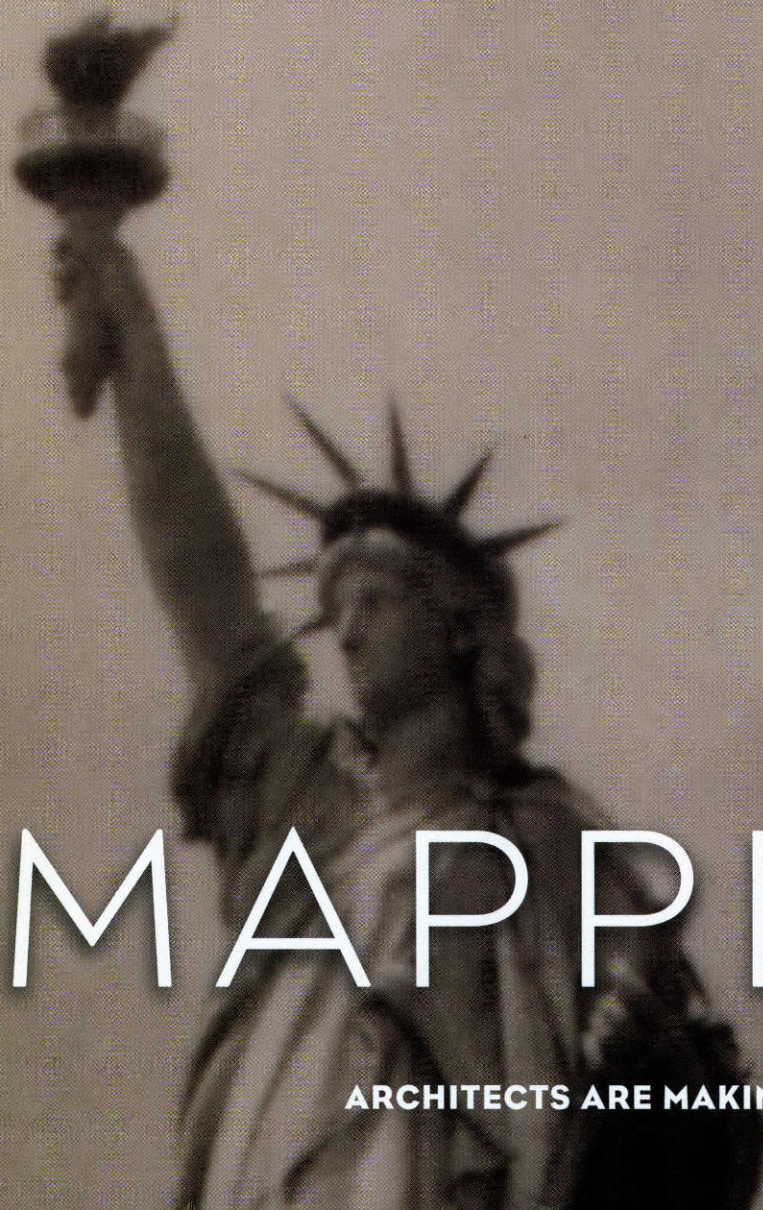


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VISTAS

TEXAS TECH RESEARCH. WINTER 2002 VOLUME 10 NO. 1



MAPPING LIBERTY

ARCHITECTS ARE MAKING HISTORY WITH HIGH TECHNOLOGY TO PRESERVE AMERICA'S MOST BELOVED LADY.

VISTAS

TEXAS TECH RESEARCH. W

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editor's note

WINTER 2002 VOLUME 10 NO. 1

10.1

THERE ARE MOMENTS IN OUR LIVES,

in our history, when we know life, as we once experienced it, is changed forever. Before Sept. 11, 2001, when terrorists struck in New York City, Washington, D.C., and Pennsylvania, I had planned the cover story for this issue of VISTAS to be the Statue of Liberty article. After that day six months ago when America lost her innocence, I knew the article "Mapping Liberty" took on more importance, as researchers are helping to document and preserve the most well-known symbol of freedom in the world. VISTAS and hundreds of other research magazines across the country provide a great service to our society in communicating scientists' discoveries and scholars' new knowledge. Research and education are the blessings of American society, privileges and resources not shared in many parts of the world. Those engaged in research and education have open minds to new ideas, to differing opinions, to solutions to our world's greatest problems. For five years, I have had the privilege of being president of an organization that represents many of those hundreds of research magazines across the country, the University Research Magazine Association. These colleagues of mine, editors of university research magazines, are passionate, as I am, about keeping these vehicles of communication alive and well, as we all know the value of the goals of such publications. As editors, we know that researchers and scholars are our best hope of helping to eliminate oppression across the globe, to lifting the veil of ignorance that drives hate and violence. Education is more important, more poignant, now, after 9/11/01. — Kippira D. Hopper, Editor

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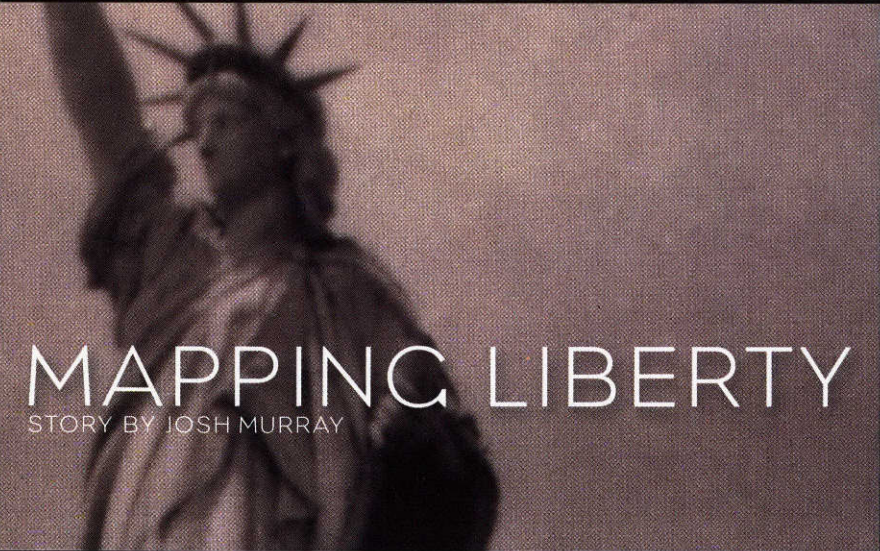
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MAPPING LIBERTY





STORY BY JOSH MURRAY








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the
NATURE
of
things

HOTOGRAPH BY STEWART FEE

BY H. S. CROFT

lessons

as old as time are dying throughout universities across America. That lesson is natural history. David J. Schmidly, Ph.D., president of Texas Tech University, points out natural history explains our roots and provides us with a deep understanding and appreciation for life as we know it. That's why he is taking steps to keep natural history strong at Texas Tech.

"Natural history is a major strength at Texas Tech. Other universities are cutting back on teaching in this field, but we continue to build. It's so important for future generations to know about our natural world and how to care for it," said Schmidly who is also a biologist.

Texas Tech has a 40-year history of science and education in natural history. The university holds the national lead in teaching and preserving natural history in and out of the classroom. That may be because of the fact that Texas Tech sits right in the heart of the South Plains of Texas.

"This land is rich in agriculture and livestock providing hands-on experience to researchers and students alike. That experience in natural history is everything," Schmidly said. "I was raised on a farm, so I was out on the land all of the time. I watched animals and birds and became fascinated with how the world works. Texas is becoming so urbanized that we're losing much of the land and the flora and fauna that depend on natural lands for their lives."

Scientists, like Robert Baker, Ph.D, director of the Natural Science Research Laboratory at Texas Tech, continue to bring natural history to the forefront. "The university has 10 leading mammalogists on the faculty in biological sciences and, range and fisheries management. The Natural Science Research Laboratory has thousands of specimens of mammals from all over the world. It's important that we study mammal species from the past, and preserving those who are in danger of extinction," Baker said.

