

ADVANCE

Year End Report
January 1, 2003-December 31, 2003

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Leroy Daugherty, Co-PI
Richard Hills, Co-PI
Christine Marlow, Co-PI
Kenneth Paap, Co-PI

Pamela Hunt, Program Coordinator
Rebecca Zaldo, Records Specialist
Cecily Jeser-Cannavale, Research Analyst
Jammie Benton-Speyer, Graduate Assistant

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I. PARTICIPANTS

Program Personnel

Lisa M. Frehill, PI, Associate Professor, Department of Sociology and Anthropology

Principal Investigator is responsible for all aspects of ADVANCE. The PI oversees all program activity, participates in and supports programs of all ADVANCE committees, conducts institutional self-study, and supervises program coordinator, research analyst and graduate students. The PI serves as chair of the Committee on the Status of Women in STEM.

Pamela Hunt, Program Coordinator

Program Coordinator facilitates and coordinates work of the Committee on the Status of Women in Science, Mathematics and Engineering and its subcommittees by: gathering institutional data and other information and providing logistical support; organizing workshops for faculty and students; coordinating with other relevant programs on campus on annual events; facilitating communication among faculty, staff, and administrators; maintaining website; producing program brochure/flyers; monitoring budget; writing annual reports.

Jammie Benton-Speyer and Mark Cubillos (1/03-8/03) Graduate Assistants

Assists with on-going internal data collection and analysis, including workshop evaluation and reporting.

Rebecca Zaldo, Administrative Assistant (started 7/03)

Provides programmatic support to the Program Coordinator including: meeting facilitation, financial records processing, and financial records database maintenance.

Cecily Jesser-Cannavale, Research Analyst (started 10/03)

Assists with on-going internal data collection and analysis, including workshop evaluation and reporting.

Richard Hills, Co-PI, Associate Dean, College of Engineering (1/03-8-03) Interim Vice Provost for Research (8/03-12/03)

Administration of program. Serves on the Committee on the Status of Women in STEM and the Research subcommittee.

Kenneth Paap, Co-PI, Associate Dean, College of Arts and Sciences

Administration of program. Serves on the Committee on the Status of Women in STEM and the Research Subcommittee.

Leroy Daugherty, Co-PI, Associate Dean, College of Agriculture and Director, Agricultural Experiment Station

Administration of program. Serves on the Committee on the Status of Women in STEM and the Recruitment Subcommittee.

Christine Marlow, Co-PI, Associate Dean, Graduate School

Administration of program.

Members, Committee of the Status of Women in STEM

In addition to the above listed program personnel, participants served on the Committee on the Status of Women in STEM. Each Committee member attends meetings of the committee and serves on one of the four subcommittees.

Laurie Churchill, Program Coordinator, New Mexico Alliance for Graduate Education and the Professoriate (NM-AGEP)

Sonya Cooper, Associate Professor, Engineering Technology

Leroy Daugherty, Associate Dean, College of Agriculture and Home Economics and Director, Agricultural Experiment Station

Champa Gopalan, Professor, Agronomy and Horticulture

Roger Hartley, Department Head, Computer Science

Laura Huenneke, Department Head, Biology (left NMSU, 7/03)

Patricia Hynes, Project Director, NM Space Grant

Ricardo Jacquez, Professor, Civil and Geological Engineering and Program Director, New Mexico Alliance for Minority Participation (joined committee 8/03)

Colleen Jonsson, Associate Professor, Chemistry and Biochemistry (left NMSU, 7/03)

Steven Loring, Administrative Analyst, Agricultural Experiment Station

Bahram Nassersharif, Department Head, Mechanical Engineering (left NMSU 7/03)

Linda Riley, Associate Associate Department Head, Industrial Engineering

Rudi Schoenmackers, Interim Associate Dean of Research, College of Engineering (joined committee 8/03)

Ann Vail, Department Head, Family and Consumer Sciences

Mark Wise, Department Head, Animal and Range Sciences

Subcommittees

Recruitment

Chair, Linda Riley, Associate Academic Department Head, Industrial Engineering

Leroy Daugherty, Associate Dean, College of Agriculture and Home Economics and Director, Agricultural Experiment Station

Roger Hartley, Department Head, Computer Science

Colleen Jonsson, Associate Professor, Chemistry and Biochemistry (left NMSU 7/03)

Bahram Nassersharif, Department Head, Mechanical Engineering (left NMSU 7/03)

Research

Chair, Patricia Hynes, Project Director, NM Space Grant

Tiziana Giorgi, Assistant Professor, Mathematical Sciences

Champa Gopalan, Professor, Agronomy and Horticulture

Richard Hills, Associate Dean and Director, Engineering Research Center

Kenneth Paap, Associate Dean and Director, Arts and Sciences

Mark Wise, Department Head, Animal and Range Sciences

Sonya Cooper, Associate Professor, Engineering Technology

Distinguished Visiting Professor

Chair, Ann Vail, Department Head, Family and Consumer Sciences

Steven Loring, Administrative Analyst, Agricultural Experiment Station

Stuart Munson-McGee, Professor, Chemical Engineering

Tracy Sterling, Professor, Entomology, Plant Pathology and Weed Science

Faculty Development

Chair, Laura Huenneke, Department Head, Biology (left NMSU 7/03)
Christine Marlow, Professor of Social Work and Program Director New Mexico Alliance for Graduate Education and the Professoriate (new Chair, 7/03)
Sonya Cooper, Associate Professor, Engineering Technology
Maria Luisa Gonzales, Department Head, Educational Management and Development
Tara Gray, Director, New Mexico State University Teaching Academy
Steven Kanim, Associate Professor of Physics
Nirmala Khandan, Professor of Civil and Geological Engineering
April Ulery, Assistant Professor, Agronomy and Horticulture

Other Specific People Not Listed:

Dr. Miriam Meyer, Director, Institutional Research and Planning provided most of the institutional data required for this report.
Dr. Cynda Clary, Interim Associate Dean, College of Agriculture and Home Economics, serves as a member of an ad hoc committee developing procedures for exit interviews of STEM faculty who leave NMSU.
Dr. William Quintana, Associate Professor, Department of Chemistry and Biochemistry, Chair, NMSU Hispanic Faculty/Staff Caucus-Collaboration on diversity issues.
Dr. Steven Franks, Department Head, Survey Engineering, Hosted Dr. Wendy Lathop's visit as a Distinguished Visiting Professor.
Dr. Laura Kramer, Professor, Sociology, Montclair State University.

Participants' Summary

Almost all female STEM faculty members were involved in some aspect of the ADVANCE program during the past year. Many department heads--from STEM and non-STEM departments--participated in ADVANCE-Sponsored programming that was part of a full day of department head workshops or the department head roundtable event. The evaluator (Dr. Laura Kramer) met with 26 different people at NMSU to discuss ADVANCE. In addition, ADVANCE programming reached faculty members from across the university via a Promotion and Tenure Workshop, via programming offered by the Teaching Academy and sponsored by ADVANCE, via public presentations about the program on campus, and via the mentoring program. All NMSU Deans and senior administrators learned of the ADVANCE program via a presentation at Provost's Council. Other outreach efforts, especially those associated with Distinguished Visiting Professors' programming, reached undergraduate and graduate students in STEM, K-12 teachers in the community, and other members of the Las Cruces community with various educational programs.

II. ACTIVITIES AND FINDINGS

Overview

ADVANCE activities are administrated through a Committee on the Status of Women in STEM NMSU. The PI, Co-PI's, faculty from each of the three colleges involved in ADVANCE (Agriculture and Home Economics, Arts and Sciences, and Engineering) and three program directors from related NMSU programs work on this Committee and its four subcommittees. The four subcommittees manage the various programmatic elements and include several faculty members beyond those who work on the main Committee on the Status of Women in STEM.

The *Committee on the Status of Women in STEM* (CSW-STEM) engages in outreach activities and is responsible for coordinating the annual research report on the status of women in STEM at NMSU. The report will form the basis for subsequent programming to address gender disparities in STEM at NMSU. An office staff consisting of a Program Coordinator, Records Specialist (7/03), Research Analyst (hired 10/03) and Graduate Assistant provide necessary administrative, data collection and analysis, and logistical support for the CSW-STEM's activities.

The Recruitment Subcommittee is involved with outreach, research and training and development activities. The Faculty Development Subcommittee is involved with educational and training and development activities. The Research Subcommittee meets to administer a program of grants to existing female STEM faculty for research and travel within their disciplines. The Distinguished Visiting Professor Subcommittee administers another research-related activity that involved a strong outreach component and makes women scientists more visible. And an ad-hoc Exit Interviews Subcommittee developed the interview protocols and conducted face-to-face and phone interviews to understand why STEM faculty left NMSU.

A. RESEARCH AND EDUCATION ACTIVITIES

1. Committee on the Status of Women in STEM (CSW-STEM)

The ADVANCE PI and research staff obtained, prepared, and presented the following data about the status of women in STEM at NMSU:

- Institutional Research and Planning provided much of the quantitative data needed by the program.
- A study of Space Allocation was conducted in collaboration with the Facilities Space Management office at NMSU.
- Exit interviews were conducted and a report was drafted by the ad hoc committee.

The ADVANCE PI and program staff also coordinated visits by:

- Alice Hogan, NSF Program Officer for the ADVANCE: Institutional Transformation Program (1/03) met with top administrators at NMSU including the President, Provost, Vice Provost for Research, Deans from the three academic colleges involved with ADVANCE, the ADVANCE Co-PIs and the PI's department head.
- Dr. Laura Kramer, Professor of Sociology at Montclair State University (10/03). The formal evaluator's report, based on qualitative data gathered in interviews

with more than two dozen STEM faculty and NMSU administrators, is included in the attachments for this report.

The PI and research staff prepared the 2003 Society of Women Engineers' "Survey of Literature on Women in Engineering" published in SWE Magazine's "Yearbook," Summer, 2003.

The PI conducted trainings for NMSU personnel and provided evaluation support for several collaborative activities at NMSU:

- NMSU Department Head Training Retreat (6/03): 3-hour conflict management program and evaluation of the Retreat.
- New Faculty Orientation Program (8/03): collaborated with the Office of the Provost, Faculty Senate, and Teaching Academy to implement more comprehensive training.
- Promotion and Tenure Workshop (9/03): collaborated with Office of Provost and Hispanic Faculty/Staff Caucus to organize and evaluate workshop.
- Department Heads' Roundtable on "Evaluating Teaching, Research and Service" (10/03).

2. Recruitment Subcommittee

Provided start-up funding for Nancy Chanover as a College Assistant Professor to enable possible later transition to a tenure-track position in Astronomy.

Distributed start-up package enhancements (totaling \$233,900) to the following, all of whom were hired during the Spring, 2003 semester as tenure-track assistant professors:

Mary Ballyk (Mathematical Sciences)
Maria Cristina Mariani (Mathematical Sciences)
Kathy Hanley (Biology, starting in Fall 2004)
Erin Silva (Agronomy and Horticulture)
Claudia Trevino, (Chemistry and Biochemistry)
Julieta Valles-Rosales (Industrial Engineering)

3. Research Subcommittee

16 applications from 13 women were received. Of these, nine research awards were made, 3 travel awards were made, and 1 visiting researcher award was made for a total of \$109,998 of funds distributed for the 2004 calendar year.

Nine STEM Faculty women were funded with ADVANCE funds for research:

Josefina Alvarez, Professor Mathematical Sciences – a total of \$15,000 for two writing projects in Mathematics, Research, and Education.

Paola Bandini, Assistant Professor, Civil and Geological Engineering – a total of \$7,522 for the purchase, installation, and calibration of trianial equipment and accessories for soil testing with automatic data acquisition system.

Mai Gehrke, Professor, Mathematics – \$5,022 for Lattice Ordered algebras and applications.

Giorgi Tiziana, Assistant Professor, Mathematics - \$8,202 for Surface Nucleation in Superconductors Surrounded by Normal Materials

Jing He, Assistant Professor, Computer Science – a total of \$14, 946 for Improving Protein secondary structure prediction using 3-dimensional spatial constraints of the protein.

Maria Mariani, Assistant Professor, Mathematical Sciences – a total of \$14,039 for nonlinear problems arising in physics and finance.

Elba Serrano, Associate Professor, Biology – a total of \$7,522 for nanonotechnology research initiative in multi-photon imaging of quantum dots and neural tissue engineering.

Tracy Sterling, Professor, Entomology, Plant Pathology and Weed Science – a total of \$15,000 for Oxidative Stress Tolerance Mechanisms in Plants.

Nicole Vogt, Assistant Professor, Astronomy – a total of \$15,000 for The Formation of Disk Galaxies.

Three STEM Faculty women were funded with ADVANCE funds for travel:

Nancy Chanover, College Assistant Professor, Astronomy — a total of \$2,500 for Vertical Structure of Haze in Titan's Atmosphere.

Mai Gehrke, Professor, Mathematical Sciences – a total of \$2,500 for Lattice-Ordered Algebras and Applications.

Martha Mitchell, Associate Professor, Chemical Engineering – a total of \$1,600 for travel to attend the International Adsorption Society's 8th International Conference on Fundamentals of Adsorption.

One STEM faculty woman received funding for a visiting researcher:

Tiziana Giorgi, Assistant Professor of Mathematics - \$1,145, Surface Nucleation in Superconductors Surrounded by Normal Materials.

4. Faculty Development Subcommittee

- Provided funds to support NMSU's Teaching Academy events and workshops.
- Four STEM faculty were provided with \$500 awards to participate in the Space Grant Consortium's GRASP (Gaining Retention and Achievement for Students Program)—departments provided remaining funds (\$250).
- Two faculty received \$500 awards to participate in other educational programs such as Spanish language training and training in the use of scholarly technologies.

B. FINDINGS

The attached file reports findings from four sources:

1. Institutional Data: 19 tables and 3 graphs report the status of women at all levels of STEM faculty and administration at NMSU.
2. Space Allocation Report
3. Exit Interviews Report
4. Dr. Laura Kramer's Evaluator's Report

A report detailing the findings of the Gender Equity in Pay study was not available at the time of this report. At the request of the ADVANCE program, the Office of Institutional Research and Planning has initiated the first such study in eight years (a 1995 study had been performed at the request of the NMSU Women's Studies Program).

Sub-Awards' Research Findings

All recipients of start-up funds (distributed by the Recruitment Subcommittee), research and travel awards (distributed by the Research Subcommittee), and Faculty Development funds (distributed by the Faculty Development Subcommittee) report their findings from work supported by ADVANCE funds. Project dates vary, but the following findings have been reported to date by the recipients of ADVANCE funds.

Recruitment Subcommittee: Start-Up Funds

PI – Jeanine Cook

Type of Project – Research

Title of Project – “Expansion of the Advanced Computer Architecture Performance and Simulation Laboratory”

The grant supported the purchase of a 9-node, 18 processor, Beowulf cluster for research and teaching. Three graduate students, in addition to the PI, have been the primary users of this machine. The PI also taught two courses in which the machine was used. The students in one of these classes assembled the machine, installed the operating system and related software, and verified correction operation as a class assignment. Findings included a parallel implementation of the SimpleScalar microarchitecture simulator; a dynamic phase detector and predictor that enables significantly decreased simulation time while maintaining accuracy of simulation; a new algorithm and implementation to feasibly compute the intrinsic locality of large, realistic workloads which allowed the study of the intrinsic locality a suite of scientific/floating point and multimedia workloads, both of which had not been studied previously; and an algorithm that significantly increases the accuracy of performance counters that are used in multiplexed mode. Four papers were published in conference proceedings as a result.

PI – Inna Pivkina

Type of Project – Start up Funds

Pinkina used her start up funds to purchase a computer and printer for her office, used regularly for research and teaching. Secondly, the funds were used for her summer salary, which allowed her to conduct research during the summer months. During this time a paper was finished and accepted to the CLIMA IV Conference (Computational Logic in Multi-Agent Systems). Post proceedings will be published by Springer-Verlag as a volume of the Lecture Notes on Artificial Intelligence Series. Additionally, funds

were used to pay for a two-week visit to the University of Kentucky to collaborate with a former advisor on two projects.

Research Subcommittee: Research and Travel Minigrants

PI – Rebecca Creamer

Type of Project – Research

Title of Project – “Association of a fungal endophyte with locoweed toxicity.”

This research studies the role of fungal endophytes of locoweed in production of a toxin, swainsonine, which causes locoism of grazing animals. To conduct the research, the researchers developed a system of culturing locoweed plants with and without the fungus, and the fungus alone on plant tissue culture media. The baseline levels of toxin production for plants and fungus growth under specific conditions were determined. Preliminary experiments suggest that toxin production is increased in plants with fungus that are under drought stress. The pH optima for the fungus have also been determined. Currently, other environmental parameters including temperature, nitrogen, phosphorus, and potassium levels are being tested.

PI – Mai Gehrke

Type of Project – Travel

Title of Project – Participation in the Association for Women in Mathematics Workshop in Baltimore, January 2003

Gehrke attended the Association for Women in Mathematics Workshop for graduate students and recent Ph.D.s in Baltimore, Maryland. She mentored two participants and sat on a panel about shaping a career in Mathematics. The trip led to many connections with PhD students and correspondence with several attendees, which has continued. Gehrke also connected with a famous numerical analyst at the University of Houston.

PI – Lisa McKee

Type of Project – Travel

Title of Project – Travel to Anaheim, CA to attend the Institute of Food Technologists Annual Meeting and Pre-Conference Workshop

The PI attended this workshop to present a poster entitled “Peels and Seeds from Hot Sauce Production as a Dietary Fiber Source,” which was the result of a Masters Thesis. The PI attended oral and poster presentations, and received an offer of a new probe for texture analysis of foods as a result of a meeting with employees of Texture Technology, Inc. A two day workshop was completed titled “Making Measurements for Sensory and Consumer Testing.” One publication resulted.

PI – Paola Bandini

Type of Project – Travel

The PI received travel funds that allowed her to attend various NSF workshops on funding opportunities in the field of Civil and Geological Engineering. These workshops provided networking opportunities with program directors and managers in the area of civil and geological engineering. A visit to Purdue University resulted in a slightly new

research direction, and the PI is currently working in the generation of results and preparation of a new journal paper with collaborators at Purdue University.

PI – Michele Nishiguchi

Type of Project – Research

The project allows the investigators to examine the mechanisms that drive host-symbiont recognition, and assesses whether environmental factors or inherent genetic characters affect speciation and diversity among *Vibrio* bacteria. State of the art techniques, including fluorescent microscopy, molecular biology, and bioluminescence emission have been developed and used in our system. Central to this study was determining whether the genetic architecture of host-symbiont pairs was different between geographically isolated squid populations, and whether speciation among *vibrio* bacteria is driven by the differences among these distant populations. The project helped to shed light on whether the environment or host has greater selection for bacterial fitness. Additionally, a key element of the proposal was the study of the hosts and *vibrio* symbionts through several international and collaborative efforts that have previously been established by our laboratory. Results will be disseminated through various publications, meetings, websites and courses. This program of study has also provided unique research opportunities for graduate and undergraduate students at NMSU. Three journal publications, one book, and one website resulted from this research.

PI – Michele Nishiguchi

Type of Project – Travel

Travel funds were awarded to start collaborations with Dr. Gonzales Giribet, an Assistant Professor of Biology in the Department of Organismal and Evolutionary Biology at Harvard University. Information from this work has led to several new projects on systematics of invertebrates. Four journal publications have resulted from this research, as well as the creation of a website.

PI – Martha Desmond

Type of Project – Research

Title of Project – Proposal for Release Time from Classes for the Fall of 2002 to Focus on Manuscript Preparation and the Development of Competitive Grant Proposals

Manuscript preparation and submission was the main focus of release time from classes during the fall semester of 2002. During this period, five manuscripts to peer reviewed scientific journals, and one chapter to be published in a book were submitted. Six additional manuscripts are in preparation and are to be submitted at the end of the spring semester. A competitive grant proposal was submitted to the USDA National Research Initiative. Additionally, Desmond organized and chaired the Scientific Session of the New Mexico/Arizona Joint Meetings of the Wildlife Society and American Fisheries Society on February 6-8, 2003 in Gallup, New Mexico. Desmond also hosted a meeting with several faculty from the Universidad Autonoma de Chihuahua, facultad Zootecnia in February, 2003. Finally, one website was created.

PI – Elizabeth Gasparim

Type of Project – Research

Title of Project – “Typology of Moduli of Vector Bundles

The result of this research was an answer to the Atiyah Jones Conjecture, which had been open for over thirty years in the field of geometry/topology/mathematical physics. The research resulted in three publications and four talks to which the PI was invited and at which results were presented.

PI – Lisa McKee

Type of Project – Research

Title of Project – “Consumer Rinsing Methods for Reducing Microbial Loads on Pork Chops”

The study evaluated the effect of ten consumable products used as rinsing agents and two cooking methods on microbial loads of retail pork loin chops. No differences were found in initial microbial loads. After rinsing aerobic counts for VN were lower than after rinsing aerobic counts for all other treatments. No differences were detected in after rinsing loads for the remaining treatments. All after cooking loads were zero. Several graduate and undergraduate students have participated in various studies to date, giving them hands-on experience in microbiological analysis procedures. One paper was published in conference proceedings

Faculty Development Subcommittee: Faculty Development Awards

PI – Jill Schroeder

Type of Project – Faculty Development

Title of Project – Participation in Gaining Retention and Achievement for Students Program (GRASP).

Schroeder attended the GRASP program with the goal to gain insight into student learning approaches and to learn techniques to provide a classroom environment where students can successfully master the course material. The program kept instructors focused on the changes in the classroom with which they were experimenting, as well as provided positive feedback based upon teaching, which was encouraging.

