THE ISBA NEWSLETTER

Vol. 5 No. 2   September 1998

Message from the President

It seems that I can not escape from it any longer! I have been nicely, but insistently reminded that I should address you at least once. Well, this is it!

I am about three-quarters through my term as President, and it has been a most interesting, and rewarding experience. Our society is still very young, so there are many (many, many) things to do. I have done a few of them, following the way so efficiently lead by the former President Steve Fienberg (who has a larger and older society to rule these days), but I am leaving most of them to our next President, John Geweke. It has been really great to work with them both; it was (well, it still is) a nice team; interacting with them has always been nice and easy, and I have had all the help I could possibly need. My first thanks go to them both. I am indebted to whoever had the nice idea of having three Presidents!

Up till this year, I have never appointed anyone to do anything before (with the exception of proctoring exams, maybe) nor have I formed any committees (except for judging Ph.D. theses). I seem to be becoming an expert now! Of course, I counted on the help and the input from the members of the Board. New appointments this year include our Program Chair Elect (Robert Wolpert), new Web Master (Mike Evans), and the elections committee. Two other committees are almost formed (some of you are always a bit slower in answering than others): the Constitution and By-laws committee (to be chaired by Jay Kadane) and an ad hoc committee to prepare a

report on all sorts of possible publications for ISBA, including electronic (to be chaired by John Geweke). You can find information on our web page. I am always surprised that people are willing to devote much-needed time and effort to keep ISBA rolling. I am indeed most grateful to all of you who said yes when asked to serve ISBA in some way.

ISBA has been most lucky in counting on the effort, time and dedication of Mike Evans. He has done a superb job as Executive Secretary, fixing all the millions of details that are always pending. If this was little, he also launched our new web page with plenty of yummy information (I won't tell you about it, so go and visit!). We expect to have our definite URL pretty soon. In case you did not realize, Mike is also putting together this issue of the Newsletter as well! Rob McCulloch has done also a very nice job in keeping all our finances and enrollment under control and updated. My very sincere thanks to them both.

We have an extremely efficient Program Committee (Mark Steele, Chair; Alicia Carriquiri, Past Chair; Robert Wolpert, Chair Elect). They actually are handling the most important activity that ISBA develops now. And they are so efficient that all my work in this aspect reduces to being kept informed! (as I basically agree with their wise decisions). They are now very busy preparing ISBA 2000 in Greece. Believe me: that will be a meeting not to miss! It is shaping up terrifically! I hope that the President that you are just about to elect will welcome most of you in Greece in a year and a half. As you must know by now,

our election committee (chaired by Steve Fienberg) has also done its job (even on time!). So the very first 'normal' election in the history of the ISBA is on its way. They have prepared for us a slate of wonderful people. It will be very difficult to chose amongst them. Your vote will be needed soon!

The Society is shaping, and it's shaping nicely, I believe. However, it still needs lots of inputs, efforts, directions and enthusiasm until it takes its final form. It is important that ISBA should be as we all want it to be, so I urge everyone to participate in this project, and make your comments and suggestions known. This Newsletter is a good place to send ideas, but also to members of the Board, as they are your representatives.

We also have a few chapters, which are very active and enthusiastic. We do not have many, however, and we have not launched any 'special interest groups' yet. I am guessing that we shall see many more of them both with time.

This year we also had a 'real' Executive Committee Meeting and a 'real' Board Meeting, as before most of these 'meetings' were electronic. We all agreed that, as extremely convenient as e-mail is, there should be some of these real meetings on a regular basis. The meetings went smoothly (alas, so long!) and I appreciate the dedication and interest of all members of the board. Many of them came directly from a very long trip, and all devoted a lovely, sunny afternoon in Valencia to discuss a long list of ISBA issues. I realized that the meetings had been unusually pleasant, but then everyone there was a nice Bayesian! This is not all that frequent for a Board Meeting!

Last, we also had a nicely attended General Membership meeting (yes, it was another lovely, sunny afternoon with no talks! amazing!) This was probably the most pleasant General Membership Meeting that I have ever attended in my life (and the largest too!), but then again they were all Bayesians! The only sad moment was when we paid tribute to a great, influential Bayesian who left us this year. From here, I also want to thank Larry Bretthorst for his nice obituary of Ed Jaynes. I know that it must not have been easy for him to prepare and deliver this, and he had to do it on very short notice. Thanks, Larry.