More than 82,000 specimens are on display in the Mammal Collection of the Natural Science Research Laboratory at the Museum of Texas Tech. The collection includes a wide range of specimens. Researchers in the United States, Latin America, Canada, Europe and Australia utilize the 40-year-old collection. The collection is the largest in Texas and one of the first frozen tissue collections to be developed in the world.

A major highlight of the natural history effort can be found in the bioinformatics program at Texas Tech. The program is an ideal learning tool for

students and scientists from around the world who are interested in natural history. The program holds a diverse collection of wildlife combined with other existing ecological and geographical electronic information. Now, anyone can enter the database, ask questions, and get answers with the research data provided from the collections with the click of a mouse.

The Department of Biological Sciences also sponsors the James Sowell Expeditions. The expeditions support the work of undergraduate and graduate students in documenting the planet's biodiversity. The expeditions also support the work of nationally known writers and photographers. Expeditions to Honduras and Ecuador, in the summer of 2001, were successful in the collections of 75 species, and the identification of two previously unknown species of mammals.

Another area of interest can be found through the Southwest Collection/Special Collections branch of the Libraries of Texas Tech University. The compilation holds the James Sowell Family Collection in Literature, Community and the Natural World. The collection includes the personal papers of the most prominent nature writers of this generation: Barry Lopez; Rick Bass; Bill McKibben; Pattiann Rogers; Doug Peacock; Bill Kittridge and Annick Smith. These collections are growing and provide a natural corollary to the Southwest Collection's historical strengths on ranching, agriculture and the environment. The ranching collections are considered among the most prominent in the United States.

Texas Tech also provides unique curricular innovations and programs of study. The undergraduate Honor's College supports a Bachelor of Arts program in natural history and humanities. This program combines basic sciences, like biology and chemistry, with the humanities.

Schmidly says the knowledge and skills obtained through this degree will enable the student to pursue a number of post-graduate options including: graduate school; science journalism; nature writing; nature photography; museum science; documentaries; and other careers that require a merging of science and humanities disciplines.

"Texas Tech is a national leader in this interdisciplinary effort. Training students to bridge the traditional disciplinary boundaries of natural history is essential for confronting the complex environmental issues of the 21st century," Schmidly said. ◀



SUBBLING
RIVRY

jealousy

is defined as the intolerance of rivalry or unfaithfulness. Most parents can define it as that initial scream coming out of the bedroom because Brooke is playing with the teddy bear that Bobby wants. In the world of parenthood, adults often believe that they have made mistakes in parenting when they observe jealousy among siblings. When writing her book, "Preventing Sibling Rivalry," Sybil Hart, Ph.D., an assistant professor in the Department of Human Development and Family Studies at Texas Tech University, described the positive approach taken in her research in order to aid parents understanding and handling of jealousy.

Hart received a National Institutes of Mental Health grant when she came to Texas Tech. The grant allowed her to follow-up research on jealousy in 12-month olds with research on 6-month-old infants. "Our research has shown that signs of jealousy can appear as early as 6 months of age," Hart said. Her research studies also indicate that a negative reaction by a young toddler to a new addition in the family is normal and healthy. "Jealousy is actually a way of expressing love," Hart said. "This is normal and does not indicate that your child is insecure or improperly trained."

How is jealousy tested? Hart pulled together her knowledge as a mother of three girls, her experience as a childcare specialist, and her professional education to develop a technique to test jealousy in infants. "This kind of research is helpful because you can do a lot of naturalistic research, but getting into the lab will get you ahead by leaps and bounds," said Hart.

The lab study consists of a triad: the mother, her infant and a doll. Hart placed individual mothers in a room with their infants and the doll, and the mother then would talk lovingly to the doll, as if it was a real infant, while Hart and her research team videotaped her infant's reaction. Hart used a doll instead of a real baby because real babies are too variable. One could be a happy baby, and one could be crying, adding too much inconsistency to the research. "We are trying to control all of our variables," said Hart.

The key to decreasing jealousy is finding out where it comes from. Hart discovered through her experiments that the nature of the mother affects the infant's reactions. Hart categorized the mothers in her study into three different categories: intrusive, withdrawn and sensitive. When researching intrusive mothers, Hart found a closed-off, backing away reaction in their infants. "Infants who have a cold or flat response during the experiment are the children who could be subject to a minor form of child neglect," said Hart. When looking at withdrawn mothers, unusual reactions are again more likely to show up. Infants of sensitive mothers usually react with a negative response, which is the healthiest result.

"Children who direct jealous reaction to their mothers are usually the healthiest emotionally," said Hart.

Hart also addresses the issue of age-spacing as it relates to jealousy between siblings. One myth Hart noted in her book is that having children far apart helps children get along better. Hart recommends having children closer together in age. "Children who are closer in age are encouraged to form friendships and closeness with each other," Hart said. "This is harder to do with widely spaced siblings because their interests will vary." Children of the same gender also tend to get along better because they can form friendships more easily through common interests. When having two children of the opposite sex, sometimes an older girl with a younger brother will get along because they will be physically quite similar during early childhood.

When will Brooke and Bobby understand what jealousy is? Children also have a hard time with abstract concepts because their word associations are quite literal. A concept such as jealousy is hard for a child to understand, so age must be taken into account when parents try to give explanations, Hart says. Jealousy develops over a period of time just like any other characteristic in a human and so does its comprehension.

How do parents prevent Brooke and Bobby from fighting over that teddy bear? Hart says that what parents want to know most of all is how to prevent jealousy and whether it is ever too late to try. Hart suggests that during an infant's first year, parents can help their infants learn how to get adults' attention by using positive behaviors, or a "love vocabulary." The "love vocabulary" includes smiles, watching, eye-contact and affection, to which parents can respond by "showing optimism, being generous with praise and encouragement and being stable in providing support." Hart also addresses the issue of older children's jealousy by distinguishing different fight patterns and different motivations. Struggles between children serve different purposes and are aroused by different feelings. Parents can address these issues by using appropriate resolution techniques. By presenting anecdotes throughout her book, Hart includes typical as well as unusual stories to portray real-life situations. "Some of these jealousy stories are not typical," Hart said. "This puts your personal situation into a broader context."

Through her research, Hart has discovered that jealousy is a way that a very young infant can say, "I love you," which should be somewhat of a comfort to parents. "I had enough to offer parents very early in the game just by finding that infant jealousy is normal and healthy," said Hart. "That alone just changes everything you thought you knew about jealousy." ◀

THE
bloodbraid
uniraiprot

barrier



scientists

first found evidence in the early 1900s that the brain had a specialized barrier that protected its cells. Researchers now know that a blood-brain barrier keeps many substances out of the brain, including a number of therapeutic agents that might be beneficial. The blood-brain barrier functions as a system of small capillaries located in the brain that maintain a constant brain microenvironment.

David D. Allen, R.Ph., Ph.D., assistant professor of pharmaceutical sciences at the Texas Tech University Health Sciences Center in Amarillo, conducts research on ways to get beneficial drugs to bypass the blood-brain barrier. Allen recently received a National Institutes of Health Academic Research Enhancement Award to continue his research. He has been researching drug delivery to the brain since 1993 and has an interest in drugs in general because of his background as a pharmacist.

The blood-brain barrier prevents many substances, such as toxins, from entering the brain's pristine nerve cell habitat. "The barrier separates the circulatory system from the brain which keeps many substances out," he said.

However, the brain has certain proteins that will transport needed nutrients to the brain that otherwise wouldn't cross the barrier.

Allen's research proposes using a protein transporter located at the blood-brain barrier, called the choline transporter, to deliver drugs to the brain across this barrier.

"There are a lot of beneficial drugs that cannot get into the brain because of the barrier. We use these transport proteins, such as the choline transporter, to deliver drugs to the brain," Allen said. "We are attempting to come up with a way to get drugs past the barrier and into the brain."

Allen is specifically studying ways this transporter could be helpful with smoking cessation. "A compound that blocks nicotine's effects in the brain, n-octyl nicotinium iodide, or NONI, is one of the compounds that we are trying to get into the brain by this method," Allen said.

