# <u>NARAHARI UMANATH PRABHU</u>

1. Address (office): School of Operations Research

& Industrial Engineering

Cornell University, Rhodes Hall

Ithaca, NY 14853 Tel: 607-255-9132

(home): 123 Salem Drive

Ithaca, NY 14850 Tel: 607-257-3637

2. <u>Born</u>: April 25, 1924 at Calicut (Kerala, India)

Naturalized U.S. Citizen: November 16, 1972, Ithaca, New York

3. Family: Wife Sumi (married 1951), daughters Vasundhara (born 1952)

and Purnima (born 1954)

4. Education: B.A. (Honors) University of Madras, 1946 (pure and applied mathematics)

M.A. University of Bombay, 1950 (statistics)

M.Sc. University of Manchester, 1957 (mathematics)
Thesis: "Solution to Some Dam Problems"

5. <u>Scholarships</u>: 1941: Conolly Scholarship for topping the list of successful candidates in

Malabar District at the School Leaving Examination

1955: British Council Scholarship for research in England

6. <u>Professional Experience</u> (Starting with Present Position):

1994- Professor Emeritus, Cornell University, Ithaca, New York

1967-1994: Professor of Operations Research, Cornell University, Ithaca, New York

1965-1967: Associate Professor of Operations Research, Cornell University, Ithaca, New York

1964-1965: Associate Professor of Statistics, Michigan State University, East Lansing, Michigan

1961-1964: Reader in Mathematical Statistics, University of Western Australia, Nedlands,

Australia

1952-1961: Reader and Head of the Department of Statistics, Karnatak University, Dharwar

(Karnataka, India)

1950-1952: Lecturer in Mathematics and Statistics, Gauhati University, Gauhati (Assam, India)

1947-1948: Lecturer in Mathematics, Victoria Jubilee Technical Institute (Bombay University),

Bombay (Maharashtra, India)

1946-1947: Lecturer in Mathematics, Baroda College (Bombay University), Baroda (Gujerat, India)

### 7. Visiting Appointments:

1984 Jan.-June: Ga¨stforskare, Mathematics Institute, Uppsala University, Uppsala, Sweden

1981 May-July: Pinhas Naor Distinguished Fellow, Technion, Haifa, Israel

1979-1980: Visiting Professor: Department of Mathematics, University of Maryland,

College Park, Maryland

1978 June-Aug.: Visiting Professor: Department of Statistics, University of Melbourne,

Parkville, Australia

1973-1974: Visiting Professor: Mathematics Research Center, University of Wisconsin,

Madison, Wisconsin

1973 June: Visiting Professor: Technion - Israel Institute of Technology, Haifa, Israel

1970-1971: Visiting Professor: Mathematics Research Center, University of Wisconsin,

Madison, Wisconsin

1961 May: Visiting Professor: Indian Statistical Institute, Calcutta, India

1959 Mar.-June: Visiting Fellow: Department of Mathematics, The University of Western

Australia, Nedlands, Australia

## 8. Consulting:

April 1965: Sylvania Electronic Products, Inc., Waltham, Mass.

1976: Cornell WATSLINE Project (with D.C. Heath and D. Lampell)

August 1980: Bell Laboratories, West Long Branch, New Jersey

September 1999: M.Eng. Project on Transactions Network Modelling

### 9. Research Projects Directed/Participated:

1989: Co-Principal Investigator (with Robert L. Taylor): "Symposium on Applied

Probability - 1989," NSF Grant No. DMS-8906957/ONR Grant No. N00014-89-J-1830/APO Grant No. DAAL 03-89-G-0039

1986-1989: Program Coordinator for Statistics and Applied Probability, Mathematical

Sciences Institute, Cornell University

1983: Principal Investigator: "International Conference on Stochastic Processes and

Their Applications," NSF/AFOSR/ARO Grant No. MCS 82-12457

1976-1978: Principal Investigator: "Applied Stochastic Processes," National Science

