RM-691
A History of the Department of Statistics and Probability Michigan State University*
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The Agricultural College of the State of Michigan was founded in 1855. It became a land-grant institution under the Morrill Act of 1862 and reached university standing in 1955. The Department of Statistics was formed in 1955 around five faculty transferred from the Department of Mathematics. It was charged with responsibility for teaching statistics courses, providing statistical consulting, and for providing a center for routine desk calculations arising from statistical problems. On November 1, 1965, the department was renamed Statistics and Probability, a unique name that reflects the department's commitment to both probability and statistics.

There were five charter members of the Department of Statistics. W. Dowell Baten (PhD, University of Michigan, 1929) came to MSU as an Associate Professor in 1936 and had a partial appointment in the Agricultural Experiment Station. Leo Katz (PhD, University of Michigan, 1946) joined in 1946; Ingram Olkin (PhD, University of North Carolina, 1951) joined in 1951; Kenneth Arnold (PhD, MIT, 1941) joined as an Associate Professor in 1952; and James Hannan (PhD, University of North Carolina, 1953) joined in 1953.

In the meantime, the department has granted 157 PhD's and over 760 master's degrees. In 2010, the tenure track faculty positions numbered 23.75 full-time equivalent positions (FTE's) and over 20,000 semester credits were earned in courses listed by the department.

This history is organized into seven sections. Section 1 describes the genesis of the department in some detail. Section 2 lists some of its better known past faculty and visitors. Section 3 is a chronology of its chairpersons. Section 4 tracks growth in terms of numbers of tenure track positions, degrees awarded, and student enrollments leading to current faculty (Appendix A) and programs. Section 5 lists some of the graduates of the department's PhD program. Section 6 gives the evolution of statistical consulting in the department. Section 7 includes what we believe are interesting anecdotes from the attempted hiring of Jerzy Neyman to the meeting of train and automobile carrying Professors Martin Fox and Herman Rubin. Appendix B lists some of the books authored or co-authored by faculty.

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*A shorter version of the history will appear as a chapter in the book Strength in Numbers: The Rising of Academic Statistics Departments in the U. S., A. Agresti and X. Meng, Editors. Springer, NY.

*Gilliland and Stapleton are professor and professor emeritus, respectively. The authors thank their colleagues for many useful ideas and facts and Cathy Sparks for her research of department records to develop statistical information. Special thanks to the editors and to Bill Harkness and Ingram Olkin.

1 Genesis and the Early Years

The Department of Statistics and Probability started with a recommendation from an Administrative Group in 1955 that included J. Sutherland Frame, Head of the Department of Mathematics. On May 24, 1955 it came forth with this recommendation to the Board of Trustees:

> "It is recommended that a separate department of statistics, to include a statistical consulting service, be formed in the Division of Mathematical and Physical Sciences of the School of Science and Arts at Michigan State College, effective 1 July 1955; and that an appropriate budget be provided for it".

The Group's report included a budget estimate for this new department and commented that five members of the Department of Mathematics would be transferred to the new unit, written "transferred to statistics teaching and consulting service."

The duties for the new unit were listed: "1. To teach the statistics courses now taught in the Mathematics Department. 2. To provide a statistical consulting service on a campus-wide basis for staff and graduate students working on problems involving statistics. 3. To provide a center for a limited amount of routine desk calculating arising from statistical problems, and carried out by persons who might be trained by the Statistics Department and employed on the labor payroll with funds supplied by departments or individuals using the service. Eventually it may be better to transfer this aspect to another administrative unit".

The records of the Board of Trustees meeting of June 17, 1955 contain this proposal to the Board:

> "Upon the recommendation of the Administrative Group, it is proposed to create a separate Department of Statistics to include a statistical consulting service in the Division of Mathematical and Physical Sciences, effective July 1, 1955. The total cost for the 1955-56 fiscal year will be $32,800 for staff, supplies, and material, and this item is included in the tentative budget".

Perhaps the reader will find the rationale for the new department unremarkable. In May 1989 one of the co-authors sought more details and recorded notes of a discussion with Professor Emeritus J. Sutherland Frame, who served as Head of Mathematics in the 1940's and 1950's and as the Acting Head of the Department of Statistics for 1955-56. Professor Frame mentioned these events and facts pertaining to the period leading up to the creation of the Department of Statistics: 1. There was much demand for statistics courses at an elementary level. 2. Mathematicians were not interested in teaching these courses or in doing consulting as needed about campus. 3. Statisticians were hired and their salary scale was higher than that of the mathematicians. 4. Those that consulted were given one fewer course to teach. Loads at that time were 12-13 hours per quarter, 3 or 4 courses.

Professor Frame indicated that these circumstances had led to friction and need for a separate department. He mentioned that all faculty in the Department of Statistics were to be given one fewer course to teach each term than their colleagues in the Department of Mathematics. This difference existed for several years after 1955 until the faculty in the Department of Mathematics had teaching loads reduced.

