SMU Research, Volume 9

Office of Public Affairs

Follow this and additional works at: https://scholar.smu.edu/research_magazine

Recommended Citation
https://scholar.smu.edu/research_magazine/13

This document is brought to you for free and open access by the Office of Research and Graduate Studies at SMU Scholar. It has been accepted for inclusion in SMU Research Magazine by an authorized administrator of SMU Scholar. For more information, please visit http://digitalrepository.smu.edu.
Collectively Special
SMU Libraries Offer Valuable Resources for Researchers
Thank you for your continued interest.

Dean, Research and Graduate Studies

late-breaking research items and noteworthy research-related news.

research presented in this volume interesting and would like to help further it, please send me or the concerned faculty member a note. We would very much appreciate it.

News,” several sources, including generous support from alumni and friends.

we have changed the contents from year to year, with a few topics recurring because of the work of Binford, who has made groundbreaking contributions to his field, is known to young scholars as the father of “New Archaeology.”

This is the ninth volume of SMU Research. To avoid giving the look of “sameness,” we have changed the contents from year to year, with a few topics recurring because of their significance. One recurring feature has been “Faculty Publications,” which we decided to discontinue this year because of the inadequacy of using a short list of publications to showcase the productivity of the entire faculty. Two topics, “Research News,” introduced in Volume 6, and “Note-Worthy,” introduced in this volume, cover late-breaking research items and noteworthy research-related news.

The resources necessary for conducting research at SMU are generated through several sources, including generous support from alumni and friends. If you find some research presented in this volume interesting and would like to help further it, please send me or the concerned faculty member a note. We would very much appreciate it.

Thank you for your continued interest.

U. Narayan Bhat

Dean, Research and Graduate Studies

nbhat@mail.smu.edu

SMU RESEARCH

SMU Research is produced annually by the Office of Public Affairs for the Office of Research and Graduate Studies of Southern Methodist University. Please send correspondence to Office of Research and Graduate Studies, Southern Methodist University, PO Box 750240, Dallas TX 75275-0240, or call 214-768-3545. E-mail: bphillip@mail.smu.edu

Office of Public Affairs

Editor Ellen Mayou
Designer Victoria Clary
Photographer Hillman S. Jackson
Contributors Lisa Castello, Meredith Dickenson, Janet Rayland, Susan White
Associate Vice President for Public Affairs Patricia Ann LaSalle

Office of Research and Graduate Studies

Contributors Barbara Phillips, Larry Smith

Corporate Officers of the University
R. Gerald Turner President
Ross C. Murfin Provost and Vice President for Academic Affairs
Thomas E. Barry Vice President for Executive Affairs
S. Leon Benten General Counsel, Vice President for Legal Affairs and Governmental Relations, and Secretary
James E. Cowdell Vice President for Student Affairs
Morgan D. Olene Vice President for Business and Finance
Jeanne P. Whitman Vice President for Development and External Affairs
Elizabeth C. Williams University Treasurer

Academic Deans
John Attanasio Dedman School of Law
U. Narayan Bhat Research and Graduate Studies
Carole Brandt Meadows School of the Arts
Robin W. Lovin Perkins School of Theology
Jasper Neel Dedman College of Humanities and Sciences
Albert W. Niemi Jr. Edwin L. Cox School of Business
Robert A. Patterson Education and Lifelong Learning
Stephen Szyjewski School of Engineering

Central University Librarian
Gillian McCombs

Photography
Mike Boyer pages 15, 16, 17, 22, 25, 26
SuperStock pages 3, 5, 7, 9, 10, 11, 12

Copyright © 2002. Southern Methodist University will not discriminate in any employment practice, education program, or educational activity on the basis of race, color, religion, national origin, sex, age, disability, or veteran status. SMU’s commitment to equal opportunity includes nondiscrimination on the basis of sexual orientation.

Member, University Research Magazine Association.

Grand Award winner-Council for the Advancement and Support of Education (District IV) 2001.
# Table of Contents

1. **Dean's Message**

2. **Research News**
   - SMU researchers are developing “smart skin,” participating in a new worldwide initiative to “listen” to the sky, and much more...

3. **Faculty Profiles**
   - A psychology professor who is studying the correlation between spirituality and health,
   - an art history professor who is overseeing an archaeological dig in Italy,
   - and a math professor who is helping energy companies extract more oil and gas are among nine faculty members profiled in this issue of SMU Research.

4. **Collectively Special**
   - The unique resources of SMU’s libraries attract scholars worldwide.

5. **Moral Questions and Enlightened Answers**
   - An SMU theologian provides clarity to the ethical issues of our day.

6. **Back to Basics**
   - SMU Physics Professor Ryszard Stroynowski is at the forefront of the search to learn more about the structure of matter.

7. **Faculty Recognition**

8. **Sponsored Research**

9. **Note-Worthy**

10. **Portrait of an Artist**

11. **Cover Story**
    - The many special collections in SMU’s 11 libraries provide a valuable resource for researchers. See story on page 13.

12. **This Page**
    - A work in progress by Jay Sullivan. See page 26 for more of Sullivan’s work.
Trial by Delay

Although the U.S. Constitution requires a speedy trial for criminal defendants, no such relief is available for those caught in the sluggish maze of the civil justice system. Crowded court dockets, legal delays, and contentious parties can drag out lawsuits for years. Several studies have shown that long delays can cause psychological harm to plaintiffs and defendants, says Daniel W. Shuman, professor of law in Dedman School of Law. For example, Shuman says, medical journals have noted a link between physician suicides and malpractice lawsuits.

Shuman reviewed more than two dozen studies for his article, "When Time Does Not Heal: Understanding the Importance of Avoiding Unnecessary Delay in the Resolution of Tort Cases," published in the American Psychological Association's journal, Psychology, Public Policy, and Law.

He says the debate over reforming tort law needs to shift from an emphasis on the financial and managerial inefficiencies in the system to the psychological toll that unresolved disputes exact on individuals.

"People have always understood that delay is not good in litigation, but it's been expressed as a financial problem — a lack of resources and money," Shuman says. "We need to rethink the harm that delay causes and understand it in terms of the significant permanent physical and emotional harm to the litigants."

For more information: Daniel Shuman dshuman@mail.smu.edu www.law.smu.edu/lawschool/faculty/shuman.htm

Several studies have shown that long delays can cause psychological harm to plaintiffs and defendants.

Understanding what caused the pueblo to expand may help researchers explain the 12th and 13th-century migrations.

An excavation being conducted by an SMU anthropology professor is providing new insight into migratory patterns of prehistoric people who lived in the Southwestern United States.

Michael Adler, associate professor of anthropology, is excavating the Chaves/Hummingbird Pueblo, located on a private ranch about 25 miles from Albuquerque, New Mexico. The pueblo was occupied from about A.D. 1250 to 1450. In its early years, the pueblo was a small community, but in the 14th century it became a boomtown occupied by 500 to 1,000 people. Understanding what caused the pueblo to expand may help researchers explain the 12th and 13th-century migrations. Adler believes that people from the western pueblos of Zuni and Acoma may have come to the Chaves Pueblo after the climate in their areas changed and they ran out of water. A analysis of pollen from the Chaves site conducted by Bonnie Jacobs, assistant professor of environmental science and chair of the environmental science program, found evidence of cattail pollen, which indicates a heavily watered area.

"The Chaves Pueblo, which was located in a lowland area with streams, continued to be livable for people after areas at higher elevations had to be abandoned," Adler says.

The Chaves site is littered with pottery shards reflecting a multitude of regional designs. The owner of the site, Richard Chaves, has donated all the artifacts found on his property to SMU for scientific use and to the Dallas Museum of Natural History for exhibition. Adler and a team of students brought back more than 10,000 artifacts from the site last summer.

For more information: Mike Adler madler@mail.smu.edu www.smu.edu/anthro/faculty/madler/madler.html
Listening to the Skies

For years, SMU geophysicists have operated stations that monitor underground explosions. Now, these scientists are participating in a new worldwide initiative to listen to the skies as well.

The researchers are measuring infrasound—low frequency sound waves that lie just below the level of human hearing. Infrasound waves can be generated by nuclear explosions, hurricanes, tornadoes, avalanches, and even meteors.

Infrasound monitoring was introduced in the 1950s and 1960s to monitor nuclear explosions, but stopped in the early 1960s when nuclear testing moved underground. New concerns about above-ground nuclear testing have convinced international officials to create a new $100 million worldwide network of 60 infrasound monitoring stations, known as arrays.

SMU researchers are building infrasound monitoring stations on Wake and Midway islands in the Pacific Ocean that will be part of this network. Independently, they also have set up infrasound stations across the Southwest to listen for mining blasts and natural seismicity.

"The arrays will give researchers a tremendous amount of scientific data," says Paul Golden, director of SMU's Geophysical Research Programs. As scientists learn how to differentiate between different sources of infrasound, Golden says, this data could be used for numerous purposes, from predicting tornadoes to closing roads in case of an avalanche.