C. TRAINING AND DEVELOPMENT ACTIVITIES

1. Recruitment Subcommittee

- Provided supplemental funds for STEM faculty in Mechanical Engineering to attend “Diversity in Mechanical Engineer Education and Workforce” special session at the ASME Annual Meetings (Washington, DC, 11/03).
- Presentation by ADVANCE PI at a special panel held during the annual congress of ASME (American Society of Mechanical Engineers): “Diversity in Engineering Education and Workforce” presided by Joseph Bordogna, Deputy Director National Science Foundation.

2. Faculty Development Subcommittee

Department Head Training: October 29, 2003 - *Evaluating Teaching, Research and Service* attended by 18 people.

Mentoring Program

The Mentoring Program expanded: all new STEM faculty were paired with a mentor and more returning faculty entered the mentoring program. Total participation: 70, about half men and half women. Events:

- Spring Mixer held on January 30, 2003 (Early Semester Get-Together) attended by 12 people.
- “Resident Alien: A Scientist in Women’s Studies” presented by Ingrid Bartsch, co-editor of the Gender and Science Reader and University of Southern Florida assistant professor and director of women’s studies. 30 people attended.
- Junior Faculty Luncheon (3/21/03: Informal meeting of Junior Faculty in mentoring program), 2 attended.
- End of Year Event (5/14/03) 24 people attended.
- Open House-Mentoring Program Fall 2003 (8/29/03). Thirty-three people attended.
- Mentors’ Orientation- Fall 2003 (9/18/03): 20 new and returning mentors attended a luncheon training about how to mentor junior and mid-career faculty.
- Mentoring Orientation- Fall 2003 (9/13/03). Luncheon and training for newly designated mentoring pairs. 47 people attended.

Other Workshops:

- Sponsored a workshop conducted by Dr. Reta Beebe, Emerita Professor of Astronomy (10/9/03) “How to Reduce Your Sense of Isolation and Enhance Your Productivity. Dr. Beebe shared her experience with current faculty on obtaining funds. Thirty-one people attended.
- Sponsored a workshop conducted by Dr. Elizabeth Titus (11/13/03), Dean of NMSU Library. Dean Titus shared insights into personnel issues. Ten people attended.
- Sponsored Promotion and Tenure Workshop (9/20/02) with the Hispanic Faculty/Staff Caucus and the Office of the Provost. 39 people attended.

D. OUTREACH ACTIVITIES

1. Committee on the Status of Women in STEM

- PI began meeting with STEM Departments to discuss program: Fishery and Wildlife Sciences; Geology; Entomology, Plant Pathology and Weed Science; and Survey Engineering (remainder will be scheduled in early 2004).
- PI and Program Coordinator are Program Co-Chairs for the 2004 Women in Engineering and Program Advocates Network (WEPAN) national conference, to be held in Albuquerque, NM, June 2004.
- PI and three co-PI’s (Kenneth Paap, Leroy Daugherty and Christine Marlow) attended the NSF ADVANCE Principal Investigators’ meeting May 1-2, 2003.
- Program personnel have become involved in other transformative activities at NMSU. PI is involved in the Teaching Academy Planning Committee, the Women’s Studies Steering Committee, chairs a university wide Committee on the Status of Women (now the Presidents Commission on the Status of Women chaired by Dean Titus), the Roles and Rewards Task Force, and the Search Committee for the new EEO/ADA Director. The Program Coordinator is

a member of the Campus Childcare Advisory Board and serves as the Society of Women Engineers' Student Chapter Liaison.

- Funded STEM women's attendance at the New Mexico Women's Studies Conference (February 2003 in Socorro, NM) Ramona Parra, Specialist I, SWAT Lab (and a NM-AGEP Scholar); Melissa Fowler (Psychology Student), Jammie Benton-Speyer (Sociology Student), Cecily Jesser (Sociology Student).
- PI organized and presented information about ADVANCE at the New Mexico Women's Studies Conference, Socorro, NM February 27-28.
- Program Coordinator attended the Women in Engineering Program and Advocates Network Conference in Chicago, IL June 2003.
- PI prepared brochure "Partner Assistance Information" and worked with NMSU Faculty Senate to pass a bill to add a dual career couple policy statement to the NMSU Procedures Manual.
- Presentations by PI to video conference hosted by North Dakota State University (8/03), and teleconferences with Marshall University (12/03) and American Society of Engineers (11/03).
- PI made presentations about the status of women in STEM and ADVANCE at: NMSU Academic Deans Council (2/03), University Research and Creative Activities Fair (9/03 with Graduate Assistant), Provost's Council—includes all NMSU Deans and Vice Presidents—(10/03), Faculty Senate (11/03).

2. Recruitment Subcommittee

- Crafted a general advertisement about NMSU to place in outlets not often used by STEM departments at NMSU due to cost. These included: *SACNAS (Society for the Advancement of Chicanos and Native Americans in Science)* and *AISES (American Indian Science and Engineering Society)*, *Science*, and *ASEE Prism Magazine (American Society for Engineering Education)*
- PI and/or program coordinator met with STEM candidates during the 2003 calendar year.
- Sponsored ASME Diversity Luncheon (11/15/03) at the ASME conference in Washington, DC.
- Attended the SACNAS conference in Albuquerque, NM (10/03)—assisted the NMSU Graduate School.

3. Distinguished Visiting Professor Subcommittee

Dr. Wendy Lathrop's visit included the following:

- Luncheon - "Mapping Your Career as a Women in Engineering."
- General Lecture – "Floodplains 101."
- Teachers Seminar – "Inquiry Based Environmental Modules for Middle School and High School."
- Middle School Program – "Floodplains and Wetlands."

III. PRODUCTS

The ADVANCE program at NMSU has produced an impressive array of products in a large number of STEM disciplines via the minigrants program that provides research and travel funds to women faculty in 19 departments at NMSU. In just two years' time the researchers who have been supported with these funds have produced seven refereed journal articles; two book chapters; two films; four scientific abstracts; five proceedings articles; six websites; seven conference presentations; three grant proposals; and 17 manuscripts under review or in preparation.

(1) Journal Publications

Desmond, M.J. Impacts of desert grassland alteration on the distribution and abundance of white sided and black-tailed jack rabbits. *Journal of Mammology*.

Desmond, M.J. Habitat Associations and Co-occurrence of Chihuahuan Desert Hares. *Lepus californicus* and *L. callotis* in Chihuahua, Mexico. *American Midland Naturalist*.

Ginter, D., and M.J. Desmond. In Press. Avian mortality during fall migration at communication towers along the Rio Grande corridor in southern New Mexico. *Southwestern Naturalist* 49(3).

Frehill, L. M., J. Benton-Speyer, and P. Hunt (2003). 2002 Survey of literature on women in engineering. *SWE Magazine* 49(3): 22-35.

Jones, B.W. and M.K. Nishiguchi. (2004). Counterillumination in the bobtail squid, *Euprymna scolopes* (in press, *Mar. Biol.*)

Nishiguchi, M.K., J.E. Lopez, and S.V. Boletzky (2004). Enlightenment of old ideas from new investigations: The evolution of bacteriogenic light organs in squids. *Evol. Dev.* 6(1): 41-49.

Nishiguchi, M.K. and V.S. Nair (2003). Evolution of pathogenicity and symbiosis in Vibrionaceae: A combined approach using molecules and physiology. *Int. J. Syst. Evol. Microbiol.* 53: 2019-2026.

Nishiguchi, M.K. (2002). Host recognition is responsible for symbiont composition in environmentally transmitted symbiosis. *Microbial. Biol.* 44 (1):10-18.

(2) Books or other non-periodical, one time publications

Books:

M. Desmond, K. Young, B. Thompson, R. Valdez and A. Lafon. In Press. Avian diversity and conservation in Chihuahuan Desert grasslands of Northern Mexico: Case studies for passerine and raptor communities in Chihuahua. in

Biodiversity, Ecosystems and Conservation in Northern Mexico. J. -L.E. Carton and G.E. Ceballos Editors. Oxford University Press.

Nishiguchi, M.K. and B.W. Jones. (2003). Microbial biodiversity within the Vibrionaceae. in: J. Seckbach (ed.), *Origins, evolution, and the biodiversity of microbial life*, Cole-Kluwer Academic Publishers, Dordrecht, The Netherlands, (in press).

Proceedings

Cook, J. "Intrinsic Data Locality of Modern Scientific Workloads." Published in Proceedings of the Sixth Annual IEEE International Workshop on workload Characterization.

Cook, J. "Toward Accurate Performance Evaluation Using Hardware Counters." To be published in the proceedings of the "Applications for a changing World," ITEA Modeling Simulation Workshop.

Cook, J. "Fast, Accurate Micro-Architecture Simulation." To be published in the Proceedings of the "Applications for a Changing World," ITEA Modeling and Simulation Workshop. Winner of a Graduate Student Paper Competition.

He, J., Ranjan, D. Jiang, W., Chiu, W., Schmid, M.F. "Detecting local symmetry axis in 3 dimensional virus structures," accepted by the 2nd Asia-Pacific Bioinformatics Conference, Jan. 2004, to appear in January 2004. (acceptance rate 34/118).

Nissen, S.J., T.M. Sterling, D.M. Namuth, S.M. Fritz, A. Martin, B. Kappler, and C. Mallory-Smith. 2003. Teaching herbicide mode of action with lessons and animations available online. Proc. Western Soc. Weed Sci. 56:93.

Films:

Riley, L. Presentation publication: "Using Intelligent Computation to Optimize Large Scale Simulation Models" (filmed).

Riley, L. Presentation publication. "Future Trends in Optimization: Algorithms, Software, and Hardware" (filmed).

Scientific Abstracts:

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Namuth, D.M., S.J. Nissen, T.M. Sterling, S.M. Frits, I. Hernandez-Rios, A. Martin, B. Kappler, C. Mallory-Smith, J.A. Dille. 2004. Creation of peer reviewed online herbicide modes of action lessons and animations for public education. WSSA Abstracts 44: (in press).

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(3) Websites

<http://www.cs.nmsu.edu/~biology/Faculty%20&%20Staff/Nishiguchi/Nishiguchi.htm> (Michele Nishiguchi)

<http://leopold.nmsu.edu/nmcws/Default.htm> (Martha Desmond)

<http://croptechnology.unl.edu/viewLesson.cgi?LessonID=1022008824> (D.M. Namuth)

<http://croptechnology.unl.edu/viewLesson.cgi?LessonID=998688536> (D.M. Namuth)

www.math.nmsu.edu/~jswanson/instanton.m2 (Elizabeth Gasparim and Irene Swanson)

<http://croptechnology.unl.edu> (Tracy Sterling)

(4) Other Products

Cook, J. "Reducing Estimation Errors in Multiplexed Performance Counters." In submission to the ACM International Conference on Measurement and Modeling of Computer Systems.

D. Berardelli and M. Desmond. Burrowing owl nesting strategies and nest success in urban versus grassland habitats and among burrow types. 3rd North America Ornithological Conference, September 24-28, 2002, New Orleans, LA.

M. Desmond, A. Lafon and F. Chavez-Ramirez. Assemblage composition and diversity of grassland birds wintering in northern Mexico: influence of land management practices. 3rd North American Ornithological Conference, September 24-28, 2002, New Orleans, LA.

McKee, Lisa: Consumable Household products for decontaminating retail beef steaks, pork loin chops and skinless chicken breasts. Abstract of poster presentation. Rocky Mountain Food Safety Conference, May, 2003.

Namuth, D.M., D. Lee, A. Guru, S.J. Nissen and T.M. Sterling. 2003. Development of an Electronic Library of Lessons for Multi-Institutional Use. Presented at the NMSU College of Engineering and NM Space Grant Consortium's Science, Engineering and Technology Education Conference – <http://spacegrant.nmsu.edu/NMSU/2003/index.html>

Niemela, S. and M. Desmond. Influence of seed abundance and diversity of a wintering Chihuahuan Desert avifauna. 3rd North American Ornithological Conference, September 24-28, 2002, New Orleans, LA.

Riley, L., "An Automated Testing and Classification System for Identifying Defects in Nuclear Steam Generator Tubes Using a Learning Vector Quantization Neural Architecture," with Gabe Garcia, Bahram Nassersharif and John Schaub.

Riley, L. Proposal: ITR: A New Paradigm for Optimizing hybrid Simulations of Rare Event Modeling for Complex Systems – Establishing Interfaces Among Engineering Disciplines, submitted to National Science Foundation (December 2002).

Riley, L. Proposal: "Teaching Theoretical Stochastic Modeling Courses Using Applied Examples and Industrial Partners," National Science Foundation (September 2002-January 2004).

Riley, L. Proposal: "Eddy-Current Signature Classification of Steam Generator Tube Defects," Department of Energy (July 2002 – September 2003).

(5) Publications Under Review or in Preparation

Abbot, L.B., R.D. Pieper, and K.E. Young. 2002. Analysis of mountain meadow monitoring program in Sequoia and King's Canyon National Parks. Report to Sequoia and King's Canyon National Parks Natural Resources Management Division. In Review.

Beradelli, D., M.J. Desmond, and L. Murray. In Preparation. Burrowing owl reproductive success and habitat selection in urban and grassland habitats in southern New Mexico. Condor.

Desmond, M.J. In Review. Avian use of agricultural hedgerows during the winter in northern Mexico. Southwest Naturalist.

Desmond, M.J. In Review. Effects of grazing practices and fossorial rodents on the wintering avian community in Chihuahua, Mexico: Implications for grazing management and conservation. *Biological Conservation*.

Desmond, M.J. and J.A. Savidge. In Review. Factors affecting burrowing owl reproductive success in black-tailed prairie dog and badger systems. *Journal of Wildlife Management*.

Desmond, M.J., F. Chavez-Ramirez, A. Lafon-Terrazas. In Preparation. Winter grassland bird distribution, movement patterns and habitat use in northern Mexico. *Conservation Biology*.

Desmond, M.J. and S.A. Niemela. In Preparation. Seed production in relation to habitat characteristics in the northern Chihuahuan Desert. *Journal of Range Management*.

Desmond, M.J., Berardelli, and T.R. Mader. In Preparation. Burrowing owl occupation and distribution in recently re-established black-tailed prairie dog colonies. *Ecological Restoration*.

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Gasparim, E., "Computing instanton numbers of curve singularities," submitted.

Gasparim, E., "Vector Bundles over the basic flop."

Gehrke, M. and Priestley, H.A., Canonical extensions and duality for double-quasi-operator algebras. In Preparation.

Gehrke, M., H. Nagahashi, Y. Venema. A Sahlqvist Theorem for Distributive Modal Logic. Manuscript submitted to *Annals of Pure and Applied Logic*.

Ginter, D. and M.J. Desmond. In Preparation. Avian mortality at radio-towers during migration in the Chihuahuan Desert. *Southwest Naturalist*.

M.Gehrke, J. Harding, Y. Venema. Identities preserved by MacNeille completion are preserved by canonical extension. In Preparation.

Niemela, S.A. and M.J. Desmond. In Review. The influence of vegetation physiognomy and floristic composition on a winter Chihuahuan Desert Avifauna. *Journal of Wildlife Management*.

Niemela, S.A. and M.J. Desmond. In Review. Influences of seed abundance, diversity, and distribution on a wintering Chihuahuan Desert Avifauna. *Journal of Wildlife Management*.

IV. Contributions

(1) Within PI Discipline

The PI is preparing a number of manuscripts within the field of sociology. To some extent, the data related to the institution and the question of how to make meaningful and appropriate cross-institutional comparisons among the original nine ADVANCE institutions has formed the basis of one of the PI's papers, which will be presented at the Eastern Sociological Society meetings in spring, 2004 and submitted for publication sometime later in 2004.

The PI and the ADVANCE research staff produced an in-depth review of literature for the Society of Women Engineers' annual "Yearbook" edition in 2003 and are doing this service again for 2004.

Another major project in which the PI is involved is writing a textbook on social inequality that integrates class, ethnicity, gender and sexuality.

(2) Other Disciplines

ADVANCE funds assisted in the preparation of scholarly work in nine STEM disciplines: wildlife science, mathematics, biological science, weed science, electrical engineering, industrial engineering, food science, computer science and science education. The 53 articles, proceedings papers, websites, and other products make wide-reaching contributions across the STEM fields.

(3) Development of Human Resources

The ADVANCE faculty development, research and travel grants were essential to scholars' professional development. First, a some awardees (Dr. Jill Schroeder, Dr. Marcela Trevino, Dr. Rebecca Creamer, and Dr. Michele Shuster) used their funds to improve their teaching via the Gaining Retention and Achievement for Students (GRASP) program or the Integrated Technology and Learning (ITAL) program at NMSU (Dr. Tracy Sterling). Dr. Wendy Hamilton used ADVANCE funds to develop her Spanish language skills, which are essential in her job as the department head for Cooperative Extension. The heavy teaching loads and institutional emphasis on teaching excellence mean that such development opportunities are essential to faculty success at NMSU.

Second, the travel awards provided funding for faculty women to attend conferences in their fields to strengthen professional networks. As can be seen by the impressive list of publications (in Section III of this report), collaborative activity is key to women's success in academic STEM fields.

Third, several researchers were able to pursue new projects in new areas within their discipline. For faculty, like Dr. Rebecca Creamer, who will come up for promotion and tenure within the next year such new research projects are essential. These new projects are expected of associate professors at NMSU, as they move towards the rank of full professor.

Fourth, faculty like Dr. Michele Nishiguchi and Dr. Elizabeth Gasparim were able to gain release from teaching duties to strengthen their research publications records. Dr. Nishiguchi applied for promotion and tenure this year, therefore, the course release was quite timely for her. Several faculty, notably, Dr. Linda Riley of Industrial Engineering and Michele Nishiguchi of Biological Sciences, and Jeanine Cooke of Electrical and Computer Engineering, were able to use ADVANCE awards to leverage resources—especially space (more space or better space)—within their departments for research projects. Space is a precious commodity at any institution that impacts academic STEM researchers' ability to complete their work in an efficient and effective manner.

Fifth, the program engaged in activities to develop women who are currently ranked as “college track” at NMSU to enable them to compete successfully for future tenure track openings. Funds were provided to Dr. Michele Shuster in Biology, Dr. Marcela Trevino in Chemistry and Biochemistry, and Dr. Nancy Chanover in Astronomy for this purpose.

Finally, this past year Dr. Laura Huenneke left NMSU to become the Dean of Arts and Sciences at Northern Arizona University. Within the larger perspective of ADVANCE's intended effects on higher education, the movement of a STEM woman from a department head position to one of academic leadership as a dean is important to note. Dr. Huenneke indicated that her substantial participation in the ADVANCE program helped her to envision herself as a dean.

(4) Physical, institutional, or information resources that form the infrastructure for research and education.

The ADVANCE program was instrumental in providing significant support for increased information resources at NMSU for STEM and non-STEM fields. Working with the Office of the Provost, the Hispanic Faculty/Staff Caucus, the Teaching Academy and Faculty Senate the program provided support for broad-based institutional training. ADVANCE program funds have been essential to the launch of the NMSU Teaching Academy.

In addition, the program has produced a draft of a “Partner Assistance Information” brochure for use by the institution in solving dual career dilemmas. The program has brought department heads together on two occasions in the past year to discuss managerial issues such as conflict management and evaluating faculty members' teaching, research and service activities.

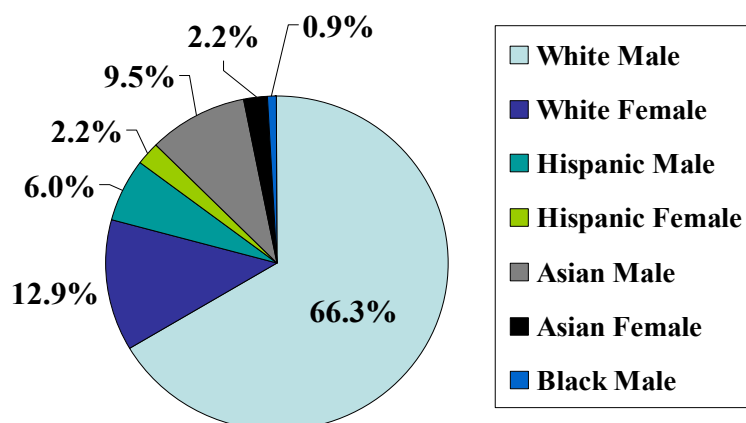
The ADVANCE program website, and the vital connections maintained with the other eight ADVANCE institutions have been essential in making information about institutional change easily accessible to a wide audience. The PI made presentations about women's status in STEM fields to the leadership of NMSU at the Provost's Council as well as to the Faculty Senate.

Program personnel participation in other institutional efforts-notably a campus-wide Roles and Rewards Taskforce formed by the Provost and a newly-formed Commission on the Status of Women is important in disseminating the information learned via the many data collection efforts of the program across campus. Such involvement insures that issues related to the status of women at the institution are kept at the forefront of these other institutional efforts.