I am not explicitly mentioning many other people to whom I have a debt of gratitude and who have made my task as ISBA pres much easier. This, as I said,

was a rewarding task, and I have done it as well as I possibly could. I do believe that the ISBA is a nice enterprise, but it will actually be whatever we make of it. For good or for bad it is still in a stage in which it is highly non-robust to input, so the role of everyone is important. I hope you share my faith in it and help to make ISBA a nice (and fun!) society.

Minutes of the Meeting of the Board

There was a meeting of the Board prior to the Valencia 6 conference, on Saturday May 30 at 5:00pm in Alcossebre, Spain. Reports were heard from the President, Treasurer and Executive Secretary. Also discussed were meeting issues and policies, publications, scheduling meetings of the board, organization of ISBA chapters and the nominating committee and elections. More details can be obtained on the ISBA website (see this Newsletter for the address).

Minutes of the General Meeting

This meeting was held on Thursday, June 4, at 5:00pm during the Valencia 6 conference. Reports of the Treasurer and the Executive-Secretary were presented. An Obituary for E.T. Jaynes was read by Larry Bretthorst (see this Newsletter) followed by a minute of silence, a Certificate of Appreciation was presented to ISBA's first webmaster Carlos Rodriguez, a Founders Award was presented to Arnold Zellner and a report was read by Mark Steele from the Program Committee on Future meetings and ISBA 2000. More details can be obtained on the ISBA website (see this Newsletter for the address).

ISBA Awards at Valencia 6

A Founders Award For Arnold Zellner

"In deep appreciation for his unflagging enthusiasm and irrepressible spirit, his zealous advocacy of the Bayesian method, his profound Bayesian research contributions, his outreach to researchers and statistical groups around the world, and especially his leadership of the Bayesian movement as the founding President of the International Society for Bayesian Analysis."

A Certificate of Appreciation for Carlos Rodriguez

"In thanks for his service as ISBA's first Webmaster, and especially for his efforts in establishing ISBA's

homepage and giving ISBA the means to communicate effectively with its members."

ISBA Website

The ISBA website contains items of interest to ISBA members, Bayesians and statisticians generally. For example, virtually any information concerning ISBA can be found there, as well as book reviews of Bayesian books, photos of prominent Bayesians, Bayesian links etc. Suggestions for additions can be sent to the webmaster.

The current location is only temporary and we will soon have a permanent address. Please take a look at:

http://utstat.utoronto.ca/mikevans/isba/isba.html

1999 ISBA Elections

In an election to be held this coming fall, ISBA members will be asked to select a president-elect for 1999 (who will become President in 2000), a Treasurer (3 year term), and 4 members of the Board of Directors (3-year terms).

President Susie Bayarri appointed the following Nominating Committee to prepare a slate of candidates for the forthcoming ISBA elections:

David Draper (UK)
Tim Dune (South Africa)
Carmen Fernandez (UK)
Daniel Gianola (USA)
Pilar Iglesias (Chile)
Peter Mueller (USA)
Dale Poirier (Canada)
Christian Robert (France)
Fabrizio Ruggeri (Italy)
Bruno Sanso (Venezuela)
S.K. Upadhyay (India)
Isa Verdinelli (USA)
Stephen E. Fienberg (USA) – Chair

The Nominating Committee selected the following candidates.

For President-Elect

Philip Dawid (UK)
Mike West (USA)

For Treasurer

Edwin J. Green (USA)
Valen Johnson (USA)

For the Board

Mark Berliner (USA)
Alicia Carriquiry (USA)
Petros Dellaportas (Greece)
Simon French (UK)
Jayanta Ghosh (India)
Brunero Liseo (Italy)
Daniel Pena (Spain)
Sylvia Richardson (France)

Some biographical information on these candidates can be obtained on the ISBA web-site under News and Announcements.