Other members of SMU's Department of Geological Sciences who are involved with the infrasound research include Eugene Herrin, the Shuler-Fosco Professor of Geological Sciences, and Brian Stump, the Claude C. Albritton Jr. Chair of Geological Sciences.

For more information: Paul Golden
golden@smu.edu

Wills Detail Colonial Life

A collection of 18th- and 19th-century wills discovered by an SMU doctoral student has provided a window into the way women lived in the Texas and Mexico borderlands more than 200 years ago.

Amy Meschke, a Clements Scholar and Ph.D. candidate in American history, studied the wills of 20 colonial women living between 1770 and 1820 in San Esteban de Nueva Tlaxcala, a frontier settlement in northern Mexico that no longer exists. She discovered the buried testaments in the archives of the town of Saltillo, Mexico.

"These wills are valuable to historians," Meschke says, "because most people who lived in the Spanish colonies could neither read nor write." Historians, therefore, have few letters, diaries, and other first-hand accounts of people's lives. The wills discovered by Meschke tell her about possible mortality and fertility rates; wealth and class differences; the role of religion; the types of property owned and agricultural practices; and the importance of Spanish law and custom in protecting the inheritance and property rights of Spanish colonial women.

Meschke plans to conduct further research, looking at wills over a longer period and comparing men's and women's wills to understand the differences and similarities of their experiences in these frontier settlements.

For more information: Amy Meschke
ameschke@smu.edu
Predicting Successful Relationships

A woman's friends may be particularly astute in predicting whether a heterosexual romantic relationship will last, according to a study co-authored by an SMU psychology professor.

Stephen Drigotas, associate professor of psychology in Dedman College, and Christopher Agnew of Purdue University in Indiana studied 74 male-female couples and their network of friends, including both their joint friends and their individual friends. All study participants, including the couples, were asked to give their perceptions about the couple's relationship and rate such factors as the couple's commitment to each other and their closeness.

The study found that the perceptions of the couple's joint friends had of the couple's commitment and closeness also significantly predicted whether the pair would break up.

"Sometimes our very involvement in a relationship can prevent us from seeing our relationship as it is," Drigotas says. "Our study shows that people should not be too quick to discount the relationship assessments of their friends. They might provide an accurate glimpse into what sort of relationship people have with their partners."

The study also found that couples with a higher number of joint friends were more committed, satisfied, and invested in the relationship, and were more likely to have remained together by the six-month follow-up.

Results of the study were published in the December 2001 issue of the Journal of Personality and Social Psychology.

for more information: Stephen Drigotas
sdrigotas@smu.edu
www.smu.edu/psychology/faculty/drigotas.html

Stone Age Dining

Research conducted by two SMU anthropologists is raising questions about how ancient man lived in southern Ukraine between 60,000 and 30,000 years ago.

Anthropology Professor Anthony Marks and doctoral student Katherine Monigal are studying two Neanderthal sites in the Crimea. According to conventional wisdom, Neanderthals lived on a diet that consisted almost entirely of meat from large animals. But a study of 50 tools from the two Crimean sites found traces of feathers, meat, plants, and starches on the tools, suggesting that the Neanderthal diet included foods other than meat.

"Neanderthals at this time and place were clearly utilizing birds," Marks says.

Traces of plants found on the tools also indicate that plants may have been more important than previously thought. Marks believes that those Neanderthals may have used a glue-like substance from cattails to secure stone points in handles for hunting.

Study co-authors Bruce Hardy and Marvin Kay used new techniques to reveal materials on the artifacts that have never been seen before.

"Until recently, no one believed that plant remains could survive for 40,000 years," Marks says.

Their research was published in the September 2001 issue of the Proceedings of the National Academy of Sciences.

for more information: Anthony Marks
amarks@smu.edu

Until recently, no one believed that plant remains could survive for 40,000 years.
The new technology could have numerous applications for defense, space, medicine, and industry.

Understanding Immigrants

An interdisciplinary team of researchers from SMU and the University of Texas at Arlington has received one of the largest grants ever given by the National Science Foundation in the field of cultural anthropology. The three-year, $445,000 grant is being used to conduct the first comprehensive study of immigrants in the Dallas-Fort Worth Metroplex.

The study will compare and contrast the experiences of five distinct groups of post-1980 immigrants in the Metroplex: Nigerians, Vietnamese, Salvadoreans, Mexicans, and Asian Indians. It will focus on social, economic, and political factors that influence incorporation into American culture.

"Immigrants come to this country with a certain baseline of human capital in terms of education and skills," says James Hollifield, professor of political science and one of four researchers involved with the project. "Something happens between their moment of arrival and the time they become incorporated. We want to look at that black box in terms of what happens between these two periods."

In addition to Hollifield, researchers involved with the study are Caroline Brettell, chair of the Anthropology Department in Dedman College; Dennis Cordell, professor of history and associate dean for general education at SMU; and Manuel Garcia y Griego, director of the Center for Mexican American Studies at UT-Arlington.

In the past 20 years the Dallas-Fort Worth area has quietly become more diverse in terms of its population, Brettell notes, and the results of the new study could be used by civic leaders and grassroots organizations to plan effectively for the integration of new immigrants.

"We hope this will teach people who live in Dallas more about the complexity of the populations that live in their city," Brettell says.

For more information: Caroline Brettell cbrettell@smu.edu

Smart Skin

Two engineering professors and a chemistry professor from SMU are teaming up to develop a novel technology that has applications ranging from "smart wraps," which could monitor meat and vegetables for spoilage, to "smart textiles," which could sense when a person has been exposed to harmful chemicals.

The technology embeds microelectronic devices such as thermometers or infrared detectors into a flexible material that can be placed over surfaces such as fabric or machines.

"This could open up a whole world of flexible electronic devices based on distributed sensors," says Zeynep Celik-Butler, professor of electrical engineering in the School of Engineering.

Celik-Butler and her husband, Donald Butler, professor of electrical engineering, and Chemistry Professor Patty Wisian-Neilson have received a three-year, $300,000 grant from the National Science Foundation to develop this new technology.

The Butlers have already developed a prototype "smart skin" product using two preliminary grants from the Army Research Office and the National Science Foundation.

The new technology could have numerous applications for defense, space, medicine, and industry, the researchers say. The military, for example, could weave sensors into soldiers' clothing that would enable them to be identified while out in the field. Or, sensors could monitor environmental parameters such as toxic gases or bacterial agents. NASA could put "smart skin" on robots that would enable them to measure temperature remotely and avoid hot objects that can cause damage.

Biomedical applications could include developing clothing that would be capable of monitoring physiological parameters such as glucose and insulin levels.

For more information: Zeynep Celik-Butler cb@engr.smu.edu

www.engr.smu.edu/~rbh/
In the past 12 years, numerous state and federal appellate court decisions have shifted power away from juries into the hands of judges.

Should judges or juries have the final say in civil cases? This question has fueled a long-standing debate between advocates of juries and those who would limit the right to trial by jury. According to a study by The Dallas Morning News and The SMU Law Review, in the past 12 years numerous state and federal appellate court decisions have shifted power from juries into the hands of judges.

Part of the controversy focuses on review standards that appellate courts apply when evaluating the sufficiency of the evidence supporting verdicts. Some believe that juries only have the power to draw the most probable or convincing inference from the evidence, which is known as the “equal inference rule.” Others, however, believe that the jury should be allowed to choose among opposing reasonable inferences, even if a reviewing court could conclude that the most convincing inference was not selected by the jury.

SMU Law Professor Bill Dorsaneo is a critic of the “equal inference rule.” He says that the rule has been used as a blunt instrument by some reviewing courts and by justices who do not like what juries have decided. “Whenever it is possible to draw more than one reasonable inference from the evidence, the case should be finally decided by the jury. That’s why we have a courthouse,” he says.

Dorsaneo, the Chief Justice John and Lena Hickman Distinguished Faculty Fellow and Professor of Law in Dedman School of Law, is a prominent advocate of the jury’s role in the litigation process. He has written a series of articles for The SMU Law Review that look at how Texas and federal appeals courts have used various legal standards to control the power of juries in civil cases.

“Part of the role of an appellate court is to review verdicts to see whether they are supported by evidence,” Dorsaneo says. “That is an important function of the administration of justice but appellate review must be done carefully, with deference under standards that are crafted to guard against the substitution of an appellate judge’s opinion for the view of the jury.”

Dorsaneo’s views on the right to trial by jury lend serious weight to the national debate. He is considered the nation’s foremost expert on Texas civil procedure as the author of the 26-volume Texas Litigation Guide. Dorsaneo also is a co-author of the five-volume Texas Civil Trial Guide and three textbooks on federal and state civil procedure.