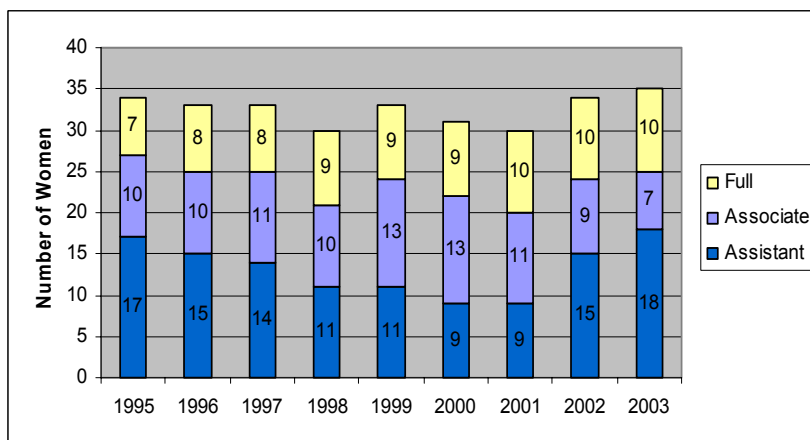
(5) Other Aspects of Public Welfare

Three of the ADVANCE-supported researchers' projects dealt with various other aspects of public welfare. Dr. Mai Gehrke attended the Association for Women in Mathematics Workshop in Baltimore because it provided an opportunity to mentor and network with colleagues, which is imperative to women's success in the field. Dr. Lisa McKee's research on consumer methods for reducing microbial loads on pork chops provided the means to collect preliminary data in an important area of consumer food safety. The data are being used in a proposal to the USDA to justify the need for a larger, more comprehensive study. Finally, Dr. Laurie Abbot's research on rangeland vegetation at remote locations in New Mexico assisted in understanding the dynamics of vegetation, soil, and disturbance, which is essential to developing and implementing strategies to rehabilitate these lands and restore their productivity.

Sex and Ethnicity of NMSU STEM Faculty, Fall 2003, n=232



Women Tenured and Tenure Track STEM Faculty at NMSU, 1995-2003



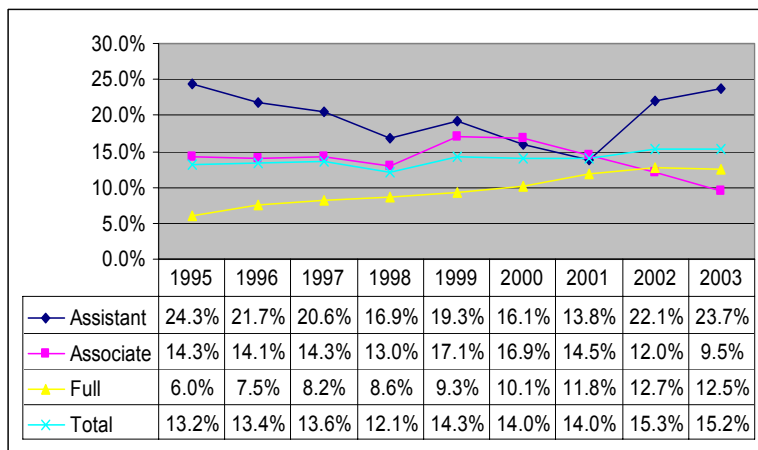
Departments included:

College of Agriculture and Home Economics: *Agronomy and Horticulture, Animal and Range Science, Entomology, Plant Pathology and Weed Science, and Fishery and Wildlife Science.*

College of Arts and Sciences: *Astronomy, Biology, Chemistry and Biochemistry, Computer Science, Geological Sciences, Mathematical Sciences and Physics.*

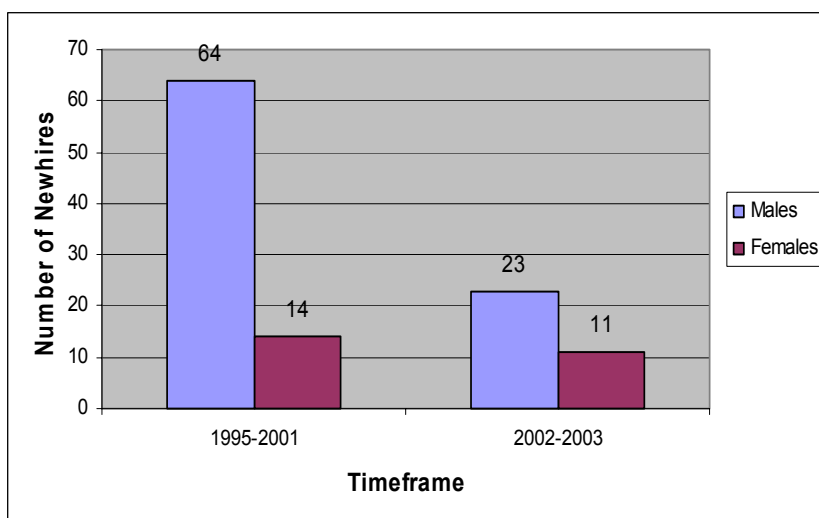
College of Engineering: *Chemical Engineering, Civil and Geological Engineering, Electrical and Computer Engineering, Engineering Technology, Industrial Engineering, Mechanical Engineering, Survey Engineering.*

Women as a Percent of NMSU STEM Tenured and Tenure Track Faculty by Rank, 1995-2003



Departments Included: AGHT, ANSC, EPPWS, FWS, BIO, CHEM, CS, GEOL, MATH, PHYS, CAGE, ChE, ECE, ET, IE, ME, SUR

New-hires in STEM at NMSU



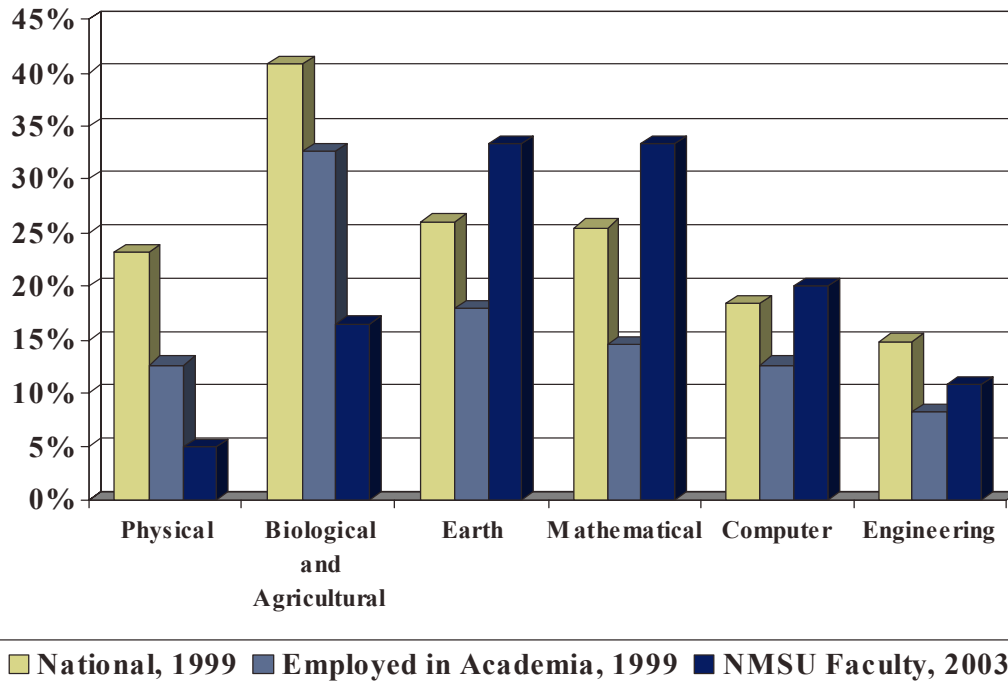
Promotion & Attrition at NMSU

<i>1995, 1996, & 1997 Cohorts-Status as of Fall, 2003 (STEM fields)</i>	<i>Assistant</i>		<i>Associate</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
<i>Percent Promoted</i>	68.9%	40.0%	31.8%	40.0%
<i>Percent Left NMSU</i>	27.5%	60.0%	27.3%	40.0%
<i>Number</i>	29	5	22	5

Promotion & Attrition at NMSU

<i>All cohorts, 1995- 2003: Status as of Fall, 2003 (STEM fields)</i>	<i>Assistant</i>		<i>Associate</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
<i>Percent Promoted</i>	24.7%	11.5%	23.9%	35.1%
<i>Percent Left NMSU</i>	14.6%	15.4%	14.9%	35.1%
<i>Number</i>	89	26	67	17

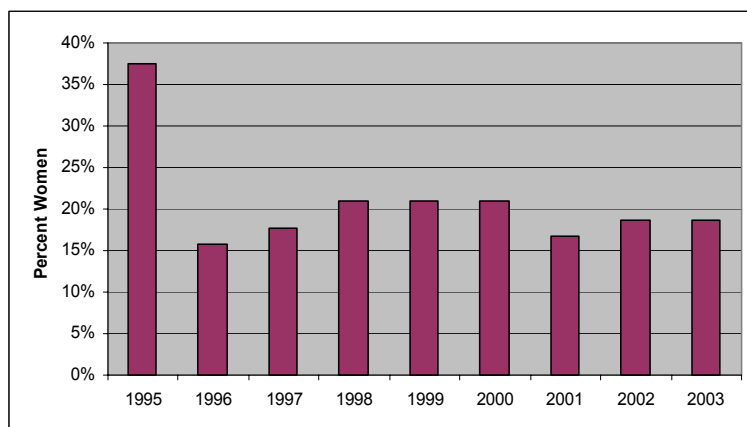
Women as a Percent of All Ph. D. Recipients Nationwide, 1999, Academic Employment, 1999 and NMSU Faculty, 2003



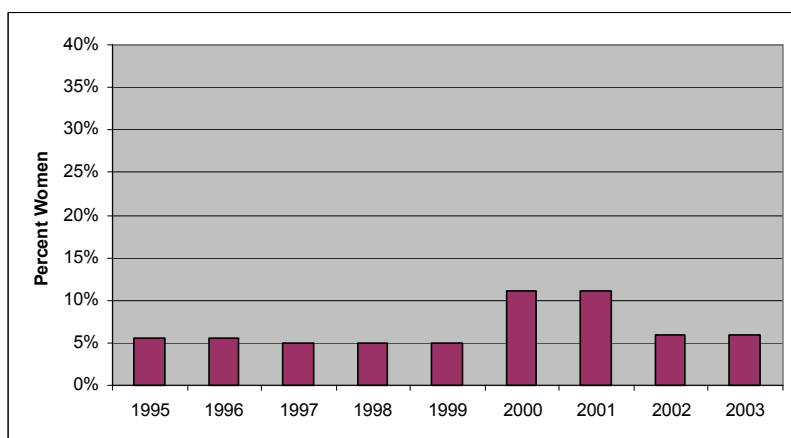
Departments Included: Physical: Astro, Chem, Phys; Biological and Agricultural: Biol, Aght, Ansc, Eppws, Fws; Earth: Geol; Mathematical: Math; Computer: CS; Engineering: All engineering

National data from: National Science Foundation: Science and Engineering Indicators, 2002

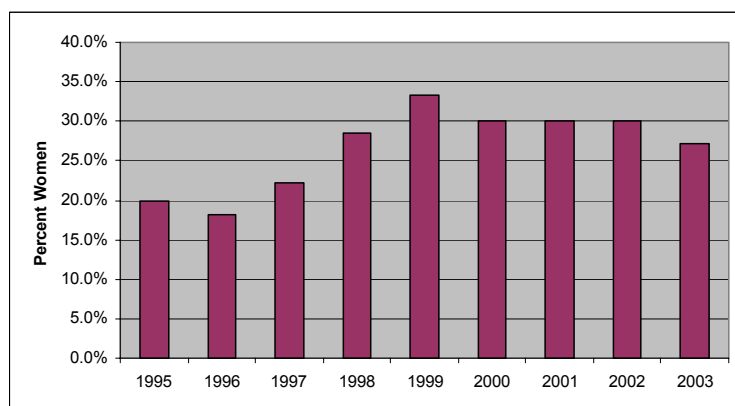
Women as a Percent of Faculty in Agronomy and Horticulture, 1995-2003



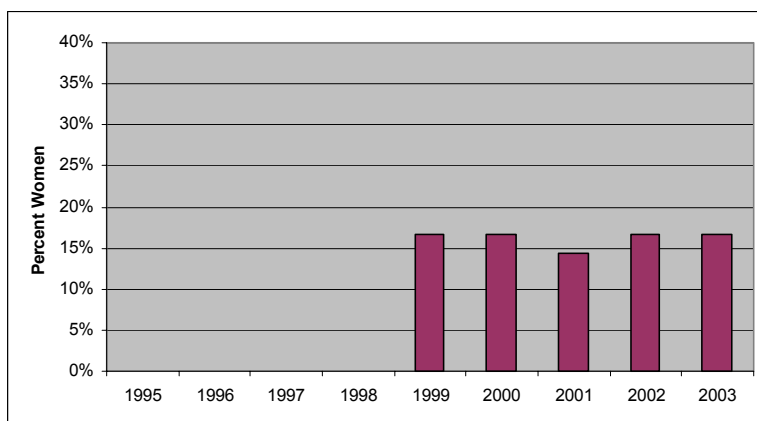
Women as a Percent of Faculty in Animal and Range Science, 1995-2003



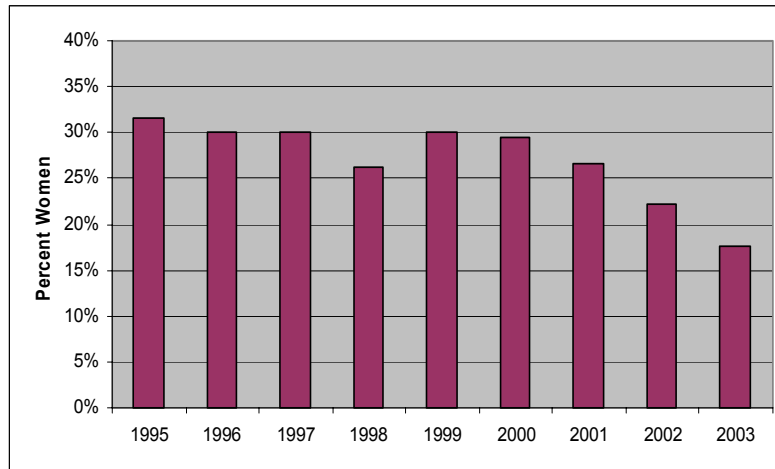
Women as a Percent of Faculty in Entomology, Plant Pathology and Weed Science, 1995-2003



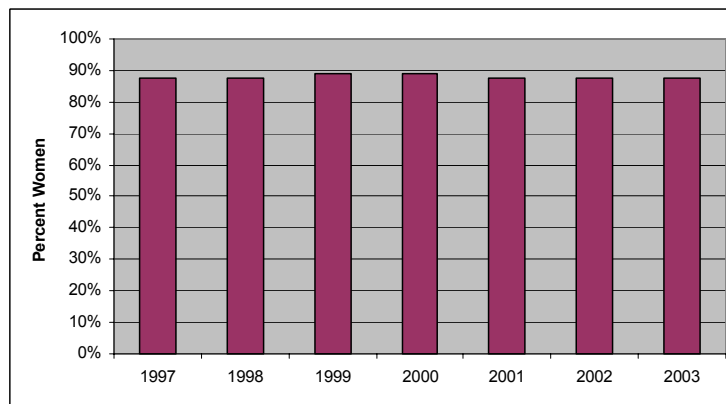
Women as a Percent of Faculty in Fish and Wildlife Science, 1995-2003



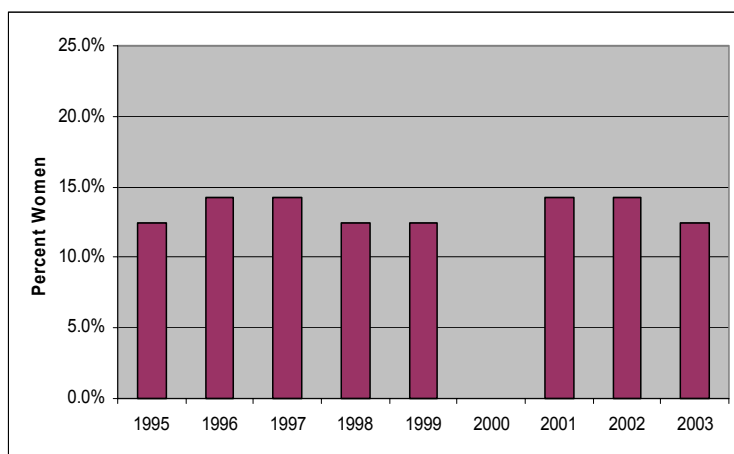
Women as a Percent of Faculty in Biology, 1995-2003



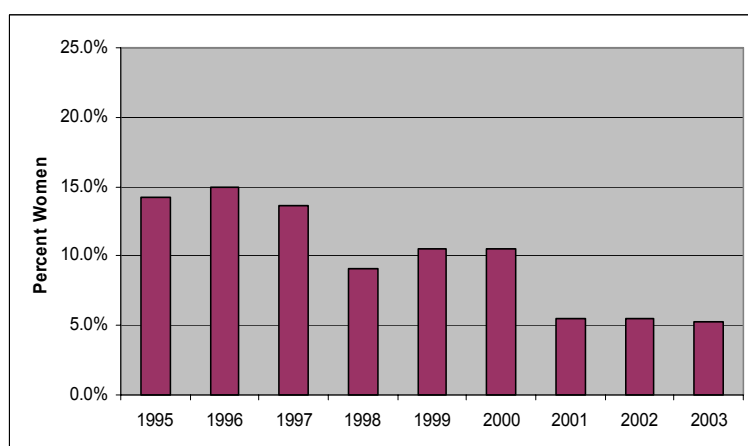
Women as a Percent of Faculty in Family and Consumer Science, 1995-2003



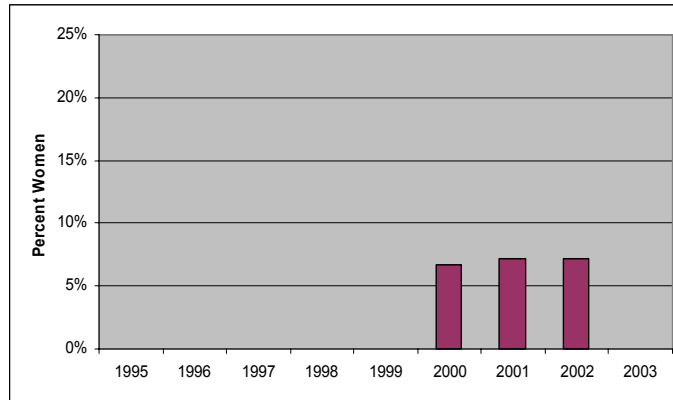
Women as a Percent of Faculty in Astronomy, 1995-2003



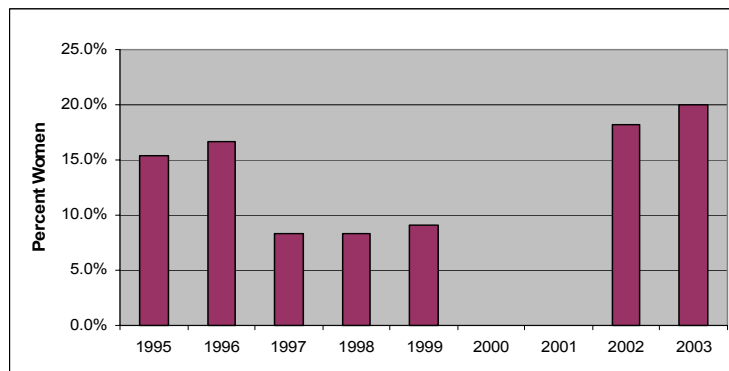
Women as a Percent of Faculty in Chemistry and Biochemistry, 1995-2003



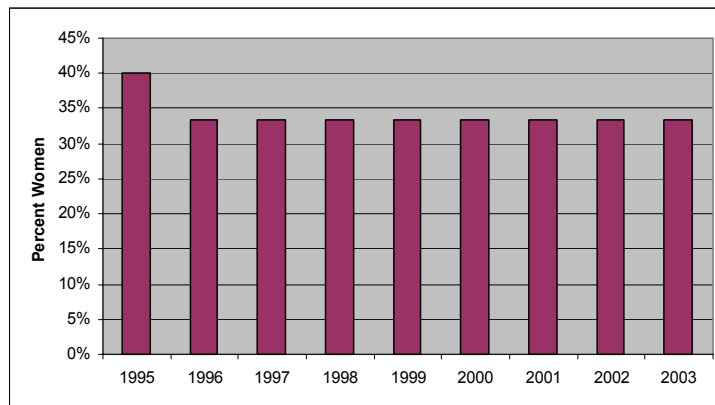
Women as a Percent of Faculty in Physics, 1995-2003



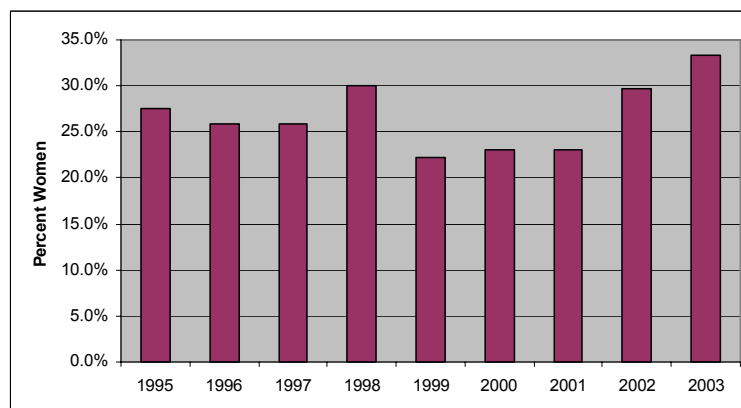
Women as a Percent of Faculty in Computer Science, 1995-2003



