for Nominations

IEEE Information Theory Society 2010 Shannon Award

The IEEE Information Theory Society Claude E. Shannon Award is given annually for consistent and profound contributions to the field of information theory. Award winners are expected to deliver the Shannon Lecture at the annual IEEE International Symposium on Information Theory held in the year of the award. This year, for the first time, the Shannon Award Committee has decided to issue an open call for nominations. Although anyone may make a nomination, the Committee retains the responsibility of assuring that a suitable slate of candidates is nominated, and may itself generate nominations.

Nominations and optional letters of endorsement must be submitted by March 1 to the current President of the IEEE Information Theory Society. In 2009 the President will be Prof. Andrea Goldsmith <andrea@systems.stanford.edu>. A nomination form is available on the Shannon Award page http://www.itsoc.org/society/shannon_awd.htm.

IEEE Information Theory Society 2009 Aaron Wyner Distinguished Service Award

The IT Society Aaron D. Wyner Award honors individuals who have shown outstanding leadership in, and provided long standing exceptional service to, the Information Theory community. This award was formerly known as the IT Society Distinguished Service Award.

Nominations for the Award can be submitted by anyone and are made by sending a letter of nomination to the President of the IT Society. The individual or individuals making the nomination have the primary responsibility for justifying why the nominee should receive this award.

Nomination Procedure: Current officers and members of the IT Society Board of Governors are ineligible. Please send letters of nomination identifying the nominee's areas of leadership and exceptional service, nominee's current vita, and two letters of endorsement by March 15, 2008 to IT Society President, Andrea Goldsmith <andrea@systems.stanford.edu>.

IEEE Information Theory Society 2009 Paper Award

The Information Theory Society Paper Award is given annually for an outstanding publication in the fields of interest to the Society appearing anywhere during the preceding two calendar years.

The purpose of this Award is to recognize exceptional publications in the field and to stimulate interest in and encourage contributions to fields of interest of the Society. The Award consists of a certificate and an honorarium of US$1,000 for a paper with a single author, or US$2,000 equally split among multiple authors.

The award will be given for a paper published in the two preceding years.

Nomination Procedure: By March 1, 2009, please email the name of the paper you wish to nominate, along with a supporting statement explaining its contributions, to the IT Transactions Editor-in-Chief, Ezio Biglieri, at <ezio.biglieri@gmail.com>.

IEEE Joint Comsoc/IT 2009 Paper Award

The Joint Communications Society/Information Theory Society Paper Award recognizes outstanding papers that lie at the intersection of communications and information theory. Any paper appearing in a ComSoc or IT Society publication during the years 2006-2008 is eligible for the 2009 award. A Committee with members from both and cash prize presented at the Comsoc or IT symposium of the authors' chosing.

Nomination Procedure: By March 1, 2009, please email the name of the paper you wish to nominate, along with a supporting statement explaining its contributions to both communications and information theory, to Frank Kschischang at <frank@comm.utoronto.ca>.

IEEE Information Theory Society 2009 BoG Member Nominations

Around the time you receive this Newsletter, the Nominations and Appointments Committee will be nominating members to run for election to the Board of Governors. Suggestions are welcome. They may be sent to the Society's Senior Past President. In addition, the Bylaws specify a process for members to make nominations by petition (please refer to the society website).

IEEE Awards

The IEEE Awards program has paid tribute to technical professionals whose exceptional achievements and outstanding contributions have made a lasting impact on technology, society and the engineering profession.

Institute Awards presented by the IEEE Board of Directors fall into several categories:

Medal of Honor	(Deadline: July 1)
Medals	(Deadline: July 1)
Technical Field Awards	(Deadline: January 31)
Corporate Recognitions	(Deadline: July 1)
Service Awards	(Deadline: July 1)
Prize Papers	(Deadline: July 1)
Fellowship	(Deadline: November 15)

The Awards program honors achievements in education, industry, research and service.

Each award has a unique mission and criteria, and offers the opportunity to honor distinguished colleagues, inspiring teachers and corporate leaders. The annual IEEE Awards Booklet, distributed at the Honors Ceremony, highlights the accomplishments of each year's IEEE Award and Medal recipients.