Foundation Grant No. MCS 76-22987

1973-1976: Principal Investigator: "Applied Stochastic Processes," National Science Foundation Grant No. MPS 73-04437 Principal Investigator: "Applied Stochastic Processes," National Science 1971-1973: Foundation Grant No. GP 20832 1968-1970: Participated in "Analytical Methodology and Optimal Control in Urban Traffic Networks," U.S. Department of Transportation, FHA Contract FH-Il-6913 (Principal Investigator: Robert E. Bechhofer) Principal Investigator: "Stochastic Models for Hydrology," Cornell Water 1967-1968: Resources Research Center 10. <u>Supervision of Research</u>. I have directed the thesis work of the following candidates: 1994: Antonio Pacheco: Markov-Additive Processes arising in Storage Models for Communication Systems. Ph.D. Thesis, Cornell University. 1992: Loon-Ching Tang: Markov Random Walks with Applications to Queues 1990: Neville Nagarwalla: Stochastic Storage Processes with Finite Boundaries. Ph.D. Thesis, Cornell University. 1989: Yixin Zhu: Markov-Modulated Stochastic Storgae Processes. Ph.D. Thesis, Cornell University 1985: Bhanu G. Bhaskaran: Almost Sure Ordering of Some Continuous Time Stochastic Processes with Applications. Ph.D. Thesis, Cornell University Michael J. Phelan: Nonparametric Inference from Poisson-type Counting Processes. Ph.D. Thesis, Cornell University 1982: Paul K. Reeser: The Dynamic Priority Queueing System. M.S. Thesis, Cornell University 1980: Vidyadhar G. Kulkarni: Ladder Processes for Markov and Semi-Markov Chains. Ph.D. Thesis, Cornell University 1979: Haya Kaspi: Ladder Sets of Markov Additive Processes. Ph.D. Thesis, Cornell University Thomas K. Wong: The Structure of Stationary Point Processes with Applications to the Theory of Palm Measures and Renewal Theory. Ph.D. Thesis, Cornell University 1977: Udai K. Garg: A Queueing Network Model of Multiprogrammed Time Sharing Virtual Memory System for Performance Evaluation. Ph.D. Thesis, Cornell University <u>1976</u>: Henry M. Goldberg: Analysis of Earliest Due Date Scheduling in Queueing Systems. Ph.D. Thesis, Cornell University Dror D. Zuckerman: Some Problems in Replacement Models and Control of Dams. Ph.D. Thesis, Cornell University

Nancy E. Griscom: Priority Queueing System with Service in Two Phases. M.S.

Thesis, Cornell University

Bharat T. Doshi: Continuous Time Control of Markov Processes on an Arbitrary State Space. Ph.D. Thesis, Cornell University

1970: James G. Little, Jr.: Waiting Line Processes at Signalized Traffic Intersections. Ph.D. Thesis, Cornell University

1969: Michael Rubinovitch: Ladder Regenerative Events with Applications to Dam Models. Ph.D. Thesis, Cornell University

John A. Hooke: Some Limit Theorems for Priority Queues. Ph.D. Thesis, Cornell University

1968: Frank M. Worthington: Some Ladder Processes in Continuous Time with Application to Queues. Ph.D. Thesis, Cornell University

Elena M. Caruso: The Queue as a Stopped Random Walk. M.S. Thesis, Cornell University

1967: A.P. Lalchandani: Some Limit Theorems in Queueing Theory. Ph.D. Thesis, Cornell University

1964: M.L. Thornett: Problems in Sequential Analysis. M.S. Thesis, University of Western Australia

U. Narayan Bhat: Some Simple and Bulk Queueing Problems. Ph.D. Thesis, University of Western Australia

### 11. Membership of Professional Societies:

Institute of Mathematical Statistics, U.S.A. (since 1957). Elected Fellow, 1972

American Mathematical Society (since 1965)

Operations Research Society of America (1965-1989)

Operational Research Society of India (since 1965)

American Association of University Professors (since 1968)