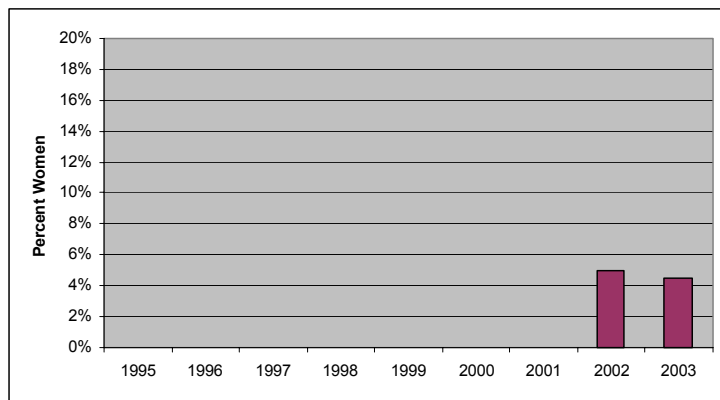
Women as a Percent of Faculty in Geological Science, 1995-2003



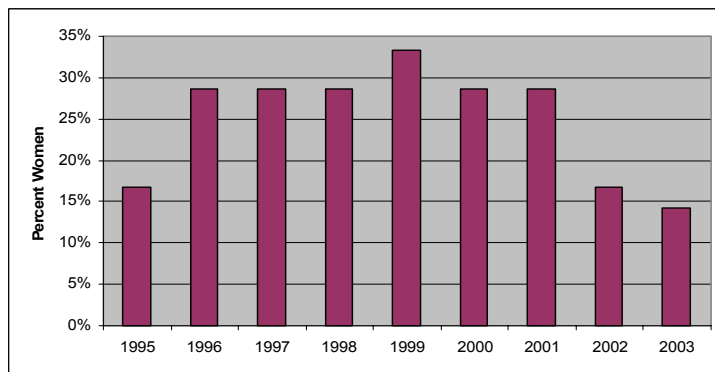
Women as a Percent of Faculty in Mathematical Science, 1995-2003



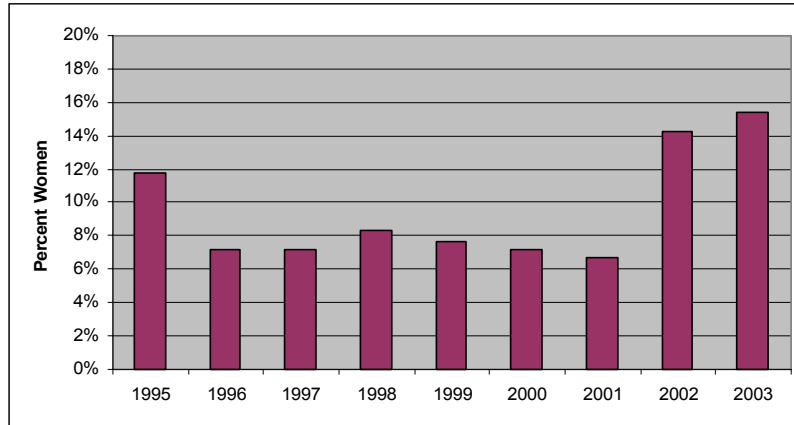
Women as a Percent of Faculty in Electrical and Computer Engineering, 1995-2003



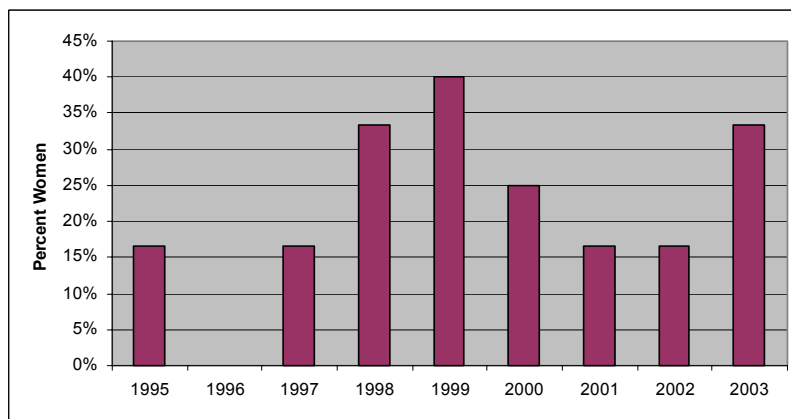
Women as a Percent of Faculty in Chemical Engineering, 1995-2003



Women as a Percent of Faculty in Civil and Geological Engineering, 1995-2003



Women as a Percent of Faculty in Industrial Engineering, 1995-2003



Women as a Percent of Faculty in Mechanical Engineering and Survey Engineering, 1995-2003

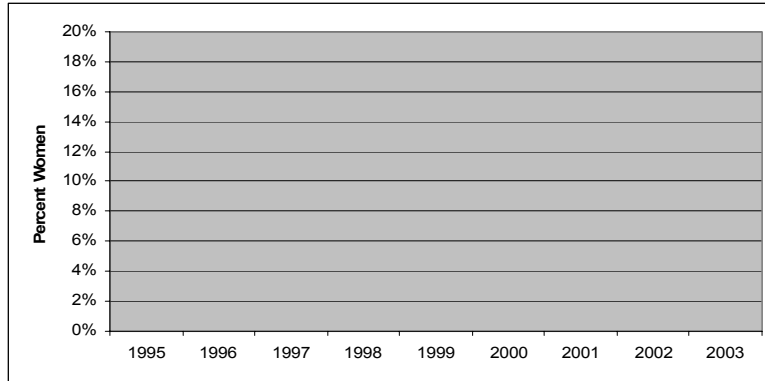


Table 1A: New Mexico State University Faculty by Category, Fall 2003

Faculty Category	All NMSU ¹			STEM and SBS Departments		
	All	Female	%Female	All	Female	%Female
Tenure/Tenure Track	627	196	31.3%	288	62	21.5%
Temporary/Non-tenure Track ²	88	57	64.8%	35	20	57.1%
Total	715	253	35.3%	323	82	25.3%

Notes: ¹Includes library faculty but excludes cooperative extension service.

²Temporary/Non-Tenure Track are also referred to as “Noncontract” or as “College Track faculty. Here are only those faculty who are full time in positions that are relatively permanent have been included.

Table 1B: New Mexico State University Faculty by Category, Fall 2003

Faculty Category	Social and Behavioral Science Departments			ADVANCE (STEM) Departments		
	All	Female	%Female	All	Female	%Female
Tenure/Tenure Track	52	20	38.5%	236	42	17.8 %
Temporary/Non-tenure Track	15	4	36.4%	24	16	66.7%
Total	67	24	35.8%	260	50	22.3%

Table 2: Distribution of NMSU STEM Faculty by Category and Gender, Fall Semesters 1995 - 2003

	Tenure/Tenure Track			Non-Tenure Track			All Categories		
	Total	Female	% Female	Total	Female	% Female	Total	Female	% Female
1995	251	34	13.5%	35	15	42.8%	286	49	6.6%
1996	246	33	13.4%	31	15	48.4%	277	48	17.3%
1997	250	40	16.0%	31	17	54.8%	281	57	20.3%
1998	247	41	16.6%	36	18	50.0%	283	59	20.8%
1999	240	42	17.5%	27	16	59.3%	267	58	21.7%
2000	231	40	17.3%	32	22	68.7%	263	62	23.6%
2001	233	37	15.8%	30	18	60.0%	263	55	20.9%
2002	232	41	17.6%	39	19	48.7%	271	60	22.1%
2003	236	42	17.7%	24	16	66.7%	260	58	22.3%

Table 3A: Fall 2003 STEM Departmental Distribution of Tenured and Tenure Track Female Faculty

	Distribution of Female Faculty in STEM Departments		
	All	Female	%Female
Agriculture and Home Economics	58	15	25.9%
Agronomy and Horticulture	16	3	18.8%
Animal and Range Science	17	1	5.9%
Entomology, Plant Pathology and Weed Science	11	3	27.3%
Family and Consumer Science	8	7	87.5%
Fishery and Wildlife Sciences	6	1	16.7%
Arts and Sciences	104	19	18.7%
Astronomy	8	1	12.5%
Biology	17	3	17.6%
Chemistry and Biochemistry	19	1	5.3%
Computer Sciences	10	2	20.0%
Geological Sciences	6	2	33.3%
Mathematical Sciences	30	10	33.3%
Physics	14	0	0.0%
Engineering	74	8	10.8%
Electrical and Computer Engineering	22	1	4.5%
Chemical Engineering	7	1	14.3%
Civil and Geological Engineering	13	2	15.4%
Engineering Technology	12	2	16.7%
Industrial Engineering	6	2	33.3%
Mechanical Engineering	11	0	0.0%
Survey Engineering	3	0	0.0%

Table 3B: Fall 2003 STEM Departmental Distribution of Non-Tenure Track Female Faculty

	Tenured & Tenure Track		Non-Tenure Track			Non-Tenure Track as % All Females
	Female	%Female	All	Female	% Female	
Agriculture and Home Economics	15	25.9%	3	1	33.3%	6.2%
Agronomy and Horticulture	3	18.8%	1	0	0.0%	0.0%
Animal and Range Science	1	5.9%	1	0	0.0%	0.0%
Entomology, Plant Pathology and Weed Science	3	27.3%	0	0	0.0%	0.0%
Family and Consumer Science	7	87.5%	1	1	100.0%	12.5%
Fishery and Wildlife Sciences	1	16.7%	0	0	0.0%	0.0%
Arts and Sciences	19	18.7%	18	14	77.8%	42.0%
Astronomy	1	12.5%	0	0	0.0%	0%
Biology	3	17.6%	1	1	100.0%	25%
Chemistry and Biochemistry	1	5.3%	4	2	50.0%	66.7%
Computer Sciences	2	20.0%	2	2	100.0%	50.0%
Geological Sciences	2	33.3%	0	0	0.0%	0.0%
Mathematical Sciences	10	33.3%	11	9	81.8%	47.4%
Physics	0	0.0%	0	0	0.0%	0.0%
Engineering	8	10.8%	3	1	33.3%	11.1%
Chemical Engineering	1	14.3%	0	0	0.0%	0.0%
Civil and Geological Engineering	2	15.4%	0	0	0.0%	0.0%
Electrical and Computer Engineering	1	4.5%	1	1	100.0%	50.0%
Engineering Technology	2	16.7%	0	0	0.0%	0.0%
Industrial Engineering	2	33.3%	1	0	0.0%	0.0%
Mechanical Engineering	0	0.0%	1	0	0.0%	0.0%
Survey Engineering	0	0.0%	0	0	0.0%	0.0%

Table 3C: Fall 2003 SBS Departmental Distribution of Female Faculty

	Tenured and Tenure Track			Non-Tenure Track		
	All	Female	%Female	All	Female	%Female
Communications	6	2	33.3%	3	2	66.7%
Criminal Justice	8	4	50.0%	2	1	50.0%
Geography	5	0	0.0%	1	0	0.0%
Government	9	3	33.3%	1	0	0.0%
Psychology	13	5	38.5%	0	0	0.0%
Sociology and Anthropology	11	7	63.6%	4	1	25.0%

Table 4. Distribution within Sex and Field of Rank and Tenure Status of NMSU Faculty, Fall, 2003

	Social and Behavioral Sciences				NMSU-ADVANCE STEM Fields			
	Female		Males		Females		Males	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Non-Contract								
Instructor	0	0.0%	1	2.6%	3	5.2%	3	1.5%
Assistant	3	12.5%	4	10.3%	3	5.2%	2	1.0%
Associate	1	4.2%	1	2.6%	8	13.8%	2	1.0%
Full	0	0.0%	1	2.6%	2	3.4%	1	0.5%
Tenure-Track/Tenured								
Assistant, Tenure-track	8	33.3%	7	17.9%	18	31.0%	57	28.2%
Assistant, Tenured	3	12.5%	1	2.6%	0	0.0%	2	1.0%
Associate, Tenure-track	0	0.0%	0	0.0%	0	0.0%	3	1.5%
Associate, Tenured	7	29.2%	10	25.6%	10	17.2%	62	30.7%
Full, Tenured	2	8.3%	14	35.9%	14	24.1%	70	34.7%
Total	24	1	39	1	58	1	202	1
Non-Contract, Total	4	16.7%	7	17.9%	16	27.6%	8	4.0%
Tenure-Track, Total	8	33.3%	7	17.9%	18	31.0%	60	29.7%
Tenured, Total	12	50.0%	25	64.1%	24	41.4%	134	66.3%

Table 5: Faculty by Gender and Ethnicity, Number and Percent of Total within Tenured and Tenure-Track and Non-Tenure Track

		Tenured and Tenure-Track					Non-Tenure Track				
		Hispanic	Asian	Black	White	Not Coded	Hispanic	Asian	Black	White	Not Coded
STEM	Female	5 2.1%	5 2.1	0 0.0%	30 12.7%	2 0.8%	2 8.33%	0 0.0%	0 0.0%	13 54.2%	1 4.2%
	Male	14 5.9 %	22 9.3 %	2 0.8%	154 65.3%	2 0.8%	0 0.0%	0 0.0%	0 0.0%	8 33.3%	0 0.0%
	Total	19	27	2	184	4	2	0	0	21	1
SBS	Female	3 5.8%	1 1.9%	0 0.0%	16 30.8%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	4 36.4%	0 0.0%
	Male	2 3.8%	0 0.0%	0 0.0%	30 57.7%	0 0.0%	1 9.1%	1 9.1%	0 0.0%	5 45.5%	0 0.0%
	Total	5	1	0	46	0	1	1	0	9	0

Table 6A: NMSU STEM Departments Assistant Professor Cohorts 1995-2003

Cohort Year	# In Cohort		Promoted		Left Institution		Not yet tenured	
	M	F	M	F	M	F	M	F
1995	9	4	8	1	1	3 ¹	0	0
1996	10	1	7	1	3	0	0	0
1997	10	0	6	0	4	0	0	0
1998	5	3	1	1	0	0	4	2
1999	7	4	1	0	2	0	4	4
2000	7	2	0	0	0	1	7	1
2001	18	1	0	0	3	0	15	1
2002	11	6	0	0	0	0	11	6
2003	12	5	0	0	0	0	12	5
Total 1995-2003	89	26	23 (25.8%)	3 (11.5%)	13 (14.6%)	4 (15.4%)	53 (60.0%)	19 (73.1%)

Note:

¹One of the women who left had been promoted to a tenured associate professor position before she left. The other two left before promotion/tenure.

Table 6B: NMSU SBS Departments Assistant Professor Cohorts 1995-2003

Cohort Year	# In Cohort		Promoted		Left Institution		Not yet tenured	
	M	F	M	F	M	F	M	F
1995	1	3	1	0	0	2	0	1
1996	1	2	1	1	0	1	0	0
1997	3	1	0	1	2	0	1	1 ²
1998	2	1	0	0	2	0	0	1
1999	1	0	0	0	0	0	1	0
2000	2	1	0	0	1	0	1	1
2001	0	4	0	0	0	0	0	4
2002	3	1	0	0	0	0	3	1
2003	2	0	0	0	0	0	2	0
Total 1995-2003	15	13	2 (13.3%)	2 (15.4%)	5 (33.3%)	3 (23.1%)	8 (53.3%)	9 (69.2%)

Note:

²The one female who arrived in 1997 had been promoted but not yet tenured as of 2003.

Table 7A: NMSU STEM Departments Associate Professor Cohorts 1995-2003

Cohort Year	# In Cohort		Promoted		Left Institution		Not yet tenured	
	M	F	M	F	M	F	M	F
1995	6	1	3	1	2	1	0	0
1996	7	3	2	1	1	1	0	0
1997	9	1	2	0	3	0	0	0
1998	8	4	2	1	0	2	0	0
1999	10	2	5	1	1	1	0	0
2000	9	3	1	1	2	1	0	0
2001	7	1	1	1	1	0	1	0
2002	5	1	0	0	0	0	1	0
2003	6	1	0	0	0	0	0	0
Total 1995-2003	67	17	16 (23.9%)*	6 (35.3%)	10 (14.9%)	6 (35.3%)	2 (3.0%)	0 (0.0%)

* Percentages are within sex to show the 2003 status of faculty hired/promoted to associate professor 1995-2003.

Table 7B: NMSU SBS Departments Associate Professor Cohorts 1995-2003

Cohort Year	# In Cohort		Promoted		Left Institution		Not yet tenured	
	M	F	M	F	M	F	M	F
1995	0	2	0	1	0	0	0	0
1996	4	0	2	0	0	0	0	0
1997	1	0	0	0	0	0	0	0
1998	1	1	1	0	0	1	0	0
1999	1	3	1	0	0	1	0	0
2000	1	0	1	0	0	0	0	0
2001	0	0	0	0	0	0	0	0
2002	2	1	0	0	0	0	0	0
2003	0	1	0	0	0	0	0	0
Total 1995-2003	10	8	5 (50.0%)*	1 (12.5%)	0 (0.0%)	2 (25.0%)	0 (0.0%)	0 (0.0%)

* Percentages are within sex to show the 2003 status of faculty hired/promoted to associate professor 1995-2003.

Table 8: Tenured and Tenure Track Age, Time at NMSU, Experience and Time to Tenure

	SBS Departments			STEM Departments		
	Males	Females	Gender Gap	Males	Females	Gender Gap
Age						
Mean	48.1	42.9	5.2	46.7	44.4	2.3
Median	50.5	42.0	8.5	46.0	44.0	2.0
Std. Dev.	7.3	7.5		8.8	7.2	
Minimum	30.0	30.0		29.0	34.0	
Maximum	59.0	56.0		71.0	62.0	
# of valid cases	32	21		194	42	
Time at NMSU						
Mean	11.7	8.5	3.2	11.7	8.0	3.7
Median	12.0	8.0	4.0	11.0	7.5	3.5
Std. Dev.	7.6	5.1		9.1	6.1	
Minimum	0.0	1.0		0.0	0.0	
Maximum	27.0	20.0		39.0	20.0	
# valid cases	32	20		194	42	
Years of Experience						
Mean	15.9	10.2	5.7	16.2	12.4	3.8
Median	15.5	10.0	5.5	15.0	11.5	3.5
Std. Dev.	8.5	6.7		9.35	7.0	
Minimum	1.0	1.0		1.0	1.0	
Maximum	32.0	25.0		41.0	28.0	
# valid cases	32	20		194	42	
Time to Tenure						
Mean	4.0	5.3	-1.3	4.7	4.4	0.3
Median	5.0	5.0	0	5.0	5.0	0
Std. Dev.	1.7	0.8		1.4	2.1	
Minimum	0.0	4.0		0.0	0.0	
Maximum	6.0	7.0		7.0	8.0	
# valid cases	25	12		134	24	

Years of experience: Current year minus date of Ph.D.

Gender Gap: Male minus Female.

Table 9: Tenure and Tenure Track Monthly Salary by Rank

	SBS Departments			STEM Departments		
	Males	Females	Gender Gap*	Males	Females	Gender Gap
Monthly Salary: Assistant Professors						
Mean	\$4,413.23	\$4,114.23	\$299.00	\$5,388.14	\$5,394.29	\$6.15
Median	\$4,611.90	\$3,968.40	\$643.50	\$5,141.80	\$5,182.00	\$40.20
Std. Dev.	\$478.20	\$468.19		\$893.41	\$864.97	
Minimum	\$3,577.50	\$3,627.40	Ratio:	\$3,832.70	\$4,332.70	Ratio:
Maximum	\$4,933.40	\$5,039.10	.86	\$7,277.60	\$7,226.30	1.01
# valid cases	8	11		59	18	
Monthly Salary: Associate Professors						
Mean	\$5,438.26	\$4,983.59	\$454.67	\$6,048.88	\$5,650.10	\$398.78
Median	\$5,726.00	\$5,050.80	\$675.20	\$5,757.30	\$5,511.50	\$245.80
Std. Dev.	\$961.02	\$351.76		\$1,028.89	\$545.62	
Minimum	\$4080.70	\$4,432.20	Ratio:	\$4,263.30	\$4,907.10	Ratio:
Maximum	\$6,554.70	\$5,347.10	.88	\$9,101.70	\$6,910.50	.95
# valid cases	10	7		65	10	
Monthly Salary: Full Professors						
Mean	\$6,219.18	\$7,734.05	-\$1,514.87	\$7,236.31	\$6,345.39	\$890.92
Median	\$6,167.70	\$7,734.05	-\$1,566.35	\$7,135.50	\$6,357.20	\$778.30
Std. Dev.	\$1,245.38	\$2,277.75		\$1,296.91	\$700.43	
Minimum	\$4,472.80	\$6,123.40	Ratio:	\$4,924.60	\$5,537.00	Ratio:
Maximum	\$8,699.40	\$9,344.70	1.26	\$11,103.00	\$8,237.70	.89
# valid cases	14	2		70	14	

*Gender Gap: Male minus Female.

** Ratio: consistent with conventional reporting on pay gaps between men and women, the ratio of women's to men's median earnings was computed and reported. This ratio is interpreted as the amount the average woman earns for every dollar the average man earns.