Leo Katz was one of the five faculty transferred from the Department of Mathematics and certainly was the driving force in creating the department at a time when there were relatively few such departments in the United States. Katz had a close relationship with faculty in Economics and Psychology, and those departments supported his efforts. Following the transition, he became the first chair of the department. He attended national and international meetings and was able to attract many distinguished visitors to the department in the 1950's and 1960's for talks or longer stays including Fisher, Renyi, Revesz, and Mahalanobis.

Perhaps readers will find this James Hannan account of the visit from Sir Ronald Fisher in fall 1957 both interesting and informative (*A Conversation with James Hannan*, Statistical Science, **25**, No. 1, 126-144, D. Gilliland and R. V. Ramamoorthi). The interplay between Fisher and the fledgling department shows that faculty in the new department were most interested in the mathematical aspects of statistics. Here Gilliland is asking the questions. Q. We have heard the Sir Ronald Fisher visited Michigan State University in the late 1950's and gave a series of talks. What was that like? A. He gave a series of lectures. He had a new book (recent at that time) and wanted to talk about the book the way he thought about the book and, Kraft (Charles), in particular, was more interested in mathematical content. We had a conflict there. Kraft had definite theorems in mind, and he could never get anything like that out of Fisher. Q. So Kraft spoke up regularly during the lectures? A. Well, he didn't badger him very much, but I knew what he had in mind. He worked with LeCam and worked at that level. Fisher was still back into thinking that everything he did was more important than anything anyone else did. I think that Fisher had to miss a few dates and then he came back. He threw away his notes and proceeded to tell us what he thought of the kind of statistics we were doing. He said the *Annals* should be bundled up and deposited into "yon river," the Red Cedar.

The 1950's and 1960's were exciting years as the new department developed. In the late 60's and early 70's the department had up to 12 NSF grants per year for American doctoral students. There has been no similar support since. Early in the department's history, a rotating colloquium, based on the Berkeley-Stanford model, was held once a quarter with Wayne State University and the University of Michigan. Joseph Gani began the Journal of Applied Probability at MSU in 1964 before he moved to Manchester. The department record for largest lecture was set in about 1965 for the business statistics class STT 315 (575 students). David Blackwell was awarded an Honorary Doctor of Science degree at Michigan State University in 1969. John Kinney was a highly respected professor in mathematics who spent time in the department 1965 – 76. He would often

speak in cryptic terms, and, with his back to the blackboard, would write on the blackboard.

Michael Waterman, now a professor at the University of Southern California, was Kinney's student in Statistics and Probability (PhD, 1969). His thesis is titled *Some Ergodic Properties of Multi-Dimensional F-Expansions*. From the USC website, "Professor Waterman works in the area of computational biology, concentrating on the creation and application of mathematics, statistics and computer science to molecular biology, particularly to DNA, RNA and protein sequence data. He is the co-developer of the Smith-Waterman algorithm for sequence comparison and of the Lander-Waterman formula for physical mapping". Waterman was inducted into the National Academy of Sciences in April, 2001. He is shown in Figure 1 signing the Registry of Membership during the induction ceremony.

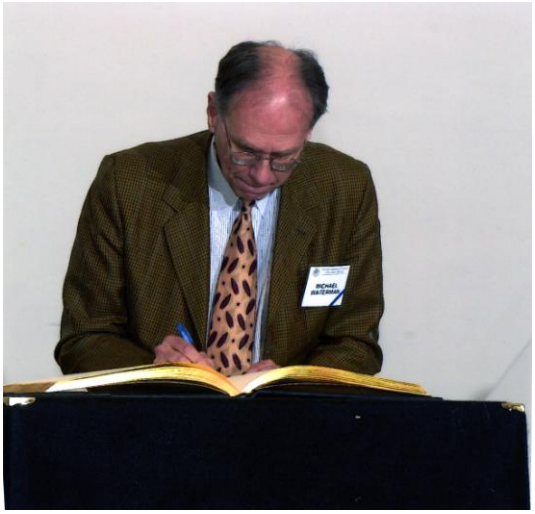

Figure 1. Waterman Induction into the National Academy of Sciences.

2 Past Faculty and Visitors

The department has had many prominent faculty who spent some parts but not the ends of their careers in the department. Here is a partial list with their years in the department given: Peter Brockwell (1971-73), Stuart Either (1975-86), Joseph Gardiner (1978-08), Gopinath Kallianpur (1956-64), John Kinney (1965-76), Ingram Olkin (1955-60), Herman Rubin (1959-68), Robert Staudte (1968-74), and Joel Zinn (1977-83). Visitors who spent at least a year in total include Sergei Chobanyan, Joseph Gani, Chris Heyde, Ildar Ibragimov, Rafail Khasminskii, Andrzej Makagon, Desmond Nicholls, Ferdinand Osterreicher, P. K. Pathak, N. Portenko, N. U. Prabhu, Alfred Renyi, Pal Revesz, and Jayaram Sethuraman.