He serves on the Advisory Committee to the Texas Supreme Court, is a member of the American Law Institute, and chair of the Texas Supreme Court’s Task Force for Revision of the Texas Rules of Procedure. A member of the SMU law faculty since 1975, he received a Bachelor’s of Arts degree from the University of Pennsylvania and graduated with high honors from the University of Texas School of Law.

Reaching for Infinity

“Do the math.” It’s a message that Geoffrey Orsak often delivers to high school students and one that he himself takes to heart in his own research.

Orsak uses math to develop algorithms that can give wireless devices the same level of connectivity as devices directly wired to the Internet. He has received grants for his research from Raytheon, Texas Instruments, Nokia, and several government agencies.

Orsak earned his Bachelor’s, Master’s, and PhD degrees in electrical and computer engineering from Rice University. He now serves as associate dean for research and development in the SMU School of Engineering and an associate professor of electrical engineering.
Orsak also devotes much of his time to ensuring that students have the engineering skills they need to function in today’s technology-driven world. In 1999 he helped create the Infinity Project, a national program sponsored by the SMU School of Engineering and Texas Instruments that is bringing advanced engineering and technology education into high school classrooms. The Infinity Project started with 13 Texas high schools during the 2000-2001 school year and expanded this year to 40 schools in 10 states.

The Infinity Project curriculum is incorporated into a year-long engineering class offered to sophomores, juniors, or seniors who have completed Algebra II and one science course. The class focuses on the math and science fundamentals of the information revolution and teaches students how engineers create and design the technology around them, such as cell phones and MP3 players. Orsak runs a summer training institute for new Infinity teachers and he and several of his graduate students go into high school classrooms in Dallas to support Infinity teachers.

Orsak is co-author of Multimedia and Information Engineering, the textbook developed for the Infinity Project. It is one of the first high school engineering textbooks ever produced.

“We want to make sure that every student has access to an exciting engineering curriculum at a time when it can influence their choices about advanced courses in math and science and about potential careers in technology,” Orsak says.

Although Orsak hopes the Infinity Project will increase the number of applicants to engineering schools, he says even students who do not pursue careers in engineering will benefit from the program. “At the very minimum, the Infinity Project will help students better understand the ever-broadening digital world around them.”

Orsak also was the driving force behind creation of the new Institute for Engineering Education at SMU (see page 25.)

For more information: Geoffrey Orsak orsak@engr.smu.edu http://papaya.ses.smu.edu/~gersak/InfinityProject: www.infinity-project.org

Orsak also was the driving force behind creation of the new Institute for Engineering Education at SMU—www.theinstitute.smu.edu

For more information: Geoffrey Orsak orsak@engr.smu.edu http://papaya.ses.smu.edu/~gersak/InfinityProject: www.infinity-project.org

Orsak also was the driving force behind creation of the new Institute for Engineering Education at SMU—www.theinstitute.smu.edu

At Home Among the Etruscans

For Gregory Warden, overseeing an archaeological dig in northern Italy was a natural choice—the site is only 22 miles from his native Florence. The Mugello Valley Archaeological Project and the excavations at the Etruscan site of Poggio Colla, however, offered Warden more than an opportunity to conduct research near his hometown. The excavations have revealed information that will add enormously to the knowledge of Etruscan Italy.

“Poggio Colla is particularly important because it has undisturbed habitation layers that span much of Etruscan history (from the seventh to the second centuries B.C.),” says Warden, a professor of art history in Meadows School of the Arts. Warden’s major interest is the art and culture of ancient Italy, but his expertise as an archaeologist and art historian extends to the broader range of art from the ancient Mediterranean.

Because Etruscan habitation sites are uncommon, the culture is known mainly from funerary remains. Most Etruscan cities, representing the first urban culture of Italy, were covered by medieval cities and later remains. Poggio Colla is one of a handful of Etruscan habitation sites accessible to archaeologists today. It has well-defined fortification walls, an extensive necropolis (cemetery) area, and the rare remains of a temple.

Poggio Colla was briefly excavated in 1968, but SMU and the University of Pennsylvania Museum of Archaeology began the first systematic exploration of the site in 1995. For the past seven summers, Warden, who also has participated in archaeological projects in Texas and Libya, has led a field school comprising staff members and undergraduates and graduate students from SMU and universities nationwide.

The digs have yielded not only major architectural finds, such as the temple and building foundations, but also numerous artifacts such as bronze figures and masks, pottery, and coins and jewelry made by the Etruscans, considered to be brilliant metalworkers, Warden says. The Etruscans were a wealthy and highly stratified society; a small elite group controlled a large population of slaves and serfs. He hopes the habitation site will yield more about other members of Etruscan society who did not have the social standing to preserve their lives in the tombs. Warden is writing a book on the Etruscan way of death as well as a publication about the Poggio Colla excavations.

Warden, who has taught at SMU since 1982, chaired the Art History Division for six years and has served as associate dean for academic affairs in Meadows School of the Arts since 1985. Before joining SMU he taught at Bowdoin College and in the Classical Archaeology Graduate Group at the University of Pennsylvania. He served as director of the SMU-in-Italy summer program in Florence, Orvieto, and Rome from 1987 to 1998. Warden earned his B.A. in anthropology from the University of Pennsylvania and his M.A. and Ph.D. in classical and Near East archaeology from Bryn Mawr College.

For more information: Gregory Warden gwarden@smu.edu www.smu.edu/poggio/index.html

The Infinity Project

started with 13 Texas high schools during the 2000-2001 school year and expanded this year to 40 schools in 10 states.

The excavations at Poggio Colla have revealed information that will add enormously to the knowledge of Etruscan Italy.
McCullough is working on a four-year project to assess spiritual and religious development across the adult life span and to discern the relationship between spiritual and religious development to physical and emotional health. He received a $150,000 grant from the John Templeton Foundation to fund the research.

“Spiritual and religious development – as well as how they are related to people’s emotional and physical health – really captures my imagination,” McCullough says. “It is a set of phenomena that no one understands very well.”

McCullough’s study – the Terman Spirituality and Health Project – utilizes data from the Terman Life Cycle Study of Children with High Ability, one of the longest-running and most prominent longitudinal studies in social science. The study began in 1922 as a sample of more than 1,500 gifted boys and girls from California who all tested in the “genius” range in intelligence. Participants responded to multiple measures of their spiritual and religious involvement in numerous follow-up studies throughout their childhood, early adulthood, middle adulthood, and elderly years. Data from the initial Terman study has produced nearly 100 published articles on genius, creativity, human development, marital stability, obesity, personality, and mental and physical health. Until now, however, no one has studied the spiritual and religious development of the study participants to assess the relationship these might have on well-being and longevity.

One of the theories McCullough plans to test is a polarization hypothesis, also called the “Matthew effect,” which suggests that the spiritually “rich” get richer and the spiritually “poor” get poorer, in terms of their spiritual growth. Another hypothesis questions whether religion is related to physical health. Although some studies have linked religious involvement to better mental and physical health, McCullough is trying to determine whether changes in religious practices are related to length of life.

A third hypothesis is that early adulthood is a propitious time for developing spiritual behavior. His research will measure intellectual curiosity, negative emotions, extraversion, conscientiousness, and agreeableness as personality traits to determine if these aspects of personality correlate with people’s engagement in religious and spiritual pursuits as they age.

McCullough earned his Bachelor’s degree from the University of Florida and his Ph.D. from Virginia Commonwealth University. He began teaching at SMU in 2000, the same year he was awarded a Margaret Gorman Early Career Award from the American Psychological Association. In 2001 he was awarded the American Psychological Association/John Templeton Foundation Award for research in positive psychology.

McCullough has written more than 60 peer-reviewed journal articles and book chapters and written or edited four books. His book on the psychology of gratitude will be published in 2003 by Oxford Press.

For more information: Michael McCullough mikem@mail.smu.edu or mathome.com http://faculty.smu.edu/mikem/

Beyond Graphs

For years analysts have relied on graphs to help visualize and solve conceptual problems, but many graphs have shortcomings when used to solve complex business problems. Developing a solution for these shortcomings has been a long-term research focus for Amit Basu, the Charles Wyz Professor of Information Systems in the Edwin L. Cox School of Business.

“Traditionally the graphing methods used in systems and process analysis have been mostly diagrammatic tools,” Basu says. “You draw a picture of what a process might look like, using blocks and arrows. The problem with the traditional methods is that the reasoning has to be done manually.”

Because the process of visually absorbing and analyzing detailed processes can become highly complex, Basu and a colleague developed a mathematical construct called a metagraph, based on graph theory. “The metagraph allows us to analyze processes mathematically as opposed to manually analyzing them,” he says.
Success in Advertising

A fascination with counting things and a naturally curious mind has made a prolific researcher out of Alice Kendrick, professor of advertising in Meadows School of the Arts. Kendrick conducts research on advertising effectiveness, agency practices, promotional products, and message content. She also examines advertising education and conducts surveys of advertising employers and job seekers. Her ideas have attracted attention from scholars and advertising executives alike, appearing with equal frequency in publications such as the Journal of Advertising Research and AdWeek.