"Because of its chemical properties, it was thought that NONI could not get into the brain, but because of certain parameters of the choline transporter, we can deliver NONI to the brain using this transport protein," he said.

"Our research has shown that the compound may be able to get into the brain and we will demonstrate that the drug will block nicotine's ability to stimulate the dopamine system in vivo," he said. Dopamine is a neurotransmitter in the brain that is involved in the effects of drugs of abuse and also movement disorders, such as Parkinson's disease.

Allen says he is also looking at another compound that is three orders of magnitude stronger at blocking nicotine's effects in the brain as well as other compounds that affect the dopamine system and other neurotransmitter systems.

In the future, the use of this transport system by drugs to cross the blood-brain barrier may be used in the treatment of diseases such as Parkinson's or Alzheimer's disease. The use of this transporter may be helpful for other brain disorders as well.

Scientific research on the blood-brain barrier has come a long way in the last hundred years. Not only was its existence discovered, but also through research, scientists are finding it possible to bypass the blood-brain barrier and deliver important substances to the brain. ←



VATICAN

ARTS

Hosted
By

**THE
TU MUSEUM**

FREScoes

JUNE 1

SEPT 15

benedict's

displeasure with the lifestyle of his fellow students in Rome led him to found a monastic community known today as the Benedictine Order. Benedict, who lived from 480 until 550, taught humility, obedience, equality and the spiritual value of work. In a time of violence, he preached a motto of peace. His story is now coming to Lubbock in the form of four frescoes.

The collection, "Traditions and Renewal: Medieval Frescoes from the Vatican Museums," opens at the Texas Tech Museum June 1, 2002, and runs through Sept. 15, 2002. The exhibition features 31 frescoes, some of which have never been on public display.

"This is not a traveling exhibition," said Gary Edson, MFA, executive director of the Museum and professor of museum science. "When these frescoes leave Texas Tech, they will not be on view again until 2025."

Edson says the priceless Vatican art found its way to the Texas Tech Museum through the efforts of the Rev. Malcolm Neyland, of the Lubbock Diocese. "Father Neyland has been working on bringing a Vatican Museums exhibit to Lubbock since he first visited the Vatican 13 years ago," Edson said.

The frescoes are from two churches. Those from Saint Nicola in Carcere were painted from about 1120 to 1130. The pieces from Saint Agnese were painted between 1280 and 1310. In addition to the story of Saint Benedict, the frescoes depict Old Testament prophets such as Amos, Jeremiah, Moses and others.

The works were removed from the churches in the mid-1800s. "Some of the pieces have been seen in publications, but they have never been seen in public as a group," Edson said. "Nor have they been seen in their current state of conservation."

Frescoes often were used in churches to tell a story. Seeing these works together should attract art historians and historians to Lubbock next summer. "I expect there will be academic interest in this exhibition," he said.

In addition to the rarity of the works, Edson says the frescoes are of interest because they are representative of the changing styles from the Medieval and the Renaissance eras. In Medieval artwork, figures were flat, with no distinguishing facial features or physical dimension. "In the later frescoes from Saint Agnes you begin to see different characteristics in faces and a more humanization of the works," said Edson. "You can see

the distinction quite clearly from the earlier works taken from Saint Nicholas to the ones taken from Saint Agnes."

How will the Museum handle an exhibition of this size? Edson says the same as it does any other exhibition.

"There are a number of things you do for any exhibition," he said. "You ask: What kind of environment are you trying to create? What story will the works tell, how will people move through the exhibit and a lot more."

Edson and his staff already have made sketches of how the pieces will be arranged and how the crowds will flow through the exhibit rooms. The staff has made scale reproductions of the gallery and has made wood cutouts of arched hanging spaces to see how the piece will hang and how the lighting will look.

"We've already found that we'll have to change the depth on some of these spaces to better utilize the lighting," he said.

Much of the construction will be done in the museum's workrooms and moved into place just before the frescoes arrive. The artwork will arrive in Lubbock in late May 2002. The exhibition will occupy the space now used by the Texas Tech Museum's Diamond M art collection. Those paintings will be relocated or stored beginning in late March or early April.

Complementary exhibitions also on display will come from the Museo Franz Mayer in Mexico City and the Sarah Campbell Blaffer Foundation in Houston.

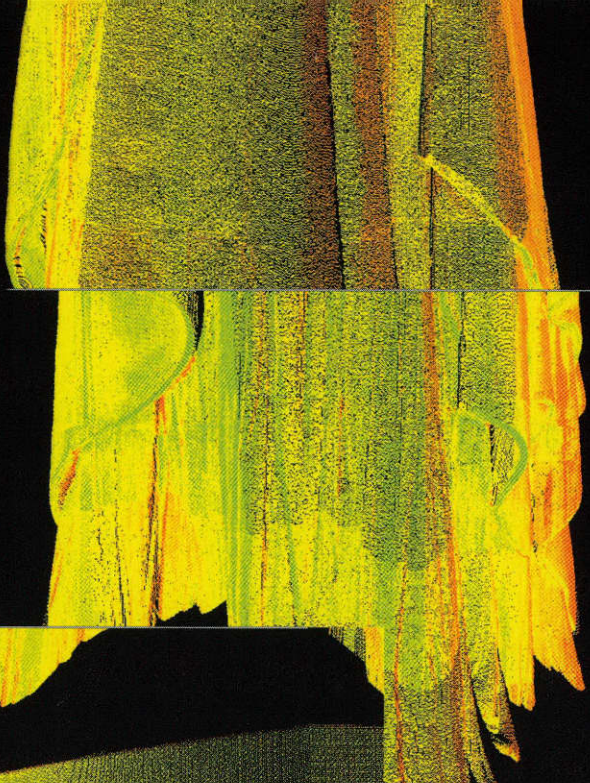
The pieces from the Franz Mayer Museum include paintings, sculptures and ceremonial objects of silver from the 17th and 18th centuries, said Edson. "These works are a natural complement to the works from the Vatican Museums."

Works from the Blaffer Foundation include paintings from the 16th and 17th centuries when secular subjects began to appear alongside traditional religious motifs, he said.

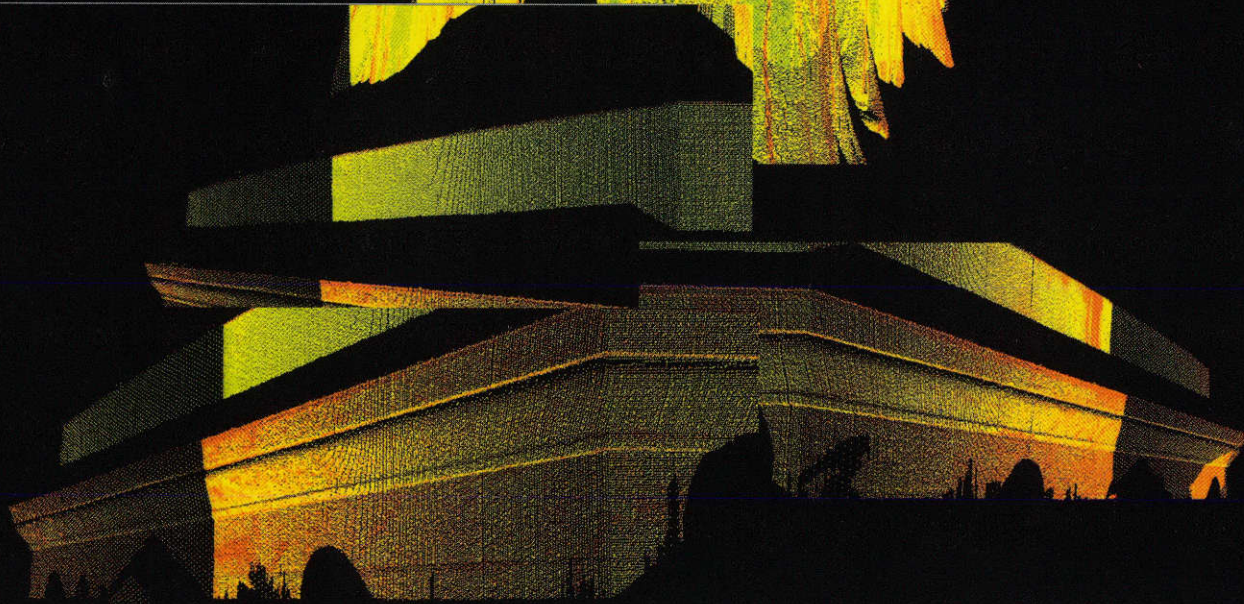
While admission to the exhibition is free, tickets are required. They can be reserved for a specific hour and day by calling the Museum at (806) 742-6800 or toll free at 866-803-6873. More information on the exhibit is available on the Internet at www.vaticanexhibit.org.