International Statistical Institute (since 1975)

#### 12. Professional Activities:

President: INTERNATIONAL INDIAN STATISTICAL ASSOCIATION (1999-2001)

Founding Editor: QUEUEING SYSTEMS: THEORY AND APPLICATIONS (1986-1995)

Associate Editor: STOCHASTIC HYDROLOGY AND HYDRAULICS (1987-1999)

Principal Editor: STOCHASTIC PROCESSES AND THEIR APPLICATIONS (1980-1984); Co-Founding Editor: (1973-1979)

Associate Editor: ADVANCES IN APPLIED PROBABILITY (1973-1982); OPERATIONS RESEARCH (1967-1970); OPSEARCH (1966-1970)

Member: Scientific Board, Translation of SOVIET ENCYCLOPEDIA OF MATHEMATICS, Reidell Publishing Company, Dordrecht (1987-1994)

Referee for various international journals of mathematics, probability and operations research

Reviewer for Zentralblatt fur Mathematik (1963-1987), Mathematical Reviews (1965-1987)

Referee for proposals submitted to the National Science Foundation, Army Research Office (Durham) and National Research Council, Canada

Examiner for M.Sc. and Ph.D. Theses at various universities in Australia and India

Member: IMS Committee to Guide the Formation of a New IMS Journal on Applied Probability (1988-1989)

Program Co-chairman for the International Symposium on Applied Probability, Sheffield, England, August 16-19, 1989.

Member: Program Committee for the IMS Symposium on Probability and Its Applications, Fort Collins, Colorado, August 14-18, 1988

Chairman: Organizing Committee for the MSI Workshop on Mathematical Theory of Queueing Systems, Ithaca, New York, August 11-13, 1988

Chairman: Organizing Committee for the Joint Summer Research Conference on Statistical Inference from Stochastic Processes, Ithaca, New York, August 9-15, 1987

Chairman: TIMS/ORSA Applied Probability Group (1986-1988)

Member: Organizing Committee for the ORSA/TIMS Special Interest Meeting on Applied Probability in Biology and Engineering, Lexington, KY, July 18-20, 1983

Chairman: Organizing Committee for the Twelfth Conference on Stochastic Processes and Their Applications, Ithaca, New York, July 11-15, 1983

Member: Organizing Committee for the International Symposium on Stochastic Systems, Lexington, KY, June 10-14, 1975

Associate Director: NSF Summer Institute on "Mathematical Models and Stochastic Processes in Environmental Sciences," Cornell University, July 2-27, 1973

Chairman: Committee for Conferences on Stochastic Processes (1975-1979); Member (1972-1974)

Member: Institute of Mathematical Statistics Nominating Committee (1973-1974, 1988-1989)

Associate Editor: Journal of the Operations Research Society of America (1968-1970)

Member: Panel of Consultants, Statistical Society of Australia (1964-1968)

Founder-President: Western Australia Statistical Society (1963)

#### 13. International Conferences Attended by Invitation:

September 1994: Workshop on Stochastic Models, Ulm, Germany

August 1992: International Seminar on Coupling and Regeneration, Petrozavodsk, Russia

August 1991: Sixth KAIST Mathematics Workshop on Analysis and Geometry, Taejon,

Korea

May 1985: Symposia on Statistics and a Festschrift, London, Ontario, Canada

Aug.-Sept. 1982: The Seventh Conference on Probability Theory, Brasov, Romania

<u>Jan. 1981</u>: Conference on Applied Probability Models for Complex Stochastic Systems,

Raleigh, NC

June 1975: The Fifth Conference on Stochastic Processes and Their Applications,

College Park, MD

Dec. 1974: International Symposium on Recent Trends of Research in Statistics, Calcutta,

India

May 1973: Conference on Mathematical Methods in Queueing theory, Kalamazoo, MI

Aug. 1972: The Second Conference on Stochastic Processes and Their Applications,

Leuven, Belgium

Sept. 1971: Conference on Inventory Control and Water Storage, Gyor, Hungary

Aug. 1971: Conference on Stochastic Processes and Their Applications, Rochester, NY