Table 10: Non-Contract Age, Time at NMSU, Experience and Monthly Salary

	SBS Departments			STEM Departments		
	Males	Females	Gender Gap	Males	Females	Gender Gap
Age						
Mean	48.0	60.0	-12	46.5	41.9	4.6
Median	51.0	61.0	-10	46.0	42.0	4.0
Std. Dev.	12.7	2.8		13.1	8.7	
Minimum	28.0	56.0		28.0	24.0	
Maximum	62.0	62.0		65.0	61.0	
# valid cases	7	4		8	16	
Time at NMSU						
Mean	6.0	6.5	-.5	4.13	7.1	-2.9
Median	2.0	2.0	0.0	1.5	3.5	-2
Std. Dev.	9.9	10.5		6.7	7.3	
Minimum	0.0	0.0		0.0	1.0	
Maximum	28.0	22.0		20.0	22.0	
# valid cases	7	4		8	16	
Years of Experience						
Mean	9.7	15.0	-5.3	16.4	12.8	3.6
Median	8.0	14.0	-6.0	17.0	9.5	7.5
Std. Dev.	9.7	12.3		9.8	9.3	
Minimum	1.0	1.0		4.0	2.0	
Maximum	30.0	31.0		34.0	36.0	
# valid cases	7	4		8	16	
Monthly Salary: All Non-Contract						
Mean	\$3,824.71	\$3,241.67	0.85**	\$4,344.99	\$3,735.89	0.86**
Minimum	\$3,000.00	\$2,983.80		\$2,940.50	\$2,340.00	
Maximum	\$5,000.00	\$3,666.67		\$6,716.00	\$5,351.70	
# valid cases	7	4		8	16	
Monthly Salary: Excluding Instructor Rank						
Mean	\$3,962.02	\$3,241.67	0.82**	\$4,937.25	\$3,955.98	0.80**
Minimum	\$3,228.00	\$2,983.80		\$3,108.30	\$2,955.90	
Maximum	\$5,000.00	\$3,666.67		\$6,716.00	\$5,351.70	
# valid cases	6	4		5	13	

*Gender Gap: Male minus Female.

** Ratio: consistent with conventional reporting on pay gaps between men and women, the ratio of women's to men's median earnings was computed and reported. This ratio is interpreted as the amount the average woman earns for every dollar the average man earns.

Table 11: NMSU Administrative Leadership Positions, Fall 2003

	2002				2003			
	Total	Male	Female	%Female	Total	Male	Female	%Female
Department Heads (STEM)	19	17	2	10.5%	19	18	1	5.3%
Associate Department Heads (STEM)	7	6	1	14.3%	6	5	1	16.6%
Assistant Department Heads (STEM)	1	1	0	0.0%	2	2	0	0%
Vice Presidents/Provosts	5	3	2	40.0%	5	3	2	40.0%
Vice Provosts	3	1	2	66.6%	4	3	1	25.0%
Deans ¹	8	5	2	25.0%	8	5	3	37.5%
Associate Deans	11	7	4	36.4%	14	10	4	28.6%

Note: ¹The two female deans in 2002 were the Dean of the Graduate School and the Library Dean. In 2003 two of three searches for academic college deans were successful. The new Dean of the College of Arts and Sciences is the only female academic dean. A search is in progress to fill the position of the Dean of the College of Engineering.

Table 12: SBS and STEM Faculty Holding Regents' Professorships, 2003

	Total	Men	Women
SBS Departments	1	0	1
STEM Departments	4	3	1*
Non SBS/STEM	6	6	0
Total	11	9	2

*Includes L. Huenneke, who left NMSU in Fall, 2003.

Table 13: Gender Distribution of Tenure and Promotion Committees 1997-2003

	College of Agriculture and Home Economics			College of Arts and Sciences			College of Engineering		
	Total	Female	% Female	Total	Female	% Female	Total	Female	% Female
1997-1998	N/A	N/A	N/A	6	0	0.0%	6	0	0.0%
1998-1999	5	1	20.0%	6	0	0.0%	7	0	0.0%
1999-2000	5	2	40.0%	6	1	16.6%	6	0	0.0%
2000-2001	5	2	40.0%	6	1	16.6%	7	0	0.0%
2001-2002	5	2	40.0%	6	1	16.6%	6	0	0.0%
2002-2003	5	2	40.0%	6	1	16.6%	6	0	0.0%
2003-2004	Committee still being formed			6	1	16.6%	5	0	0.0%

Table 14: Women as a Percent of All Ph. D. Recipients Nationwide, 1999, Academic Employment, 1999 and NMSU Faculty, 2003

	Physical Sciences	Biological and Agricultural Sciences	Earth and Atmospheric Sciences	Mathematical Sciences	Computer Sciences	Engineering
National, 1999	23.20%	40.80%	26.00%	25.50%	18.40%	14.80%
Employed in Academia, 1999	12.62%	32.60%	17.95%	14.47%	12.62%	8.24%
NMSU Faculty, 2003	4.90%	16.40%	33.30%	33.30%	20.00%	10.80%

ADVANCE: Space Allocation Study

Cecily Jeser-Cannavale, Jammie Benton-Speyer, and Lisa Frehill

Overview

The well publicized study of the status of women faculty at MIT's schools of sciences noted a significant difference in space allocation by sex. For science, technology, engineering, and mathematics (STEM) faculty, the availability of adequate space – in terms of both quantity and quality – affects researchers' productivity and the quality of work life. The study outlined here sought to determine whether there were sex differences in the allocation of space at New Mexico State University (NMSU). The study used quantitative data supplied by the Office of Facility Space Management in addition to brief qualitative interviews with department heads to show that this was a complicated question. At NMSU, while there was a statistically significant difference by sex in space for full professors (i.e., women's means of 266 square feet was less than men's mean of 541 square feet), this difference was not significant when we controlled for college. Departmental space allocations greatly varied. There was no evidence of institutional discrimination based on sex.

Data Collection

In June 2003, Jammie Benton-Speyer discussed the University of Michigan space allocation study with Jan Malley. In October, 2003, Cecily Jeser-Cannavale contacted Sheila Edwards at the University of Washington to ensure that New Mexico State University's (NMSU) study would be comparable to that conducted by other ADVANCE institutions.

Ron Washburn, Interim Director, Facility Auditor, CAD/GIS Specialist for Facility Space Management, provided to the ADVANCE program building layouts and spreadsheets about the spaces controlled by the academic STEM departments. Between July and October, 2003 a member of the ADVANCE research staff met with each of the nineteen STEM department heads to:

- (1) verify the accuracy of the data provided by Mr. Washburn and
- (2) ask a series of general questions concerning space allocation (see Appendix A).

In November 2003, Cecily Jeser-Cannavale met with Mr. Washburn to review the data once again and reviewed the University of Washington space allocation report to prepare the NMSU report. Based on these reviews, an SPSS data file was constructed that included information about the space allocated to all tenured and tenure track NMSU STEM faculty members. The variables included the usual demographics as well as several measures of space (all measured in square feet).

- Office Space
- Lab Space
- Shared Space
- Total Space

Total space was the sum of office space plus lab space plus a fraction of shared space (e.g. if two people shared a lab, then each was considered as controlling half of that space). In some analyses department heads were considered separately.

Departmental level data on space were also compiled within the following categories:

- Conference Rooms
- Classrooms
- Break Rooms
- Work Rooms
- Student Areas

This analysis enabled us to compare/contrast department level resources to see if the departments with higher percentages of female faculty controlled less space than those with proportionately fewer female faculty members. Such an analysis could reveal the presence of structural/institutional discrimination based on sex.

Limitations of Data

Many limitations discussed by both University of Washington and the University of Michigan were present at NMSU too. Those limitations were:

- (1) Departmental differences in space policies and practices hindered the ability to consistently assign ownership to individual faculty members. Departments control shared research space very differently and usually the space was not assigned to faculty members. However, some departments would identify the primary user(s) of shared research space. Assignment of graduate students' space varied by department and that space was generally not assigned to a specific faculty member.
- (2) Data do not reflect the quality or type of space needed for a faculty member's research programs. Faculty members within a department could have different space needs based upon their type of research.
- (3) It was not possible to visually inspect the space managed by the nineteen academic departments.
- (4) Academic departments varied considerably in their capacity and willingness to verify data. Overwhelmingly, department heads were reluctant to conduct interviews on space allocation, because the facilities management office had undertaken a very similar process.
- (5) Serious differences in sample sizes hindered data analysis and sex comparisons. Sample sizes for female faculty within departments were small compared to male faculty members especially when comparisons within rank were attempted.

Findings

The first data analysis compared the square footage allocated to female versus male faculty members. Table 1 presents mean square footage of space by sex.

Table 1: Means of Square Footage for Female and Male Faculty Members by Rank

Rank	Male		Female	
	Mean	N	Mean	N
Full Professor	540.7	53	266.3	12
Associate Professor	438.9	58	555.0	15
Assistant Professor	364.7	67	355.4	18

Using a t-test statistic to test the differences in males' and females' mean space, we found only one significant difference: at the full professor level men's mean of 541 square feet was significantly greater than women's mean of 266 square feet of space ($t=2.388$). However, when we controlled for college or disciplinary area, the difference in space assigned to female versus male full professors was no longer significantly different. It should be noted, however, that subsample sizes were too small for meaningful statistical tests in many cases.

A departmental data analysis that compared the square footage allotted to female and male faculty members did not reveal any differences. (See Table 2) For full professors space allocation depended on both sex and department. Departments with equitable distribution of space were:

- Mathematics
- Agronomy and Horticulture

Departments that allocated more space to females than to males

- Geological Sciences

Departments that allocated more space to males and than to females

- Entomology, Plant Pathology, and Weed Science
- Civil and Geological Engineering

The data were hard to analyze due to many departments lacking in the number of female faculty, especially at the full professor level.

Table 2: Mean Square Footage of Space by Department, Rank, and Sex for Tenure Track Faculty 2003

Department	Professor				Associate Professor				Assistant Professor			
	Males	N	Females	N	Males	N	Females	N	Males	N	Females	N
College of Agriculture and Home Economics												
Agronomy & Horticulture	457.2	5	430.0	2	278.3	3	0.0	0	441.0	4	133.0	2
Animal & Range Science	745.8	8	0.0	0	112.5	2	0.0	0	328.2	5	1,144.0	1
Entomology, Plant Pathology, & Weed Science	345.0	2	133.0	2	586.0	2	0.0	0	131.3	3	133.0	1
Family & Consumer Sciences	0.0	0	133.5	2	0.0	0	484.63	4	0.0	0	0.0	0
Fishery & Wildlife Science	127.0	1	0.0	0	106.0	1	0.0	0	109.0	2	132.0	1
College of Arts and Sciences												
Astronomy	157.0	2	0.0	0	153.5	2	0.0	0	143.0	2	124.0	1
Biology	1,080.0	3	0.0	0	1,111.0	4	1,260.17	3	822.2	5	1,532.3	2
Chemistry & Biochemistry	1,547.8	4	0.0	0	833.7	7	1298	1	985.7	6	141.0	1
Computer Science		0	0.0	0	205.7	3	0.0	0	183.0	4	184.5	2
Geological Science	165.0	2	1,007.0	1	0.0	0	159	1	873.0	1	0.0	0
Mathematics	157.3	3	158.5	4	181.6	7	158.33	3	139.4	8	128.8	3
Physics	737.3	3	0.0	0	560.0	6	0.0	0	281.0	6	0.0	0
College of Engineering												
Chemical Engineering	970.5	2	0.0	0	993.0	2	314	1	1428.0	1	0.0	0
Civil & Geological Engineering	219.4	7	162.0	1	388.0	2	0.0	0	159.0	2	164.0	1
Electrical & Computer Engineering	357.9	7	0.0	0	211.8	6	0.0	0	139.0	7	114.0	1
Engineering Technology	184.5	2	0.0	0	182.3	4	180	1	181.0	3	180.0	1
Industrial Engineering		0	0.0	0	180.0	1	180	1	180.0	2	180.0	1
Mechanical Engineering	239	2	0.0	0	439.2	5	0.0	0	386.8	5	0.0	0
Survey Engineering	0.0	0	0.0	0	146.0	1	0.0	0	146.0	1	0.0	0

In further analysis, total square footage was broken into office space, lab space, and shared space for each department. (See Table 3) The total space controlled by department varied. For example, the Mathematics department had a total of 8,347 square feet while Mechanical Engineering had 27,260 square feet. But the Mathematics department does not need the same kind of lab space required by mechanical engineering. Shared space was limited due to the lack of data. Reporting reliability was weak: some departments had clearly defined assignments of such space while others failed to report which faculty members used particular labs. Office space ranged from an average of 107.3 square feet to 377.6 and lab space varied from an average of 123.8 square feet to 1,931.8 square feet.

Table 3: Total and Mean Square Footage of Office Space, Lab Space, and Shared Space by Department, 2003

Department	Office Space		Lab Space		Shared Space	
	Total	Mean	Total	Mean	Total	Mean
College of Agriculture and Home Economics						
Agronomy & Horticulture	4,034	237.3	10001	588.3	0	0.0
Animal & Range Science	2,582	151.9	19841	1,167.1	0	0.0
Entomology, Plant Pathology & Weed Science	2,351	213.7	38561	3,505.5	0	0.0
Family & Consumer Sciences	1,930	323.0	5195	865.8	105	17.5
Fishery & Wildlife Sciences	1,894	315.7	5092	848.7	0	0.0
College of Arts and Sciences						
Astronomy	2,818	352.3	517	64.6	0	0.0
Biology	4,063	156.3	32,116	1,784.2	305	16.9
Chemistry & Biochemistry	5,576	293.3	33,095	1,741.8	540	28.4
Computer Science	3,776	377.6	1,238	123.8	0	0.0
Geological Sciences	977	162.8	2,252	375.3	0	0.0
Mathematical Sciences	7,313	252.2	513	17.7	521	18.0
Physics	5,396	337.3	10,407	650.4	0	0.0
College of Engineering						
Chemical Engineering	2,081	297.3	9,932	1,418.9	0	0.0
Civil & Geological Engineering	2,799	174.9	21,628	940.4	0	0.0
Electrical & Computer Engineering	4,932	246.6	17,097	854.9	0	0.0
Engineering Technology	2,812	234.3	18,847	1,570.6	0	0.0
Industrial Engineering	1,905	317.5	8,463	1,410.5	0	0.0
Mechanical Engineering	4,049	337.4	23,181	1,931.8	0	0.0
Survey Engineering	322	107.3	602	200.7	0	0.0

Another aspect of space allocation was the amount of communal spaces for departments. (See Table 4) Such communal spaces are important in several ways.

- These spaces provide the department with more flexibility in scheduling classes and meetings.
- Communal spaces provide the infrastructure for the development of a sense of community and solidarity in a department.
- Communal spaces can potentially be transformed into individually controlled spaces (e.g. labs, offices, etc.).

Two departments had no conference room: Survey Engineering and Geological Sciences. Four departments lack control over classrooms: Agronomy and Horticulture, Astronomy, Entomology, Plant Pathology and Weed Science, and Survey Engineering. The amount of space dedicated to students' areas, which included graduate assistants' offices, varied between departments.

Table 4: Total Square Footage of Communal Space by Department, 2003

	Conference Rooms		Break Rooms		Classrooms		Work Rooms		Departmental Offices		Student Areas	
Department	Square Feet	N	Square Feet	N	Square Feet	N	Square Feet	N	Square Feet	N	Square Feet	N
College of Agriculture and Home Economics												
Agronomy & Horticulture	404	1	0	0	0	0	182	1	1,397	4	610	3
Animal & Range Science	1328	2	0	0	3,145	3	1,726	5	2,690	17	3325	14
Entomology, Plant Pathology & Weed Science	411	1	1	116	0	0	507	2	1,227	2	571	3
Family & Consumer Sciences	337	1	0	0	904	1	367	2	1,582	7	310	1
Fishery & Wildlife Sciences	268	1	0	0	1,264	1	292	2	1,915	8	1,583	5
College of Art and Sciences												
Astronomy	428	1	40	1	0	0	66	1	276	2	2,965	13
Biology	1139	3	0	0	2,153	2	573	2	313	1	2,685	9
Chemistry & Biochemistry	404	1	507	3	6,193	6	0	0	1,045	6	3,165	17
Computer Science	893	1	0	0	3,352	4	0	0	1,212	5	6,965	13
Geological Sciences	0	0	0	0	3,451	3	315	1	776	3	591	3
Mathematical Sciences	1,520	4	1,118	4	10,048	14	955	2	1,142	1	8,122	36
Physics	563	1	48	1	9,778	13	186	1	389	1	2,917	14
College of Engineering												
Chemical Engineering	304	1	195	2	1,459	1	256	1	462	2	3,983	16
Civil & Geological Engineering	1,569	3	276	2	2,051	5	244	1	581	1	5,870	19
Electrical & Computer Engineering	727	2	406	3	3,866	4	144	1	897	4	4,460	15
Engineering Technology	443	1	128	1	593	1	177	1	1,349	4	2,402	3
Industrial Engineering	418	1	58	1	1,680	2	177	1	1,247	4	2,967	7
Mechanical Engineering	1,104	2	89	1	5,528	8	0	0	880	2	4,529	13
Survey Engineering	0	0	0	0	0	0	0	0	3	571	335	1

The departments control space that are distributed between faculty members, emeritus faculty, graduate students, and communal areas. Table 5 presents the data of total space controlled by a department and the total space per tenured and tenure track faculty member. It also shows the percent of women within the department. The correlation coefficient for total space per faculty member and percent women was -.018. This same correlation coefficient was computed within each college:

College of Agriculture and Home Economics -.084.
College of Arts and Sciences -.282.
College of Engineering .416.

These correlations mean that within the College of Engineering, as the percentage of women faculty members increased, so too did the square footage per faculty member in that department increase. On the other hand, the opposite was found for the College of

Arts and Sciences with no substantial correlation between percentage of women in the department and the per faculty square footage in the five STEM departments in the College of Agriculture and Home Economics.

Table 5: Total Space and Total Space per Tenured and Tenure Track Faculty Member by Sex

	Total Space		Percent Female
	Total	Mean	
College of Agriculture and Home Economics			
Entomology, Plant Pathology, and Weed Science	43744	3976.7	27.3%
Fishery & Wildlife Sciences	12,308	2,051.3	16.7%
Animal & Range Science	33,087	1,946.3	5.9%
Family & Consumer Science	10,730	1,788.3	87.5%
Agronomy & Horticulture	16,628	978.1	23.5%
College of Arts and Sciences			
Chemistry & Biochemistry	50,525	2,656.2	10.0%
Biology	43,042	2,391.2	27.8%
Physics	29,684	1,855.3	0.0%
Computer Science	17,436	1,743.6	20.0%
Geological Sciences	8,362	1,393.7	33.3%
Mathematical Sciences	31,252	1,077.7	34.5%
Astronomy	7,110	888.75	12.5%
College of Engineering			
Mechanical Engineering	39,390	3,282.5	0.0%
Industrial Engineering	16,915	2,819.2	33.3%
Civil & Geological Engineering	35,018	2,693.7	15.4%
Chemical Engineering	18,672	2,667.4	14.3%
Engineering Technology	26,751	2,229.3	16.7%
Electrical and Computer Engineering	32,529	1,626.5	4.5%
Survey Engineering	1830	610	0.0%

Interview Findings

All of the department heads stated they controlled space allocation in their department. Three of these department heads work with a departmental committee that assists them in allocating space. Most department heads did not indicate how they allocated space; however two stated it was based upon a formula. Two department heads stated allocation was based upon research and grants, while two department heads specified academic need as the main determinant for space allocation. One department head stated space was allocated based upon seniority.

Overall, the lack of adequate space was cited as an issue by half of the department heads interviewed, while the other half did not have major concerns with space. Two department heads indicated that while space was not scarce for the time being, space was “tight” and may become a problem in the future. Department heads cited lab space as the most scarce, followed by office space, classroom space, space for graduate students, and storage space.

Conclusions

Is there institutional sex discrimination when allocating space? Our findings show that there does not appear to be a clear pattern of institutional sex discrimination when allocating space. The NMSU ADVANCE program constructed a data set based upon the parameters established by University of Michigan and the University of Washington ADVANCE programs. In order to better answer the question we also conducted short interviews with department heads. Department heads were hesitant to answer some of our questions because of their concern that space could be taken from them.

The data has some significant limitations. Departments do not uniformly assign space to faculty members, which made it difficult to analyze the shared space within departments. The small sample sizes of female faculty members hindered data analysis.

In order to improve our study, next year the ADVANCE program will be working closely with the Office of Facility Space Management. We will jointly interview the department heads so that department heads will not be as reluctant to answer our questions, which had been the case this year. The goal of ADVANCE and the Office of Facility Space Management is to improve the quality and reliability of the data maintained about assigned space, especially shared space, to enable us to better answer questions concerning gender equity in space allocation. Better data will improve our confidence in our finding of insignificant sex difference in space allocation.

Executive Summary: Exit Interview Final Report

Why Do Faculty Members Leave NMSU?

Purpose

As part of the ADVANCE: Institutional Transformation Program at NMSU, the Committee on the Status of Women in STEM conducted exit interviews with faculty members who left NMSU as well as the department heads of “leavers.” The purpose was to determine the factors that accounted for faculty members’ decisions to leave NMSU and to ascertain those strengths of the institution upon which faculty recruitment and retention efforts could be built. The information gathered as a result of this effort fits well several of NMSU’s Strategic Directions for 2003-2004:

- Human Resources Goal #4: Attract, develop, reward and retain a high-quality faculty and staff.
- Diversity Goal #5: Provide opportunities for faculty and staff to enhance their knowledge and skills working with an increasingly diverse university community.
- Diversity Goal #6: Increase the diversity of NMSU’s faculty and staff with the goal of having the NMSU employee profile represent the appropriate market pool in terms of race/ethnicity, gender, and people with disabilities.

Methods

As of August 29, 2003, a total of 11 people were interviewed by the ADVANCE Ad Hoc Exit Interviews Committee. Five of these were department heads in STEM, two of whom, themselves, were leaving NMSU, while the remaining six were faculty members from STEM departments who had left NMSU in either 2002 or 2003 (a total of 8 “leavers”). The interview data were supplemented with evidence gathered from STEM faculty asked to comment on verbally-reported findings. Department Heads were situated to provide information about a number of retention issues, including instances of successful efforts to make counteroffers to retain faculty members.