3 Chairpersons

Departmental Bylaws adopted in the 1960's call for the election of a chairperson every three years with the result going to the Dean of the College of Natural Science as a recommendation. Every once in a while an incumbent chair was willing to continue. The longest serving chairperson was Habib Salehi (1989-2005). He positioned the department well in the transition from the quarter system to the semester system in 1992 and oversaw a rapid growth in enrollments in statistics courses. The chairpersons were technically "heads" until fall 1963. The list of chairs follows with A denoting "Acting."

Table 1. Chairpersons of Statistics and Probability.

Sutherland Frame 1955-56 (A)	Leo Katz 1956-61 and 1962-63
Kenneth Arnold 1961-62 (A) and 1963-67	Martin Fox 1966 Fall (A)
James Stapleton 1967-69 (A) and 1969-75	V. Mandrekar 1975-81 and 1982-85
Hira Koul 1981-82 (A)	Dennis Gilliland 1985-89
Habib Salehi 1989-2005	Vincent Melfi 2005-06 (A)
Mark Meerschaert 2006-09	Hira Koul 2009 –

4 Faculty Positions, Degrees Awarded, Enrollments and Curricula

Faculty. The department grew slowly in the period from 1970 to 2000, moving from about 13 FTE to 17 FTE tenure track faculty positions. By 2010 the number had grown to 23.75 FTE. See Appendix A for a photograph and list of current tenure track faculty and professors emeriti. Also see Figure 2 below. This river graphic is patterned after the one that Professor W. J. Beal created on the wall of his laboratory to represent the origins of Michigan Agricultural College and the growth of the student body from 1855 to 1913 (*History of the Michigan Agricultural College* by W. J. Beal, MAC Press, East Lansing, MI, 1915). He used a scale of 6 inches to a year for length and 50 students to the inch for width. By 1913, the the river was about 30 feet long and the width at the mouth was about 2 feet, 9 inches. It would take a large laboratory to accommodate the extension of Beal's graphic to the year 2010 for MSU with the same scale. The river would be about 80 feet long and 78 feet 4 inches wide at the mouth!

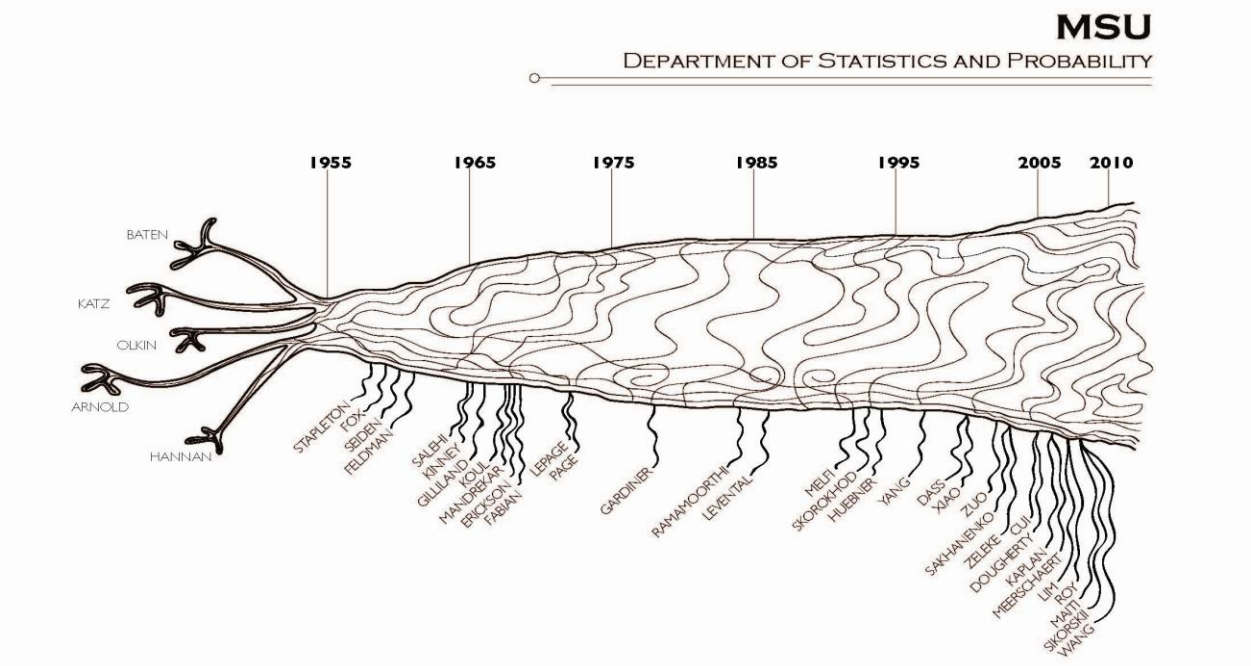

Figure 2. River Showing Entry of the Tenure Track Faculty Now at or Retired from MSU.[*] (Width of River is Proportional to Number of Tenure Track FTE Positions)

[*] Graphic by Jessica Crews, graphic designer, jlcrews25@yahoo.com.