Vatican Museum exhibitions do not typically come to cities the size of Lubbock. But Edson says the museum is ready to handle the work and the prestige. "This is a big step for our museum and will pave the way for other high-profile exhibits in the future," Edson said. ←

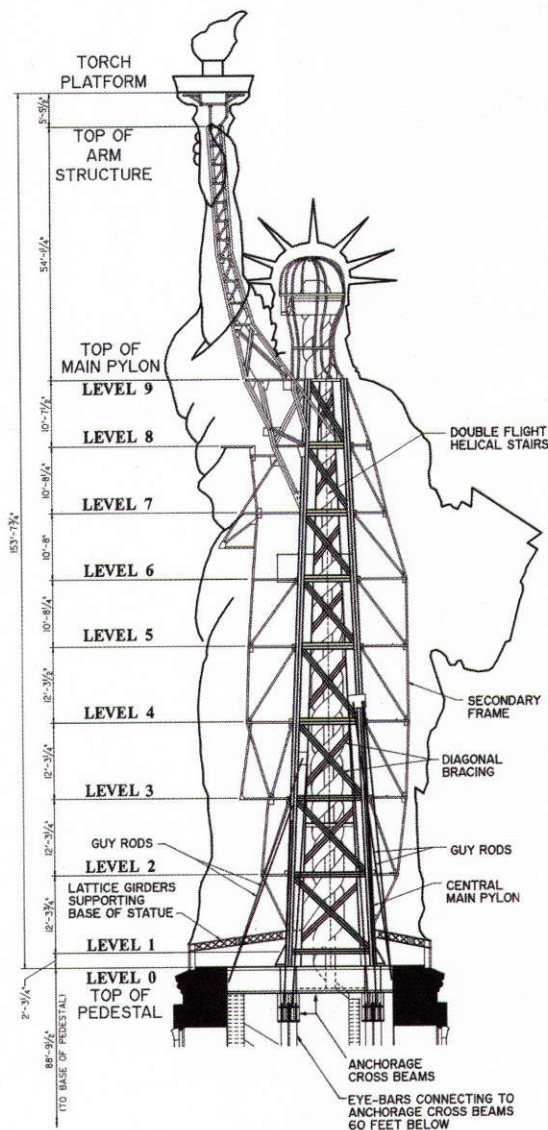




STORY BY JOSH MURRAY
IMAGES COURTESY OF TEXAS TECH UNIVERSITY
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PHOTOS BY ARTIE LIMMER



MAPPING LIBERTY



Certainly, many symbols represent America. Often, those symbols are buildings or structures that represent the strength, vitality and prosperity of America to the world. On Sept. 11, 2001, America lost a portion of the Pentagon in Washington, D.C., and Americans watched as the twin towers of the World Trade Center in New York fell to the hands of terrorists. Those three buildings, one representing military strength, and the other two representing financial trade, took a hit. So did the world. Innocent lives were lost. Symbols of America changed. But just a 15-minute ferry ride to the south of the World Trade Center is the Statue of Liberty, still standing proudly, still representing America to the world.

Just a month before the dreadful September day, representatives from the National Park Service and the Historical American Buildings Survey welcomed Professor John White, M. Arch., AIA, Professor Glenn Hill, M. Arch., AIA, and Associate Dean of Research Elizabeth Louden, M. Arch., from the Texas Tech University College of Architecture to the Statue of Liberty. Their mission: to produce the United States' first-ever architectural drawings of the exterior of the statue.

The researchers said this challenging and exciting documentation research project began months before when White received a phone call from Paul Dolinsky, chief of the Historical American Buildings Survey. White said the organization was aware that the university had purchased the Cyrax 2500 Laser Scanner.

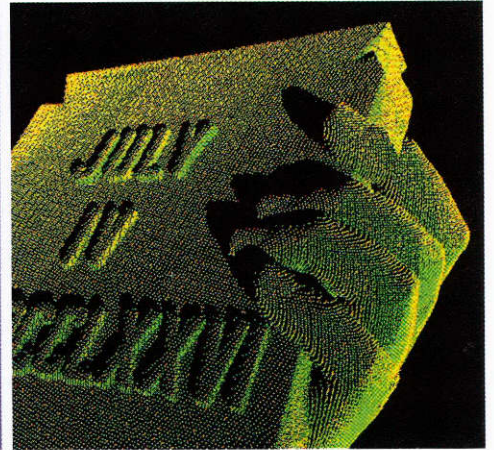
"The National Park Service needs accurate drawings of the Statue of Liberty. We have drawings of the steel frame, but unfortunately we do not have the original drawings of the artistic copper work," Dolinsky said. "No other university, to my knowledge, has Texas Tech's capability to use remote measuring equipment."

Texas Tech purchased the Cyrax 2500 laser scanner to provide cutting-edge technology for collaboration for the university's architecture, landscape architecture, geosciences and medical research efforts. The National Park Service asked the College of Architecture team, known for its reputation in historic preservation, to document the Statue of Liberty without the use of scaffolding.

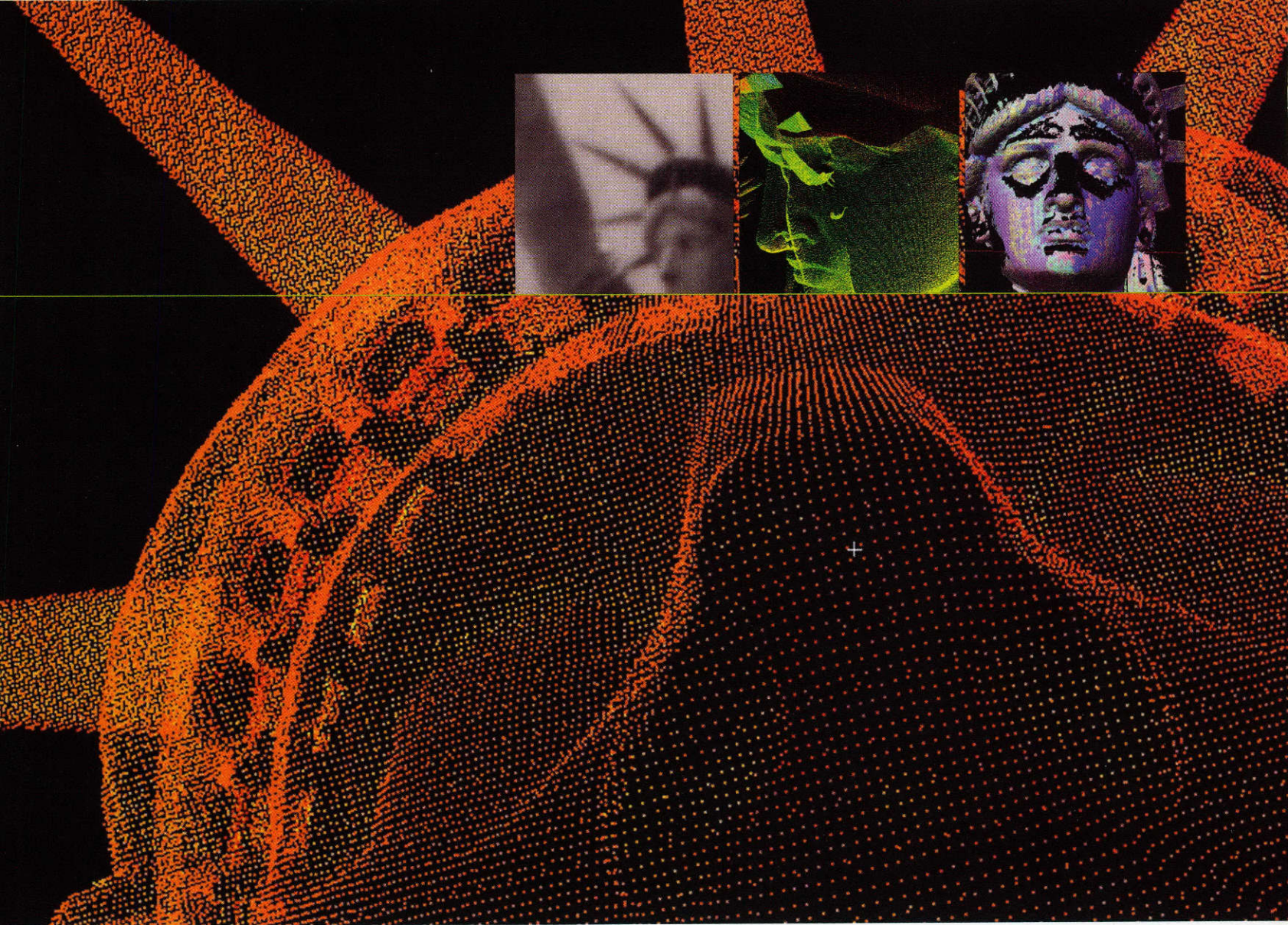
"There is a 25-year track record between the National Park Service, Historic American Buildings Survey, Texas Tech and John White," Dolinsky said.