The committee consisted of:

Cynda Clary	Laura Huenneke
Sonya Cooper	Linda Riley
Lisa Frehill	

In most cases, two committee members participated in each interview. Interviewers discussed their findings, wrote and shared interview notes, and met on several occasions to discuss the findings and develop this report. A preliminary copy of the report was sent to all interviewees, who were asked to comment on its contents. Four of the 11 replied with positive endorsements and concrete suggestions regarding this report. Faculty members who were leaving the institution appreciated the opportunity to comment on NMSU in hopes that the negative issues they had faced would not be problematic for future generations of faculty at NMSU.

The findings of this report should be viewed with caution because of the small scale of our study. However, the issues that we have uncovered, some of which were investigated further by Dr. Laura Kramer, the external evaluator for ADVANCE, reveal some areas of concern that merit further investigation.

Brief Overview of Findings

What did faculty like best about NMSU?

- working with the students at NMSU
- commitment to the institution's goals

What factors affected the decision to leave NMSU?

Compensation was important, but was not the driving issue in these faculty members' decisions to leave NMSU. Instead, issues related to the work environment at NMSU were paramount in faculty members' decisions to leave the institution. Leavers cited a number of issues, which were often confirmed by department heads, as follows:

- Negative departmental climate
- Unresolved interpersonal problems between department members or between the department head and faculty member
- Difficulties of enacting the multiple roles associated with research, teaching, and service
- Perceptions of fairness of the distribution of responsibilities and rewards within the department
- Issues related to sexism and racism—between faculty members
- “Red tape” involved in successfully completing and managing funded research at NMSU, especially related to hiring technical personnel and CAS/accounting issues
- The difficulty for basic science researchers to move ideas from the laboratory into the marketplace, which was better institutionalized at academic workplaces to which the faculty member was going.

In addition, meaningful career ladders and training into academic administration were cited as important. Two of the people who were interviewed moved from department head positions at NMSU to be deans elsewhere, therefore, leaving NMSU was necessary though both were candidates for open dean's positions in their respective colleges, these respondents highlighted the following:

- Lack of formal training at NMSU for academic administration was problematic.

What can be done?

To address the interpersonal relations issues that were cited repeatedly by interviewees, comprehensive strategies should be undertaken as follows:

- Increased training of department heads, especially in the area of general management, conflict resolution, and leadership.
- Diversity training for all faculty, with an emphasis on the issues of subtle racism and subtle sexism.
- Post-tenure review or other mechanisms to punish inappropriate conduct on the part of full professors.
- Development of an ombuds office associated with the provost to deal with conflicts before they fester.

To address the issues of red tape that researchers, especially those with funded projects experience, two additional recommendations are essential:

- Improve—or overhaul—the CAS system WITH faculty input.
- Streamline hiring processes, especially of technical and support staff.
- Determine fair methods of ensuring that faculty with funded research are able to access other institutional resources necessary for the projects, including space.

Exit Interviews Report

How the Study Was Conducted

The original plan of the project was to interview as many faculty who had left NMSU within the past couple of years as was possible. In addition, the department heads of each leaving faculty member were interviewed. By interviewing department heads, the committee was able to gain administrative insight into issues related to faculty recruitment and retention. In most cases, department heads were able to provide information pertaining to cases where other faculty members had left as well as successful retention cases. This meant that the interviews taken as a whole covered information relevant to a total of 14 different cases of faculty members who either left the institution or who were successfully retained.

We spoke with the following:

- 8 people who left NMSU, two of whom were department heads.
- 3 additional department heads.

Interviews were conducted by two members of the committee whenever possible. Phone interviews were conducted by one member of the committee. Questions that were asked are included in the Appendix, but it should be noted that in many cases, these questions served as guides for discussion that could go in different directions depending upon the individual circumstances of the interviewee. The interviews, whether in person or by phone lasted at least one hour and a maximum of three hours, with an average of about 1 ½ hours. Questions that were asked of the faculty members and the department heads (two separate sets) are contained in the appendix. In general, respondents—both faculty who left and department heads—were NOT reluctant to speak. Indeed, the faculty who were leaving were more than happy to spend time speaking with the committee members and even sent or provided additional materials so that we could better understand their situation.

Throughout this report, we use him/her (s)he personal pronouns in order to obscure, as much as possible, information that could be used to identify the particular respondent. Respondents were promised confidentiality. Several indicated it was “okay” to use their names, but we have chosen not to use any names in order to protect all of the respondents. All of the respondents were given an opportunity to review this report and to request appropriate editing before it was made public as a further step to guard confidentiality.

What Did Faculty Like Best About NMSU?

NMSU Students and the Land Grant Mission

The good news first: we asked people what they liked best about NMSU. Without hesitation, faculty reported that they liked working with the students at NMSU. They felt a strong commitment to the institution and its goals as a public, land-grant institution, often citing their own family background as similar to that of the students at NMSU. Several faculty—both men and women—had tolerated very difficult climates within their departments BECAUSE of their personal belief in the institution’s goals and sense of commitment to the students.

It’s Not Just About Money!

More good news: compensation was not the driving issue in these faculty members’ decisions to leave NMSU. While NMSU’s salaries are below the means reported in the Oklahoma State University Annual Salary Survey within ranks and disciplines—and the faculty were aware of

this fact—a range of other issues affected these faculty members’ decisions. It must be pointed out, however, that salaries in most—but not all—cases increased for the faculty member, sometimes substantially so. Faculty who left indicated that the increased salary became another good reason to leave NMSU.

What Factors Affected the Decision to Leave NMSU?

Departmental Climate, Unresolved Interpersonal Conflicts, Sexism and Racism

Foremost, and, perhaps the most difficult issue to address was the departmental climate, especially the department head’s leadership. In several cases, there had been problems—interpersonal problems between department members, difficulties between the department head and the faculty member, etc.—that had not been addressed in the early stages of the conflict. These issues festered, sometimes for many years, because the institution failed to provide a quick, effective solution. These interpersonal conflicts then affected the entire department because even though some NMSU STEM departments are large, subfields within those departments are like “mini-departments” within which all department members **MUST** play an active role in the research, teaching and service work of the program. Unlike the situation at much larger institutions, no faculty member at NMSU can confine his or her activities to only one of these three areas.

The heart of the conflicts come, to some extent, from the difficulties of enacting the multiple roles associated with research, teaching, and service; perceptions of fairness of the distribution of responsibilities and rewards within the department; and issues related to sexism and racism (both blatant and subtle). Research on higher education indicates that women and minority faculty often bear a heavier burden of service and outside-classroom teaching than their white male counterparts. As the number of female students in many of NMSU’s natural and physical science departments has grown without a commensurate increase in the number of women faculty, the few (or only) women in the department find themselves mentoring and advising a large number of students. Furthermore, since minority and female faculty tend to be in more recently-graduated cohorts, they often engage in newer areas of research within their disciplines. Graduate students, then, tend to gravitate towards these faculty members but then these faculty experience difficulty in receiving “credit” for this work, especially if such work is part of an interdisciplinary program.

Phrases like “a white male doesn’t have a chance” in the context of active faculty searches are not uncommon to hear, according to one commentator on the preliminary report. Given that two-thirds of NMSU’s STEM faculty members are white males and an overwhelming majority hired in the past year are white males, the data contradict this belief. But it is important to note that climate issues were also cited by white males, indicating that bias was problematic whether or not it was related to sex or race/ethnicity.

In several cases, without being prompted to comment on sexism or racism, respondents freely volunteered examples of how they felt that they were treated differently because of their sex or ethnicity. For example, a female faculty member who had been in a particularly troubled department reported that she felt the department head did not respect her, so she would send in a male colleague with various committee reports.

Various forms of intellectual harassment were reported by several faculty members. One woman reported that while she was untenured, a more senior male colleague would visit her office nearly every day to criticize her research and work-related activities. Another woman produced a

sizable folder of departmental correspondences, which she had accumulated to document the harassment—including actions that slowed progress on her research—that had occurred over many years. In this latter case, a succession of department heads had failed to address the problem in a meaningful way and the current department head felt that there would now be less tension in the department with the departure of the faculty member.

There are significant legal ramifications associated with the institution NOT addressing interpersonal conflicts, especially since these conflicts can easily escalate, as was the case with several of the faculty members to whom we spoke. Annette Kolodny's chapter in an edited volume discusses the problem of "Intellectual Harassment." In this chapter, she cites the case of a medical research faculty member at the University of Iowa, a woman of Chinese ancestry, who was awarded a large settlement after she sued the institution. Over a period of time, her colleagues had spread malicious rumors about her, which had a significant negative impact upon her research (including her ability to do collaborative research and attract graduate student research assistants). While the faculty member did win her case and was awarded promotion to full professor, the entire process took 14 years, bankrupted her personally, and was a cause of stress-related illnesses. The University was ordered to pay her \$50,000 in back pay, \$126,000 in damages and to cover her legal costs—that she had originally paid out of pocket—of \$895,000!

"Red Tape": Difficulty Getting Work Done

A second broad issue cited by those faculty members with outside research funding and their department heads as particularly problematic was the "red tape" involved in successfully completing and managing funded research at NMSU. One researcher who left, for example, indicated that it was utterly impossible to purchase a chair! The faculty member eventually, him/herself, bought a chair. The faculty and department heads realized that careful oversight of external funds was important, but their experiences at other large, research-oriented institutions had demonstrated to them that there were better ways of maintaining accountability.

The issues that were cited most often as problematic related to funded research were hiring technical personnel and CAS/accounting issues. One department head stated that at a job at a previous large research institution a technician could be hired within a couple of weeks of receiving award notification. Here at NMSU, the same process can take upwards of six months. CAS issues lie at the heart of the other researcher's complaint regarding purchasing the chair. Even with careful consultation with financial monitors, faculty have found the system difficult. One step in the right direction are the trainings initiated in the past few months by the Office of the Vice Provost for Research. Despite these trainings and previous policy changes, however, some faculty members report that they still encounter staff who are unfamiliar with the newer rules and procedures.

These issues are even more problematic for new faculty members in the "bench sciences," those sciences in which it is essential to make numerous purchases and hire a range of personnel in order to establish a working laboratory capable of generating the results for grant applications and publications. The time required to develop a good working relationship with a range of administrators, fiscal monitors and their own colleagues combined with the need to figure out how to navigate the overly-complex system often without effective mentoring from senior faculty in their departments is problematic for new faculty. New faculty members this past year reported they were already starting to feel "burnout" from having to process the paperwork necessary to set up labs.

Moving Ideas Out of the Lab and Into the Marketplace

A final issue that was not brought up very often by interviewees, but one that bears further scrutiny beyond this report concerns the ability of basic science researchers to move ideas from the laboratory into the marketplace. One researcher who was taking a lateral move in terms of salary indicated that the place to which (s)he was going had already established an effective system for technology transfer.

Professional Development Opportunities: Preparing Future Administrators

Two of the people who were interviewed moved from department head positions at NMSU to be deans elsewhere. For these people, leaving NMSU was the next logical step in their career paths, although one of the respondents had hoped to advance in administration at NMSU rather than to leave the institution. The general issue of advancement opportunities at NMSU is one that should be examined across campus. The lack of formal training at NMSU for academic administration was cited as somewhat problematic. We say “somewhat” because these heads were aware of additional training provided by the American Association for Higher Education and their professional associations. Are there other faculty members who aspire to academic administration? Can faculty members plan to have a career in administration at NMSU or will they need to accept geographic mobility as one of the requirements to satisfy these career goals?

What Can Be Done?

Three of NMSU’s 2003-2004 Strategic Directions are associated with faculty:

Human Resources Goal #4: Attract, develop, reward and retain a high-quality faculty and staff.

Diversity Goal #5: Provide opportunities for faculty and staff to enhance their knowledge and skills working with an increasingly diverse university community.

Diversity Goal #6: Increase the diversity of NMSU’s faculty and staff with the goal of having the NMSU employee profile represent the appropriate market pool in terms of race/ethnicity, gender, and people with disabilities.

The achievement of these goals is paramount in order for NMSU to achieve the other goals related to the continuous improvement in the quality of education, research expenditures and external funding of research, and expansion of NMSU’s graduate programs. The exit interviews and subsequent discussion shed light on how NMSU can achieve Goals #4-6. Indeed, the institutionalization of a process to conduct meaningful exit interviews with faculty would, itself, be a significant strategy to meet these goals.

Seven important steps can be taken to address the issues that were raised in the course of these exit interviews. These results and recommendations need to be viewed with caution, since they represent the experiences of a relatively small percentage of NMSU’s STEM faculty (11/275 = 4.0% but represented two-thirds of those who left the institution in the past year). Preliminary findings have been orally reported and reviewed by a number of other faculty and department heads in Ad Hoc committee meetings and at the ADVANCE Committee on the Status of Women in STEM meeting. The first four steps address issues of departmental climate:

1. Increased training of department heads, especially in the area of general management, conflict resolution, and leadership. (Addresses Strategic Directions Goals 4, 5, and 6.)
2. Diversity training for all faculty, with an emphasis on the issues of subtle racism and subtle sexism. (Addresses Strategic Directions Goals 4, 5, and 6.)
3. Development of an ombuds office associated with the provost. **Many** of our peer institutions have such an office, which can provide faculty with access to fellow faculty members trained in mediation so that conflicts can be meaningfully addressed earlier rather than later. Such an office could also provide help to faculty on the bureaucratic processes that cause such frustration, but which are essential to provide institutional accountability. The EEO/ADA Officer is NOT the appropriate person to handle such matters. On the one hand, faculty see the EEO/ADA Officer as a “last resort”—they want a conflictual situation to end without having to use a cumbersome legal process. On the other hand, faculty see the EEO/ADA Officer as a representative of the NMSU administration, the same administration that they felt failed to take effective measures to sanction a harasser. The EEO/ADA Officer is seen as protecting the administration’s and not the faculty member’s interests. (Addresses Strategic Directions Goals 4 and 5.)
4. Post-tenure review or implementation of some other mechanism to punish inappropriate conduct by tenured, especially full, professors. (Addresses Strategic Directions Goals 4, 5, and 6).

The remaining two steps relate to the bureaucratic process that cause frustration for faculty members and department heads:

5. Improve—or overhaul—the CAS system WITH faculty input. (Addresses Strategic Directions Goals 4 and 5).
6. Streamline hiring processes. (Addresses Strategic Directions Goals 4 and 5).
7. Determine more fair methods of ensuring that faculty with funded research are able to access other institutional resources necessary for the projects, including space. (Addresses Strategic Directions Goal 4).

These three kinds of processes were cited in numerous contexts in which the ADVANCE program conducted training in the past year. Department heads from across the university reported substantial problems in these areas during the Department Head Retreat in June. New faculty and their mentors who participate in the ADVANCE program cited these problems, and the ADVANCE program has started to document these processes to identify how they may be streamlined.

Improving organizational processes’ efficiency will not, alone, lead to retention of valuable faculty members but these strategies are likely to reduce some of the sources of frustration that faculty experience in their jobs. It was quite telling when faculty members who left made comments like “it just wasn’t fun to go to work anymore” reflecting the culmination of poor departmental climate, perception of unfair practices, and the constant battle to obtain the resources necessary to accomplish one’s job. Problems with CAS or hiring, alone, don’t cause people to leave but they do add to the list of “cons” associated with staying at NMSU when even a lateral-move offer in terms of salary is presented to the faculty member.

Summary

While salaries continue to be a significant factor in recruitment and retention of faculty, careful exit interviews revealed that more sensitive issues were at the heart of many faculty members’ decisions to leave NMSU. Salary is also a “scapegoat” in that for those who leave because of

conflicts and problems within their department. It is far easier to highlight the significant salary increase as the reason for the move rather than to tell one's colleagues that the real reason for leaving is the bad behavior or unfairness of these same colleagues. Likewise reasons like "moving closer to family" becomes another convenient way for faculty members leaving the institution to avoid confrontation with their colleagues in the department.

The committee found that a range of issues related to general managerial effectiveness—i.e., the inability of department heads to establish and maintain an appropriate professional environment within their departments—means that interpersonal conflicts fester for years rather than being "nipped in the bud." For women and minority faculty, there are simply more bases upon which these conflicts may develop than for white males. Minority and female faculty members' research is often in relatively newer, cutting-edge areas compared to the more traditional areas of their more senior colleagues. In addition, more senior colleagues are more likely to hold a more secure, tenured position than are the more junior women and minority faculty members. Finally, the distribution of research, teaching and service work, and how these activities are evaluated and rewarded annually are more likely to negatively impact junior women and minority faculty members—who account for only one in three of NMSU's STEM faculty—than senior white males. Minority and women faculty members who are sparse in STEM find themselves on more committees than their white male peers and report that this work is often devalued by the department head or the departmental promotion and tenure committee. Future research is essential to determine whether there are significant differences in workloads and the relative value associated with various aspects of faculty members' jobs.

In closing, the committee agreed that the exit interviews were essential research for the institution but also served an important function with respect to the people who left the institution. Every one of the faculty members who left that was asked for an interview unhesitatingly agreed to the interview. At the conclusion of the interview these respondents expressed their gratitude and appreciation for the opportunity to share their stories with someone from NMSU. Interviewees felt that their input was important in crafting the strategies that will become increasingly essential to attract and retain a high-quality labor force.

The committee plans to conduct similar interviews next summer and will do so on an on-going basis while searching for a means to institutionalize the exit interview process. It would be useful to expand these interviews to include non-STEM faculty to determine other matters the institution needs to address. The fact that fellow faculty members conducted the interviews—under the guidance of a trained social scientist with interview experience—was an important aspect of the research design. Faculty were able to establish the rapport that is essential in gathering potentially sensitive information. Likewise, having a department head present for interviews with other department heads was important in teasing out the truly significant issues related to retention from the administrative standpoint.

ADVANCE can provide much support in enacting these recommendations. We have begun working with Personnel in which Diana Quintana has been especially helpful and interested in pursuing these goals. Prior to her leaving NMSU, ADVANCE met also with Elva Telles to discuss the establishment of an ombuds office. With the collaboration with the Office of the Provost, Personnel, and the Office of the Vice Provost for Research, it is possible to make effective use of the rich data collected via these exit interviews and the larger discussions that ensued as a result of sharing this information across campus.

Appendix: Informed Consent Forms and Interview Questions for Faculty Members Leaving NMSU and for Department Heads of Faculty Leaving NMSU

Informed Consent
ADVANCE: Exit Interview

The ADVANCE program at NMSU seeks institutional transformation in order to address issues of gender equity. The program elements support the recruitment and retention of women in faculty and administrative positions in science, mathematics, and engineering (SME) fields at NMSU. The occasion of an employee choosing to leave the institution provides us with an opportunity to gain some perspective on what NMSU needs to do to retain valued SME faculty regardless of gender.

We appreciate your willingness to discuss your decision to leave NMSU with us today. Because we realize that some of the issues we will discuss are very personal, we will make every effort to disguise your identity in any reporting related to this interview. Each year we plan to use these career transition interviews as one of many pieces of information to improve NMSU, especially with respect to issues related to gender equity, via a report to the Provost. No names, department names, or other identifying information will be conveyed--unless so requested by you--in these reports.

Signature of Interviewee

Date

Printed Name of Interviewee

Signature of Interviewer

Date

Printed Name of Interviewer

Signature of Interviewer

Date

Printed Name of Interviewer

I. Demographics

Our first questions are some basic, background information items about your employment at NMSU and your family situation.

[Note: Start with current title]

1. When did you come to NMSU?
2. What was your 1st position at NMSU?

Ask the next questions as applicable:

3. IF DID NOT START ON TENURE TRACK:

When did you start a tenure-track appointment at NMSU?

4. Have you received tenure? If so, when did you receive tenure?
5. When were you promoted to Associate Professor?
6. When were you promoted to Professor?
7. Have you held other positions at NMSU? If so, please describe briefly.
8. What is your current family status? (Prompt: marital status, number and GENERAL age-range of children)
9. Has your family status changed since you came to NMSU? If so, how?

If spouse, then also ask:

10. What does your spouse do here in Las Cruces?

II. Destination Details

Next, please tell us about the position to which you are going. For example,

1. Did you receive an invitation or solicitation to apply elsewhere?
2. Where is this position?
3. What kind of position?
4. Are you receiving a start-up package?
5. Are you being offered an increase in salary?
6. Are you being offered a better benefits package? If better, in what way?
7. What about this new job really “pulled” you? What are the major factors in your decision to leave NMSU?
8. Did spouse/family considerations influence your decision? If so, how? Did the other institution offer you support/services for your family’s relocation? If so, what was this support or what were these services?

III. NMSU Issues

Now, let’s talk a little about whether there was anything that NMSU could have done to keep you here and your reflections on your job and the institution in general.

1. What do you think are some of the best features of NMSU?
2. What have you liked best about working at NMSU?
3. What are some more problematic features of NMSU?
4. What have you liked least about working at NMSU?
5. How do you feel about your department? [Possible prompt: Would you say it’s collegial or do people just do their own thing, etc.]
6. How do you feel about your college? Is it clear how the department’s expectations and functions relate to the overall direction from the college?
7. When you first came to NMSU, was mentoring wanted and/or available?

8. When you first realized that you might leave NMSU, did your department head discuss possible improvements in your situation here, or possible offers to match the offer being made by your new employer?
 9. Did you have discussions/communication about such offers or improvements with your dean, either directly or through your department head?
 10. Are there specific items that would have resulted in your deciding to stay at NMSU? Please describe.
-

Department Head's Questions—Exit Interviews

1. When and how did you learn that _____ was leaving NMSU? For example, did you hear of the leave directly from the employee, through the grapevine, etc? Did the employee discuss this with you prior to interviewing for other jobs or only after making the decision to leave?
2. Did _____ consult with you about specific issues that might have influenced her/his decision to leave? If so, when and what were these specific issues?
3. After learning of _____'s decision to leave, did you consult with your college dean? If so, what was the result of that consultation?
4. To what extent do you feel your college offers sincere support for retaining faculty members?
5. What is your understanding of your college's policy regarding counteroffers? That is, could you please describe your college's policy? What is your opinion concerning this policy?
6. How proactive does your college encourage you to be regarding faculty retention in your department?
7. What resources do you know about—and what is your opinion about the quality and effectiveness of those resources—that you can use to aid in the retention of faculty members?
8. What resources do you know about—and what is your opinion about the quality and effectiveness of those resources—that you can use to aid faculty members who are under stress?