The department has added six tenure track positions in the last ten years. Entry level faculty positions have been added with the appointments of new chairs, following department reviews, and to meet the increasing demand for collaborative research and service courses. In the recent past, faculty positions have been targeted at specific research areas and collaborations. Mark Meerschaert came as full professor and chair in 2006 and Tapabrata Maiti joined as full professor in 2008.

Joseph Gardiner, after joining the department in 1978, gradually moved to the Department of Epidemiology in MSU's College of Human Medicine and is now fulltime in that unit. In addition to heavy research and administrative responsibilities, he has served as a thesis advisor for nine doctoral students of the Department of Statistics and Probability, most of whom have taken positions in the drug or medical industry.

Research was strengthened with arrival of Academician Anatoli Skorokhod in 1993. With sadness we note that he passed away on January 3, 2011. According to Wikipedia, Skorokhod was the author of 450 scientific works, and was a member of the American Academy of Arts and Sciences.

Mandrekar and Koul have been honored by the university with distinguished faculty awards for their outstanding research. The three leading PhD thesis advisors to date, producing 66.0 of the total of 157 theses, are Koul 27, Mandrekar 20.5 and Hannan 18.5. Mandrekar has also directed or co-directed students in other units, including mathematics. Salehi has had a 50% appointment in mathematics since joining MSU in 1965. Not only did he direct or co-direct many PhD students in both departments, but he served on virtually all PhD committees in S&P.

The department has been enriched for most of the last 10 summers from visits by Professor Ildar Ibragimov of the University of St. Petersburg. Ibragimov gives special topics courses for doctoral students.

Examples of professional service include the department's leadership in establishing the MidMichigan Chapter of the ASA in 1985. The inaugural address was given by Paul Meier of the University of Chicago. In 1990 Raoul LePage organized and chaired Interface '90 together with a special meeting on the bootstrap method at Michigan State University sponsored by the Institute of Mathematical Statistics. *Statistics and Probability Letters*, published by North Holland, has offices in the department. Editors-in-Chief are Somnath Datta, 1988 department PhD graduate, now at the University of Louisville, and Hira Koul, currently department chairperson.

Undergraduate Program. The department has an undergraduate program that graduates fewer than 10 per year. A number of outstanding undergraduates took advantage of graduate courses and went on to earn PhD's at other institutions. These include D. van Dyk (PhD 1995 at the University of Chicago, soon to join Imperial College, London), T. Graves (PhD 1995 at Stanford, now at Los Alamos National Laboratory), S. Lalley (PhD 1981 at Stanford, now at the University of Chicago), Karl Rohe (PhD 2011 at UC –

Berkeley, soon to join University of Wisconsin) and G. Spaniolo (PhD 2000 at University of North Carolina, now at Genentech).

Doctoral Program. From 1955 through 2010, 157 PhD's were awarded with 4 in the 1950's, 21 in the 1960's, 28 in the 1970's, 34 in the 1980's, 34 in the 1990's, and 36 in the 2000's including 2010. See Figure 3. In addition, faculty in the department have served as major professors for PhD graduates in mathematics or engineering.

Until the last several years, the course curriculum has been almost exclusively devoted to theory, either on statistical inference or on probability. The first year program includes two one semester courses on measure theory based probability and another two on "Lehmann type" statistical inference. The prelims, given at the beginning of the second year, have been, and still are, based on these courses. Doctoral students are now expected to take courses on applications, beginning with a linear models course. Recently a course on computations has been added. Some thought is being given now to giving students a choice of two prelims from the three areas, probability, inference, and applications.

Perhaps the most significant changes in graduate enrollment over the last 29 years have involved Chinese students. Before 1982 a handful of Chinese students had come from Taiwan, just three for PhD's. The department's first mainland Chinese PhD graduate, Song Yang in 1988, has been followed by 37 others. Since 2001, 25 of the 32 PhD graduates have come from China. To date, 24 have remained in the US after graduation with 1 going to Canada. The big change among MS students began in 2006 when students bringing funds from China began study here, almost always for the MS degree. Currently the department has about 50 such students.

