Historian’s Column

Anthony Ephremides

Claude E. Shannon 1916-2001

Through the centuries, the ideas and contributions that have had the most impact were startling in their simplicity. The ability to prune the tree of knowledge to its bare essentials has been the hallmark of the greatest minds in that it permits new branches and life to spring forth just as the actual pruning of real trees does.

Claude Shannon’s work not only met this criterion of greatness but also wrapped it in astonishing aesthetic beauty and stunning innovativeness. The members of our Society do not need to be told about the revolutionary impact of his work. Some of our members have in fact known and worked with him. They are daunting figures themselves, yet they feel dwarfed by Shannon’s intellect as they describe the effect he had on them.

His enigmatic smile and deep piercing eyes along with a self-effacing modesty and humor helped synthesize an almost mythical persona. Claude Shannon personified what we can only dream of. Although he began leaving this world gradually and quietly as the dreadful Alzheimer’s disease ravaged his noble mind, it was not until February 24 of this year, when he actually passed away, that we sensed the magnitude of the loss. But his monumental legacy will shine on the world forever.

I was not among those fortunate enough to have actually worked with him or to have witnessed the workings of his mind. But, I was fortunate enough to have met him and to have felt a little of the almost mystical aura that he radiated, as I shook his hand. The picture is still vivid in my mind: The quiet, almost bashful, gentleman with the silver hair mingling among the attendees of the 1985 ISIT in Brighton, England. During the banquet, Bob McEliece, the General Chairman of the Symposium, introduced him as “one of the greatest scientific minds of our time”. The thundering applause would not stop. When it eventually subsided, Shannon’s first words were: “This is ...ridiculous!” And then in the 1986 ISIT in Ann Arbor, Michigan, I had the good fortune to share a table with him at the banquet and as first vice-president of the Society at the time I had to preside over the awards ceremony. What a thrill it was to have him hand out the awards to all those recognized that evening. I am sure they all cherish the memory.

Shannon has left us now. Our Society has always paid tribute to him as not only the founder of our field but as someone who laid out the entire foundation of the information technology era. Our campaign to help the world appreciate his contributions will continue. Perhaps the most effective way to do so will be by continuing to add to the field he created. In the 1998 ISIT in Cambridge, Massachusetts, we celebrated the golden anniversary of the founding of Information Theory. We are now three years into the second half of the field’s first century and we already have new exciting discoveries that continue to push the boundaries of knowledge. Shannon showed us how to model the source and the transmission of information. He also showed us how cryptography and complexity are mere facets of the fundamental process

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From the Editor

In this issue of the IEEE Information Theory Society Newsletter, we note in sadness the passing of Claude E. Shannon, a true pioneer and visionary. He will be remembered for his significant contributions to the field of communications, and the many lives he touched through his ground-breaking work over the course of his phenomenal career. In this issue Tony Ephremides’ historian column appears in the form of a eulogy for Shannon.

There are also informative columns by IT Society President Joachim Hagenauer as well as Sol Golomb’s puzzle column. In addition, there are announcements of prestigious awards recently won by members of our Society, and reports from various workshops and symposia.

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

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<th>Issue</th>
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<tr>
<td>June 2001</td>
<td>April 15, 2001</td>
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<tr>
<td>September 2001</td>
<td>July 15, 2001</td>
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<tr>
<td>December 2001</td>
<td>October 15, 2001</td>
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<tr>
<td>March 2002</td>
<td>January 15, 2002</td>
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Electronic submission, especially in PDF, ascii, and Word formats, is encouraged.

This marks my last issue as editor of the IT Society Newsletter, and I hope you will extend a warm welcome to my successor Lance C. Pérez. It has been a pleasure working with you all.

Lance may be reached at the following address:
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Sincerely,
Kimberly Wasserman

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Historian’s Column

Claude E. Shannon 1916-2001

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of representing and processing information. He also touched upon almost every aspect of what we have all been working on for over fifty years. He even entertained us (along with himself) by his juggling, his unicycle, his chess-playing machines, his maze, and his numerous other intellectual toys. But above all he taught us how to think clearly and simply; how to grasp the essence of a problem. Blessed are those who understood this, his ultimate message.