In keeping with the ISBA constitution, any group of 30 members can nominate another member for any vacant position. Nominations must reach the Secretary by September 26. Electronic nominations list 30 nominees and must be authenticated by signatures sent either by mail or FAX

Ballots will be mailed to ISBA members in late September.

Leonard J. Savage Thesis Award

The winner of the 1997 Professor Leonard J. Savage Thesis Award is Dr. Donald Denison, Department of Mathematics, Imperial College, London, UK. He completed his thesis, "Simulation Based Bayesian Non-parametric Regression Methods" under the supervision off Professors B.K. Mallick and A. Smith. Denison gave a report of his work at the Savage Award Session of the ASA Dallas Meetings, August, 1998, arranged and chaired by Prof. Ehsan Soofi and received an award of $750.

Dr. Juha Heikkinen, Forest Research Institute, Helsinki, Finland received honorable mention for his outstanding thesis, "Bayesian Smoothing and Step Functions in Nonparametric Estimation of Curves and Surfaces," completed under the direction of Professors A. Penttinen and E. Arjas. He also presented his work at the Savage Award Session in Dallas. He received an award of $100.

Other finalists who made presentations at the Savage Award Session are: Dr. Michael J. Hardy, "Why Logical

Probabilities Need Real Numbers," U. of North Carolina, Dr. Nan-Jung Hsu, "Hierarchical Long-Memory Time Series Models," Dr. Gael Martin, "Bayesian Inference in Models of Cointegration: Methods and Applications," and Dr. Richard Paap, "Markov Trends in Macroeconomic Time Series."

In 1997, 18 theses were submitted for the Savage Thesis Award competition and were judged by members of the Savage Thesis Evaluation Committee, E. Soofi, U. of Wisconsin, Chair, S. Chib, Washington U., V. Johnson, Duke U., P. Lenk, U. of Michigan, T. Leonard, U. of Edinburgh, P.Rossi, U. of Chicago and R. Weiss, U. of California. Funds for the awards were provided by the NSF-NBER Seminar on Bayesian Inference, the Savage Memorial Fund, the International Society for Bayesian Analysis and the ASA Section on Bayesian Statistical Science. Members of the Savage Memorial Fund Board are: J.W. Pratt, Harvard U., E.E. Leamer, U. of California, J. B. Kadane, Carnegie Mellon U., S. Geisser, U. of Minnesota, S. E. Fienberg, Carnegie Mellon U, and A. Zellner, President, U. of Chicago.

To be considered for the 1998 Savage Award, two copies of a dissertation must be submitted to the Thesis Evaluation Committee by the dissertation supervisor before November 15, 1998 accompanied by a short letter from the supervisor summarizing the main results of the dissertation. The Thesis Evaluation Committee will be appointed by the Board of the Savage Memorial Fund to evaluate submitted dissertations. The winner, who will receive $750 and those accorded honorable mention will be announced at the 1999 Annual Joint Statistical Meetings in Baltimore, Md. Dissertations and supporting letters should be sent to:

Prof. Arnold Zellner,
Graduate School of Business,
U. of Chicago,
1101 E. 58th Street, Chicago,
Illinois 60637, U.S.A.

Bayes Interviewed at Valencia 6

The Reverend Thomas Bayes (Thomas Leonard) was interviewed by Anthony O'Hagan June 1998 in Alcossebre, Spain.

MC. It's a great pleasure to have you here, Mr. Bayes. Or should I say "Your Reverence"?

Bayes. Just call me Tom.

MC. Before I ask you some questions, would you be kind enough to bless our disco?

Bayes. Certainly, my son. "Benedictus Bayesianus, Amen"

MC. Wonderful. Now Tom, let me ask you first how you got here to Alcossebre. You know many people had a lot of trouble.

Bayes. Yes, all these airplanes milling around when one is trying to get down from Heaven.
So I made the air traffic controllers strike to stop them all for a bit. I'm sure it made things much easier for everybody.

MC. Oh yes, good idea! So now you've had a good look at Bayesianism in 1998, what do you think of it?

Bayes. Oh my son, it's wonderful! Such a lot of good work!

MC. Yes, Tom, all those clever invited speakers.

Bayes. Oh no. I was talking about the posters.

MC. So you weren't impressed with the invited sessions?