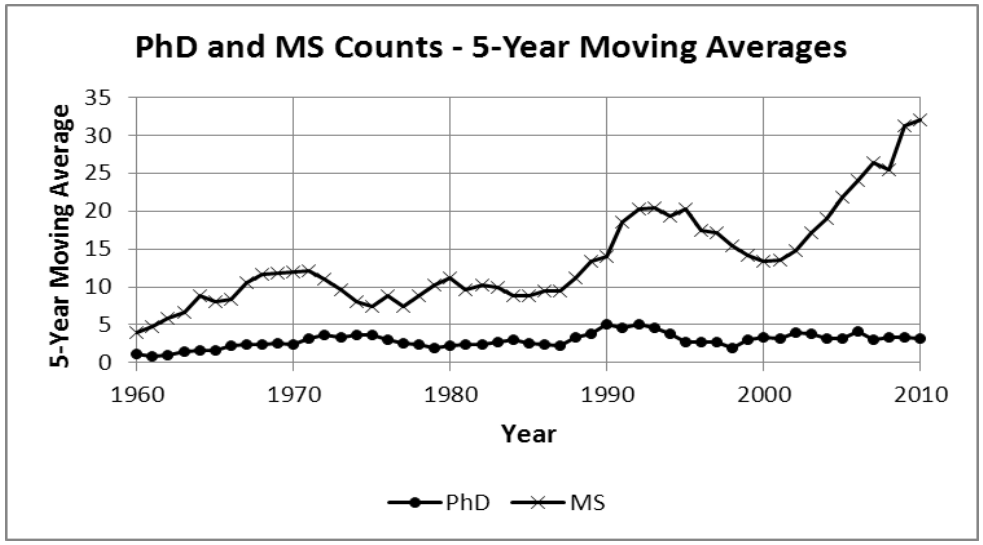

Figure 3. Counts of PhD and MS Graduates.*

*The latest dip in 5 year averages of numbers of MS degrees seems to have been caused by the Asian economic crisis of 1997- 8, bringing about significant decreases in the numbers newly enrolling in the Falls of 1997-2000 from Taiwan and South Korea.

Masters' Programs. Over the years, the department has made its Masters' programs more accessible to a larger body of graduate students by removing certain mathematics requirements. These changes, the development of dual-master's programs, and the increased demand for the MS coming mainly from international students have led to an increase in interest and number of degrees granted (see Figure 3).

Students admitted to the Master's program may have studied as little as one year of calculus plus a linear algebra course. That has changed little over the 55 years. There has seemed to be little relationship between a student's prior mathematical education and performance. Students have been expected to take two semesters on probability and inference (STT 861-2), plus courses on ε-δ analysis and linear algebra. Recently the math course requirement was dropped. Beyond these four courses, students were able to take any 800-level courses they wished, though most took courses on linear methods, sampling, time series, computing and multivariate methods. All MS students have been required to pass an exam over STT 861-2 given during their second year of study.

The department is proud of the achievements of its MS graduates. It is feasible to list only a few of them. Examples are D. DuLaney, E. Nagy, N. Rudomino and M. Yao in actuarial science, G. Dilloway and R. Nero in business, S. Dorinski in government, and J. Samarias, who headed the technical side of the NASDAQ. Many of the MS graduates earned PhD's in other programs including statistics and biostatistics at other institutions.

Teaching. A major change occurred in 1992 that greatly affected the growth of the department. That year the university changed from the quarter system to the semester system, decided by a university faculty vote of 400 to 399. The authors, who voted "yes", felt important for a moment. Chairperson Salehi positioned the department well in the transition. For example, a new elementary statistics course with a computer component was introduced. Roy Erickson was its first instructor. Presently, students earn over 4,000 semester credits per year in the course. Immediately prior to the conversion, the quarter credits earned in the department's courses amounted to the equivalent of about 10,000 semester credits per year. In calendar year 2010, the total number of semester credits earned through the department was more than 20,000 semester credits.

Teaching loads in the department are nominally three courses per year though some faculty have lighter teaching loads accompanying research and/or administrative responsibilities. There has been increasing demand for service courses in statistics. This is due to an emerging recognition of the importance of the subject to many disciplines and the fact that the university decided to allow some courses in pre-calculus probability and statistics to partially satisfy a university mathematics graduation requirement.

Administration. The Advisory Committee for the department includes all tenure track faculty plus two elected students. The committee determines curriculum, administers the prelim exams, conducts the election of chairpersons, and, in general, advises the chairperson. The subset of the AC consisting of associate and full professors advises the chairperson on personnel decisions.

Since 1975 the department has designated faculty as graduate directors or co-directors, with responsibilities for (i) admissions of graduate students and (ii) graduate assistant assignments. Professors Hannan (10 years), Salehi, Stapleton (20 years), Ramamoorthi, Yang, and (now) Maiti have held the position. For the last five years, some responsibility has been split off with Professors Dass and Levental administering (ii).

The department has three fulltime support staff members. Cathy Sparks has served as the Administrative Assistant to the Chair since 1983. Sue Watson joined the department in 2006 after previously serving the Department of Mathematics. Erik Segur has since 2007 been the expert who addresses the information technology and computing needs of the department.

5 Some Graduates of the PhD Program

We list 32 of the 157 graduates of the doctoral program, organized by decade of completion of their degree. Choosing whom to include was a difficult task. Their last or current affiliation is indicated. There were 4 graduates in the 1950's including W. Harkness (Penn State). There were 21 graduates in the 1960's including S. D. Chatterji (École Polytechnique Fédérale de Lausanne, Switzerland), V. Mandrekar (Michigan State), A. Oaten (UC – Santa Barbara), B.L.S.P. Rao (Indian Statistical Institute), J. Van Ryzin (deceased, chair at Columbia), and M. Waterman (Southern California, member of the National Academy of Sciences). There were 28 graduates in the 1970's including J. Boyer (Kansas State), J. Boyett (St. Jude Children's Research Hospital), G. Hamedani (Marquette), D. Ruppert (Cornell), V. Susarla (deceased, SUNY-Binghamton), and S. Vardeman (Iowa State). There were 34 graduates in the 1980's including S. Datta (Louisville), A. Godbole (Michigan Tech), K. Gunawardena (University of Wisconsin – Oshkosh), R. Karunamuni (University of Alberta), S. N. Lahiri (Texas A&M), M. Merkle (University of Belgrade), M. Pourahmadi (Texas A&M), A. Schick (SUNY-Binghamton), A. R. Soltani (Kuwait University), and T. N. Sriram (Georgia). There were 34 graduates in the 1990's including L. Chen (American Express), M. Geraldes (Bristol-Myers Squibb), K. Mukherjee (Lancaster, England), K. Podgorski (Lund University, Sweden), S. Rajagopalan (General Electric), and H. Zhang (Purdue). There were 36 graduates in the 2000's including J. Hannig (North Carolina), W. Song (Kansas State), and L. Wang (Georgia).