"Some have said that my research bridges industry and academia," Kendrick says. "The biggest satisfaction I get through my research is that it makes a difference to those who read it." Recently Kendrick examined the way television networks promote their shows to understand the cultural values on display. She says 10-second promotional announcements, such as NBC's "Must See TV" spots, are shorthand for the type of overall programming to be found on any network. Kendrick and her co-researcher Jamie Fullerston, assistant professor of advertising at Oklahoma State University, compared a week's worth of promotional announcements on NBC with the Spanish-language network Univision. They were looking for differences in sexual content, gender roles, and the quantity and type of programs advertised. On NBC, viewers saw more male characters and younger talent than on Univision. Sexual content, especially suggestive dress, was more prevalent on Univision than on NBC, and women on Univision more likely were portrayed in traditional roles.

Kendrick is the co-author of the widely used textbook, Successful Advertising Research Methods. When not in the classroom, Kendrick serves in the Academic Division of the American Advertising Federation. The AAF represents 250 collegiate advertising programs and each year sponsors the premier student advertising program, the National Student Advertising Competition.

Kendrick also serves on the National Advertising Review Board and has been a judge for the Advertising Hall of Fame. She was awarded the Carl Rosenfold Education Prize in 2000 for her research and writing on the effectiveness of promotional products.

Kendrick, who joined SMU in 1985, earned Bachelor's and Master's degrees in journalism from Louisiana State University, and a Master's degree in adult education and a Ph.D. in communications from the University of Tennessee.

For more information: Alice Kendrick akendrick@mail.smu.edu
As soon as people think that a persuader has an ulterior motive, they react negatively.

The Art of Persuasion

A customer is trying on a leather jacket in a men's clothing store when a salesperson approaches him and compliments the fit. How effective will the compliment be in persuading the customer to purchase the jacket?

Not very, according to research conducted by Amna Kirmani, assistant professor of marketing in the Edwin L. Cox School of Business. Consumers are turned off by salespeople using flattery to persuade them to make purchases, says Kirmani, who has studied persuasion for more than 10 years. “As soon as people think that a persuader has an ulterior motive, they react negatively,” she says. “When the target of a persuasion tactic feels manipulated, you’ve lost the game.”

Subtle persuasion tactics can be successful, however, if the target doesn’t recognize them, Kirmani says. As an example, she uses Mark Antony’s “Friends, Romans, countrymen, lend me your ears” speech that roused the masses against the murderers of Julius Caesar in William Shakespeare’s classic play.

Kirmani’s research shows that a salesperson using flattery in a different context ultimately will be more persuasive. “If a salesperson compliments you while ringing up your sale, you leave the store feeling good and are more likely to come back,” she says. “You don’t encode it as negative because you don’t see an ulterior motive.”

Kirmani also has examined the persuasive influence of relationships, comparing the exchange-based relationships one has with salespeople to the communal-based relationships one has with a parent, friend, or spouse. “When I am the target of a persuasion attempt, it matters who is trying to persuade me,” she says. “When a friend compliments you in a store, there’s no ulterior motive.”

As a teacher, Kirmani has been interested to learn that students often do not recognize the persuasive influence of instructors, she says. “When I present something with enthusiasm, my students are more likely to be enthusiastic. When I dislike some aspect of marketing, they tend to dislike it. I’m shaping how they think about marketing, whether in subtle or unsubtle ways, but students don’t recognize that as persuasion. They think it’s the role of an institution to do that.”

Kirmani joined the SMU faculty in 1994 after completing her Ph.D. at Stanford University. She received her Bachelor’s degree in communication arts from the University of Maryland-College Park, and her M.B.A. from Cornell University.

For more information: Amna Kirmani
akirmani@mail.cox.smu.edu
http://faculty.cox.smu.edu/akirmani.html

Enhancing Software Reliability

For data-driven businesses such as banks and insurance companies, reliability of databases is critical. In the case of software for systems such as anti-lock brakes, potential fatal consequences can occur if something goes wrong.

Improving the reliability of large software systems is the
focus of research done by Jeff Tian, associate professor of computer science and engineering in the SMU School of Engineering.

Typically, Tian says, software reliability efforts have focused on the tail end of projects. He is trying to move up these efforts to the front end of projects.

"When you conduct software reliability testing at the tail end, it is too late," Tian says. "If we can do something more up front, we will have a better quality product."

Tian began working on software reliability when he was employed at IBM before joining the SMU faculty in 1995. "If a company's software is not reliable, people won't buy it," he says.

The National Science Foundation has awarded Tian a four-year grant to conduct his research on software reliability because of the high potential value his research has to industry. Tian also has received grants from the State of Texas Advanced Technology Program in 1999 and 2001. His most recent ATP grant is a $115,540 award to develop methods to ensure and maximize reliability and safety for embedded software systems.

Tian has published widely on his research, and in 1999 the Journal of Systems and Software rated him as one of the top 10 scholars in his field based on publications in the leading software engineering journals in the previous five years. He was one of 100 young engineers from across the country selected to participate in the 2000 Frontiers of Engineering Symposium sponsored by the National Academy of Engineering.

A native of China, Tian earned his Bachelor's degree in electrical engineering from Xian Jiaotong University. He earned his Master's degree in engineering science from Harvard University and his Ph.D. in computer science from the University of Maryland.

Computing for Oil

John Chen's research could not be more timely. Chen, associate professor of mathematics in Dedman College, uses advanced mathematics to help energy companies extract more oil and gas.

Companies currently are able to extract only about 15 percent of the oil in a well from an initial drilling. Chen says. Secondary methods of recovery, such as injecting water into a well, can recover another 10-15 percent.

Chen's research focuses on a third level of recovery, in which chemicals or heat may be inserted into wells to extract more oil. The research could maximize use of expensive chemicals, as well as improve efficiency for each of the third-level methods now used to recover oil, he says.

Chen hopes eventually to commercialize computer codes that he and his research group are writing to improve different methods of oil recovery. He anticipates that his research could help optimize recovery of oil in China, the Middle East, South America, and the former Soviet Union.

Several oil companies, as well as the Department of Energy and the U.S. Army Research Office, have given Chen and his colleagues financial support for their research. He also has received a grant from the National Science Foundation to organize an international conference for researchers in his field every two years.

In addition to his research on oil recovery, Chen heads the new Center for Scientific Computation at SMU, which was established in 2000 to help apply computational techniques to problems in mathematics, engineering, and other applied sciences. The center is expected to enhance faculty research at SMU, as well as improve educational opportunities for undergraduate and graduate students.

SMU plans to match a grant Chen recently received from the National Science Foundation to purchase supercomputers for the center. The center's computing resources will be made available to outside companies as well as to SMU students and researchers.

A native of China, Chen earned his Bachelor's degree in mathematics from the University of Jiangxi and his Master's degree in mathematics from Xian Jiaotong University. He received his Ph.D. in mathematics from Purdue University and joined the SMU faculty in 1995.

For more information: John Chen chenwmail.smu.edu http://faculty.smu.edu/chen/
COLLECTIVELY SPECIAL
By Nancy Lowell George

History student Kerry Oman recently won a prize for an article he wrote on early American fur trappers using the resources of SMU’s DeGolyer Library, a rare book collection devoted to Western Americana.

Spanish scholar Julia Benavent spent a month at SMU’s Bridwell Library last summer studying firsthand the history-changing orations of a 15th-century Italian monk.

Paleobotanist Bonnie Jacobs used historical maps from SMU’s Science and Engineering Library to prepare for a 2000 expedition to Tanzania that yielded valuable information for scientists who study climate change.

Oman, Benavent, and Jacobs are among researchers from around the world who have benefited from the numerous special collections in SMU’s 11 libraries. The libraries and their special collections play an important role in helping the University meet its goals: to expand knowledge through research and share knowledge through teaching, says U. Narayanan Bhat, dean of research and graduate studies.

“A college education is not simply the accumulation of information but also the process of developing knowledge through analysis and synthesis,” Bhat says.

When SMU opened in 1915, its library occupied the first floor in the east wing of Dallas Hall, the only building on campus except for a women’s residence hall. Today the University has 2.6 million books located in libraries throughout the campus. SMU’s libraries are popular not only with visiting scholars but also with campus visitors.

One of the University's most notable libraries is Bridwell Library at Perkins School of Theology. Bridwell houses more than 380,000 volumes in theology and religious studies, rare book collections of early printing, an extensive Bible collection, and the largest collection of 15th-century printed books in the Southwest.

“Bridwell Library is the strongest theological library west of the Mississippi,” says Director Valerie Hotchkiss. It features archival materials on American Methodism as well as significant works of leading theologians, philosophers, and literary figures.

Bridwell is home to one of the most complete collections of materials by and about 15th-century Dominican Friar Girolamo Savonarola, who was a religious and political activist in Renaissance Florence. The collection includes scores of 15th-century polemical tracts and sermons in which he attacks the court of Lorenzo Medici, the papacy, and the frivolities of Florentine life.