Bayes. Well for example, take this fellow Green and his "exact sampling". You go backwards and forwards in time, turn density functions into jigsaw puzzles, and what have you got at the end of it?

MC. An exact random number. (Pause) Hmm ....

Bayes. I've never heard such nonsense!

MC. Tom, there's been a lot of talk on model choice. What do you think of that?

Bayes. I liked what that Smith fellow said. He said there were far too many of these ad hoc criteria. And all this ad hockery was not really Bayesian.

MC. So what did he do?

Bayes. Oh, he gave us a few more ad hoc criteria. And they are not really Bayesian.

MC. Well, Tom, we shouldn't be too hard on Adrian Smith. You know he's leaving us?

Bayes. Oh, really my son? Should I do a "Requiem" or a "Gloria"?

MC. Going back to model choice, Tom, José Bernardo gave us the BRC. Do you know what that means?

Bayes. I think it stands for "Bernardo's Really Confused".

MC. Yes, I'm sure you are right! And model choice is all mixed up with Bayesian model averaging, I believe?

Bayes. Yes, my son. That was the talk by that Clyde woman. By the way isn't it nice to see so many female Bayesians? They must work hard to do Bayesian statistics as well as their cleaning, washing and cooking. Perhaps if more of them gave the invited papers we'd have some better talks.

MC. So what did you like most about Merlise Clyde's paper, Tom?

Bayes. Well, I thought it was really cleaver how she pretended that the important question was how to compute model averages. So nobody noticed that the real question is whether it makes any sense in the first place.

MC. Well Tom, our time is running out. It's been a great pleasure to have you here. I think you have one last piece of advice that you want to give all the bright young Bayesians?

Bayes. Yes indeed, my son. [Give paper]

MC. [Reading + OHP] Advice to young Bayesians
 ... you'll have time for lots of fun with your MCMC.

Bayes. And who cares if it doesn't converge? You can still get the papers published because nobody's going to check your computations, are they?

MC. Ladies and Gentlemen, some words of wisdom from the Late, great Reverend Thomas Bayes. Take a bow, Tom!

Bow and Exit.

Bayesian Songbook

Brad Carlin is maintaining an archive of "Bayesian" songs performed at this and past year's cabaret nights at the Valencia meetings. The archive is located at:

http://www.biostat.umn.edu/~brad/music.html

Future Newsletters

A new editor of the Newsletter is being selected. If you have ideas for future newsletters please send then to:

Mike Evans
Dept. of Statistics
University of Toronto
Toronto, Ont. M5S 3G3
Canada

He will ensure that these are passed on to the new editor.

E.T. Jaynes Obituary and Bibliography

Edwin Thompson Jaynes
July 5, 1922 -- April 30, 1998

G. Larry Bretthorst
Dept. of Chemistry
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St. Louis MO 63130

On July 5th, 1922 Edwin Thompson Jaynes Jr. was born in Waterloo, Iowa to Ethyl and Edwin Jaynes. At the time the Jaynes lived near Cedar Falls, Iowa. Ed had two sisters, and an older brother. His father, a surgeon, practiced in Waterloo. By 1922 standards his family was fairly well off. However, his father died when Ed was very young, leaving his mother to care for four small children. Consequently, the Jaynes family moved to Parkersburg, Iowa where Ethyl's parents lived.

Ed grew up around Parkersburg. His first word was ``kitty'' which he uttered when he was seven months old. He took his first step at 13 months. He called his mother ``Ma.'' His family did have some fine furniture, linen, silverware, a Knabe grand piano, a classical music collection, and a large library, including the Harvard Classics, housed in elegant glass-front mahogany bookcases – things left over from when his father was alive -- but no money. Their only source of income was from renting half of the house. They had to grow most of their own food. Ed Jaynes has noted that his grandfather had to help them out financially many times [5].

The presence of the piano and library must have exerted a great influence on Ed, because he considered a career as a concert pianist. At his death he had a Bosendorfer grand piano in his home valued at approximately $100,000 dollars and hundreds of tapes of himself playing compositions from various classical composers. His library consisted of more than a thousand books, including statistics, physics, music, chemistry, biology, history, and philosophy.