Last Fall, during the moving ceremony of the dedication of his statue at Gaylord, Michigan, under gray and threatening skies, I remember one of the folk from Gaylord who attended and who happened to have been a classmate of his in school in the 1920’s. She was a simple gray-haired lady with the typical stamp of forthrightness that characterizes many people from the midwest. We asked her whether she remembered any anecdotes from her brief association with Shannon. She said that she couldn’t relate to us any stories or incidents. They were all clouded in her memory under the shroud of time. However, with a twinkle in her eye, she said: “I can tell you this, though; he was very smart!” A very fitting description of the genius that was Shannon!

Brief Chronology

1916: Claude E. Shannon is born in Petoskey, Michigan and grows up in Gaylord, Michigan.
1936: He receives a B.S. degree in Mathematics and Electrical Engineering from the University of Michigan.
1940: He obtains a M.S. degree in Electrical Engineering and a Ph.D. degree in Mathematics, both at MIT. (His MS thesis on the Symbolic Analysis of Relay and Switching Circuits receives various awards and displays early signs of his genius; his Ph.D. Dissertation on genetics remains largely unknown as an interlude into a vastly different field).
1941: He joins the AT&T Bell Laboratories.
1948: His landmark paper “A Mathematical Theory of Communication” is published; Information Theory is born.
1958: He returns to MIT.
1978: He retires formally.
early 90’s: Alzheimer’s disease gradually invades his brain.
Feb. 24, 2001: Claude E. Shannon passes away. He is survived by his wife Mary Elizabeth Moore Shannon, a son, a daughter, a sister, and two granddaughters.

Ingrid Daubechies wins the “Basic Research Award” of the “Eduard-Rhein-Foundation (ERF)”

During a ceremony held at the “Ehrensaal” of the “Deutsche Museum” (Museum of Science and Technology) in Munich, Germany, the Vice-Premier of the State of Bavaria presented the year 2000 “Basic Research Award” of the Eduard-Rhein-Foundation (ERF) to Professor Ingrid Daubechies from Princeton University for:

“The invention, the mathematical development and the applications of wavelets which have found widespread applications as orthogonal functions in signal processing, radar and image processing, especially for the new image compression standard JPEG 2000”.

Ingrid Daubechies has a distinguished career with positions at the Universities of Brussels; Rutgers and Princeton as well as the Mathematical Research Department of Bell Labs. Her many previous awards include the IEEE IT Society Golden Jubilee Medal, the American Mathematical Society’s Steele-Prize and the National Academy of Science Medal in Mathematics. She is married to Dr. Robert Calderbank, AT&T, former Editor in Chief of the Information Theory Transactions and she has two children.

The Eduard-Rhein-Foundation (ERF) is named after the German inventor, journalist and benefactor Eduard Rhein who spend most of his life promoting the advancement of information technology and whose estate serves as the base of the prize money. The Basic Research Award comes with a check of 100,000 Deutschmarks and is regarded as the highest valued research award in information technology in Europe.

Previous ERF “Basic Research Award” winners known to members of the IT Society include Claude Shannon, Andrew Viterbi, Gottfried Ungerboeck, Richard W. Hamming, Jacob Ziv and Vladimir Kotelnikov.

The year 2000 Technology Award of the Eduard-Rhein-Foundation went to Professor Norman Abramson for his invention and implementation of the ALOHA protocol and was presented at the same ceremony.