The Charles C. Selecman Savonarola collection at Bridwell was established in 1968 by his wife, Bessie Selecman, in honor of the third president of SMU. The library’s Savonarola holdings increased in size and significance when it purchased biographer Mario Ferrara’s collection in 1980. Ferrara amassed more than 1,200 books, manuscripts, and ephemera on the monk.

Since 1995 Bridwell has offered six research fellowships each year to scholars, ministers, and artists. Recent visiting researchers have traveled from Germany, the Czech Republic, and Bulgaria to use Bridwell’s holdings. Julia Benavent came from the University of Valencia in Spain last summer to study the Savonarola collection.

“Bridwell Library is very well known among Savonarolarists around the world,” Benavent says. “During my visit to Bridwell Library I had at my disposition all the texts on the orations by Savonarola, the previous and the later ones.”

Bridwell’s rare holdings go beyond theology, however, to include works from the Arts and Crafts movement in England, including William Morris’ Kelmscott Chaucer on vellum, a Dance of Death collection, and an extensive collection of early illustrated books and graphics by Dürer, Holbein, and Rembrandt. The library also has a collection of more than 1,100 miniature books that was donated in 1986 by the late Dallas retail executive Stanley Marcus.

A Resource on Western Americana

Another noted library at SMU is DeGolyer Library, which has one of the best collections of Western Americana in the United States. Researchers from throughout the world access DeGolyer’s materials on Western Americana, Texana, the borderlands between the United States and Mexico, and railroad history.

“We have books, newspapers, photographs, diaries, business records, and manuscripts,” says Russell Martin, who assumed the directorship of the library in 2001. “Putting them all together provides a rich mosaic for the study of the past.”

DeGolyer Library was established in 1974 when Everette L. DeGolyer Sr. and Everett DeGolyer Jr. transferred 40,000 rare books and manuscripts from their personal collection to SMU. “The DeGolyer collection was one of the finest private libraries in the country,” Martin says.

Today DeGolyer owns 100,000 volumes of rare and scholarly works, 5,000 feet of manuscript materials, and 350,000 photographs.

“The library contains the rarest of the rare—from one-of-a-kind manuscripts to books where only a few copies remain,” says David Weber, the Robert H. and Nancy Dedman Professor of History and director of the Clements Center for Southwest Studies in Dedman College. “Without the DeGolyer Library on campus, we’d be hard-pressed to support a Ph.D. program with its focus on the Southwest and Mexico.”

Kerry Oman, a Ph.D. candidate in the Clements Center, is using the DeGolyer’s published accounts of early 19th-century fur traders to complete his doctoral thesis. Last fall, Oman was honored by Montana, the Magazine for Western History for the best graduate student article submitted to the magazine. “Winter in the Rockies: Winter Quarters of the Mountain Men” will be published in the spring 2002 issue.

Preserving the Law

At the Underwood Law Library in SMU’s Dedman School of Law, a nationally recognized collection of international law materials supports the work of law professors and students as well as visiting international scholars. In addition, it supports pub-
were dead. Troyan such

Focus:

www.smu.edu

Attention to every item in the collection.

Michael Troyan began writing a biography on actress and philanthropist Greer Garson in 1994, she was 89 and too ill to sit for in-depth interviews. Most of the key people in her life – such as her third husband, Buddy Fogelson and leading men such as Errol Flynn and Walter Pidgeon – were dead. Troyan's challenges were compounded because the golden days of MGM studios were long over, and most of the records and archived material that would have highlighted Garson's career were discarded by MGM in the 1970s when the film giant faced financial troubles.

When Garson died in 1996, however, Troyan learned that her personal materials chronicling her acting career - from London's West End through her Hollywood and Broadway years - had been given to the Hamon Arts Library at SMU in 1992. They are housed in the Jerry Bywaters Special Collections Wing of the Hamon Arts Library, which serves as a repository for materials illuminating the cultural history of the Southwest, particularly in the first half of the 20th century.

"It was not until I came to Dallas and opened one of her scrapbooks that I got a real sense of who Greer Garson was as a person," Troyan says. His book, A Rose for Mrs. Miniver (The University Press of Kentucky, 1999) is in its third printing.

Preserving Garson's papers is important because she is part of our cultural heritage, says Sam Ratcliffe, director of the Jerry Bywaters Special Collections Wing. "She was the dominant actress of the 1940s."

Map Tanzania

The largest library on campus is the Hamon Library, which includes the Science and Engineering Library.

Bonnie Jacobs, chair of the environmental science program at SMU, used maps from the Edwin J. Fosse Map Library in the Science and Engineering Library to prepare for a summer 2000 trip to Tanzania that was funded by the National Science Foundation.

Jacobs, who studies fossil plants from Africa to determine climate
conditions as long as 46 million years ago, analyzed U.S. Central Intelligence Agency and historic British military maps of Tanzania to determine the elevation, latitude, and longitude of contemporary plants' habitats. She studies modern plants' relationships to their environments to better understand prehistoric plants. Comparing the climates can improve experiments used for predicting future conditions, she says.

"The information on these maps is critically important and can't be found easily," Jacobs says. "Even with the Internet, these resources aren't readily available. Tanzania is still considered one of the exotic places of the world."

The Tanzanian maps are included in the Foscue Collection of 250,000 historic, topographic, political, navigation, and military maps. The collection is named for the late Edwin J. Foscue, a former faculty member in the now defunct Geography Department at SMU. He created the collection after returning from his post with the U.S. Army Mapping Service in World War II with more than 28,000 captured German war maps, which form a core part of the collection.

Balancing Preservation and Accessibility

Because many items in the SMU libraries are rare or even one-of-a-kind, librarians strive to achieve a balance between preservation and accessibility. Most items are available in library reading rooms under the supervision of a curator. The sketchbook of artist Jerry Bywaters in Hamon Arts Library may be handled only by users wearing cloth gloves to protect the book from oils in the skin. Special exhibits and catalogs also help researchers and the public access the collections.

"We have 2,500 square feet of exhibition space in Bridwell Library that is accessible to the public," says Director Valerie Hotchkiss. Recent exhibits at Bridwell have included "The Reformation of the Bible/The Bible of the Reformation," which won the American Library Association's coveted Leab Award for best catalogue of the year, and "Stanley Marcus: Book Collector, Book Publisher, Friend of Bridwell Library."

Bridwell and several other SMU libraries are using technology to make rare library resources available to researchers via the Web. Bridwell has digitized 14 of its rarest books and manuscripts, enabling researchers from around the world to study the documents in their original format. The library also is making electronic facsimiles of its collection of more than 200 letters from Methodist founder John Wesley, his brother Charles, and other family members.

More than 200 World War II government documents representing 6,000 pages of material from pamphlets, posters, booklets, and photos have been digitized and are available for viewing on the Internet as the first step of Central University Libraries' digital initiative, says Central University Librarian Gillian McCombs. The documents are part of the government document collection at Fondren Library.

"By digitizing these materials, we are preserving a piece of the past and protecting the aging materials from future damage," McCombs says. "Many of these U.S. government documents were printed quickly during wartime on cheap paper, which is disintegrating rapidly. Making these documents available on the Web also expands access to researchers everywhere."

SMU Provost Ross C Murfin says SMU's efforts to collect and digitize valuable books and documents will help prevent what happened when the library at Alexandria burned in 480 A.D. and much of Western civilization's history vanished in a matter of hours.

"Today, special collections dispersed around the world — including ours at SMU — ensure that when our present joins the distant past, the record of our thoughts and accomplishments will live on," he says.
Moral QUESTIONS and Enlightened ANSWERS
Theologian Provides Clarity to Ethical Issues of Our Day

By Meredith Dickenson
PHILOSOPHER WILLIAM JAMES said that the modern world needs to discover a "moral equivalent of war," by which he meant that war had the power to shift people's attention away from their private interests and build a commitment to the needs of society as a whole.

Echoes of James can be heard in the talk of a new national unity that has emerged since September 11, 2001. Historians and political scientists will study the events leading up to and after that day, but theologians and ethicists will divine whether the soul of the American people really has changed.

One of these ethicists no doubt will be Robin Lovin, dean of Perkins School of Theology and SMU's Cary M. Maguire University Professor of Ethics. One has only to look at the eloquence of Lovin's writings to understand his stature as a leading American intellectual. In an op-ed written on the day of the attack for The Dallas Morning News, Lovin beamed a light of reason on a dark moment.

"We consistently have underestimated the destructive power of fervent commitments held by people who sense that they have no hope in this life," Lovin wrote. "To disarm the terrorist permanently, we must take on that hatred at its source. That calls for a steady hand and selfless heart of someone trying to defuse an unexploded bomb."