For more detailed information on the Awards program, and for nomination procedure, please refer to http://www.ieee.org/portal/pages/about/awards/index.html.

Call for Papers
2009 IEEE International Symposium on Information Theory (ISIT2009)

COEX, Seoul, Korea / June 28-July 3, 2009 / http://www.isit2009.info

TPC Members

J. Andrews
A. Asikhmin
R. Baraniuk
A. Barg
J. C. Belfiore
C. Berrou
E. Biglieri
N. Cai
C. Carlet
M. Chiang
S. Diggavi
A. El Gamal
H. El Gamal
E. Erkip
C. Fragouli
T. Fujiwara
M. Gastpar
V. Goyal
A. Grant
B. Hajek
B. Hassibi
T. Helleseth
T. Ho
T. Javidi
N. Jindal
I. Kontoyiannis
V. Kumar
J. N. Laneman
T. Linder
H. A. Loeliger
H. Lu
G. Lugosi
S. Meyn
O. Milenkovic
U. Mitra
R. Nowak
D. Palomar
M. Parker
B. Prabhakar
B. Preneel
K. Ramchandran
R. Roth
S. Savari
A. Scaglione
G. Seroussi
S. Shamai
D. J. Shin
A. Shokrollahi
P. Siegel
E. Soljanin
H. Y. Song
R. Srikant
W. Szpankowski
E. Telatar
L. Tong
D. Tse
E. Tuncel
D. Tuninetti
S. Ulukus
R. Urbanke
P. Viswanath
P. Vontobel
T. Weissman
F. Willems
R. Yeung

The 2009 IEEE International Symposium on Information Theory will be held at COEX (Convention & Exhibition) in Seoul, Korea, from Sunday June 28 through Friday July 3, 2009. Seoul, the capital of Korea for more than 600 years, boasts its unique, dynamic mixture of tradition and modernity, offering a wide spectrum of activities for travelers.

Previously unpublished contributions across a broad range of topics in information theory are solicited, including (but not limited to) the following areas:

- Channel and source coding
- Coding theory and practice
- Communication theory and systems
- Cryptography and security
- Data compression
- Detection and estimation
- Emerging applications of information theory
- Information theory and statistics
- Network and multi-user information theory
- Pattern recognition and learning
- Quantum information theory
- Sequences and complexity
- Signal processing

Submitted papers should be of sufficient detail for review by experts in the field. In addition to submitting new results in areas that form the core of information theory, researchers in related fields and researchers working on novel applications of information theory are encouraged to submit contributions. Final papers will be five pages in length. The submission deadline is January 7, 2009. Detailed information on paper submission, technical program, tutorials, travel, social programs, and travel grants will be announced on the ISIT 2009 web site: http://www.isit2009.info.

General Co-chairs:

Jong-Seon No (Seoul National University, Korea) jsno@snu.ac.kr
H. Vincent Poor (Princeton University, USA) poor@princeton.edu

TPC Co-chairs:

Robert Calderbank (Princeton University, USA)
Habong Chung (Hongik University, Korea)
Alon Orlitsky (UCSD, USA)

For general inquiries, please contact the General Co-chairs.

IEEE ITW 2009 - Taormina, Sicily
IEEE Information Theory Workshop - October 11-16, 2009

General Co-chairs
Ezio Biglieri
Emanuele Viterbo

TPC Co-chairs
Daniel Costello
Alex Grant

TPC Members
J-C. Belfiore (ENST-France)

H. Boelcskei (ETH - Swiss)

J. Boutros (Texas A&M University at Qatar - USA)

G. Caire (USC - USA)

M.O. Damen (Univ. Waterloo - Canada)

D. Forney (MIT-USA)

A. Goldsmith (Stanford-USA)

A. Graell i Amat (GET/ENST - France)

J. Hagenauer (LNT - DE)

T. Ho (CalTech - USA)

M. Honig (Northwestern -USA)

J. Huber (University Erlangen-Nürnberg - DE)

J. Kliewer (NMSU - USA)

V.J. Kumar (USCa - USA)