Ed left Parkersburg in 1938 to enter Cornell College in Mount Vernon, Iowa. He returned to Parkersburg occasionally to visit his mother and grandmother. Interestingly, his mother kept his grades from Cornell College. In his first semester he received a B in English, an A in mathematics, a B in German, and a B in chemistry. By the second semester he was doing better, receiving all A's except for a B in mathematics. By the end of his second year his grades were straight A's. That continued for the third and fourth year, with one exception. He received a C in philosophy. He finished his undergraduate schooling in 1942 receiving a B.A. in physics.

During the time he was attending Cornell College he supported himself by working and by loans from the Louise Foote Foundation. He noted with pride that these loans were repaid on time and that ``my entire college education cost my mother a total of $25; one winter she bought me an overcoat'' [5].

Between his junior and senior year, he worked at the Warner Institute with Drs. Gustav Martin and Marvin R. Thompson. After receiving his B.A. he intended to return to the Warner Institute for another summer, but his plans changed because of the war. From 1942 to 1944 he worked for the Sperry Gyroscope Company on Long Island helping to develop Doppler radar.

At the end of 1944, he became Ensign Jaynes and worked at the Anacostia Naval Research Lab in Washington D.C. developing microwave systems. During his stay in the Navy he spent some time on Guam. When he was discharged in 1946, he was a lieutenant (j.g.). There are two documents written by Ensign Jaynes: the first is a series of 9 lectures on solving circuit problems using Laplace and Fourier transforms [1]; the second, is titled ``Theory of Microwave Coupling Systems'' [2]. These two documents constitute the earliest known professional writings of Ed Jaynes.

Jaynes left the Navy in 1946 and headed for California. In the summer of 1946 he worked in the W. W. Hansen Laboratories of Physics at Stanford on the design of the first linear electron accelerator. At the end of the summer, he enrolled at the University of California at Berkeley as a student of J. R. Oppenheimer.
In September of 1947, Oppenheimer left California and went to Princeton. Oppenheimer wrote letters of recommendation for three of his students in an effort to get them into Princeton. One of these students was Ed Jaynes, who became a graduate student at Princeton in 1947. As it turned out, all of the students that followed Oppenheimer to Princeton eventually changed advisors. Jaynes gave his reasons for making this change in ``Disturbing The Memory'' [4] he says

"But, as this writer learned from attending a year of Oppy's lectures (1946--47)
at Berkeley, and eagerly studying his printed and spoken words for several years thereafter, Oppy would never countenance any retreat from the Copenhagen position, of the kind advocated by Schrodinger and Einstein. He derived some great emotional satisfaction from just those elements of mysticism that Schrodinger and Einstein had deplored, and always wanted to make the world still more mystical, and less rational.

This desire was expressed strongly in his 1955 BBC Reith lectures (of which I still have some cherished tape recordings which recall his style of delivery at its best). Some have seen this as a fine humanist trait. I saw it increasingly as an anomaly~---~a basically anti--scientific attitude in a person posing as a scientist~---~that explains so much of the contradictions in his character.

As a more practical matter, it presented me with a problem in carrying out my plan to write a thesis under Oppy's supervision, quite aside from the fact that his travel and other activities made it so hard to see him. Mathematically, the Feynman electromagnetic propagator made no use of those superfluous degrees of freedom; it was equally well a Green's function for an unquantized EM field. So I wanted to reformulate electrodynamics from the ground up without using field quantization. The physical picture would be very different; but since the successful Feynman rules used so little of that physical picture anyway, I did not think that the physical predictions would be appreciably different; at least, if the idea was wrong, I wanted to understand in detail why it was wrong.

If this meant standing in contradiction with the Copenhagen interpretation, so be it; I would be delighted to see it gone anyway, for the same reason that Einstein and Schrodinger would. But I sensed that Oppy would never tolerate a grain of this; he would crush me like an eggshell if I dared to express a word of such subversive ideas. I could do a thesis with Oppy only if it was his thesis, not mine."

Eugene Wigner became Ed's thesis advisor in 1948.