White, a fellow and dean of the Historical American Buildings Survey and director of Texas Tech's historic preservation program, has documented structures at the Grand

STANDING AT GROUND LEVEL. THE TEXAS TECH ARCHITECTURE TEAM MEASURED EVERY QUARTER INCH OF THE STATUE'S SURFACE-COLLECTING MORE THAN 500 MILLION DATA POINTS.



LEFT TO RIGHT: PROFESSOR GLENN HILL, M. ARCH., AIA, JARED WRIGHT, JON GAMEL, PROFESSOR JOHN WHITE, M. ARCH., AIA, WEI XIONG, AND ASSOCIATE DEAN OF RESEARCH, ELIZABETH LOUDEN



Canyon National Park, Mark Twain's home in Hartford, Conn., the Texas State Capitol and the Lyndon Baines Johnson National Park, among many other sites. He said, "The statue is such an international icon for liberty and a national monument that contributes significantly to the built and cultural heritage of the United States. This new documentation technique will help the National Park Service provide on-going repairs to the statue."

For more than seven years, Loudon also has worked with the National Park Service on projects, such as the Manzanar War Relocation Centers in California and the Harper's Ferry National Park in West Virginia. And Hill, who directs the computing curriculum for the college, has developed an Internet design studio, and has worked as a research associate for Texas Tech's Wind Engineering Research Center. Recently, he has refocused his area of research into environmental visualization.

All three researchers work with the university's historic preservation program that offers a Masters of Science degree. James White, M. Arch., AIA, dean of Texas Tech's College of Architecture said, "Buildings are part of our country's legacy. In the College of Architecture, we feel like preservation is as critical to the environmental and architectural history of our country as building new buildings."

Dolinsky said Texas Tech researchers will provide drawings that will be used on an on-going basis to monitor and care for the statue. The National Park Service has other reasons as well. Dolinsky said "These drawings also ensure the Statue of Liberty against catastrophies."

State-of-the-art technology is on the side of the Texas Tech researchers. Lieca Inc., provided the survey instrument, Carlson Software provided computer-assisted-drafting software and Via Computers provided a small, wearable computer to record the survey data. Paraform Inc. provided the software to convert the point-cloud data into three-dimensional geometry. "Measuring every fold of copper on the Statue of Liberty would be extremely difficult," Hill said. "But with the scanner, we will be able to record exactly what we could see from 150 feet away."

Hill, who orchestrated the acquisition of the scanner, said the scanner is about the size of a desktop computer monitor, weighs 45 pounds and stands almost 17 inches tall. The portable scanner was first introduced in 1998 and has been used successfully to produce three-dimensional images of as-built structures at engineering and construction sites.

Loudon said this documentation is a complex task. "It's never been



"NO OTHER
UNIVERSITY, TO MY
KNOWLEDGE, HAS
TEXAS TECH'S
CAPABILITY TO USE
REMOTE MEASURING
EQUIPMENT."

- PAUL DOLINSKY
CHIEF OF THE HISTORICAL AMERICAN
BUILDINGS SURVEY

done before. We're learning as we go," she said. "We want to push the limits of this technology."

The Texas Tech professors, along with students John Gamel and Jared Wright, used a laser-scanning technique that would baffle Lady Liberty's creators. With targets placed strategically on the statue's surface, the researcher's set up in 13 different locations at the base of the statue to capture the data. Standing at ground level, the team measured every quarter-inch to one-eighth of an inch of the statue's surface. More than 500 million data points were collected. Hill said the images were stored on a laptop computer at the site and transferred to polygonal-three-dimensional images. With the help of computer-assisted software, the images are being converted to two-dimensional drawings.

In the months to come, those points then will be converted into measured drawings that meet the Historic American Buildings Survey standards for recording historic structures. Wei Xiong, a new graduate student from China, is assisting in the documentation process as well. Xiong said since Sept. 11, 2001, this project has been put into perspective.

"Coming from China, I know the Statue of Liberty is a symbol of the United States," Xiong said. "With this project, I feel I have a duty on my shoulders, and I'm very proud of that."

In addition, the drawings will be housed at the Library of Congress with an archival shelf-life projected to be 500 years. "We take this responsibility very seriously. When you contribute to the national memory and you know that what you're doing will last beyond yourself, it's an opportunity to be a real part of history in a very positive way," Loudon said.

The history of the Statue of Liberty began in 1865. Just like today, liberty was on the mind of the world. The French admired all that America represented. It was a time when America had successfully established a democratic government and had survived the Civil War to abolish slavery. Long before France established its own republic, two of its citizens, Frederic-Auguste Bartholdi, a sculptor, and Edouard Rene Lefebvre de Laboulaye, a scholar, wanted to give America a monument to memorialize independence and human liberty. And so the idea for the Statue of Liberty was born at a dinner party.

When Bartholdi sailed to America to propose France's gift, he entered the harbor and wrote, "The picture that is presented when one arrives in New York is marvelous ... it is thrilling. It is, indeed, the New World, which appears in its majestic expanse, with the ardor of its glowing life."

During this trip, Bartholdi met with U.S. President Ulysses S. Grant; Henry Wadsworth Longfellow, an American poet; Horace Greeley, a New York editor and politician; and others. Later in that trip, Bartholdi traveled across the United States carrying a sketch of the statue and a small model. While everyone was receptive, financial backing was difficult to find.

Joseph Pulitzer, a Hungarian immigrant and owner of newspapers, such as *World* and *St. Louis Post-Dispatch*, saw the opportunity to raise money to build the statue's pedestal and raise circulation for his newspapers.

In an effort to appeal to readers, Pulitzer promised that every contributor's name would be published in the newspaper no matter how much money was given. On Aug. 11, 1885, Pulitzer announced in the *World* that \$100,000 had been raised with donations coming from more than 120,000

individuals. Pulitzer was right: Circulation for his newspapers increased by 50,000 readers.

In 1874, the Third Republic was formed in France, and Laboulaye and Bartholdi knew the time was right to begin the statue. It was agreed that France would pay for the statue and America would pay for the pedestal and foundation. Work soon began.