EVALUATION OF NSF-ADVANCE AT NMSU

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Submitted by

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I. The Visit

The visit had two foci: development of the ADVANCE Program's capacity, and progress toward institutional transformation through changes in all units affecting the recruitment and retention of women in faculty and administrative positions in the "STEM" (science, technology, engineering, and mathematics) fields. From the evening of October 21 through the morning of October 28, the campus visit included meetings with twenty-four people individually and three in a small group. Meetings with administrators included the Associate Provost, the Interim Vice Provost for Research, one academic Dean (College of Arts and Sciences), Associate Deans from the College of Engineering (Interim), the College of Arts and Sciences, and the College of Agriculture and Home Economics, six STEM department heads (from all three STEM colleges), and two department administrators below department head (College of Engineering). I also met with ten faculty members without administrative assignments (females and males, from all ranks, within all three STEM Colleges). In addition, I met with the ADVANCE Principal Investigator, and the Program Coordinator, and the New Mexico – AGEP [Alliance for Graduate Education and the Professoriate] Program Director. I had met with eight of these individuals in 2002.

Many of these individuals simultaneously hold a variety of roles within ADVANCE, from membership in one or another subcommittee to the four Co-Principal Investigators. Many participate in the mentoring program, and/or have had members of their unit receive support through the ADVANCE program. Some have received funding from the ADVANCE grant in their start-up package, for travel, to host a visiting professor, and/or for some research activity.

In addition to weekdays scheduled with meetings beginning at 8:15 and generally running until 5, I spent Saturday and Sunday mornings in extended ADVANCE-related conversations. Finally, on October 29 I had an hour-long phone conversation with the Interim Director of Personnel, who had been ill at the time of our on-site appointment.

Interviews were scheduled for forty-five minutes to over an hour. Several ran well over the scheduled time, and others would have done so if schedules had permitted. Respondents were often surprised by the breadth of the conversation and by the extent to which they found themselves reflecting on their perceptions and experiences. As in 2002, the selection of individuals enabled me to meet with people simultaneously representing a variety of campus units, at a variety of points in their careers, and with varied experiences with the ADVANCE program. Clearly, and significantly, these individuals also have widely varying degrees of power and influence on the campus.

Preparation for the visit included a review of the program-related materials supplied beforehand, and the revision of the interview schedules developed for my first visit. Individualized topics were explored depending on the kinds of positions the person held, and their experiences with ADVANCE. Given the importance of institutional transformation as a programmatic goal, I put topics related to the functioning of the institution and the changes taking place at the center of my interviews. With a large number of leadership positions occupied by interim appointees, it was not surprising that I found the instability of the administrative leadership to be a major topic of interest (and often concern) to many with whom I spoke.

II. Changing Context since Year One

In my evaluation of the first year of the NMSU ADVANCE Program, I wrote: "Recent changes in the University's leadership bring energy and innovative ideas to the campus. Many I spoke with were optimistic about the potential for the future. However, there is also concern

about the ability to turn the ideas into action....” Central to the second year visit was the impact of the year’s changes in leadership on movement toward institutional transformation. I list below the major positions currently occupied by an interim appointee. In addition, various academic administrative positions have had a long period of transient incumbents, from department headships upward to the top of the University’s administration.

- President of the University (the Interim President is concurrently the Provost, Dr. Flores)
- Vice Provost for Research (the position, created during ADVANCE’s first year, was vacated unexpectedly by the departure of the externally recruited incumbent. The interim Vice Provost is Dr. Hills, an ADVANCE co-PI)
- Director of Personnel (the first interim director retired shortly after taking this position)
- Director of the Office of Equal Employment Opportunity (the interim director was initially hired to direct employee training; a search to fill the position is beginning this month; Dr. Frehill was recently asked to serve on the search committee)
- Dean of the College of Engineering (last year’s interim dean has returned to his position as a department head, and a second interim dean is now serving)
- Associate Dean for Academics of the College of Engineering (replacing the current Interim Dean of Engineering)
- Associate Dean for Research of the College of Engineering (replacing the current Interim Vice Provost for Research)
- Department Head of Mechanical Engineering (a unit that has never hired a female faculty member)

It was apparent from the start that the combination of uncertainty and short-staffing accompanying resignations and retirements makes it unusually difficult to predict future directions. Further, the critical array of positions staffed by “interim” appointments will slow the pace of change university-wide. While some interim appointees appear to see this time as an opportunity to review and revamp some traditional processes, others are viewed on campus as seeing themselves holding the institution steady until their positions are filled with permanent appointees. Finally, the movement of personnel from their own positions into interim positions – or adding the interim position to the job - has left positions unfilled or understaffed, and thus interferes with forward movement on change initiatives already begun.

Some people anticipated that an external appointment to the presidency might lead to the appointment of a new Provost, which might discourage innovation even by new appointees to other academic posts. With the arrival on campus of a new Dean of Arts and Sciences in July, decision making in that College is energized. However, because it has been some time since that position was occupied by a “permanent” incumbent, there is a wide range of tasks that Dr. Cruzado-Salas faces.

Parenthetically, it should be noted that some divisions of the University (such as the division of Business and Finance, and until this year the Personnel Office) have had unchanging management for several decades. Unchanging leadership is generally linked to the evolution of procedures and rare use of evaluation. The justifications of procedures often become lost in the past; I found that some faculty and even department heads are not sure whether a particular regulation or procedure is due to Federal mandate, state law, or local practice alone. In addition to the lack of the reevaluation associated with the promotion or arrival of new leadership, the seniority of these division heads results in a lack of leverage for newer leaders of less centralized divisions (e.g., academic departments). Thus, efforts to act quickly or to innovate organizationally are unlikely to succeed. We will return to this below.

III. The ADVANCE Program: Developing Capacity

Staffing

The ADVANCE Program is currently staffed by Pamela Hunt, Program Coordinator, Rebecca Zaldo, a full-time administrative assistant (“Records Specialist”), a quarter-time work-study student, who assists with routine office tasks, and a half-time graduate assistant who was on leave at the time of my visit and has returned part-time to the program.

Ms. Hunt’s effectiveness continues to be viewed widely as impressive. However, her productivity was hampered by the long period between the conceptual approval of the secretarial position and the start-up of Ms. Zaldo. Ms. Zaldo is now assuming day-to-day responsibility for negotiating the cumbersome accounting system, and other aspects of Program activities with templates developed by Ms. Hunt during the program’s first year. Procedures lists are currently in preparation.

Data collection and analysis remain the responsibility of Dr. Frehill with the assistance of a part time student assistant. More effective use will be made of Dr. Frehill’s impressive leadership capability if the Program moves forward with the hiring of a fulltime analyst (with a master’s level training in social science), as several other ADVANCE programs have done.

Space

The Program moved early in 2002 to a two-office suite. The new location is less desirable than its first, which was in an engineering building, and across the street from the buildings of the College of Agriculture and Home Economics. The current location is far from the College of Agriculture and Home Economics, and a fair walk from the College of Engineering. The space (for which rent is charged by the University) is well located in other ways: it is close to the offices of NM-AGEP, which permits useful pooling of some resources, and it is near Dr. Frehill’s sociology office. Unfortunately, the offices (converted dormitory rooms) are small, low-ceilinged, and dark. With the growth of Program staff, additional offices would add to effectiveness; more inviting space would help to create the appropriate, energetic tone when visitors arrive. Currently, there has been an administrative unwillingness to allow the Program to rent vacant space in the same building.

Committees

The structure developed in the first year has proven very useful for the administration of the variety of ADVANCE activities. The Program staff has typically worked very closely with the sub-committee chairs in their on-going and cyclical workloads. The PI should explore further delegation of leadership to sub-committee chairs, leaving the Program office to provide support services. Where such a transfer of leadership is realistic, support services within the Program office should be transferred from the Program Coordinator to the Records Specialist.

Two aspects of the ADVANCE committee functioning during the second year deserve special mention: first, the departure from NMSU of Professor Huenneke, a central figure in the Program from its inception, and chair of the sub-committee on faculty development; second, an inconsistent pattern of participation by members of the Committee on the Status of Women in SME (Science, Mathematics, and Engineering). Dr. Huenneke’s departure, for a very positive career move (Dean of Arts and Sciences at Northern Arizona University, from Chair of the

Biology Department at NMSU), is a major loss to the program, to which she made a wide variety of important contributions, as well as the University. At the time of her departure, she was the only woman department head from the STEM disciplines (Dr. Vail heads the Department of Family and Consumer Sciences, which has food scientists among its members, but she is not herself trained in a STEM field).

The Program's success will rest in part on the active involvement of all faculty and administrators who occupy positions within it. It would be useful to have appointing administrators and their appointees annually review the fit between their appointees and the Program. Each person connected to ADVANCE is potentially significant to its functioning; no seat should be occupied by an individual whose work load or primary commitments lessen his or her ability to contribute to ADVANCE. While absenteeism is unavoidable from time to time, a review of committee minutes indicates that some adjustments in the representatives may be in order.

Workshops

In its second year, the Program continued to sponsor or co-sponsor a wide range of successful workshops on questions of interest to STEM faculty. As ADVANCE continues this pattern, the Program Coordinator will need to provide more information to possible participants, so that unanticipated overlap and redundancy do not undermine future attendance. Some topics are worthy of repetition, and others may share some common elements, but the time pressures in the lives of NMSU faculty are universal, and individual good will should not be presumed.

One workshop topic suggested in last year's report and which several people articulated a need for in the 2003 visit, is "how to decide when to say no, and then how to say it." This would be useful for junior faculty, who are often in demand to bring their fresh participation to committees, but who need to accomplish research and writing for their academic future. It would also help established faculty who are too often relied on for a disproportionate amount of service, and are thus taken away from the appropriate amount of time spent on research and writing. This situation is nationally found to be more prevalent among women than men professors.

Men and ADVANCE

In its second year, ADVANCE has taken seriously broadening the participation of men in its activities. Workshops have male participation, and the mentoring program has been opened up to the participation of all STEM faculty. For example, all new STEM faculty—male and female—were paired with a mentor through the program. The Program leadership is looking for ways to allow faculty (female and male) to spend longer periods at professional meetings, where they would combine recruitment activity with the research-related activity for which most of their NMSU support would come.

Communication

ADVANCE has expanded its web site, offering links to sites useful to women faculty in STEM fields, and continues to produce printed materials about the Program and its activities for distribution on campus. As ADVANCE's activities have grown, so too have Ms. Hunt's assignments, and the long delays in the approval and appointment of a secretary delayed the expansion of Ms. Hunt's communications work, for which she is superbly qualified. As more and more activities become regularized, she will be able to further develop the Program's communications. She is exploring the recruitment of an intern from the NMSU journalism

graduate program, enabling more frequent sharing of news about Program activities and opportunities, and participating faculty and staff.

Dr. Frehill has made presentations on ADVANCE's work and the institution's performance to the Academic Dean's Council (1/14/03), Provost's Council (10/14/03), and the Faculty Senate (11/6/03), and ADVANCE had a poster at the symposium held by NMSU's University Research Council. She meets with STEM departments in all three colleges. By the end of the second year, she will have met with Entomology, Plant Pathology, and Weed Science, Agronomy and Horticulture, Fishery and Wildlife Sciences, Geology, Mathematics, and Survey Engineering.

Disseminating information outside of NMSU

Communication externally about the Program at NMSU has also been achieved through participation in relevant professional meetings by both the P.I. and the Program Coordinator. As part of its growth, the ADVANCE Program has actively shared its insights and experiences in national fora. Notably, Professor Frehill made a presentation in the spring to the conference of ADVANCE Program leadership in Washington. In November of this year she will participate on a panel on diversity at the annual meetings of the American Society for Mechanical Engineers (ASME), to which she was invited, in part, as a result of Ms. Hunt's previous work for ASME. The panelists will include a White House staff member and Joseph Bordogna, Deputy Director and Chief Operating Officer of the National Science Foundation. The NMSU ADVANCE Program will host a luncheon for panelists before the panel.

Finally, Dr. Frehill and Ms. Hunt are active participants in the movement of which ADVANCE is the most notable part. Ms. Hunt will be Program Coordinator for the 2004 national conference of WEPAN (Women in Engineering Programs Advocacy Network), a role which will both make use of and build further the kinds of networks that will aid the NMSU Program and the University's moves toward institutional transformation. She presented at their 2003 meetings. Dr. Frehill participated in a teleconference hosted by North Dakota State University and will work with Marshall University later this year. These two institutions have unsuccessfully applied for ADVANCE funding, and plan to re-apply. She also presented at the New Mexico Women's Studies Conference.

IV. Recruiting New Female Faculty

ADVANCE's role

Now that ADVANCE has been actively involved at the University for more than a year, I expected to find a recruitment process benefiting from Dr. Frehill's expertise as well as the material support ADVANCE is able to provide to searches and hiring packages. Supporting female candidacies for tenure track lines occurred most notably with ADVANCE's contribution of start up funds to the package constructed by the heads of the hiring departments. There are currently twice the number of women in the Assistant Professor rank in STEM fields at NMSU, compared to the number before ADVANCE funding began.

Although the ADVANCE Program has worked to insure search leaders' awareness of the multiple ways to improve the outcome of recruiting a well-qualified woman, there appears to be no assurance that search leaders follow the ADVANCE advice. For example, equal employment specialists have pointed out for decades that the demographic profiles of the national pool (among those specialties for which the department has an existing need) should be an important input into

the authorization of a position. Yet, there is apparently no regularized requirement that this step be followed.

Leadership and accountability

People frequently pointed out obstacles to recruitment that are beyond their control (climate, location, lack of job opportunities for partners, the relatively under-resourced situation of the University compared to other Research I institutions). There are many things that can be done, however, to increase the probability of a successful search. Two important areas need work, and for each of these areas the upper administration must institute procedures that make offices accountable for their performance. A central academic administrator should routinely review the practices of search committees before approving campus visits and employment offers, and hiring units need to be held uniformly accountable for their pursuit of the range of practices widely known to maximize the potential for the appointment of qualified women.

The Provost's Office should require, before authorizing any search, the submission of information on the demographics of that specialty. It should also require a timely calendar; if a search cannot be organized early enough to tap into the recruitment calendar nationally followed in that field, it should be put on hold until the next academic year. Timely decision-making and approvals should be expected each step of the way, and the Provost's office should review the timely performance of all involved in faculty searches. Needless to say, the reviews by the Provost's office must themselves be conducted with very short turn-around.

Starting late and moving slowly

The slow pace of decision making is a common complaint among faculty and lower level academic administrators. I hypothesize that searching departments, themselves, may not push forward quickly, viewing quick initiation as pointless given the slow motion anticipated at later stages. I recommend that swift action be required at each step of a search, from the development of the position description and the recruitment plan by the department, through approvals in the Dean's (and Provost's) office, the Personnel Office, and so on.

The late starts and slow pace of searches further decrease the chances of hiring a woman, because of the tight competition for qualified women candidates when they are underrepresented, and because of the greater likelihood that a female candidate will need time to address the two body problem. Further, if there will be multiple searches within a department, the subfield(s) in which there is a relatively large availability of women should be first in the recruitment calendar. For example, the hiring done by the physics department during the last academic year put the campus visits of candidates for the nanoscience opening (an overwhelmingly male national pool) before those in materials science (a comparatively sex integrated specialization). This kind of decision may result from a lack of information on the demographics of the specialty areas. If there were an on-going and cooperative relationship with a designated professional (in the Provost's office, most likely) problematic sequencing might have been avoided.

It became clear during my visit that very different views of existing procedures are common at the University, and that I need to provide some (precise and complete, therefore lengthy) examples of the kinds of problems that interfere with the attainment of ADVANCE's goals. In the area of faculty recruiting, the procedures of the College of Agriculture and Home Economics illustrate important factors likely to slow each search.

Every tenure track candidate's campus visit must include separate interviews with the Dean of that College, and with each Associate Dean under whom some portion of the position falls. Most tenure track lines combine responsibilities for teaching and research; thus, most must be interviewed by at least two, sometimes all three Associate Deans. Because the deans in the College travel often as part of their work, this requirement regularly adds a long period of time between the approval of a short list and the campus interview. The candidate's seminar is also expected to be scheduled such that all these administrators can attend, although occasionally viewing the videotape of the seminar is considered acceptable. After the department has completed its interviews, its choice must also be routed through each of these administrators. Due to their heavy travel obligations, they are not always immediately available for signature. While they do designate signing authority prior to their departure, the staff person responsible for routing the hiring documents is, nonetheless, reluctant to allow others to sign them. The slow pace from selecting a short list to interviewing is thus aggravated by the slow pace of approval of the department's preferred candidate.

A parallel problem exists in the hiring of professionals into soft money positions. Although a grant proposal and its budget were approved by the upper administration within the College of Agriculture and Home Economics, and although the Dean and Associate Deans do not participate in the interviewing process, the department head must wait for the Dean's signature before moving forward. Because soft money hires and those in "college faculty" (non-tenure track) positions might eventually be desirable candidates for tenure track positions, this slow pace of action in the long run has a negative effect on candidate pools. In the short run, of course, this process is not good for faculty retention; it represents one of the many ways in which faculty perceive their research activities as slowed down, rather than supported, by their administrators. (This problem is directly addressed in Section VII.)

The two body problem

Work-family issues still appear to affect the hiring of women more than men nationally. There is a policy initiative in the Faculty Senate which would explicitly declare a University concern for reducing or solving the "two body problem." This initiative is expected to be approved, but it has only a symbolic value, if departments seeking to hire one partner do not have more than an ad hoc approach to identifying and pursuing employment for the other.

I concluded in my first report that the relative autonomy of personnel funding at the college level undermines the creation or earlier-than-planned filling of a position for a candidate's partner. To change this situation, I strongly recommend that a position in the Provost's office be identified that will have primary responsibility for mobilizing the search and selection process for the "trailing" partner. In addition, I suggest that some of the "salary savings" held by each college when a vacated line is not immediately reauthorized (or a search does not result in an appointment) be retained by the Provost, for use in short-term appointments while longer-range solutions to the two body problem are sought.

Target of opportunity

The NMSU commitment to gender integration in the STEM fields is becoming more widely known, through ADVANCE, through the participation of faculty in recruitment activities when they attend professional meetings, and through the growing number of distinguished women in STEM fields who serve as visiting professors through the ADVANCE initiative. This should increase the possible identification of well-qualified women candidates for positions in specialty areas not currently authorized, but needing faculty. The Provost's office and

ADVANCE should work together to develop procedures that facilitate initiating target of opportunity hiring. The salary savings held by the Provost, recommended above for possible use for short-term funding of trailing partner positions, could be drawn upon for the short range funding of target of opportunity hires.

Competitive salaries

A major obstacle to recruitment of faculty, professional staff, and administrators is the rigid policy limiting salary offers determined by the salaries of current employees. While I heard about this obstacle repeatedly, negatively, I also heard that this helps in the total budget picture of the University by keeping salary expenditures lower than they might otherwise become. Finally, I learned in my interview with the Interim Director of Personnel, that there has been an initiative to develop a new salary policy to remove this barrier to recruitment. However, because of the short staffing in the Personnel Office, this project has been sidelined for months; it is now expected to be ready for action after the current round of faculty recruitment is completed.

The low priority assigned to tackling this difficult issue indicates a failure to appreciate its significance in faculty recruitment. It also interferes with faculty retention, as those who receive an offer from another University must often choose before NMSU administrators navigate the salary issues to make a counter offer.

VI. STEM Women in Administration

Any institution trying to transform itself to one with equal administrative opportunities for women and people of color must take extra care to ensure the openness of all administrative searches. Skepticism about the ability of “outsiders,” or non-members of a perceived “old boys” network must be overcome to maximize the exploration of administrative opportunities by women faculty. A failure to have an open search for an administrative position in the Provost’s Office undercut its formal endorsement of the NSF-ADVANCE goal to increase STEM women in administrative positions.

All opportunities in academic administration, even those which are short term and which are limited to internal appointments, must be advertised, and standard search procedures followed. It is a misuse of the “target of opportunity” concept to fill such a position with a woman and/or racial-ethnic minority candidate. The standard process needs to be followed. The double standard evidenced by the lack of an open search undermines administrative credibility even though the position may be filled by someone outside the traditional pool. Similarly, individuals serving in interim or temporary positions should not be moved into a permanent position without an open search.

Repeatedly I heard from individuals that some members of the campus community perceive the Provost’s office as favoring internal candidates even though they might not be sufficiently qualified for a position. One concern expressed was that such an appointment is made so that a salary can be paid below the level needed to recruit externally.

To the extent that members of the academic community question the qualifications of the Provost’s selections, there is a need for greater openness in searches, with no exceptions. Certainly, questioning the qualifications of appointees from nontraditional groups is often done from ignorance and/or narrow attitudes. However, when members of the University community perceive a double standard in the appointment process, it undercuts their own commitment to participate in fair and open searches (a major commitment of time and energy for participants).

This perception of failing to follow its own dictates also undermines the credibility of the new appointees (and hence their ability to function well).