His dissertation was a calculation of the electrical and magnetic properties of ferroelectric materials. Ferroelectric materials are crystalline substances which have a permanent electric polarization (an electric dipole moment per unit volume) that can be reversed by an electric field. His dissertation ``Ferroelectricity'' was finished in 1950 and he received his Ph.D. in physics. He published his first paper in 1950 while still at Princeton. It was titled ``The Displacement of Oxygen in BaTiO3'' [1]. This paper is essentially a one page summary of some of his thesis results. The paper is so short that it does not begin to hint at the amount of work and original thought that went into his thesis calculations. Joel Snow, one of Jaynes' early graduate students, refers to ``Ferroelectricity'' as a ``*tour de force*''.[1] Jaynes' thesis was extensively modified and later

[1] Snow, Joel A., ``Recollections of an Independent Thinker,'' in *Probability & Physics: Essays in Honor of Edwin T. Jaynes*, W.T. Grandy, Jr. and P.W. Millonni (Eds.), Cambridge University Press, Great Britain,

published by the Princeton University Press in 1953 [3] in the series *Investigations In Physics*. It was vol. I of this prestigious series. *Investigations In Physics* has featured many famous authors, including John Von Neumann, Eugene Wigner, and Eugene Feenberg.

After finishing his degree, Jaynes returned to Stanford in 1950 as an Associate Professor. He stayed through 1960. He was the only one of Oppenheimer's ex-students to get a job at a university. In his early work Jaynes was both theoretician and experimentalist. For example, his fourth paper was on the observation of a paramagnetic resonance in a single crystal of barium titanate [5], essentially an experimental paper. His second paper, on the concept and measurement of the impedance in periodically loaded wave guides [2], had both theoretical and experimental aspects. Jaynes continued to maintain an active research laboratory well into the 70's (many years after moving to St. Louis). Indeed, among his papers there was a copy of the Sunday magazine supplement of the St. Louis Globe-Democrat dated May 30, 1967 containing a photograph of Ed Jaynes in his laboratory in Crow Hall on the Washington University campus. The photograph shows him working with a high energy laser. During this period his students were testing some of the predictions of neoclassical and quantum theory.

While he was an Associate Professor at Stanford he also supported himself consulting with Varian Associates, the U.S. Army Corp of Engineers, and the University of California at Livermore. While consulting he wrote a number of reports for both Varian and the U.S. Army. Many of the U.S. Army reports still survive, but are not available for general release; a condition that will change shortly. Two of the reports done for Varian still survive, but are only available from the main Varian corporate library. Varian, at that time, was a young upstart company that could not afford to pay Jaynes in cash, so they paid him in stock. Additionally, Jaynes' records indicate that he continued to buy Varian stock throughout most of this period. At the time of his death this stock constituted about one fourth of Jaynes' total wealth.

Prior to 1957 Jaynes published a total of 7 articles [1, 2, 4-8]. These articles essentially grew out of his thesis work. However, his interests were varied as illustrated by the fact that these 7 papers covered such diverse research areas as solid state, classical electrodynamics, electron spin resonance, and nuclear magnetic resonance. Yet these papers are all related, they are all applications of classical electrodynamics to real physical problems. Jaynes had essentially four different areas of research: his first could be called applied classical electrodynamics; his second, information theory (entropy as a measure of information); his third, probability theory; and finally, semiclassical and neoclassical radiation theory.

During the years preceding 1957, Jaynes was preparing a set of lecture notes on probability theory. This material eventually was presented to the Field Research Laboratory of the Socony-Mobil Oil Company. This group in turn published, at least internally, a collection of five of these lecture notes [3]. Jaynes did try to publish the first of these lectures, ``How Does The Brain Do Plausible Reasoning,'' in 1960. However, this work was also rejected by the referee and Jaynes eventually gave up on publishing it. It was later rediscovered in the Stanford Microwave Laboratory library and, with Jaynes' permission, it was published in 1988 [62]; some 28 years after Jaynes first tried to publish it.

In 1957 Jaynes published his first articles in information theory, ``Information Theory and Statistical Mechanics,'' [9, 10]. In these two articles Jaynes reformulated statistical mechanics in terms of probability distributions derived by the use of the principle of maximum entropy. This reformulation of the theory simplified the mathematics, allowed for fundamental extensions of the theory, and reinterpreted statistical mechanics as inference based on incomplete information. These articles were published over the objection of a reviewer. (Jaynes comments on this review in ``Where do we Stand on Maximum Entropy,'' [37]). Jaynes kept that review framed and hanging on the wall of his office for more than 40 years.