Alexandre-Gustave Eiffel designed the statue's intricate, yet colossal, steel skeleton. Weighing 125 tons and standing 111 feet tall, she has a 35-foot waist, arms that are 42 feet long and her hands alone are 16 feet long. She carries a tablet that is more than 13 feet wide and two feet thick.

In order to cover the large structure, Bartholdi decided that repoussé, a technique to hammer sheet metal inside molds, was the best way to create the outside shell of the statue. It took 31 tons of copper to cover the statue.

Packed in 214 crates, the Statue of Liberty arrived in America on June 15, 1885. It took six months to assemble the statue at its new home. Richard Morris Hunt designed the pedestal that sits on a concrete foundation made of 24,000 tons of concrete. From the concrete pedestal, Lady Liberty stands an additional 89 feet tall.

So on Oct. 25, 1886, 15 years after Bartholdi's visit and 21 years after the initial idea, the Statue of Liberty was presented to America. More than 1 million people lined the bunting-clad streets, and as a parade of 20,000 people passed Wall Street, the first-ever ticker-tape parade filled the air with white curling streamers as the office workers unreeled spools of ticker tape. U.S. President Grover Cleveland remarked, "We will not forget that Liberty has made here her home, nor shall her chosen altar be neglected."

Unfortunately, Laboulaye died before seeing the completed project, but his partner Bartholdi was there, and upon seeing the completed statue for the first time, he said, "The dream of my life is accomplished."

Bartholdi was not the only one with dreams of liberty. In years to come, millions of immigrants would make their way to America with little more than dreams. Like Bartholdi, the sight of the Statue of Liberty meant their dreams had come true. They had reached America, the land of liberty.

Those people associated with the Statue of Liberty went on to be known for other great achievements. The Pulitzer Prize was named after Joseph Pulitzer and his excellent career in journalism, literature and drama. Alexandre-Gustave Eiffel later unveiled yet another famous structure – the Eiffel Tower in Paris, France. And in the years since Lady Liberty's parade, the famous ticker-tape parade has come to be the backdrop in countless parades for America's heroes. While some symbols of America have fallen to the hands of terrorists, the Statue of Liberty still stands proudly in the harbor with her torch raised proudly and her watchful eye on America.

"The statue is not about politics; it's not about the military; the statue represents our country to the world," Loudon said.

Today, more than ever, the Statue of Liberty represents America. And just as brightly as her torch glows, the American values of freedom, democracy and equality shine as well. ←



THE NEW BATTLEFIELD

by Victoria Sutton, Ph.D, J.D.



Why is America unprepared for biological warfare?

It is a bit disconcerting to see the confusion of our federal government when confronted with the new challenge of bioterrorism. After all, we have been aware of the threat of bioterrorism since the birth of our country, when Sir. Jeffrey Amherst intentionally inflicted smallpox on the Lenni Lenape Indian tribe in his genocidal campaign to acquire property. Since the 1950s, the public has been aware of the rise in interest in biowarfare, and we began diplomatic efforts to stop the proliferation and development of biological weapons.

Why, then, is the most powerful nation in the world so unprepared for this current threat?

The term, bioterrorism, can be defined as an overt release of a biological agent that is calculated to expose biological populations; resulting in immediate or delayed mortality or morbidity.

James Madison wrote in *The Federalist Papers*, No. 41, "The means of security can only be regulated by the means and danger of attack. They will, in fact, be determined by these rules and by no others." Our means of security have simply failed to be dictated by the means and danger of biological weapons through our federal organization and our legal framework.

First, as a federal government, we have not recognized that not all weapons are created equal and have not distinguished biological agents from chemical and nuclear ones in the organiza-

tion of our defense. Biological weapons are very different from chemical and nuclear ones. With nuclear and chemical weapons, the attack is obvious when it is made, and the damage is immediately recognizable, and we know that it is not a naturally occurring event. With biological weapons, the attack may be unrecognized for days or weeks and the procreative nature of biological weapons can rapidly create exponential damage to the population as it spreads through repeated exposures or contagion.

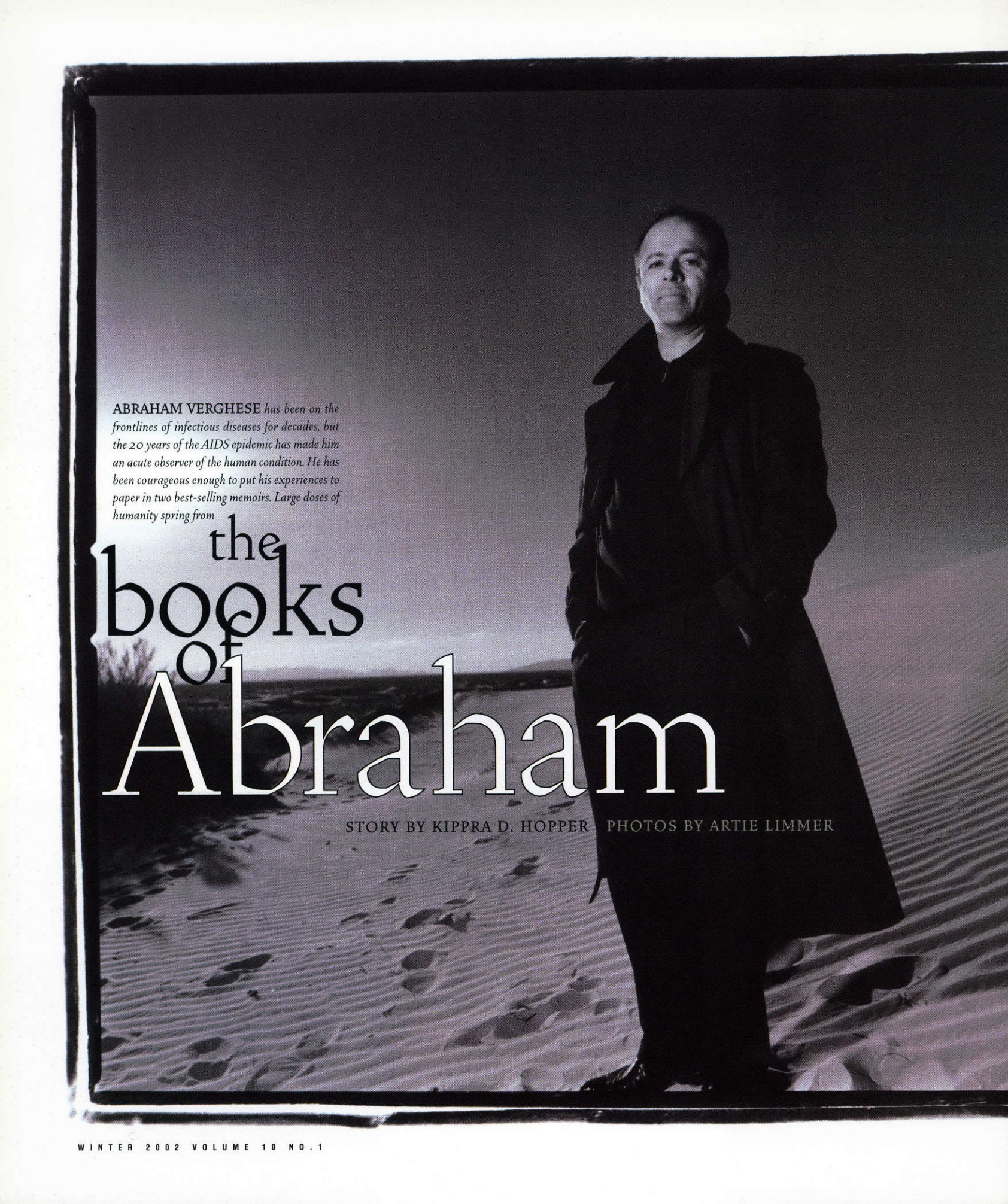
Second, public health matters are regulated by states, because of the delegation of powers set forth in the U.S. Constitution, Tenth Amendment which provides that "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." Historically, states have regulated matters of public health, unless Congress found that there was a matter having a substantial effect on interstate commerce and did so in the narrowest possible way to avoid infringing upon state sovereignty. Our national government is required by law to defend the nation in times of threat or war, rather than the states. Again, this was outlined by James Madison in *The Federalist Papers*, No. 41, "The operations of the federal government will be most extensive and important in the times of war and danger; those

of the State governments in times of peace and security." Never before, have we as a nation confronted the conflicting constitutional delegation of duties between the state and national governments in times of war or domestic threat in as direct a fashion. Where states' public health laws are governing the domestic bioterrorism activity, the federal government agencies, including the Federal Bureau of Investigation, the Centers for Disease Control and the Public Health Service, provide no national coordinated approach to the threat. Bombs, explosions, chemical and nuclear attacks can be addressed by the federal government at the earliest moment. The delay prior to the federal agencies beginning a response to a biological attack poses significant threats to our safety as a nation.