Last year I recommended that the central administration and the ADVANCE Program develop alternative routes to administrative experience for women whose departments are headed by long term incumbents, and that ADVANCE create a list-serve with information about short-term training opportunities elsewhere. I reiterate those recommendations, but also suggest that the central administration reexamine the tradition of virtually permanent service for department heads in the Colleges of Engineering and Agriculture and Home Economics. While it has clear benefits, there are also many disadvantages. One of these is the lack of access to what is typically the entry level for academic administration; there is also a lack of accountability of the head to departmental faculty.

The numbers of openings in academic administration are not large; the University cannot afford to remove any from the opportunity structure for faculty interested in administration. Recently, the position of director of the molecular biology program was filled with an external appointee without a full search. This position would be expected to draw on a well-integrated national pool (by gender).

The second year of ADVANCE brought to NMSU its senior female academic administrator, Dean Cruzado-Salas of the College of Arts and Sciences. While her background is not in a STEM field, and although she must have many demands on her time, it is hoped that she will help other STEM academic leaders as they more actively work to develop a better sex-integrated group of faculty and administrators.

VII. Retaining Faculty and Academic Administrators

Again, a focus on immutable conditions, such as distance from other research centers, too often distracts attention from the many ways in which faculty at NMSU could be better supported and encouraged to fulfill their potential. I emphasize below the importance of departmental mentoring and work assignments; the urgency of thoroughly evaluating the units involved in administering grants and effecting personnel actions; and the need for a systematic and professional approach for dealing with intra-unit conflict.

The new professor in her department

The ADVANCE-designed and administered mentoring program has met with great appreciation (the growth in participation of non-first year faculty is a sign of its good reputation). The justification for assignment of a mentor from outside one's department is clear, and reasonable. However, this cannot substitute for the introduction to the many aspects of faculty life that vary from department to department. My interviews revealed, not surprisingly, that not all department heads perform a mentoring role with their new faculty; among those who do not, not all have identified another senior colleague to take their place. I advise the development of a university-wide description of the kinds of activities and information that a new faculty member should routinely receive from a senior department member, and that the head of each department identify a mentor for each new faculty member within a month of her/his arrival on campus. Accountability for this should rest with the Provost's office; the new faculty member should not be expected to "blow the whistle" on a head who overlooks this responsibility.

In light of the previous experiences of men and women in STEM fields, it is not unusual (although certainly not universal) for women to be viewed as better at undergraduate advising and

various kinds of departmental service (e.g., insight into how to deal with an office staff problem). Department heads must be aware of the common tendency to assign these tasks to women, who are unlikely to refuse them. If a particular woman has a special ability to perform an essential function, then the department head has choices: arrange for faculty development, so other department members will attain a competence in that area, and/or reduce the woman's assignments in other areas that do not negatively affect her development as a STEM scholar. Too often, well meaning department heads point to a junior woman's willingness to serve in these ways; good mentoring requires that he (sic) not permit her to make such choices.

Supporting faculty research efforts

Improved retention of well qualified faculty (both female and male) requires improved procedures for researchers, and changes throughout the University. Many processes need to be streamlined, and opened up for public view. Some of the outstanding areas in which major dissatisfaction exists include: the setting up of accounts, once a grant is awarded, the treatment of funds received as indirect costs, the reimbursement for expenditures or the issuance of checks in response to purchase orders, and the hiring of professional, technical, and clerical staff. Offices or individuals with strong reputations should be emulated; for example, Linda Schauer, in the Engineering Research Center, is widely regarded as exceptionally competent. When individuals leave who provide essential services, faculty need them to be replaced (e.g., the writing specialist in the Engineering Research Center).

Many people with whom I met expressed great frustration with the system of grant proposal development and approval, with grants administration, and with the personnel division. Others had criticisms (e.g., the routing process for approvals could be done in parallel within two divisions involved, rather than serially; archaic grant-related software is desperately in need of replacement) but did not consider the situation dire. A few consider the situation well in hand. One individual told me things are getting better, and that they were never as bad as some people say. Why did I encounter such a gap between the perceptions of some, and those of others?

If a person has been at the University for a long time, and active in (funded) research, s/he is likely to be familiar with the individuals who staff the appropriate administrative offices. S/he has a "track record" and is less likely to encounter the distrust with which many less experienced faculty and staff find themselves greeted. Further, with years of experience people learn which staff members are competent and civil, and try to limit their vulnerability to others, whose negative approach to faculty is widely perceived. Of course, long experience and deep program pockets are no guarantee of efficient processing, as examples from ADVANCE and Professor O'Connell, below, will illustrate.

Administrative offices, distrust, and lack of accountability

To identify the understaffing of campus offices as a contributory factor certainly has some validity, especially in the current economy. However, the message I received, repeatedly, and from individuals based all over the STEM departments, was that there are people who are not doing their jobs appropriately. Perhaps the underperformance is a result of the frequent burnout (or the extremely low salaries) of those remaining in understaffed offices. There is a sense that there is no accountability for the performance of these staff members. The active distrust among the various offices handling these activities is widely acknowledged. Indeed, the distrust at the lower levels in the hierarchy is seen by some as following the lead of the highest incumbents, rather than being an individual shortcoming. One department-level administrator described the routing process, in general, as one in which the person at each level distrusts the expertise of all

who have already signed off on an expenditure or other action; he/she must review the request as if no one who has already signed off on it can be trusted. Similarly, when I asked if there were sample justifications available on the personnel or grants and contracts web pages, I was told that making samples available is apparently unacceptable to the offices of grants and contracts because it might facilitate requesting expenditures for which the present need might not have been carefully considered.

Inconsistent decision making in the approval process is to be expected when the decision makers are not accountable or have insufficient retraining as changes are enacted at the policy level. For example, while a new University policy has been passed facilitating the purchase of certain materials without major paperwork, there are staff members who, at least on occasion, continue traditional practices of presuming that grantees may be trying to spend funds inappropriately and therefore repeatedly return requests for further elaboration or modification. ADVANCE should take an active role in locating information about staff development opportunities that would enhance performance of the support responsibilities mentioned above (e.g., facilitating the setting up of accounts; designing a more active role for the Personnel Office in helping search committees reach hiring goals).

An example of the difficulties created by a lack of clear responsibility (or accountability) was described by Professor O'Connell, who currently oversees about a million dollars in external funding each year. When she sought nearby office space for the administrative assistant she had hired (with soft money), the most obvious space was an office used one-quarter time by a University employee who worked three-quarter time for the Vice Provost for Research (now departed from NMSU). That employee had another office for her three quarter time responsibilities. When Professor O'Connell requested the office, the Vice Provost did nothing. When she then met with the Dean of her college, he acknowledged the difficulty of the situation, but offered no advice or support. Finally, she approached her own department head, who suggested she should complain to the Provost directly about the lack of institutional support since she didn't have reasonably located space for the employee to be used effectively, and without an administrative assistant, fulfilling the funded projects would be undermined. At that point the space was released for her use. Her first request was made in March; the space was released in August.

The widely different experiences and perceptions I encountered do not represent any sort of random or representative sample. The Vice Provost for Research should authorize a systematic evaluation of the functioning of all campus offices with which faculty researchers must interact. The Associate Dean for Research of each college should be required to do a formal evaluation of the functioning of its Research Center, with a report due to the central academic administration, and shared with the faculty.

The ADVANCE Program's experience in hiring a Records Specialist is, itself, an excellent example of what one faculty member called the "time suck" of the bureaucratic functions at NMSU. First, there was a period of several months in which the identification of funds for the new position was the central object of contention, involving departmental and college level issues related to the use of indirect funds brought in by the grant (unfair use of "IDC" is an area of much contention and concern). The problem was solved by the transfer of the grant to the University Research office, away from the College of Arts and Sciences, as part of a policy change for reporting relationships when a grant is received for cross-college projects. This was a fix (although not a quick one); it did not resolve the basic problem for a STEM faculty member whose funding is not cross-college in scope.

On March 18, the ADVANCE Office submitted a “PDQ” (Position Description Questionnaire), closely modeled on one previously approved and filled for the NM-AGEP Office. After a week without an acknowledgment of receipt nor any other communication from the Personnel Office, Ms. Hunt followed up with an email on March 26. Four weeks after the email follow up, on April 23 Ms. Hunt received a phone call reporting that the position was downgraded from the proposed Program Facilitator position, despite the similar needs of ADVANCE and NM-AGEP. After clearing various additional hurdles, Ms. Zaldo did start work on June 18, three months from the filing of the initial PDQ. An example of the distrustful climate can be found in an e-mail response to the request from Dr. Frehill for a salary level appropriate to Ms. Zaldo’s experience: “Rebecca *may* [italics mine] have all the experience that you are stating, but” followed with a direct quote from the procedures manual.

It was seven months from the time Dr. Frehill approached Dean Paap for approval of this position (ADVANCE was then reporting to the Associate Dean for Research of the College of Arts and Sciences) until Ms. Zaldo was able to start performing her duties for the Program. The determination with which the Personnel Office staff appear to scour files for any position which might possibly include similar duties at a lower classification, in order to deny a PDQ, was mentioned to me by researchers in various STEM units. Given the short staffing of the Personnel Office, the use of time in this way suggests a need to reexamine staff priorities.

The CAS system was mentioned to me frequently as a central source of problems for faculty (especially but not only those without extensive NMSU experience) working to get research programs up and running, and moving forward smoothly. Recent progress has been made toward ensuring more consistent treatment of requests and toward removing some steps. For example, if a grant is funded with a justification for an expenditure, when the expenditure is actually requested the PI may simply “highlight” the justification in the budget narrative of the proposal, rather than prepare another justification. A training manual for Principal Investigators was recently created with input from faculty, administration, and staff members, drawing on similar manuals from other institutions. Neta Fernandez, Director of the Office of Grants and Contracts, coordinated its preparation and production. Coupled with (mandatory) training sessions for PIs, the manual is expected to provide much needed order in the system.

However, some people perceive the recent changes as inadequate, and suggest that it is time for an overall review of the way that NMSU has enacted CAS. In other words, one view has the CAS system at NMSU requiring changes in kind, not simply degree. Several people told me that the University of New Mexico has a much more researcher-friendly administrative system. Others hypothesized that the application of the CAS system to handling of all external funds is a direct, but unnecessary, result of the presence of the Physical Sciences Laboratory. Some consider the campus-wide application of the CAS system a significant and unnecessary source of much difficulty for researchers and their administrative staffs. To the degree that it is found unnecessarily burdensome for those submitting paperwork, it is also unnecessarily time consuming for those offices through which the paperwork is routed.

One person told me it was clear that there seems to be a “zero audit” policy in the division of Business and Finance. In other words, that division takes the perspective that any expenditure should have to be absolutely and undoubtedly appropriate and perfectly documented. An example from my own experience might be useful: a contract with my signature was required before it could begin to wend its way through the route to approval. At another institution, a facsimile copy of the signed contract might be accepted for the start of the routing, while the original made its way through the mails. A step could be identified beyond which it would go no

further, but at least the review could have begun. This would not endanger the inappropriate expenditure of funds in the care of the University.

Faculty Development and Intra-unit Conflict

When faculty leave due to colleagues' hostility and a department head unwilling or unable to take firm action, the loss of the faculty member is rationalized under the heading of "traditional departmental autonomy." A small minority of faculty behaving destructively can undermine a colleague's performance, as well as costing the department the human resources that become tied up in dealing with dysfunctional situations. The department head must have strong administrative support when tackling such difficult situations. It appears that there is no place where "the buck stops" – if a college's dean chooses a "hands off" approach, others in the administration appear to defer to it.

In addition to reading the exit interview report provided by Dr. Frehill, I heard about several cases of individuals who felt unfairly treated and asked for support outside the department, but considered the response to be weak, although the administrators may argue that they acted totally appropriately. For problems that may be ameliorated by a mediator, the institution must either hire one, provide thorough training for someone already at the University, or identify qualified professionals to bring in as consultants, with payment from the Provost's Office. For problems in which a department head or the administrator above the department fails to intercede actively, consequences for nonfeasance should be established.

A pattern of weak administration will have an impact on future recruitment as well as retention. There is a serious potential for the snowballing of attrition. Colleagues who witness the administrative weakness suffer from lowered morale. Individuals central to on-going research and academic collaborations are lost. Faculty time is taken up by recruitment, if the line is reauthorized. In sum, the programs as well as their students and faculty suffer. The kinds of actions to be taken in such circumstances are not discipline-specific, and it is appropriate that someone within the Provost's office be responsible for providing assistance in conflictful situations. When individuals leave for other, even perhaps better, positions, it may be said that they have not lost as individuals, but the University is weakened rather than strengthened, a goal which NSF is supporting through ADVANCE.

VIII. The Need for Selective Centralization

In the first year review, I recommended a reduction in the decentralization of academic administration. Certainly such centralization would need to be done with care. Many decisions should not be made by those without expertise in the particular academic area. However, as I said last year, "if the academic dean is not inclined to prioritize a given University-wide change initiative, the authority of academic deans will likely translate into a lack of participation in the initiative at the College level and below. This dimension of University organization has implications for the successful implementation of any campus-wide initiative." The issue remains for the incoming leadership to approach.

During the second year review, I learned of one important area in which a stronger central leadership is underway: the preparation of proposals for external funding. The Interim Vice Provost for Research, Richard Hills, has moved forward with energy, bringing the ideas he developed as Associate Dean of Engineering for Research to the University level. He has added a step early in the grant application procedure, in which people working on proposals must submit

their plan to his office for review before routing it through the Research Center of their own College.

There is some concern among the faculty and academic administrators with whom I met that this will merely add to the bureaucratic complexity with which they must regularly struggle. Others perceive it to be a useful step, for those whose proposals are ultimately funded, enabling a quicker start up when the funding is received. However, given that a large portion of proposals are unsuccessful, there may be resentment at having to go through this preparation for no ultimate purpose. As the campus phases into this requirement, one college at a time, and the outcomes of the new procedures are experienced after funding decisions are made externally, there should be an evaluation of the process. Its usefulness and its shortcomings should be shared with the faculty and adjustments made to improve the system further.

Other university wide developments include the requirement that all PIs receive training in the University's procedures, and the creation of a manual detailing these for distribution campus-wide. By providing this clarification, faculty and professional staff should no longer find themselves frustrated by (sometimes apparently and sometimes really) contradictory dictates of the administrative offices through which they administer grants.

Repeatedly in the report I have mentioned activities that should be initiated and/or monitored by a professional member of the Provost's office. Faculty recruitment, retention, and development could much more effectively be handled by a centrally identified and professionally trained person. A more centralized structure for allocating and financing faculty lines, use of sabbatical savings, and so on, will facilitate the pooling of resources that can finance a "target of opportunity" offer or lead to the hiring of a partner of a sought after candidate. Each STEM college should be accountable to the central administration for college-level achievement of hiring goals and participation in University-wide transformational activities.

IX. ADVANCE in the Third Year

ADVANCE must continue to develop its capacity, focusing on some of its earlier initiatives that need additional attention. Dr. Frehill's continuing involvement in many campus activities (most recently identified, surveys of wage equity; campus climate; and space allocation) is important for the effective pursuit of ADVANCE's goals. As ADVANCE grows, with the planned addition of a full-time Research Analyst, it will be useful to review the delegation of responsibilities and consider the reassignment of duties from the Principal Investigator and the Program Coordinator to the Secretary and the Research Analyst.

The Distinguished Visiting Professor program, well run and promising as it is, has been underutilized. More active involvement with the identification of possible visitors is needed; faculty need to more actively contact colleagues around the country to identify possible participants, rather than merely reflecting on the people with whom they, themselves, have on-going professional relationships. The very successful visit in early November exemplifies the good outcomes that the program can bring, after a thorough search for an appropriate visitor by Professor Steve Franks, Head of the Department of Survey Engineering.

It may be that many faculty do not realize that the bulk of the organization of the visit is handled by the ADVANCE office, and that the process of nominating a visitor is quite straightforward. They may not appreciate that once NMSU is known to a mid-career or senior STEM woman elsewhere, she is likely to provide entry to a network of female and female-

friendly STEM researchers, improving the effectiveness of future searches (as well as recruitment of women graduate students in STEM fields).

If the administration endorses and works out a clear process for pursuing a “target of opportunity” hire, the Distinguished Visiting Professor program will enhance the identification process. I also recommend that ADVANCE (possibly lead by the Chairperson of the Physics Department, who has related experience) explore other kinds of visiting professor opportunities, such as faculty exchanges. This may be a good way to recruit women, and it would enhance retention as NMSU faculty might arrange for their distant collaborators to work locally for a limited time. It would also help expand networks for future recruiting of faculty and graduate students. Even if the visitor does not become a permanent faculty member, she may well be part of a network of women in her field and could serve as a recruiting aide to the University. It also enables the University to provide the stimulation of new faculty without the commitment to tenure that may be difficult to extend because of financial conditions.

In my first report, I wrote at some length about the positive impact expected if a common space were identified for faculty in the main or the engineering library. For the reasons developed in that report, I continue to think this would be a useful innovation. I suggest that the faculty development sub-committee assess the degree to which it would answer some needs felt, particularly by junior women faculty, and if my initial impression is supported, take on the never-insignificant task of locating and facilitating the allocation of appropriate space.

Dr. Frehill should spend a good deal of her third year time overseeing the transition of activities for the long-term away from ADVANCE and into appropriate administrative offices. She will need to ensure the structuring of accountability into the transfer, so that the University can assure the pursuit of the ongoing and effective pursuit of these activities.

X. Institutional Transformation in the Third Year

Using the expertise of ADVANCE while transforming the permanent infrastructure

Some transformative responsibilities have been assumed by other offices, with different degrees of utilization of the ADVANCE staff’s expertise and experience. For example, the Personnel Office has agreed that in the 2004-05 academic year it will assume the costs of producing a brochure on “Partner Assistance Information”, as well as the responsibility of keeping it up-to-date. Dr. Frehill prepared the first brochure.

In contrast to this process, the production of the revised brochure for academic recruitment was prepared and completed without any input solicited from Dr. Frehill. It is important that base-budget University offices assume the responsibility for recruitment and retention related activities – that is, after all, what institutional transformation includes. However, the background that Dr. Frehill (and in some areas, Ms. Hunt, the ADVANCE Program Coordinator) brings to these areas (strengthened by her networking with ADVANCE Program leaders nationally) is a valuable resource that should be utilized. Perhaps by including Dr. Frehill as an ex officio member of task forces and shorter-term planning committees, the University will insure that she is aware of initiatives that are being launched and can contribute her unique background to those initiatives. Certainly she has a reputation for working quickly with collaborators; others need not be concerned that this will add yet another bureaucratic layer to their group’s work.

Create a centralized recruitment and retention specialist

I recommend the creation of a professional position in the Provost's office to spearhead the transformation, as suggested in the section on selective centralization. This person would be responsible for oversight of faculty searches, communicating directly with deans and department heads as positions are being defined and searches being conducted. He or she would be responsible for ensuring quick action, at the Provost's level and below. In addition, this person would take the lead in developing solutions to the two body problem for selected candidates. When a search does not result in the hire of a person from a targeted group, this individual would review the substantive explanation provided by the recruitment chair, and advise the Provost on whether to stop the search and reopen it at a later time or to allow the position to be filled. In other words, this person would represent the Provost in making Deans, department heads, and recruitment committees accountable.

Retention-related responsibilities would include working with the Personnel Office to develop more effective ways to handle (and handle earlier) dysfunctional interpersonal situations in academic departments. Another group of assignments would be serving as liaison to the office of business and finance as the evaluation and redesign of unwieldy processes is conducted.

Reviewing the administrative structure and procedures of research related offices

The establishment of the office of the Vice Provost for Research has put the University on track for a reorganization of the handling of external funding. These innovations, and others that may be designed, should be evaluated thoroughly to ensure that the changes improve the effectiveness of the system, rather than replacing one cumbersome system with another.

Dealing with the policy perspective about the role of administrative offices, working to improve the level of trust between administrative staff and faculty, and reviewing the numbers of signatures required for all kinds of actions could significantly improve faculty morale, and thus have a positive impact on the retention of all active researchers at the University. Attrition of qualified faculty, male or female, has a negative impact on all remaining faculty, female and male. Time is spent on recruitment, graduate students must be reassigned (and sometimes not easily), collaborations are more difficult at long distance, and the intellectual community that may have been important in recruiting newer faculty is undercut, with isolation ensuing. Such isolation is a problem for everyone in a research area, but even more so for junior faculty or those (at all levels) who are women or minorities.

VI. CONCLUSIONS

After an impressive first year, the NMSU ADVANCE Program continued to develop its capacity by renting more space and enlarging its own staff. The mentoring program is enlarged and includes men, both as mentors and "mentees." The Distinguished Visiting Professor program has brought women with a breadth of backgrounds and specializations for intensively scheduled programs including a wide variety of audiences. The Program continues to co-sponsor workshops with other units on campus, and to support activities (such as the Teaching Academy) that build together to enhance retention of faculty. Its role in recruiting women to the faculty has been significant, as it assists materially with start-up packages and provides a contact for women in STEM fields to find out more about the campus and the area. The development and production of a pamphlet on the "two body problem" came out of the ADVANCE office in 2003, and will – appropriately – be transferred to the Personnel Office in the coming academic year. The exit interview research will provide a potentially useful body of information for the upper

administration to use as it rethinks policies and procedures at the University that have a direct or indirect effect on the retention of faculty.

Having established itself prominently in its first year, the Program had to devote much of the second year to build its own capacity to catch up to its ambitious goals. As it approaches its midpoint, it will need to have the collaboration of other units on campus to tackle the problems that are critical to the transformation of NMSU. The University aims to recruit a faculty appropriate to its Research I identity. It will be more successful at doing so, and keeping that faculty, if fundamental administrative issues are addressed. It is hoped that the appointment of a full cast of campus leaders will facilitate that effort.