A. Lapidoth (ETH - Swiss)

N. Laneman (University of Notre Dame - USA)

C. Ling (Imperial Collage - UK)

M. Lops (Univ. Cassino - Italy)

R. Mueller (NTNU - Norway)

B. Rimoldi (EPFL Swiss)

S. Shamai (Technion-Israel)

E. Soljanin (Bell Labs - USA)

D. Tuninetti (UIC - USA)

A. Vardy (UCSD - USA)

G. Wornell (MIT - USA)

The **2009 IEEE Information Theory Workshop** (ITW 2009) will take place on **October 11-16, 2009** in Taormina, Sicily, Italy. Taormina is a world-famous tourist resort, endowed with a rare charm and atmosphere, whose fame is strictly related to the strong peculiarity of its setting. The main reason is the numerous stratifications of civilizations that have followed each other here since the VIII century B.C.

Taormina is about 50km from **Catania International Airport,** which offers direct flight connections to many Italian and European cities. The conference venue is the **Hotel Villa Diodoro******, located near the Greek theatre.

The workshop will include regular and poster sessions covering the following topics:

- Source coding
- Distributed source and channel coding
- Joint source and channel coding
- Coding for wireless systems
- Coding for sensor and ad-hoc networks
- Coding and biology

- MIMO and space-time coding
- Graph-based codes and iterative decoding
- Cooperation in wireless systems
- Sequences and coding
- Secure Communication and Cryptography
- Compressed sensing
- Coding applications

Papers up to 5 pages should be submitted by **March 29, 2009**, following the guidelines on the workshop webpage. Authors will be notified of acceptance decisions by July 12, 2009. The final version, to be published in the workshop proceedings, will be due by August 9, 2009.

Further information regarding the technical and social programs, workshop registration, and hotel accommodations will be posted on the workshop website at: http://www.deis.unical.it/itw2009

INVITED SESSIONS

Information Theoretic Security

Graph-Based Codes and Iterative Decoding

Cooperative Wireless Networks

Compressed Sensing

Bioinformatics

PLENARY SPEAKERS

Information Theoretic Security Steve McLaughlin
Graph-Based Codes and Iterative Decoding Igal Sason
Cooperative Wireless Networks Muriel Medard
Compressed Sensing Helmut Boelcskei
Bioinformatics Joachim Hagenauer

BEST PAPER AWARD

for the best paper selected for poster presentation

PANEL DISCUSSION

Organizer: Andrea Goldsmith

Challenges Posed to Information Theory by Emerging Telecommunications Standards and Technologies

Treasurer	**Publications**	**Publicity**	UNIVERSITÀ DELLA CALABRIA
Giorgio Taricco	Elza Erkip	Yi Hong	
Local organization	**Web**	**Secretariat**	Dipartimento di ELETTRONICA, INFORMATICA E SISTEMISTICA
Gianluca Aloi	Pasquale Pace	Stilema	

CALL FOR PAPERS AND FIRST ANNOUNCEMENT

Sixth International Workshop on
Optimal Codes and Related Topics – OC 2009

Programme Committee	Stefan Dodunekov (Sofia), Marcus Greferath (Dublin), Tor Helleseth (Bergen), Ivan Landjev (Sofia), Juriaan Simonis (Delft), Leo Storme (Gent), Henk van Tilborg (Eindhoven), Wolfgang Willems (Magdeburg)
Organizing Committee	Silvia Boumova (Sofia), Tsonka Baicheva (V. Tarnovo), Peter Boyvalenkov (Sofia), Emil Kolev (Sofia), Ivan Landjev (Sofia), Nikolay Manev (Sofia)
Local Organizer	Institute of Mathematics and Informatics, Bulgarian Academy of Sciences
Topics	• Optimal linear codes over finite fields and rings; • Bounds for codes; • Spherical codes and designs; • Covering problems for linear and nonlinear codes; • Optimization problems for nonlinear codes; • Sets of points in finite geometries; • Combinatorial configurations and codes; • Optimality problems in cryptography; • Graph theory and codes; • Related topics
Time	**June 16 − 22, 2009**
Location	The Workshop will take place in Varna (Bulgaria), hotel St. Elena (http://svetaelena.com/hotel.aspx?lang=en). Varna is the nearest airport. More information by `oc2009@math.bas.bg`.
Registration Fee (includes accommodation all inclusive, social events, workshop proceedings and materials)	EURO 550/600 (Double/Single room) prior to May 16, 2009; EURO 600/650 (Double/Single room) after May 16, 2009; EURO 400 for students (Double room); EURO 350 for spouses.
Deadlines	**March 31, 2009:** to inform the organizers if you intend to come; **April 15, 2009:** Deadline for submission of papers; **May 1, 2009:** Notification of acceptance (to be mailed out).
Language	The official language of the Workshop will be English.
Proceedings	The organizers intend to prepare a book of proceedings of the workshop. Authors are invited to submit at most six pages camera-ready papers in English, LaTeX format 132×190 mm, by e-mail to `oc2009@moi.math.bas.bg`.
Web site	`http://www.moi.math.bas.bg/oc2009/oc2009.html`.