Traditional cooperative federalism, which requires flexibility for states' self-governance, does not lend itself well to a system designed to react in a uniform way, when a military-like, national defense response is required.

The new battlefield is not a traditional one, and our structures in federalism and in our legal framework must adapt to the new challenges of bioterrorism and national security. ◀

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ABRAHAM VERGHESE *has been on the frontlines of infectious diseases for decades, but the 20 years of the AIDS epidemic has made him an acute observer of the human condition. He has been courageous enough to put his experiences to paper in two best-selling memoirs. Large doses of humanity spring from*

the
books
of
Abraham

STORY BY KIPPRA D. HOPPER PHOTOS BY ARTIE LIMMER



“Why are we reading, if not in hope of beauty laid bare, life heightened and its deepest mystery probed? ... Why are we reading if not in hope that the writer will magnify and dramatize our days, will illuminate and inspire us with wisdom, courage, and the possibility of meaningfulness, and will press upon our minds the deepest mysteries, so we may feel again their majesty and power? What do we ever know that is higher than that power which, from time to time, seizes our lives, and reveals us startlingly to ourselves as creatures set down here bewildered? Why does death so catch us by surprise, and why love?”

ANNIE DILLARD, "THE WRITING LIFE"

b

beyond the cotton fields of West Texas, across the flat stretches of enchanting desert lands of New Mexico, one crosses past the jagged Guadalupe Mountains, the highest point in the state of Texas, to a valley where the Hispanic and Anglo cultures mingle. In El Paso del Norte, surrounded by the tall mountain peaks and open skies, doctor Abraham Verghese heals the bodies and souls of the sick and lends comfort to the dying. In that place he has come to call home, he too soothes with the salve of literature by mining the memories of his own as a writer of poignant stories of his patients, his experiences, his relationships and his identity.

The Grover E. Murray Distinguished Professor of Medicine at the Texas Tech University Health Sciences Center in El Paso, Verghese, M.D., M.F.A., is the highly praised author of "My Own Country: A Doctor's Story of a Town and Its People in the Age of AIDS" (Simon & Schuster, New York, 1994) and "The Tennis Partner: A Doctor's Story of Friendship and Loss" (Harper Collins, New York, 1998). The two memoirs are New York Times Bestsellers and have established Verghese as a recognized author in the genre of literature and medicine. As memoirs, the two works reveal Verghese as a character, in an intimate look at his own life, thoughts and actions.

The intersection of medicine and writing has taken form from the landscapes of tragedies: Verghese's years of specializing in infectious diseases during the early days of AIDS in rural America, and in a later work, his friendship with a doctor who faced addiction and fell tragically to suicide.

In "My Own Country," Verghese writes of his years from 1985 to 1990 when he was chief of infectious diseases and assistant chief of medicine at the Veterans Administration Medical Center in Johnson City, Tenn. He also served as associate professor of medicine at East Tennessee State University. Verghese was facing the first cases of AIDS and the earliest days of the epidemic in rural Tennessee, where he was attending to many young, gay men who had come home from the cities to die near their families. He also dealt with patients who had contracted the disease through blood transfusions, through heterosexual sex and through sex with prostitutes. He describes the Bible Belt culture of rural Tennessee and the struggle of a community of doctors, nurses, patients and families to deal with a terrifying, and then, disease with many mysteries. Verghese opened up an unexamined American territory as he wrote intimate portraits of his patients and their friends - gay, straight and in-between. Verghese's journey led him to understand that while most of his patients would succumb to the deadly virus, he could help them understand the search for purpose in one's life.

In helping others in their search for meaning, Verghese found his own purpose and place. Verghese was born in 1955 to well-educated, South Indian, Christian parents, who met and married in Ethiopia where they had been hired to teach school. Now an American citizen, Verghese struggled during his time in Johnson City as a dark-skinned foreigner trying to fit into rural American culture.

He had grown up and begun his medical school training in Ethiopia before a civil war interrupted his education, a turning point in his life. He

had imagined a life in Ethiopia, although he was of Indian descent. The civil war brought a shut down to the university where he was studying. The students were sent to the countryside to educate the masses, in a mass exodus from the city.

"That was the first time I heard the word expatriate," Verghese remembers. "And I realized that no matter what I thought of myself, I was an expatriate to them. We were told there was no more university for us, and we pretty much had to leave. So that was a watershed moment in my life, and I think in many ways, it's defined my literary perspective, in that I write very much from the perspective of an outsider. I think that's an advantage because as a perennial outsider, you see things and you notice things that the good old boy who belongs to that town may have stopped seeing a long, long time ago. So that was a very pivotal event in my life, to leave at that point."

By the time Verghese had reached medical school, his parents had immigrated to America. After a brief stint as an orderly in American nursing homes, he resumed his medical education in India. By 1980, he was certified as a medical doctor, and he sought specialized training in America. Foreign medical graduates were recruited to residency programs and were vital to American hospitals' functioning. He applied to East Tennessee State University in Johnson City, located in the foothills of the Smoky Mountains.

"The Indian government took me in, which was paradoxical because that was my parents' land, technically it was my land, and yet I didn't know that country well. It wasn't my own country, so to speak."

After coming to Johnson City, Tenn., the setting of the first book, Verghese felt that he had found a particular geography that would define, if not his life, at least that of his children. "So my picking the title, 'My Own Country,' had a lot to do with this sense of a search for a place to call home," he says.

"My Own Country' was very much a search for a sense of place," he said. "The title of the book was to reflect both my search and the parallel search of these young men who were coming home, but it wasn't really home," he said, explaining that the gay men left the confines of rural society to venture out into cities, but then returned to the societal prison from which they left to come home to die.

"Society considered homosexuals alien and much of their life was spent faking conformity; in my case, my Green Card labeled me a 'resident alien.' New immigrants expend a great deal of effort trying to fit in: learning the

language, losing the accent. Gay men also became experts at blending in, camouflaging themselves, but at a great cost to their spirit.

Verghese says he's truly found a home in El Paso. "I suddenly feel for the first time in my life that I have disappeared in America. That has a lot to do with the prevailing skin color here. I have a distinct sense of having arrived in El Paso."

His book, "My Own Country," arrived as well in the right place at the right time for success, Verghese explains. "I think having lived in medicine and witnessed that whole arrival of HIV and AIDS was a powerful thing to live through and very worthwhile writing about. No one could say that writing about HIV was not important. But I was also fortunate, when I got ready to write my book, 'My Own Country,' there had been some beautiful books written by gay people primarily on the HIV epidemic, such as Randy Shilts' 'And the Band Played On' and Paul Monet's 'Borrowed Time.' And yet these were the easiest kinds of things for the general reading public to dismiss because they were written by gay people, and because perhaps self-consciously, gay people writing in that era couldn't help but to have a lot of their anger come out, and justifiably so. So when my book was proposed, it was going to be the first time a heterosexual had told the story. And, not just a heterosexual, but also a physician. And ironically, it was a point in time when the publishers were very interested in HIV. They felt that they had to do more for this very important disease. They don't feel that way now; they've completely forgotten about it."

As he had lived through a remarkable story while writing the first book, Verghese lived through a second extraordinary story, which was getting to know and watching the eventual demise of David Smith, the medical student, in "The Tennis Partner."