6 Statistical Consulting

The need for consulting was stated as a major reason for the creation of the Department of Statistics. At the outset, decisions to consult or not were left to the individual faculty and no formal consulting service was organized within the department. A Statistical Laboratory directed by Leo Katz did serve as an umbrella for outreach with a focus on grants, not campus-wide consulting. In the 1970's and 1980's a few individual faculty continued to push for and provide consulting while chairs asked for and sometimes received nonrecurring funds to support graduate students in consulting roles. In 1986 the

Statistical Consulting Service was created in the department, and soon after that support for the director came in the form of a one course reduction in teaching per year. The university eventually put funds into the recurring budget for one graduate assistantship dedicated to consulting; the college, graduate school and provost added non-recurring funds for one or two more graduate assistants. For most of nearly 20 years, the Statistical Consulting Service was directed or co-directed by Dennis Gilliland and Connie Page as demand for consulting and for support in grant proposal development increased greatly. In 2004, the MSU Foundation provided seed money to establish a centrally located and better funded consulting service. This led to the Center for Statistical Training and Consulting that is administratively housed in the Office of the Vice President for Research and Graduate Studies. The current director in not in Statistics and Probability, but many of the graduate assistants who provide consulting come from the unit and several faculty are on the Advisory Board.

The university did have and continues to have positions for statisticians in the College of Agriculture and Natural Resources with partial appointments for consulting in the Experiment Station. These individuals conduct basic research in statistics, provide vital support for research at the university, and teach courses in the Department of Statistics and Probability. Charles Cress (PhD, Iowa State University, 1966) was in the Department of Crop and Soil Sciences until 1993. Oliver Schabenberger (PhD, Virginia Tech, 1995, now at SAS, Cary, NC) filled the position until 1999 and Alexandra Kravchenko (PhD, University of Wyoming, 1997) currently serves. John Gill (PhD, Iowa State University, 1965) was in the Department of Animal Science until 1999. He was succeeded by Robert Tempelman (PhD, University of Wisconsin, 1999), who continues in that position.

7 Miscellany

1) In its early days, 1955-61, the department was housed in the "Math-Physics" Building (now the Psychology Building). The building then housed three departments. The departments grew along with the increase in MSU student enrollments from 15,000 in 1955 to 40,000 in 1970, necessitating a move to the basement of Berkey Hall, 1961-67, an unattractive location, but having large faculty offices. After Wells Hall, on the southern bank of the Red Cedar River, was completed in the Spring of 1967, the department was assigned to the 4th floor, and later in 1993 was allocated additional offices on the 5^{th} floor of the seven-story A wing. Currently a large addition to Wells Hall is being built to house English and other language departments.
2) The PhD exam structure in the 1950's clearly indicated the value that the new department put on mathematics. Bill Harkness had five exams: real analysis, complex variables, algebra, probability, and mathematical statistics.
3) Esther Seiden joined the faculty in 1960, retired in 1978, and now at age 103 resides in Jerusalem.
4) Pramod K. Pathak completed work on his PhD at the Indian Statistical Institute under the direction of Professors C. R. Rao and D. Basu in 1961 at the age of 20, probably an all-time record for youth. In 1962 he joined the MSU department as a research associate.

After a career as professor at the Universities of Illinois and New Mexico, he returned to MSU in 1998 as a visiting professor with wife, Dorothy, a professor of epidemiology.