Lovin brings to a table a range of talents as a scholar, preacher, and administrator. As the dean of Perkins, he has recruited new faculty, raised millions of dollars in gifts, remodeled Perkins Chapel, and expanded the ministry program to four cities. He is a thinker of such originality that many people who once listened carefully to him regret that."I never listened carefully to him," says Provost Ross C. Murfin.

Lovin is an ethicist who views moral questions through the lens of Christian realism. The theology has its roots in the 20th century's great moral and political upheavals and is influenced by the social sciences, in particular, law, political science, and economics. As such, Christian realists understand that in the real world the search for moral righteousness is filled with ambiguity.

"A textbook definition of Christian realism is hard to come by because the point is always to be corrective of the tendency of the times whether that is toward an uncritical realism that reduces everything to questions of power and self-interest," Lovin says.

The first Christian realist was the American theologian and political preacher Reinhold Niebuhr. Lovin's 1995 book, Reinhoud Niebuhr and Christian Realism, has been praised for its skillful application of Niebuhr's ideas to current debates in ethics. In a review of Lovin's book, historian and Niebuhr biographer Richard Wrightman Fox said, "Lovin has a gift for explicating ideas that Niebuhr often left imprecise and for injecting those ideas into contemporary intellectual debate... The book establishes Niebuhr as a thinker of lasting significance in the very act of suggesting that his work must be developed in new ways."

Niebuhr criticized liberalism for its unquestioned belief in progress, but as a Christian, he believed in the ability of mankind to work toward a common good. His times shaped his philosophy. He rejected pacifism in the face of Nazi aggression, denounced Stalinism for its totalitarian ways, and worked tirelessly on race relations. In addition, Niebuhr was able to speak to audiences across religious, ethnic, and racial lines.

"I think that his realist way of doing Christian ethics really captures the spirit of American Christianity during the central decades of the 20th century," Lovin says.

Like Niebuhr, Lovin also is a preacher, an ordained United Methodist Church minister. Niebuhr's America of 50 years ago, however, is different from Lovin's. Whereas people once flocked to hear Niebuhr speak, Lovin sees a decline of community life in America. His version of Christian realism seeks to reinvigorate the public square.

"I think that renewal depends mostly on reviving an interest in and commitment to the public, but in a nongovernmental sense," Lovin says. "This would include service organizations that are committed to their communities, and even social groups that bring people together around shared interests."

Much of this conviction is borne out of his experience as a UMC leader of more than 20 years. Lovin serves as president of the Association of United Methodist Theological Schools and on an advisory committee for the Russia United Methodist Theological Seminary.

Lovin already was a widely known scholar and administrator when he came to SMU in 1994. A native of Illinois, he received a Bachelor's degree in philosophy from Northwestern University and graduate degrees in divinity (B.D.) and a Ph.D. in religious ethics from Harvard University. He held faculty positions at the Candler School of Theology at Emory University and the Divinity School of the University of Chicago before being named dean of Drew University Theological School.

It was in Chicago that Lovin established his reputation as a scholar, primarily because he taught more graduate students in 13 years than most professors teach in a lifetime. These students were, in turn, shaped by Lovin's perspectives on Christian realism.

In addition, he was director of the Project on Religion and American Public Life, a groundbreaking study of American religious attitudes, which continues to this day.

In addition to his book on Niebuhr, Lovin is the author of Christian Faith and Public Choices: The Social Ethics of Barth, Brunner, and Bonhoeffer and Christian Ethics: An Essential Guide. He has authored and co-edited several other books, articles and major publications, including a volume of essays, Cosmogony and Ethical Order: New Studies in Comparative Ethics.

Lovin has served on the editorial boards of The Journal of Religious Ethics and the Journal of Religion. He was co-edit of the Library of Theological Ethics. Since 1991 he has been editor-at-large for The Christian Century magazine. In 1987 he was named a Guggenheim Fellow. He also is the past president of the Society of Christian Ethics.

Since coming to SMU, Lovin has overseen the renovation of Perkins Chapel; hired 19 new faculty members; established satellite programs in Houston, Galveston, Oklahoma City, and San Antonio; raised $14 million in gifts; and forged a positive and strong relationship between the school and the United Methodist Church.

"Everything Robin does, he does well," Murfin says. "He's been a great administrator because he's a great scholar. That's why faculty have been willing to follow where he leads."

This year Lovin will return to full-time teaching as the Maguire professor. The position is unusual among endowed chairs because it is not situated in any one academic department. The Maguire professor holds a universitywide chair, Charles Curran, the Scourlock University Professor of Human Values and moral theologian.

"Robin Lovin is ideal for the position. He is well-respected by his peers in Christian ethics," Curran says. "In addition, his interests in religion, ethics, politics, and culture make him the best choice to engage in discussion and dialogue with many disciplines and persons across campus."

His plans are to continue the tradition of teaching ethics across the disciplines and professions, including SMU's schools of law and business. Lovin also hopes to use his book on Niebuhr to contribute to the University's courses and programs on globalization. His predecessor, retiring ethicist William F. May, says he is pleased that Lovin will continue to use the Maguire chair as a platform for public discourse in ethics.

"He is a first-rate scholar and a wonderful speaker. I am honored that he is a successor to the chair," May says.
For Ryszard Stroynowski and other physicists, the federal government's 1993 cancellation of the Superconducting Super Collider in Texas did not end their search for answers about the fundamental structure of matter. It simply meant that they had to find another way to answer their questions.

For Stroynowski, professor of physics in Dedman College, this has meant relying on a project more than 5,000 miles away to participate in the research of his dreams.

Since 1997 Stroynowski has been involved with the construction of a large particle accelerator, known as the Large Hadron Collider (LHC), beneath the ground in Geneva, Switzerland. The LHC project comes under the auspices of CERN, the European Center for Nuclear Research and the world's leading particle physics research laboratory.

Originally planned as a competitor to the Superconducting Super Collider project, the LHC is now the focus for thousands of physicists worldwide who are hoping to learn more about the fundamental structure of matter.

The collider comprises a large underground tunnel that is 26 kilometers around and has two rings. Protons will be accelerated around the rings in opposite directions and will smash into each other at energies seven times higher than any existing collider. When they collide at an estimated rate of a billion collisions per second, new particles are expected to be released. Two large detectors -- each of which is the size of SMU's Fondren Science Building -- will capture and process the information generated by these collisions.

From this information, physicists hope to create a more accurate picture of how the universe works. "Among the debris from the collisions there should be some interesting material that no one has seen before," Stroynowski says.

Probing the fundamental structure of matter has been Stroynowski's quest for more than 30 years. A native of Poland, Stroynowski says he was drawn to science at an early age because of the opportunities it offered to discover new things.

"Physics was -- and still is -- one of the most exciting fields of discovery," he says.

Stroynowski began his scientific career as an assistant professor at the University of Warsaw. He left Poland in 1969 for political reasons and took a position as a staff physicist at CERN, where he studied the structure of protons.

Stroynowski left CERN in 1975 and moved to the United States, where he spent six years as a researcher at the Stanford Linear Accelerator Center (SLAC) and 11 years as a senior research associate and lecturer at Caltech. Among his colleagues at SLAC was Marty Perl, who received the 1995 Nobel Prize for his 1975 discovery of the tau lepton, a fundamental particle that is a superheavy cousin of the electron. Stroynowski has added to current knowledge about the tau lepton, one of 12 fundamental particles now known.

Like many other members of SMU's Physics Department, Stroynowski was drawn to Texas in the early 1990s by the opportunity to work on the Superconducting Super Collider being built near Waxahachie. He joined the SMU faculty in 1991 because he wanted to work on the project, but remain in a university environment. Stroynowski led a program to develop one of the collider's two detectors. As part of this project, he helped design the biggest magnet at the time in the world.

Although the United States began contributing to the LHC project after the Superconducting Super Collider project was cancelled in 1993, Stroynowski was unable to immediately work on the LHC project because it did not offer his graduate students an opportunity to get timely results.

"The LHC is not going to be ready until 2007, and graduate students need projects they can complete in five to six years," he says.

Stroynowski takes particular pride in his graduate students, some of whom now work with top physics programs at universities such as Caltech and UC-Berkeley. Many came to SMU for the opportunity to study under Stroynowski.

"Ryszard has a great name in the physics community," says Vasili Sheklov, who received his Ph.D. from SMU in 1997 and now works at SLAC. "He really loves science and, moreover, he is able to share his passion with people around him. This makes him a great researcher and a great teacher."

After the super collider project in Texas was cancelled, Stroynowski and his graduate students began working on an electron-positron collider project at Cornell University. The circular accelerator has a detector called CLEO that analyzes the electron-positron collisions. Using this detector, Stroynowski has been able to map the properties of the tau lepton with a high degree of precision. His work at Cornell also led to the discovery of information about another fundamental particle known as the b quark. A paper he co-authored on the b quark is considered one of the top physics discoveries of 1995.

SMU physicist Ryszard Stroynowski is playing a major role in construction of the Large Hadron Collider in Geneva, Switzerland.