<u>Aug. 1964</u>: Symposium on Congestion Theory, Chapel Hill, NC

## 14. Symposia/Special Sessions Organized and Chaired at National/International Meetings:

<u>Aug. 1988</u>: "Statistical Inference from Stochastic Processes," IMS Symposium on

Probability Theory and Its Applications, Fort Collins, CO

"Queueing Theory: Point Processes and Related Aspects," IMS Symposium on

Probability Theory and Its Applications, Fort Collins, CO

Dec. 1977: "Statistical Inference from Population Growth Models," 4lst Session of the

International Statistical Institute, New Delhi, India

May 1976: "Stochastic Processes," Joint Central/Eastern Regional Meeting of the Institute

of Mathematical Statistics, West Lafayette, IN

Aug. 1974: "Applied Probability: Its Nature and Scope," the Fourth Conference on

Stochastic Processes and Their Applications, Downsview, Toronto, Canada

June 1973: "Inventory Control," 20th Annual Meeting of the Institute of Management

Sciences, Tel Aviv, Israel

### 15. Publications:

# Research Papers

- 1. Stationary distributions of the negative exponential type for the infinite dam (with J. Gani) J. Roy. Stat. Soc. B 19 (1957), 342-351.
- 2. The integral equation for the finite dam Quart. J. Math. (Oxford 2) <u>9</u> (1958), 183-188.
- 3. Some exact results for the finite dam
  Ann. Math. Statist. 29 (1958), 1234-1243.
- 4. Continuous time treatment of a storage problem (with J. Gani) Nature 182 (1958), 39-40.
- 5. Note on a moving single server problem (with S. Karlin and R.G. Miller) Ann. Math. Statist. 30 (1959), 243-246.
- 6. Application of generating functions to a problem in finite dam theory Aust. J. Math. <u>1</u> (1959), 116-120.
- 7. Remarks on the dam with Poisson type inputs (with J. Gani) Aust. J. Appl. Sci. <u>10</u> (1959), 113-122.
- 8. The time dependent solution for a storage model with Poisson input (with J. Gani) J. Math. and Mech. 8 (1959), 653-664.
- 9. Some results for the queue with Poisson arrivals J. Roy. Stat. Soc. B <u>22</u> (1960), 104-107.
- 10. Applications of storage theory to queues with Poisson arrivals Ann. Math. Statist. <u>31</u> (1960), 475-482.
- 11. A problem in optimum storage Cal. Stat. Assoc. Bull. <u>10</u> (1960), 35-40.
- 12. On the ruin problem of collective risk theory Ann. Math. Statist. <u>32</u> (1961), 757-764.
- 13. Some aspects of queueing theory Cal. Stat. Assoc. Bull. 11 (1962), 1-9.
- 14. Elementary methods for some waiting time problems Opns. Res. <u>10</u> (1962), 559-566.
- 15. A storage model with continuous infinitely divisible inputs (with J. Gani) Proc. Camb. Phil. Soc. <u>59</u> (1963), 417-429.
- 16. Further results for the queue with Poisson arrivals (with U. Narayan Bhat) Opns. Res. 11 (1963), 380-386.
- 17. Some first passage problems and their application to queues (with U. Narayan Bhat) Sankhya A <u>25</u> (1963), 281-292.
- 18. A waiting time process in the queue GI/M/l Acta. Math. Acad. Sci. Hung. <u>15</u> (1964), 363-371.

19. Unified methods for queues and dams

<u>Proceedings of the Symposium on Congestion Theory</u> (W.L. Smith and W.E. Wilkinson, Eds.) University of North Carolina Press, Chapel Hill (1965), 317-336.