Joachim Hagenauer
Dear members and friends of the Information Theory Society, as the first President of our Society from Germany, let me reflect about the relationship of our Society with Europe and, in particular, Germany. When I had the honor of delivering the Luncheon Speech at the International Communications Conference (ICC ’93) in Geneva (Incidentally, the very same Conference where the Turbo decoding scheme was presented!), I reflected on some important information theorists from Europe such as Golay and I also projected a 10 Deutsch-Mark bill where Carl Friedrich Gauß (for more information about him see http://www-groups. dcs.st-and.ac.uk/~history/Mathematicians/Gauss.html) is depicted together with the famous Gaussian distribution. To my knowledge, this is the only mathematical formula on a valid currency bill, albeit this will change next year when the Euro appears. But I also had to confess during this speech that especially in the early days of Information Theory not many contributions came from Germany. After that luncheon Jim Massey approached me and tried to console me by stating that with Carl Friedrich Gauß the Germans had already contributed greatly to Information Theory by inventing the (Gaussian) noise. And with no noise, there is no need for channel coding! Anyway, the “noise inventor” Carl Friedrich Gauß was not only a gifted mathematician but he also cooperated in Göttingen extensively with the physicist Wilhelm Weber during the years of 1831 to 1837. Gauß and Weber achieved much during their six years of cooperation. They discovered Kirchhoff’s laws and they constructed a primitive telegraph device which could send messages over a distance of 5000 ft. This constituted the first digital electromagnetic transmission. On the sidelines, it is interesting to note that two sons of Gauss emigrated to the United States, also cooperated in Göttingen extensively with the physicist Wilhelm Weber during the years of 1831 to 1837. Gauß and Weber achieved much during their six years of cooperation. They discovered Kirchhoff’s laws and they constructed a primitive telegraph device which could send messages over a distance of 5000 ft. This constituted the first digital electromagnetic transmission. On the sidelines, it is interesting to note that two sons of Gauss emigrated to the United States, although they did not actually contribute much to science and technology there.

If you are looking for other European contributions to IT, read Tony Ephremides’ historical column and the puzzles by Saul Golomb even if they are not directly interested in Information Theory. The excellent and diligent work of the authors, editors and reviewers has almost disappeared thus allowing speedy publication of new results. I believe it is our duty to make the results of Information Theory even more easily accessible to communications engineers, computer scientists and physicists. The excellent anniversary issue of our Transactions and An event that has lately prompted a lot of interest in Information and Coding Theory amongst younger German researchers was the IT Symposium in Ulm in 1998, and I believe we enjoyed a similar experience as the Dutch did after the Amsterdam IT Symposium and as the Swedish after the 1976 Ronneby Symposium. This shows how important it is to alternate the location of our Symposium between the US and other countries as it has been the habit for quite a while. Today we have a rather active Information Theory Chapter in Germany founded by Han Vinck and currently chaired by Martin Bossert with one or two workshops per year. Very active research groups in our field can be found at the Universities of Bielefeld, Darmstadt, Erlangen, Essen, Ulm and München. The groups in Bielefeld, Essen and Ulm constitute a point of contact for many Eastern European Coding and Information Theorists from Russia, Poland and Hungary who come here on exchange contracts.

I started to learn about the duties of an IT President following the footsteps of our outgoing President Vijay Bhargava. When I attended the IEEE Technical Activities Board together with Vijay, where all the other IEEE Societies were present, I felt the high regard and respect that our Society elicits from colleagues coming from other fields within IEEE. People told me that they enjoy reading our Newsletter with Tony Ephremides’ historical column and the puzzles by Saul Golomb even if they are not directly interested in Information Theory. The 1999 ISI Journal Citation Report gives our Transactions the 2nd best ranking among all IEEE publications. When asked about the most valuable source of reference in information systems, scientists and engineers ranked the IT Transactions as number 4. This high esteem is due to the excellent and diligent work of the authors, editors and reviewers within our Society. I was very pleased to learn that during the chief-editorship of Alex Vardy the backlog of papers has almost disappeared thus allowing speedy publication of new results. I believe it is our duty to make the results of Information Theory even more easily accessible to communications engineers, computer scientists and physicists. The excellent anniversary issue of our Transactions and
the follow up book “Information Theory: 50 Years of Discovery”, edited by Sergio Verdu and Steve McLaughlin, was certainly an important step in this direction. Beside our well known awards, like the Shannon Award and the Best Paper Award, we have now established a Joint Paper Award Committee with the IEEE Communications Society. I believe this new award should honor authors of papers which show the great impact Information Theory has on communications techniques. Please let me know if you feel a paper should be nominated for this joint award.