Photograph of Ryszard Stroynowski.
Stroynowski became involved with the LHC project in 1997 while spending six months on research leave in Paris, working with a French lab that was participating in the project. During this period, he identified a portion of the LHC project to which SMU could contribute. This portion of the project was one of the LHC’s two detectors, known as ATLAS. The ATLAS – 60 feet tall and 90 feet wide – is the largest detector ever built.

Several faculty members from the SMU School of Engineering worked with Stroynowski and other members of the Physics Department to develop some of the complicated electrical and computer systems for the ATLAS detector. For example, SMU physicists and engineers developed a modem that is 20,000 times faster than the standard 56k modem.

“The LHC represents an enormous technological challenge in terms of electronics and computing,” Stroynowski says. “It is going to produce one billion events per second and we need the ability to select one event out of a billion that will provide new information. We also need electrical and computing systems that can survive extremely high levels of radiation.”

Because of SMU’s high-quality work on ATLAS, Stroynowski was asked to play a larger role in the project. In early 2001 he was named leader in the United States of the largest sub-project in ATLAS – the Liquid Argon Calorimeter, a huge device that measures the energies of particles emitted in the interactions. Stroynowski is responsible for ensuring that construction of the calorimeter stays on time and on budget, while ensuring that its performance meets the needs of scientists who will use it.

“Ryszard is doing a fine job in this very challenging task,” says William Willis, project manager for the U.S. portion of the ATLAS experiment. “He is successful at this formidable task because he is respected for his knowledge of physics and the technology involved and because of his tact and good personal relationships with our European collaborators.”

While his responsibilities on the ATLAS project involve more administration than research, Stroynowski says he accepted the position because it is important that the project stays on schedule.

“I want to participate in those great discoveries before I retire,” he says. The ATLAS detector is expected to be completed in 2005. The entire LHC collider is on schedule to be operating by 2007.

“Just getting the pieces down the shaft and assembled will take two years,” Stroynowski says, noting that the accelerator is situated from 60 to 250 meters underground.

Although the ATLAS project management office is located at Brookhaven National Laboratory on Long Island, Stroynowski is conducting his work at SMU, making frequent trips to Switzerland. Now that the LHC project is closer to completion, Stroynowski has involved several SMU graduate students in the project.

Stroynowski hopes that the LHC will help answer why each elementary particle has a different mass and why the universe is not symmetric in time. “If you run a movie forward and backward it looks the same, but time looks different moving backward,” Stroynowski says.

In addition to expanding our understanding of physics, Stroynowski notes that there probably will be other important byproducts of the LHC collider project. After all, he says, the World-Wide Web was developed at CERN to help scientists communicate with one another.

High school teachers from across Texas came to SMU last summer to learn how to make physics fun and interesting for their students.

Promoting Science for Peace

In addition to making frequent trips abroad to help build the Large Hadron Collider project in Switzerland, SMU Physics Professor Ryszard Stroynowski travels throughout Eastern Europe as a member of the Steering Group of the NATO Science Committee’s Science for Peace Programme.

The program brings together scientists from NATO countries and former communist countries to develop projects that have economic potential or application to environmental problems in former communist countries. Steering Group members help the Science for Peace Programme assess the hundreds of proposals it receives for funding and conduct site visits of projects that have been funded.

“The Science for Peace Programme represents one of the few opportunities to educate young people in these poor countries, to give them contacts with NATO partners in the United States and elsewhere, and most importantly, to provide them with incentives to stay and work within their systems,” Stroynowski says.

Making Physics Fun

Ryszard Stroynowski and other SMU physics professors are instilling an interest in physics among younger students participating in a national program call QuarkNet.

QuarkNet is sponsored by the National Science Foundation, the Department of Energy, and two of the world’s leading high-energy physics research centers – Fermil in Illinois and CERN in Switzerland. QuarkNet seeks to interest high school students in physics by involving high school physics teachers in current physics research. SMU is one of 36 universities and physics labs nationwide participating in the program.

In summer 2000, two Dallas high school teachers accompanied Stroynowski to Geneva for two weeks to see CERN and the Large Hadron Collider project with which he is involved.

“The trip to Geneva was an invaluable experience,” says Darren Carollo, a biology and physics teacher at Lincoln High School in south Dallas.

Last summer, Carollo and 17 other Dallas-area high school teachers participated in a two-week program on campus led by SMU physics professors. The teachers developed experiments that could be used to present basic principles of physics in a fun way. Carollo, for example, shared a device he developed that uses compressed air to shoot jawbreakers through pieces of plastic tube at a target encased in plexiglass. The experiment demonstrates what physicist study with a linear accelerator.

“When you are talking about muons, leptons, and protons, the average student can’t understand you,” Carollo says. “But when you take a jawbreaker and run it through a tube at 200 to 300 miles per hour and they can see it explode against a rock and fragment, they can understand that And that gets them interested in high-energy physics.”

This year the Dallas-area QuarkNet teachers have returned for several events on campus, including a lecture by Nobel Prize-winning physicist Leon Lederman.
faculty recognition

Bill Babcock, Religious Studies, Jim Hopkins, History, Joe Kobylka, Political Science, and Ellen Pryor, Law, were named SMU Alshuler Professors in spring 2001. They are the first four members of SMU's new Academy of Distinguished Teachers.

Zeynep Celik-Butler and Don Butler, Electrical Engineering, continued to serve as Distinguished Lecturers for the IEE-IEEE-Electron Devices Society.

John R. Chavez, History, was named a 2000-2001 Fulbright Scholar. He taught U.S. history at the University of Granada in Spain through June 2001.

Gary Evans, Electrical Engineering, received the Outstanding Engineer of the Year Award from the Dallas Chapter of the Institute of Electrical and Electronic Engineers.

Alice Kendrick, Advertising, was named Outstanding Advertising Educator 2000-2001 by the American Advertising Federation 10th District.

Ivan S. Kmecko, Zoran Jandric, and Radovan Kovacevic, Mechanical Engineering, received the Best Paper Award from the American Society of Mechanical Engineers for their paper "Influence of Geometrical Factor on Heat Conduction Rate During GTAW for Welding-Based Deposition." The paper was presented at the International Mechanical Engineering Congress and Exposition held in November 2001 in New York City.

Radovan Kovacevic, Mechanical Engineering, received the 2000 Frederick W. Taylor Research Medal from the Society of Manufacturing Engineers for significant published research leading to a better understanding of improved productivity involving materials, facilities, principles, and operations.

Jose Lage, Mechanical Engineering, was named Honorary Professor, University Lower Danube of Galati, Romania, in May 2001. Professor Lage also received the 2001 Engineer of the Year Award from the American Society of Mechanical Engineers, North Texas Section, Texas Society of Professional Engineers in February 2001.

Bill Lengsfelder, Theatre, received the Leon Robin Award from the Dallas Theater League as special recognition for excellence in fight choreography.

William F. May, Cary M. Maguire Professor of Ethics, received the Award for Distinction in Scholarship and Theological Education from the alumni board of Yale University Divinity School.

Alexis McCrossen, History, René Prieto, Foreign Languages and Literatures, and Sherry L. Smith, History, received the 2001 Dedman College Godfrey Lecture Series Authors' Awards for outstanding scholarly research. McCrossen received the award for her book Holy Day, Holiday: The American Sunday, Prieto was honored for his book Body of Writing: Figuring Desire in Spanish American Literature, and Smith was recognized for her book Re-imaging Indians: Native Americans through Anglo Eyes 1880-1940. Smith also received the James A. Rawley Prize for the best book on race relations from the Organization of American Historians.

Mike McCullough, Psychology, received a Templeton Foundation Award for Positive Psychology. McCullough received the third-place award of $30,000 for his research on forgiveness and gratitude and their effect on people's well-being.

The Infinity Project, under the directorship of Geoffrey C. Orsak, Electrical Engineering, received the 2001 KPMG High Tech Award for Community Involvement.

Susan Scafidi, Law, received a Cultural Policy Research Award from the Center for Arts and Culture in Washington, D.C., for her work on intellectual property and cultural commodification.

Dennis Simon and Barbara Palmer, Political Science, received the Marian Irish Award from the Southern Political Science Association for their paper "Filling the Pipeline: Women and the Electoral Hierarchy in the United States." This award is given annually for the best paper on women and politics.

Jack Myers, C.W. Smith, and Marshall Terry, English, were featured authors at the 2001 Texas Book Festival, chaired by SMU alumna and first lady Laura Bush.

Claudia Stephens, Theatre, was the featured designer at the Texas Educators Theater Association conference in January 2002, at which her costume design work was displayed.

Ryszard Streynowski, Physics, was appointed a member of the steering group of the NATO Science Committee's Science Peace Programme.

Vigdar Toplitz, Physics, was appointed the U.S. representative to the NATO Science Committee by the Department of State in January 2000.