5) The department hosted a summer meeting on inference in stochastic processes in 1963, led by G. Kallianpur. Professor Renyi visited the department and taught a course on random graphs.
6) While driving to Berkey Hall in about 1963 with fogged-up windows, the car driven by Martin Fox, accompanied by Herman Rubin, was hit by a train. Fortunately, the on-campus train, moving coal to the power station, was moving at 3 mph. The car, but not its occupants, was slightly damaged. The train survived.
7) Kriegspiel, "blind chess", was played at noon for several years in the 1960's, especially by Martin Fox and Dorian Feldman (both Berkeley grads), Herman Rubin and graduate student Chuck Conley. The change to 11:30, 12:40, and 1:50 classes ended that.
8) In the 1960's, the department had faculty with very strong personalities and opinions. The presence of Gani, Hannan, Kallianpur, Katz and Rubin in the halls and at faculty meetings and colloquia made life interesting.
9) The department explored the idea that Jerzy Neyman might be induced to join following "mandatory retirement" at Berkeley in the early 1970's. This led to a meeting with the provost, but not the desired result. The department's faculty at that time included four graduates of Berkeley (Esther Seiden, Martin Fox, Dorian Feldman, and Hira Koul).
10) In the early 1970's the department was provided with the funds for one "consulting assistantship". One of the students holding that assistantship was Bob Lovell, who wrote a number of "consulting reports", and then went on to work as a consulting statistician and program evaluation manager for the Michigan Department of Social Services. Following retirement, he rejoined the department as an instructor.
11) During the fall of 1971 a student held assistantships simultaneously at both MSU and Purdue, some 250 miles apart. He kept this a secret and commuted back and forth in an attempt to fulfill program and teaching requirements in both departments. He missed enough classes to raise suspicion and to become the topic of discussion at a chance meeting of Chairpersons Stapleton and Shanti Gupta. He lost the assistantships and left the programs.
12) Since 1978 the State of Michigan has used one- and two-stage sampling plans and decision rules designed by Gilliland and Stapleton for its determination of valid signature sufficiency for state-wide petition drives. Decisions have been made for 40 petitions containing about 15,000,000 signatures based on the investigation of some 35,000 sample signatures in total. In 32 cases, the decisions were made at the first stage of the two-stage plan based on the sample of 500 signatures.
13) The department has graduated three husband and wife pairs of PhD's: KLD and Chitra Gunawardena, John and Kim Kinateder, and George and Corina Sirbu.
14) Since 1985 Jim Stapleton has been running a unique "NCAA Basketball Tournament Contest" among MSU department members, past and present, requiring contestants to select a set A of teams, subject to certain rules with score G(A) = total number of games won by teams in A. The cost for a team is based on seed number with the cost function determined from the results of computer simulations and the fit of a logistic regression model. The contest has been adopted by Kansas State (where five MSU PhD graduates have held positions), conducted there by John Boyer, longtime chairman. Interested

departments may ask Stapleton. Interested units, academic and industrial, have adopted the contest from time to time.

15) Ken and Pauline Arnold, Dorian and Ann Feldman, and Hira and Shyama Koul have been particularly gracious hosts to many social gatherings over the years.
16) The department had a review in 1975 (outside members Ralph Bradley, Lucien LeCam, Ronald Pyke) and in 2001 (outside members Mary Ellen Bock, Thomas Kurtz, Larry Wasserman, Michael Waterman and Michael Wincek).
17) The generosity of faculty and graduates of the department is shown through gifts and established endowments that benefit the department and its missions. After the death of Professor Emeritus Vaclav Fabian in 2007, his wife Alena made a gift to the department enabling it to completely refurbish the department's colloquia-coffee room, now the "Fabian Room." More recently, Bettie Hannan established an endowment to provide for James Francis Hannan Visiting Scholars in Theoretical Statistics and Probability. Other endowments are the Norbert Wiener, the John Kinney Memorial, the Van Ryzin – Susarla Scholarship, the Czech Students, the William Harkness Teaching Awards, and the James and Alicia Stapleton Travel Fund for Graduate Students.
18) Recognition in the form of personal thanks from former students means a lot to the department. A call came to the department in December 2010 from a student wishing to thank Professor Katz for arranging credit that allowed her to graduate some 40 years earlier. It serves as a reminder of the lasting and memorable impact that a professor can have. About 10 years ago a master's degree graduate of 1969, originally from Taiwan, out of the blue, sent the department $10,000 in gratitude for her success.

APPENDIX A
2010 TENURE TRACK FACULTY

Current faculty with full or partial appointments in the department are listed below. The PhD granting institution, the year of the PhD, and the entry year into a tenure track position at MSU are given.

Yuehua Cui (Florida, 2005, 2005)	Sarat Dass (Purdue, 1998, 2000)
Daniel Dougherty[1] (North Carolina State, 2002, 2005)	Dennis Gilliland (Michigan State, 1966, 1966)
Marianne Huebner (Southern California, 1993, 1994)	Jennifer Kaplan[1] (U. of Texas, 2006, 2006)
Hira Koul (Berkeley, 1967, 1968) Chairperson	Raoul LePage (Minnesota, 1967, 1972)
Shlomo Levental (Wisconsin, 1986, 1986)	Chae Young Lim (Chicago, 2007, 2007)
Tapabrata Maiti (University of Kalyani, 1996, 2008)	V. Mandrekar (Michigan State, 1964, 1968)
Mark Meerschaert (Michigan, 1984, 2006)	Vince Melfi (Michigan, 1991, 1992) Assoc Chair
Connie Page (Michigan, 1972, 1972)	R. V. Ramamoorthi (ISI, 1981, 1984)
Parthanil Roy (Cornell, 2007, 2007)	Lyudmila Sakhanenko (New Mexico, 2002, 2003)
Habib Salehi[2] (Indiana, 1965, 1965)	Alla Sikorskii (Michigan State, 2000, 2008)
Anatoli Skorokhod (Moscow State, 1956, 1993)	Lifeng Wang (Minnesota, 2006, 2008)
Yimin Xiao (Ohio State, 1996, 2000)	Lijian Yang (North Carolina, 1995, 1997)
Aklilu Zeleke[1] (Temple, 1997, 2003)	Yijun Zuo (U. of Texas - Dallas, 1998, 2002)
Roy Erickson[3] (Michigan, 1968, 1968)	Dorian Feldman[3] (Berkeley, 1961, 1961)
James Stapleton[3] (Purdue, 1957, 1958)	Esther Seiden[3] (Berkeley, 1949, 1960)