The two 1957 articles, by themselves, would have been a career for most scientists; but Jaynes was far from finished. In the three years he remained at Stanford he published articles on wave guides [11, 14], relativity [12], information theory [13], masers [15] and 50 others after moving to Washington University in St. Louis.

In the years immediately preceding his departure from Stanford (1960) he was becoming increasingly dissatisfied with the *publish* or *perish* mentality plaguing Stanford, a condition he talked about in ``Backward Look to the Future'' [73]. So in 1960 he packed his belongings, sold his house, and moved to St. Louis, Missouri where he joined the physics faculty of Washington University.

1993.

Upon arriving in St. Louis, Jaynes set out on his remaining research interest, reformulating quantum electrodynamics to avoid quantization of the electromagnetic field. Jaynes published his first paper on this subject in 1963 with Fred Cummings. It was titled ``Comparison of Quantum and Semiclassical Radiation Theory with Application to the Beam Maser'' [18]. Jaynes continued to publish articles on both semiclassical and neoclassical radiation theory more or less continuously until he retired [18, 25, 26, 31, 34, 35, 39, 44]. However, much of this research is in the theses of his graduate students and has never been published in the open literature.

While his graduate students were working on semiclassical and neoclassical radiation theory, he was continuing with his other research interests. For example, in statistical mechanics he published 14 articles from 1960 onward. In probability theory, especially during the 80's, he published 21 articles. These articles addressed fundamental questions within these theories and often extended them to new application areas. Many of these articles are published in proceedings volumes. It was commonplace for mainstream journals to reject his manuscripts. Consequently, he often had to wait many years to respond in print to a critic.

In 1982 Jaynes took a two year sabbatical. He spent the first year at the University of Wyoming as an Adjunct Professor. While there he taught statistics, gave a few colloquia, generally renewed old friendships, enjoyed himself, thought, and wrote. Ray Smith told me that he, his son, and Gary Erickson took Jaynes camping in the Snowy Mountains. Apparently Jaynes enjoyed this experience so much that when he returned to St. Louis he went out and bought a tent and sleeping bag in the hopes of going camping again some day.

The second year of his sabbatical was spent as a Fellow at St. John's College in Cambridge, England. The time Jaynes spent at St. John's College was the highlight of his life. Had it been possible, he would have stayed. During the time at Cambridge he attended the weekly meetings John Skilling had with his graduate students. He wrote a number of papers related to the discussions that were going on at these meetings; ``Monkeys Kangaroos and *N*'' being the most notable of these [57]. He wandered the campus thinking about the history and magnitude of human accomplishments that are associated with Cambridge. He mentioned spending parts of several weeks trying to find the tomb of Rev. Thomas Bayes. He succeeded at this, because in his possessions were a number of pictures of Bayes' tomb.

Jaynes retired in 1992 after a long and productive career. Jaynes' contributions to science were of the highest caliber. His work in reformulating statistical mechanics has illuminated the foundations of that theory and enabled extensions to non-equilibrium systems. His dedication to rooting out contradictions in quantum mechanics is legendary. He must have single-handedly sparked more debate in quantum mechanics than any other person in the last 50 years. The verdict on his neoclassical radiation theory is still not in, and may not be for many more years. It may yet prove to be a better description of nature than quantum electrodynamics. He also helped take an interpretation of probability theory from being virtually unknown to a healthy research area that is being applied daily in economics, biology, physics, nuclear magnetic resonance and many other disciplines. His writing helped to clarify the foundations of probability theory in a way never achieved before. He wrote profusely, in a warm and friendly way that enabled one to see complex points as if they were intuitively obvious. He spoke as he wrote. When he criticized someone's work, he always stuck to the facts; he never reverted to name calling. His friendship was hard to earn, and hard to keep, for he had little tolerance for incompetence. He would undoubtedly be uncomfortable with all of the attention being lavished on him now that he is dead.

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