Finally, let me welcome the newly elected members of our Board of Governors with whom it will be a pleasure to work:

Michelle Effros, John B. Anderson, Thomas Cover, Hideki Imai, Torleiv Kløve and Alexander Vardy. Han Vinck will join me as second Vice President, following our First VP Tom Fujj, in running the planned Board meetings in Baltimore (during CISS), Washington (during ISIT 2001) and Cairns, Australia (during the IT Workshop).

Joachim Hagenauer
Munich University of Technology, Germany
hagenauer@ei.tum.de

2001 Class of IEEE Fellows

The following 12 Information Theory Society members were elected to the grade of Fellow by the IEEE Board of Directors effective January 1, 2001.

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
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<tbody>
<tr>
<td>Ariyavisitakul</td>
<td>Sirikit Lek</td>
<td>“For contributions to the theory and practical implementations of anti-multipath and interference suppression techniques in wireless communications.”</td>
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<tr>
<td>Bouman</td>
<td>Charles A.</td>
<td>“For contributions to the theory of statistical image processing, and its application to electronic imaging and inverse problems.”</td>
</tr>
<tr>
<td>Bruck</td>
<td>Jehoshua</td>
<td>“For contributions to the theory and practice of parallel, distributed and fault-tolerant computing.”</td>
</tr>
<tr>
<td>Goldstein</td>
<td>Jay Scott</td>
<td>“For contributions to adaptive Wiener filter theory and its application to radar and communications.”</td>
</tr>
<tr>
<td>Kalker</td>
<td>Ton A.</td>
<td>“For contributions to watermarking technology and its practical applications.”</td>
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<tr>
<td>Kam</td>
<td>Moshe M.</td>
<td>“For contributions to the theory of decision fusion and distributed detection.”</td>
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<tr>
<td>Mareels</td>
<td>Iven Michiel Yvonne</td>
<td>“For contributions to the analysis, design and implementation of adaptive systems.”</td>
</tr>
<tr>
<td>Narayan</td>
<td>Prakash</td>
<td>“For contributions to Shannon Theory and its application to the evaluation of the reliability of communication channels.”</td>
</tr>
<tr>
<td>Sayed</td>
<td>Ali H.</td>
<td>“For contributions to adaptive filtering and estimation algorithms.”</td>
</tr>
<tr>
<td>Svensson</td>
<td>Arme</td>
<td>“For contributions to detection of digital modulation methods.”</td>
</tr>
<tr>
<td>Tanaka</td>
<td>Hatsukazu</td>
<td>“For contributions to the theory of source and channel coding and its applications, as well as for contributions to education in engineering.”</td>
</tr>
<tr>
<td>Zigangirov</td>
<td>Kamil Shamilevich</td>
<td>“For contributions to the theory, analysis, and decoding algorithms of convolutional codes.”</td>
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New IEEE Senior Members

The following members of the Information Theory Society were elected to the grade of IEEE Senior Member in 2000.

Ahmed, Walid K.M. Brushe, Gary D. Farrell, Patrick G. Kschischang, Frank R.
Alajaji, Fady I. Chen, Po-Ning Fortier, Paul Koc, Cetin Kaya
Alencar, Marcelo S. Chou, Philip A. Fessler, Jeffrey A. Lafferty, John D.
Ansorge, Michael Cooper III, A. B. Fossorier, Marc Lapidoth, Amos
Barron, Andrew R. Coxson, Gregory E. Giusto, Daniele D. Linder, Tamas
Barroso, Victor A. Dapper, Mark J. Gray, Steven D. Liu, Baoding
Belfore II, Lee A. Dharanipragada, S. Henriksen, Kenneth Mandyam, Narayan B.
Bell, Mark R. Earman, Allen E. Jalloul, Louay M. A. Mandyam, Giridhar D.
Bouazzi, Ahmed S. Eleftheriou, Evangelos S. Karl, W. Clem Modiano, Eytan H.
IEEE Information Theory Society Board of Governors Meeting
Sheraton Waikiki, Honolulu, HI
November 5, 2000, 1:00 PM