FORTY-SEVENTH ANNUAL ALLERTON CONFERENCE ON COMMUNICATION, CONTROL, AND COMPUTING

September 30 - October 2, 2009

The Forty-Seventh Annual Allerton Conference on Communication, Control, and Computing will be held from Wednesday, September 30 through Friday, October 2, 2009, at Allerton House, the conference center of the University of Illinois. Allerton House is located twenty-six miles southwest of the Urbana-Champaign campus of the University in a wooded area on the Sangamon River. It is part of the fifteen-hundred acre Robert Allerton Park, a complex of natural and man-made beauty designated as a National natural landmark. Allerton Park has twenty miles of well-maintained trails and a living gallery of formal gardens, studded with sculptures collected from around the world.

Papers presenting original research are solicited in the areas of communication systems, communication and computer networks, detection and estimation theory, information theory, error control coding, source coding and data compression, queueing networks, control systems, robust and nonlinear control, adaptive control, optimization, dynamic games, large-scale systems, robotics and automation, manufacturing systems, discrete event systems, intelligent control, multivariable control, computer vision-based control, learning theory, neural networks, VLSI architectures for communications and signal processing, and automated highway systems.

Manuscripts must be submitted by Wednesday, July 1, 2009, following the instructions at the Conference website: http://www.csl.uiuc.edu/allerton/.

Conference Calendar

DATE	CONFERENCE	LOCATION	CONTACT/INFORMATION	DUE DATE
Feb 2-13 2009	**2009 Information Theory and Applications Workshop (ITA 2009)**	UCSD, San Diego, CA	http://ita.calit2.net/workshop.php	by invitation
March 18-20 1009	**2009 Conference on Information Sciences and Systems (CISS 2009)**	Johns Hopkins University, USA	http://ciss.jhu.edu/	January 5, 2009
April 19-25, 2009	**IEEE INFOCOM 2009**	Rio de Janeiro, Brazil	http://www.ieee-infocom.org/	August 29, 2008
May 10 - 15, 2009	**The 2009 International Workshop on Coding and Cryptography (WCC 2009)**	Ullensvang, Norway	http://wcc2009.org/	TBA
May 26-30, 2009	**XII International Symposium on problems of redundancy in information and control systems**	St. Petersburg, Russia	http://k36.org/redundancy2009/	March 15, 2009
June 10-12, 2009	**2009 IEEE Information Theory Workshop (ITW 2009)**	Volos, Greece	http://www.itw2009.org	Dec. 16, 2008
June 14-18, 2009	**IEEE International Conference of Communications (ICC 2009)**	Dresden, Germany	http://www.comsoc.org/confs/icc/2009/	Sept. 8, 2008
June 26-27, 2009	**WiOpt 2009**	Seoul, Korea	http://www.wiopt.org/	February 5, 2009
June 28 - July 2, 2009	**The 2009 IEEE International Symposium on Information Theory**	Seoul, Korea	http://www.isit2009.info	January 7, 2009
Oct. 11-16, 2009	**2009 IEEE Information Theory Workshop (ITW 2009)**	Taormina, Italy	http://www.deis.unical.it/itw2009	March 19, 2009

For other major ComSoc conferences: http://www.comsoc.org/confs/index.html