- 20. Some comments on Sven Erlander's paper Opns. Res. <u>15</u> (1967), 357-358.
- 21. Transient behaviour of a tandem queue Management Sci. Series A, 13 (1967), 631-639.
- Ladder variables in queueing theory
   J. Math. and Phys. Sci. 1 (1967), 229-246.
- 23. Some new results in storage theory J. Appl. Prob. <u>5</u> (1968), 452-460.
- 24. The simple queue in non-equilibrium Opsearch <u>6</u> (1969), 118-128.
- 25. The queue GI/M/l with traffic intensity one Studia Sci. Math. Hungar. <u>5</u> (1970), 89-96.
- 26. Limit theorems for the single server queue with traffic intensity one J. Appl. Prob. 7 (1970), 227-233.
- 27. A regenerative phenomenon occurring in a storage model (with Michael Rubinovitch) J. Roy. Stat. Soc. B <u>32</u> (1970), 354-361.
- 28. Ladder variables for a continuous time stochastic process Z. Wahrscheinlichkeitstheorie verw. Geb. <u>16</u> (1970), 157-164.
- 29. On a continuous time extension of Feller's lemma (with Michael Rubinovitch) Z. Wahrscheinlichkeitstheorie verw. Geb. <u>17</u> (1971), 220-226.
- 30. Priority queues in heavy traffic (with John A. Hooke) Opsearch <u>8</u> (1971), 1-9.
- 31. Wiener-Hopf factorization for convolution semigroups Z. Wahrscheinlichkeitstheorie verw. Geb. <u>23</u> (1972), 103-113.
- 32. Further results for ladder processes in continuous time (with Michael Rubinovitch) Stochastic Processes Appl. 1 (1973), 151-168.
- Recent research on the ruin problem of collective risk theory
   <u>Inventory Control and Water Storage</u> (A. Prekopa, Ed.).

   North Holland Publishing Co., Amsterdam (1973), 221-228.
- 34. Wiener-Hopf techniques in queueing theory

  <u>Mathematical Methods in Queueing Theory</u> (A.B. Clarke, Ed.).

  Springer Verlag, Berlin (1974), 81-90.

35. Optimal control of queuing systems (with S. Stidham, Jr.)

<u>Mathematical Methods in Queueing Theory</u> (A.B. Clarke, Ed.).

Springer Verlag, Berlin (1974), 263-294.

36. Stochastic control of queueing systems
Naval Res. Logist. Quart. 21 (1974), 411-418.

- 37. Ladder sets and regenerative phenomena: further remarks and some applications Sankhya 38A (1976), 143-152.
- 38. Corrigendum: Stochastic control of queueing systems Naval Res. Logist. Quart. <u>27</u> (1980), 715-716.
- 39. Estimation in single server queues (with I.V. Basawa) Naval Res. Logist. Quart. <u>28</u> (1981), 475-487.
- 40. Integral equations

Encyclopedia of Statistical Sciences 4 (S. Kotz and N.L. Johnson, Eds.). John Wiley, New York (1983), 164-169.

- 41. A fluctuation theory for Markov chains (with V.G. Kulkarni) Stochastic Processes Appl. <u>16</u> (1984), 39-54.
- 42. Wiener-Hopf factorization of Markov semigroups-l. The countable state space case <u>Proceedings of the Seventh Conference on Probability Theory</u> (M. Iosifescu, Ed.). VNU Science Press, Utrecht (1985), 315-324.
- 43. A random family of queueing systems with a dynamic priority discipline (with Paul K. Reeser) Math. Opns. Res. <u>10</u> (1985), 24-32.
- 44. A class of ruin problems

<u>Advances in the Statistical Sciences, Volume VI: Actuarial Science</u> (Ian B. MacNeill and Gary J. Umphrey, Eds.). Reidell Publishing Company, Dordrecht (1987), 63-78.

45. Stochastic comparison of bulk queues Queueing Systems Theory Appl. <u>1</u> (1986), 265-277.

- 46. Stochastic comparison of single server queues (with Carl M. Harris) Naval Research Logist. <u>34</u> (1987), 555-567.
- 47. Large sample inference from single server queues (with I.V. Basawa) Queueing Systems Theory Appl. <u>3</u> (1988), 289-304.
- 48. Estimation from an infinite server queueing system with two demands (with M.J. Phelan)

  <u>Liber Amicorum for J.W. Cohen</u> (O.J. Boxma and R. Syski, Eds.).