Frank P. Tomasulo, Cinema-Television, was elected executive vice president of the University Film and Video Association, an international organization of film/video artists and educators. Tomasulo, who serves as editor-in-chief of Cinema Journal, also was appointed to the Editorial Board of the Quarterly Review of Film and Video.

Trysh Travis, English, received a Newberry Library/South Central Modern Language Association Research Fellowship.

David Weber, History, was elected to membership in the American Antiquarian Society in October 2001. He also served as the Times Mirror Distinguished Fellow at the Huntington Library for 2000-2001.
Diane Berry, Psychology, “Predoctoral Fellowship Program (Cheryl Green): Exploring the Personal Component of Affectivity (Year 1 of 3),” National Institutes of Health (NIH).


Caroline Brettell, Anthropology, Dennis Cordell, History, and James Hollifield, Political Science, “Immigrants, Rights, and Incorporation in a Suburban Metropolis,” National Science Foundation (NSF).


Donald Butler and Zeynep Celik-Butler, Electrical Engineering, “Short-Term Innovative Research on Sensors on Flexible Substrates,” Army Research Office; “Sensors on Flexible Substrates for Smart Skin,” NSF.


Christopher Eckhardt, Psychology, “Alcohol, Anger and the Cognitions of Wife Assaultive Men,” NIH.


David Freidel, Anthropology, “Research in Maya Archaeology,” The Glick Foundation.


Robert Hampson, Psychology, “An Evaluation of Treatment Effectiveness of DIVERT Court,” Dallas County Criminal Courts; “Agreement between Texas Department of Protective and Regulatory Services and SMU,” Texas Department of Protective and Regulatory Services.

Vicki Hansen, Geological Sciences, “Tectonic Evolution of Planet Surfaces (Year 2 of 5),” and “Terrestrial Planet Evolution,” NASA.

Sandra Harabagiu, Computer Science and Engineering, “CAEREER: Reference Resolution for Natural Language Understanding,” NSF.


Eugene Herrin and Paul Golden, Geological Sciences, “Tamer Detection Tests,” Comprehensive Test Ban Treaty Organization (CTBT); “Operation and Maintenance of NVAR Array for Calendar Year 2001,” DTRA; and “Initial Funding for Planning and Design of Midway Island Infrasound Array,” University of Mississippi, DTRA.


Richard Jones, Biological Sciences, “Polycomb-group Genes and Gene Regulation (Year 8),” NIH.

John Kennell, Biological Sciences, “Telomere-like Linear Retropseudoviruses of Fusarium,” NSF.

Radovan Kovacevic, Mechanical Engineering, "AWS Graduate Fellowship Grant (D. Jandric)," American Welding Society; "Supplemental Grant to Support Robert B. Craman," Texas Higher Education Coordinating Board.


Victoria Lockwood, Anthropology, "Doctoral Dissertation: Female Wage-Labor and Renegotiations of Patriarchal Ideologies in Semi-rural West Bengal, India (S. Ghosh-Pandey)," NSF.


Anthony Marks, Anthropology, "Late Middle Pleistocene Occupations and Adaptations at Almonda, Estremadura, Portugal," and "Doctoral Dissertation Research: Examining the Boundaries of the Levantine Aurignacian," NSF.


William Orr, Biological Sciences, "Glutathione, Oxidative Stress, and Aging," and "Protein Targets of Oxidative Damage During Aging," NIH.


Peter Raad, Mechanical Engineering, "Cooperative Research: Coastal Effect of Tsunamis," NSF.

Stephan Sain, Statistical Science, "EPA Project," EPA.

William Schucany, Statistical Science, "Nonparametrics in Large, Multidimensional Data Mining," NSF.


Ryszard Stroynowski, Physics, "Personnel Agreement with Brookhaven National Laboratory," DOE.

Ryszard Stroynowski, Yongsheng Gao, and Thomas Coan, Physics, "Supplemental Request for Computing Equipment for CLEO III and ATLAS," DOE.

Ryszard Stroynowski and Fredrick Raad, Mechanical Engineering, "Cooperative Research: Coastal Effect of Tsunamis," NSF.

Ruth Wilson, Anthropology, "Controlling Blood Pressure in an Urban Black Community," University of Texas Southwestern Medical Center at Dallas.

Patty Wisian-Nielson, Chemistry, "Cyclic Alkyl/Aryl Substituted Phosphazenes: Functional Molecules with Specific Shape and Directionality," Welch Foundation.

**FUNDING SOURCES IN 2001**

**$8,984,096 total**

**Corporate**

- $1,374,903 (15.3%)
- $1,371,094 (15.9%)
- $923,094 (10.8%)

**Federal**

- $1,374,903 (15.3%)
- $1,371,094 (15.9%)
- $923,094 (10.8%)

**State/Local**

- $1,374,903 (15.3%)
- $1,371,094 (15.9%)
- $923,094 (10.8%)

**Other**

- $1,374,903 (15.3%)
- $1,371,094 (15.9%)
- $923,094 (10.8%)

**Humanities**

- $3,462,537 (39.1%)

**Natural Sciences**

- $4,247,285 (47.3%)

**Other**

- $221,080 (2.4%)

**Social Sciences**

- $1,629,894 (18.3%)

**DISTRIBUTION OF AWARDS**

---

Johannes Tausch, Mathematics, "Multiscale Methods for the Rapid Solution of Boundary Integral Equations in Geometrically Complicated Domains," NSF.


Steven Vik, Biological Sciences, "Structure/Function Studies of E Coll F1 F0 ATPase," NIH; "Chemical Proteolysis and Cross-linking of Membrane Proteins," Welch Foundation.


Ruth Wilson, Anthropology, "Controlling Blood Pressure in an Urban Black Community," University of Texas Southwestern Medical Center at Dallas.

Patty Wisian-Nielson, Chemistry, "Cyclic Alkyl/Aryl Substituted Phosphazenes: Functional Molecules with Specific Shape and Directionality," Welch Foundation.
A Boost for Advertising
Education and Research

More than $6 million in gifts given to SMU in honor of a leading Dallas advertising professional have led to the creation of a new institute for advertising education and research at the University.

In October 2000, SMU renamed its Division of Advertising in Meadows School of the Arts the Temerlin Advertising Institute for Education and Research. The new institute honors Lerner Temerlin, chairman emeritus of Dallas-based Temerlin McClain advertising, marketing, and communications agency. The new institute is being made possible by gifts pledged by friends and associates of Temerlin.

The institute will strengthen advertising education at SMU through an endowment for three faculty positions and resources for scholarships, faculty research support, student awards, and a lecture series.

“As a top 10 advertising market, the Dallas-Fort Worth Metroplex deserves to have one of the finest programs of undergraduate advertising education in the United States, and we are committed to developing such a program in the Temerlin Advertising Institute,” says Jim Goodnight, interim chair of the institute.

The Temerlin Advertising Institute has the largest enrollment of any academic unit in Meadows School of the Arts, with 220 majors enrolled in fall 2001.

Institute Extends Engineering Education

A new national institute that will promote engineering and technology education from kindergarten through graduate school has been established at SMU. The Institute for Engineering Education at SMU will lead the nation in developing innovative programs, curricula, and technology to increase the quality, quantity, and diversity of engineering graduates in the United States.

“The United States has enjoyed preeminence in engineering over the past century,” says Stephen Szgyenda, dean of the SMU School of Engineering. “This has contributed substantially to the economic success and growth of our country. If we are to maintain this advantage for this new century, we must attract more of the best students into engineering and technology programs, redesign our academic curricula to satisfy the needs of the future, and challenge our graduates to even greater heights.”

The institute’s first three priorities will be to expand engineering and technology education to high school classrooms, to develop a one-year college preparatory program for students who are not adequately prepared for engineering school, and to develop programs that will help retain those college students who enter engineering.

In addition, the institute will develop new engineering curricula and technology, serve as a national clearinghouse for engineering education programs, and establish a program to accurately assess the impact of new engineering education initiatives on student learning.

For more information on the institute, call 214-768-4262.
Jay Sullivan's straw and plaster figures are at once both familiar and distant. The representational sculptures most certainly resemble the human form, and yet they seem detached from reality. Sullivan, who has always worked figuratively, says he likes to place his figures in transition, between two points of motion. Whether the figures are walking, standing, reclining, or sitting, their gestures are "quite likely" human—what Sullivan calls "composites of the memory of movement" that are never static. He works in wet plaster and straw to give initial form to the material, and then alters pieces when dry to give further definition. "I can cut the whole figure apart and rebuild it. Often the way a piece starts out is not always the way it looks in the end," he says. Sullivan's figures have appeared in numerous solo and group exhibitions and can be found in private collections. The associate professor of sculpture and design and chair of the Division of Art has taught in Meadows School of the Arts since 1988. He earned his B.A. from Yale and his M.F.A. from California State University-Long Beach.
Curious about research at SMU?
For more information call
214-768-4345, or E-mail
bphillip@mail.smu.edu