Attendees: Jan Bajcsy, Vijay Bhargava, Ezio Biglieri, Anthony Ephremides, Thomas Ericson, Marc Fossorier, Thomas E. Fujita, Costas Georgiades, Alex Grant, Aaron Gulliver, Joachim Hagenauer, Hideki Imai, Shu Lin, Ryuji Kohno, Ioannis Kontoyiannis, Toshiyasu Matsushima, Wai Ho Mow, Masao Nakagawa, Eiji Okamoto, Toyoo Takata, Alexander Vardy, Han Vinck, Xiaodong Wang, Stephen Wicker, Raymond Yeung, Ken Zeger, Jacob Ziv

1. The meeting was called to order at 1:00 PM by Society President Vijay Bhargava. The members of the Board and the guests from SITA were welcomed and introduced themselves.

2. The Agenda was approved as distributed with the following additions:

10.3 Galley Proofs [Zeger]
18.1 Proposed Changes to Best Paper Award [Hagenauer]
19.1 E-Print Server [Vardy]
19.2 Introduction of 2001 Board of Governors [Hagenauer]
19.3 Board Meetings for 2001 [Hagenauer]

3. The minutes of the previous meeting in Sorrento on June 30, 2000, were approved as distributed.

4. Society President Vijay Bhargava read his reply to the letter by Prof. Mattson. This letter appeared in the September Newsletter. He reported that the PES Society, which is approximately 4 times the size of the Information Theory Society, spent $335,000 on chapter activities. They sponsor local activities and he suggested we should do more to support chapters.

In August he attended the TAB meeting in Dallas. IEEE dues are less than 10% of the IEEE Budget (22M out of 260M). He will attend the TAB meeting in Tampa, Nov. 17-18.

5. On October 6 a statue of Claude Shannon was unveiled in Shannon Park in Gaylord, MI. Many IT Society members were in attendance, as well as numerous local officials and citizens of Gaylord. The Society President gave a short speech followed by some words from a representative from Gaylord. Afterwards a reception was held in a local country club. Several prominent IT people presented their thoughts on the effects of Shannon’s work. Mrs. Shannon also talked. The event was a great success due primarily to the efforts of the organizing committee, particularly David Neuhoff.

At this point, a brief overview of the Society was given for the benefit of the SITA members in attendance.

6. Raymond Yeung has obtained the required number of signatures to form an IT Chapter in Hong Kong. Approval is being sought from the Section. The Hong Kong Section held its first IT Colloquium which was organized by Wai Ho Mow.

7. Marc Fossorier presented the Treasurer’s report. A five page update on the financial status of the Society was distributed and discussed. It was noted that the cash available is at about the same level as a year ago, which indicates that the $150,000 which was transferred from long term investments at the end of 1999 has been totally absorbed. Long term investments are not doing as well as in past years because of the low interest returns up to now. In addition, the IEEE may keep part of this interest to cover infrastructure costs.

He noted that several new initiatives have had or will have a significant impact on the finances of the Society, in particular the digital library, increases in editorial expenses, the increases in the Shannon and Paper Awards, and the move to monthly publication of the Transactions (in total, approximately $150,000 per year). In addition, $45,000 was budgeted this year for the statue of Claude Shannon in Gaylord, Michigan. He concluded by stating that such initiatives are good for the Society and should be encouraged, but the point has come where new ways of generating income should be considered.

There was a discussion of the revenue streams available to the Society. The President suggested that an Ad Hoc Committee be formed to look into this issue, including non-member subscriptions, membership fees and the cost of student participation. The President-Elect, Joachim Hagenauer, was mandated to form this committee.
The current net worth of the Society is approximately $1,500,000.

8. Aaron Gulliver presented the report on the IT Society website. Statistics show that the number of file transfers from the website is up over 25% since the June board meeting in Sorrento. Conference information and the newsletters continue to be the most popular items. Now that the digital library is available to members via the web, significant usage of this resource can be expected. It was noted that the on-line library has not been updated since the end of 1999. It was decided to create a new position to maintain the digital library. The President-Elect was mandated to appoint someone to this position.