[1] Less than 100% in the Department. [2] Joint appointment with the Department of Mathematics. [3] Emeritus

Seated from left to right are chairperson Koul and past chairpersons Melfi, Salehi, Gilliland, Mandrekar, Stapleton (E). Past chairperson Meerschaert is not pictured. Standing from left to right: Levental, Roy, Huebner, Lim, Wang, Sikorskii, Maiti, Kaplan, Feldman (E), Zuo, LePage, Sakhanenko, Dass, Page, Cui, Xiao, Dikong (V), Pathak (V), Sinha (V). Not pictured: Dougherty, Erickson (E), Ramamoorthi, Seiden (E), Skorokhod, Yang, Zeleke. E = emeritus, V = visitor

APPENDIX B
EXAMPLE BOOKS AUTHORED OR EDITED BY FACULTY

Parameter Estimation in Engineering and Science, J. V. Beck and **K. J. Arnold**, Wiley, NY, 1977.

Introduction to Probability and Mathematical Statistics, **Vaclav Fabian** and **James Hannan**, Wiley, NY, 1985.

Probability - the Mathematics of Uncertainty, **Dorian Feldman** and **Martin Fox**, Marcel Dekker, NY, 1991.

Sample Size Choice – Charts for Experiments with Linear Models, 2nd Edition, Robert E. Odeh and **Martin Fox**, Marcel Dekker, NY, 1991.

Experiences in Statistics, Preliminary Edition, **D. Gilliland**, Kendall-Hunt, 1990.

Weighted Empirical and Linear Models, **H. L. Koul**, Lecture Notes-Monograph Series, Vol. 21, Institute of Mathematical Statistics, Hayward, California. 1992.

Weighted Empirical Processes in Dynamic Nonlinear Models, 2nd Edition, **H. L. Koul**, Lecture Notes Series in Statistics, Vol. 166, Springer, New York, NY, 2002.

Proceedings of the Workshop on Analysis of Censored Data, edited by J. V. Deshpande and **H. L. Koul**, IMS Lecture Notes-Monograph Series, Vol. 27, Institute of Mathematical Statistics, Hayward, California, 1996.

Frontiers in Statistics: A Collection of Refereed Papers by World Renowned Statisticians in Honor of Peter Bickel's 65th birthday, edited by Jianqing Fan and **H. L. Koul**, Imperial College Press, 2006.

Silver Jubilee Issue of Statistics and Probability Letters to Celebrate 25th year of the Journal and Felicitate 70th birthday of the first Editor Richard Johnson, edited by M. Akritas, **H. L. Koul** and Anton Schick, July 2007.

Exploring the Limits of Bootstrap, edited by **Raoul LePage** and Lynne Billard, Wiley, NY, 1992.

Prediction Theory and Harmonic Analysis, The Pesi Masani Volume, edited by **V. Mandrekar** and **H. Salehi**, North-Holland, 1983.

Proceedings of the Norbert Wiener Centenary Congress 1994, Symposia in Mathematics, edited by **V. Mandrekar** and P. R. Masani, American Mathematics Society, 1997

Stochastic Differential Equations in Infinite Dimensions with Applications to Stochastic Partial Differential Equations, L. Gawarecki and **V. Mandrekar**, Springer, 2011.

Limit Distributions for Sums of Independent Random Vectors: Heavy Tails in Theory and Practice, **M. M. Meerschaert** and H.P. Scheffler, Wiley, NY, 2001.

Mathematical Modeling, 3rd Edition, **M. M. Meerschaert**, Academic Press, 2007. (4th Edition coming in 2012)

Recent Developments in Nonparametric Inference and Probability, edited by Jiayang Sun, Anirban DasGupta, **Vince Melfi**, and **Connie Page**, IMS Monograph Series, Vol 50, 2006.

Bayesian Nonparametrics, J. K. Ghosh and **R. V. Ramamoorthi**, Springer-Verlag, NY, 2003.

Random Perturbation Methods with Applications in Science and Engineering, **Anatoli Skorokhod**, Frank Hoppensteadt and **Habib Salehi**, Springer-Verlag, NY, 2002.

Linear Statistical Models, 2nd Edition, **J. Stapleton**, Wiley, NY, 2009.

Models for Probability and Statistical Inference, **J. Stapleton**, Wiley, NY, 2008.