  North-Holland Publishing Company, Amsterdam (1988), 429-441.
- 49. Theory of semiregenerative phenomena J. Appl. Prob. 25A (1988), 257-274.
- 50. Markov-modulated queueing systems (with Yixin Zhu) Queueing Systems Theory Appl. <u>5</u> (1989), 215-245.

- 51. Markov-modulated PH/G/1 queueing systems (with Yixin Zhu) Queueing Systems Theory Appl. <u>9</u> (1991), 313-322.
- 52. Elementary methods for Markov-modulated queueing systems

  <u>Proceedings of KAIST Mathematics Workshop</u>, Volume 6
  (B.D. Choi and J.-W. Yim, Eds.), KAIST Mathematics Research
  Center, Taejon (1991), 47-56.
- 53. Markov-renewal and Markov-additive processes--a review and some new results <u>Proceedings of KAIST Mathematics Workshop</u>, Volume 6 (B.D. Choi and J.-W. Yim, Eds.), KAIST Mathematics Research Center, Taejon (1991), 57-94.
- 54. Some new results for the Markov random walk (with L.C. Tang and Yixin Zhu) J. Math. Phys. Sci. <u>25</u> (1991), 635-663.
- 55. Markov-modulated single server queueing systems (with L.C. Tang) J. Appl. Probab. 31A (1994), 169-184.
- 56. Further results for semiregenerative phenomena Acta Appl. Math. <u>34</u> (1994), 213-223.
- 57. Corrections to our paper: Markov-modulated queueing systems (with Yixin Zhu) Queueing Systems Theory Appl. <u>19</u> (1995), 449.
- 58. Markov-additive processes of arrivals (with A. Pacheco)

  <u>Advances in Queueing</u> (J.H. Dshalalow, Ed.), CRC Press, Boca Raton (1995), 167-194.
- 59. A storage model for data communication systems (with A. Pacheco) Queuing Systems Theory Appl. <u>19</u> (1995), 1-40.
- 60. A Markovian Storage Model (with A. Pacheco) Ann. Appl. Probab. <u>6</u> (1996), 76-91
- 61. From Dams to Telecommunication A Survey
  Advances in Methodological and Applied Aspects of Probability and Statistics
  (N. Balakrishnan, Ed.). Gordon and Breach Publishers, Newark, NJ (2002), 3-11.
- 62. Inventories, Water Storage and Queues

  <u>Probability and Statistics</u> (R. Viertl, Ed.) in Encylopedia of Life Supporting Systems (EOLSS),
  Eolss Publishers, Oxford, UK (2002), http://www.eolss.net.

#### Books:

- 1. Time-dependent Results in Storage Theory Methuen, London (1964).
- Queues and Inventories: A Study of Their Basic Stochastic Processes
   John Wiley, New York (1965)
   Russian Translation
   Machinostroyeniey, Moscow (1969).
- 3. Stochastic Processes: Basic Theory and Its Applications Macmillan, New York (1965).

4. Stochastic Storage Processes

Springer-Verlag, New York (1980) Russian-Translation Mir Publishers, Moscow (1984). Second Edition, Springer-Verlag, New York (1998)

5. Foundations of QueuingTheory

Kluwer Academic Publishers, Boston (1997)

# Books and Other Works Edited:

- 1. Applied probability: its nature and scope Stochastic Processes Appl. 3 (1975), 223-257.
- 2. Statistical Inference from Stochastic Processes

Contemporary Math. Volume <u>80</u> American Mathematical Society, Providence (1988).

3. Mathematical Theory of Queueing Systems

J.C. Baltzer, Basel (1989).