9. There was no Newsletter report.

10.1. The Editor-in-Chief Alexander Vardy presented the Report on the Transactions on Information Theory. He stated that the quality of the Transactions is good, and he is already working with Paul Siegel to ensure a smooth transition to the new EIC. Tables indicating Editor load and time to publication were distributed. The load is being maintained at an average of 3 papers/Editor/month, and the time to publication has been reduced significantly. The EIC was commended for his efforts in these areas. The names of three new Associate Editors were put forward for approval, Ruediger Urbanke to replace Emina Soljanin, Venugopal V. Veeravalli to replace Upamanyu Madhow, and Ram Zamir to replace Philip Chou. The appointments were approved unanimously. Concern was raised about the regional distribution of the Editorial Board. It was stated that there are many information theorists in Region 10, and the BOG members from this Region were challenged to bring names to the attention of the EIC of people who could considered for appointment. Finally, the EIC noted that a replacement Publications Editor must be found as Ramesh Rao is stepping down.

10.2. The Editor-in-Chief Alexander Vardy presented the Publications Editors Report. He stated that the estimated page budget is within 3% of the target.

10.3. Ken Zeger described his difficulties with galley proofs, and suggested that the primary cause is the lack of guidelines for grammar and style. The EIC said that the IEEE would like to enforce a uniform style, but at present no written document exists. There are also some problems due to limitations with the software used by the IEEE. The President will discuss this issue with IEEE staff at the upcoming TAB meeting. The EIC also stated that future problems with galley proofs can be brought to his attention.

11. There was nothing to report from the Electronic Publications Committee.

12. There was nothing to report from the Ad Hoc Committee on Education, but Ezio Biglieri said there will be a meeting of the IEEE Education Committee in Tampa, Nov. 17-18. He will not be attending, but will be briefed afterwards and will present a report at the next board meeting. 13. Han Vinck presented the report from the Ad Hoc Committee on IT Book Translations. There has been little progress with the book by Te-Sun Han. The translator is ill which will delay publication. An announcement has been placed in the Newsletter. A publisher has not been decided on, but there will be no difficulties in getting it published. Translation of the book by Varshamov was also discussed.

14. Thomas Ericson presented the Report from the Ad Hoc Committee on the Frequency of the IT Transactions. A number of problems were identified by the EIC, and the committee discussed these at length. It was recommended that the frequency of publication increase from 6+1 to 12+1 issue per year. The Treasurer noted that this would increase costs by about $60,000. After some discussion, a motion to increase the frequency of publication to 12+1 issues per year was passed unanimously.

15. Tom Fuja stated that little use is made of the Distinguished Lecturer Program, and encouraged the BOG to make use of it in the future. Several suggestions on how to improve the visibility of this program, including sending a message to all past BOG members and all chapters, were discussed. Han Vinck volunteered to write an article for the Newsletter outlining the program.

16. Stephen Wicker presented the Report on Workshops and Symposia. He began by thanking the organizers of ISITA for their hospitality and for a well organized event.

16.1. Ezio Biglieri presented a report on ISIT 2000. There were 675 participants, and a small surplus $18,000. There was considerable discussion on what to do with this surplus. A motion to use the surplus from ISIT 2000 to support the travel of Region 8 attendees to ISIT 2001 was approved unanimously.

16.2. Vijay Bhargava presented a report on ICPWC 2000. There was a high rejection rate, resulting in high quality papers being accepted. 119 papers from 22 countries were presented. The corporate sponsors were acknowledged as being important to the success of the conference.

16.3. Stephen Wicker stated that the organization of the 2001 Canadian Workshop on Information Theory is progressing nicely. There will be three keynote speakers, Hagenauer, Tarokh and Verdu. It will be held right after the workshop on June 7-8 to honour the career of Prof. Ian Blake (BlakeFest), which is being organized by Vijay Bhargava and Vince Poor. It will be held at Dunsmuir Lodge on Vancouver Island, which is not far from Vancouver (on the mainland), where the Canadian Workshop will be held.

16.4. Tom Fuja presented a report on ISIT 2001, which will be held in Washington, DC. He highlighted the budget, including a breakdown of registration fees, and projected a modest surplus. The events planned were also outlined. There was a discussion of the yearly frequency of the Symposium. The conclusion was that it is too early to decide if this should become permanent, or the symposium
revert back to the 18 month frequency. Stephen Wicker noted that plans are already underway for the 2004-2006 Symposiums.

16.5. Alex Grant reported on the 2001 Information Theory Workshop to be held in Cairns, Australia. The venue has been booked and the contract is being drafted. Hotel costs, sponsors and the sessions were outlined. An announcement has been distributed. There will be 5 invited sessions plus a recent results session. The budget was based on 60 attendees. A loan of 5K was requested and approved unanimously. Newsletter and website advertising was also requested.

16.6. The organization of ISIT 2002 in Lausanne, Switzerland is going well. Negotiations with the hotels is in progress. As yet, no estimates of attendance numbers or fees are available.

16.7. Vijay Bhargava presented a proposal for an Information Theory workshop in Pokhara, Nepal. It will be held in late 2002, and will be organized by Alexander Vardy and himself. It will focus on coding theory and most presentations will be by invitation. A motion for IT Society sponsorship of the workshop was approved in principle with the understanding that the organizers present a budget at the next BOG meeting.

16.8. Ryuji Kohno reported that the organization of ISIT 2003 was progressing well. Stephen Wicker concluded by saying that proposals from Australia, central US and Vienna for future symposium are in development.

17 The Membership and Chapters Committee report presented by Tom Fuja. The only item to be discussed was the subsidy for Russian members.

17.1 At present 6 Russian members are supported, and the BOG must now decide whether to continue this practice. In 1997, a decision to provide this subsidy was made in response to the crisis in Russia. The issue was discussed at length, and it was concluded that the subsidy should end. Tom Fuja will notify the IEEE and the 6 members that 2001 will be their last year for support. It was suggested that the Society distribute free copies of the Transactions. Vijay Bhargava will determine the feasibility and cost of doing this.

18. The Awards Subcommittee report was presented by Joachim Hagenauer. There has been no progress on the joint IT/ComSoc Paper Award because the Communications Society has not elected their committee representatives.

18.1 Joachim Hagenauer stated that with the large committee which considers nominations for the Paper Award, there is no necessity to present several candidates to be voted on by the BOG. A motion for the Bylaw Committee to prepare appropriate changes to the Paper Award so that up to 3 papers are forwarded by the Awards Subcommittee to the BOG, and that the BOG vote on the award during the Board Meeting, was approved unanimously.

19. Other Business

19.1 Alexander Vardy presented the Board with an overview of the Los Alamos sections of LANL. This is an archive for papers on various subjects which can be submitted by authors. Alexander Barg has written to them requesting that an information theory section be created. This request has been ignored, and it was thought that an official request from the Information Theory Society may not be ignored. There was some discussion regarding copyrights and official IEEE involvement. The Society President was mandated to write a letter on behalf of the Society before the end of the year.

19.2 Joachim Hagenauer, 2001 President, presented the list of newly elected members of the Board beginning in 2001. They are John Anderson, Thomas Cover, Michelle Effros, Hideki Imai, Torleiv Kløve and Alexander Vardy.

19.3 Joachim Hagenauer announced that the 2001 Board meetings would be held in March during CISS in Baltimore, in June during ISIT in Washington, and in September during the IT Workshop in Cairns, Australia.

As this is his last Board meeting as President, Vijay Bhargava thanked the board for their collegiality and friendship. He also thanked the outgoing board members, Thomas Ericson, Andrew Barron, Ken Zeger, Shlomo Shamai and Frans Willems. Thomas Ericson thanked Vijay Bhargava for serving as 2000 IT Society President.

The meeting was adjourned at 5:35 PM.