- Statistical Inference in Stochastic Processes (with I.V. Basawa) Marcel Dekker, New York (1990).
- 5. Statistical Inference in Stochastic Processes (with I.V. Basawa)

J. Stat. Plann. Inference <u>39</u>, No. 2 (1994).

## Articles:

- 1. Conferences on stochastic processes and their applications: a brief history Stochastic Processes Appl. <u>12</u> (1982), 115-116.
- 2. Probability modeling across the continents

The Craft of Probability Modelling (J. Gani, Ed.), Springer-Verlag (1986), 126-137.

3. Queueing Systems: Theory and Applications

Queueing Systems Theory Appl. 1 (1986), 1-4.

- 4. Comments on two papers on queueing theory by J. Kiefer and J. Wolfowitz Queueing Systems Theory Appl. <u>1</u> (1986), 311-315.
- 5. A bibliography of books and survey papers on queueing systems Queueing Systems Theory Appl. <u>2</u> (1987), 393-398.
- 6. Stochastic Processes and Their Applications

Encyclopedia of Statistical Sciences <u>8</u> (S. Kotz and N.L. Johns, Eds.), John Wiley, New York (1988), 851-852.

7. QUESTA is twenty-one

Queuing Systems: Theory Appl. 21 (1995), 1-3.

#### Reviews:

- 1. D.R. Cox and H.D. Miller: The Theory of Stochastic Processes Ann. Math. Statist. <u>37</u> (1966), 1848-1851.
- 2. Joseph A. Panico: Queueing Theory Opns. Res. <u>18</u> (1970), 956.
- 3. G.F. Newell: Applications of Queueing Theory Opns. Res. <u>20</u> (1972), 456-457.
- 4. F.W. Steutel: Preservation of Infinite Divisibility under Mixing and Related Topics Zentralblatt fur Math. und. ihre Grenzgebiete 226 (1972), 391.
- 5. Michael N. Barber and B.W. Ninham: Random and Restricted Walks. Theory and Applications Zentralblatt fur Math. und. ihre Grenzgebiete 232 (1972), 394.
- 6. U. Narayan Bhat: Elements of Applied Stochastic Processes Opns. Res. <u>21</u> (1973), 654-655.
- 7. L. Kosten: Stochastic Theory of Service Systems, and E. Page: Queueing Theory in OR Opns. Res. 22 (1974), 673-674.
- 8. J.F.C. Kingman: Regenerative Phenomena J. Amer. Stat. Assoc. <u>69</u> (1974), 1048.
- 9. Hilary L. Seal: Survival Probability: The Goal of Risk Theory Interfaces <u>10</u> (1980), 118.
- 10. Srinivasan, S.K. and Subramanian, R.: Probabilistic Analysis of Redundant Systems Zentralblatt fur Math. und ihre Grenzgebiete <u>512</u> (1984), 542.
- Blanc, J.P.C.: Application of the Theory of Boundary Value Problems in the Analysis of a Queueing Model with Paired Servers Math. Reviews <u>85d</u> (1985), 1607.
- 12. Cohen, J.W. and Boxma, O.J.: Boundary Value Problems in Queueing System Analysis Math. Reviews <u>85f</u> (1985), 2569.
- 13. Gross, Donald and Harris, Carl M.: Fundamentals of Queueing Theory J. Amer. Stat. Assoc. <u>82</u> (1987), 947.
- 14. Kashyap, B.R.K. and Chaudhry, M.L.: An Introduction to Queueing Theory INFOR <u>28</u> (1990), 380.

### 16. Honors and Awards:

- 1998: Honorary Fellow, International Indian Statistical Association
- 1997: INFORMS Section on Applied Probability Award of Honor for a career of special distinction in applied probability

1992: Presented with the book: <u>Queueing and Related Models</u> (U. Narayan Bhat and Ishwar V.Basawa, Eds.), Oxford University Press (1992), dedicated to me.

Recognized as Outstanding Educator for having influenced Merrill Presidential Scholar Rajiv A. Patel

Omega Rho International Honor Society Honorary Membership