And, as with the first book, when Verghese had expected to write a fictional account of the AIDS epidemic, his muse took him once again in the second book to the genre of the memoir. "With the second book, I had the same naive idea—that here was a story about addiction in medicine and this extraordinary young man, but I couldn't write the story without revealing our intense relationship. And I couldn't write that, without revealing my personal struggles, which paralleled his. And I couldn't write that without talking about my marriage, and so on. So, again I found myself having to reveal much more than I intended to, but once it's out there, I'm comfortable with it again," Verghese said.

In "The Tennis Partner," Verghese reveals through metaphor a tale of two men and their friendship as well as the disciplines he holds dear: tennis, internal medicine, fatherhood, male friendship and the human heart. When Verghese, a physician whose marriage was unraveling, relocated to El Paso, he hoped to make a fresh start as a staff member of the R.E. Thomason General Hospital, where he meets David Smith, a medical resident recovering from drug addiction. The two men begin a tennis ritual that allows them to shed their inhibitions and find security in the sport they love and with each other. The friendship between doctor and resident grows increasingly rich and complex, even to the unraveling of David who spirals out of control. Almost everything Verghese has come to trust and believe in is threatened when David commits suicide.

"I have come to think of this as the metastasis of suicide, this transformation of a brutal act into a 'Why?' in the minds of the living," Verghese

writes. Handling David's suicide was difficult and painful, Verghese admits, but he says that paradoxically, writing about the event and the friendship helped him put the suicide into perspective. "When I finished writing the book, I finally understood that David was ultimately responsible for David. David had a disease, and he was ultimately responsible. I came to absolve myself of a lot of guilt that I carried. No one knew more about the disease than David, the disease of addiction, he'd had so much experience in and out of rehab, and there was a great deal that his friends did for him, but there was only so much we could do. His disease in a sense was fatal, and if there's any responsibility that needs to be taken, it's his. It was his to cure or deal with, or it was his to not cure and die from. Writing the book was the only way that I really came to understand that," he said.

The problem of physicians, drug abuse and suicide is a huge one, Verghese says. "Every year it takes two classes of medical students to replace the number of physicians who committed suicide that year. Most of those suicides are related to addiction or drug abuse in some fashion. I think that it's reflecting the tremendous emotional cost of being a physician that we are just beginning to acknowledge. In the past, there was this machismo prevalent in medicine that said you have to weather your residency and survive it, come out the other end and you'll be a man my son. But we're recognizing that students come to medicine with a great capacity to imagine how a patient suffers. When they enter their professional years, when they come into the clinics and the wards, the burden of how much they have to do, and stresses of all they have to learn, does something to them. Their capacity to imagine the suffering disappears or shrinks, and people become 'the diabetic foot in bed three' and 'the gunshot wound in bed four.' Students lose identity; they become conditioned. And what happens to that in parallel is that they begin, even as they minimize the emotional context of the patient, to minimize their own suffering. So one of the characteristics of physicians is that they deny their own patienthood. They deny their own emotional reactions in life. When they become ill, they focus on the symptom, and they medicate the symptom, and that's often how they get addicted," he said.

Although still a huge problem, Verghese says the difference for medical students now is that the curriculum includes discussions of such topics in the humanities courses offered to students. "We're trying to remind students by teaching literature and medicine that even though we're in this very specialized area and with our own specialized language, there is a parallel world out there. And paradoxically, the best way to be reminded of that world is by discussing a short story or a novel or a poem. Fiction is a great lie that tells us and reminds us of the day-to-day nature of suffering and humanity that's out there. If you spend all your time in the medical environment, you begin to have a distorted view of life. You feel like everything is illness or disease and health is the absence of these things. But it's so much more than that."

For Verghese, his life as a doctor and teacher and his life as a writer are intertwined.

"I don't make as much of the dichotomy between writing and medicine as people seem to make. To me, they're one seamless enterprise, and they stem from the same soil. They're a parallel enterprise in that so



much of what I do in internal medicine, so much of my craft, has to do with observation, with recognizing the clues that the body is showing you if you know how to see them, and then pulling these clues together and recognizing which are significant, which are not, and then trying to put them into a whole that explains everything that you're seeing. To me writing is very much like that. You're trying to find the significant details, put them together next to, and in juxtaposition to, some other details. Out of this, for the reader, emerges some pattern that is recognizable, some whole. I think that most physicians I know are engaging in the same sort of internal dialogue that I am engaging in, except that I'm more consciously putting it down on paper."

Vergheese, who after practicing medicine for years, earned his master of fine arts degree, as the James Michener Fellow, through the esteemed Iowa Writers' Workshop. During his year there, he met author John Irving, who became his mentor. Vergheese said he was amazed to hear the same aphorism in both writing school and medical school: 'God is in the details.' "I think that the crafts are not that separate; they're not that different. It strikes me that the discipline of one is good for the other, and vice versa. But in many ways, they are the same discipline," he said.

Irving said of "My Own Country": "[A] story told from the closely observed heart of an epidemic. Far from being a sociological discourse, it is intensely personal; Dr. Vergheese's vulnerability and his lucid prose give this book the emotional momentum of a good novel. ... This impressive literary debut puts him in the esteemed company of such physician-writers as Sherwin Nuland and Richard Selzer."

Vergheese's intimate works have won other wide acclaim as well. "My Own Country" was a selection of the Book of the Month Club and the Quality Paperback Club and a winner of the New Visions Award from those clubs. The book won the Lambda Literary Award in 1995 and was a finalist for the National Book Critics Circle Award for 1995, was picked as one of the top five books of the year in 1994 by Time magazine, and for notable mention by the New York Times Book Review.

The book has been made into a television movie by Showtime, first aired in 1998, and directed by Mira Nair, who also directed "Mississippi Masala," and starring Naveen Andrews, who also played in "The English Patient." Other stars that help tell Vergheese's story on screen are Glenna Headly, Marisa Tomei, Swossie Kurtz and Hal Holbrook.

Sections of "My Own Country" have been excerpted in "On Doctoring: Stories, Poems, Essays," in "Home Works: A Book of Tennessee Writers" and in "Academic Medicine."

"The Tennis Partner" was a selection of the Book of the Month Club, was picked as a notable book of 1998 by the New York Times Book Review, and was one of the top 10 books of 1998 by Bookreporter. Vergheese has recorded an Abridged Audio version.

As well, his research, fiction and essays have appeared in dozens of medical journals and in *The Atlantic Monthly*, *The New York Times*, *The New York Times Book Review*, the *Washington Post Book World*, *The New Yorker*, *GRANTA*, *Esquire*, *Sports Illustrated*, *Mirabella*, and *TALK*, among others.

Vergheese might be most proud that both of his books are being taught in several medical schools, including the Texas Tech University Health Sci-

ences Center, and colleges as part of a movement to teach humanities in medicine, the thought being that doctors who study literature will be better at the bedside as well as better at taking care of their own professional and personal stresses.

On the Texas Tech University Health Sciences Center El Paso campus, students are offered a series of ethics and humanities lectures, with Vergheese giving some of those. He said he brings people together in these courses to discuss a short story or novel, and in doing so, be reminded of the larger world. "I also have a physician who has HIV, who was infected by a needle stick. I have her come and talk about that experience. That has a very powerful message to the students that makes them confront the fact that they can't hide behind this sort of sense that we all develop in medicine, that disease happens to other people. It really forces us to recognize that the patients are us. We are them. To the degree we understand that, we'll be better physicians."

Noting that he is gratified that both of his books are being taught in many of these medicine and humanities programs across the country, Vergheese travels extensively to offer lectures to students across the country whose curriculum includes his books. "It's a great opportunity to spread this message. I think it's great for Texas Tech too to disseminate a knowledge that came to me, largely while I was at this institution. I wrote both books while working here. So I'm proud to do that, to take it on the road."

Vergheese, in his own teaching at Texas Tech, is focused on the interface between the physician and the patient, saying that is where one distinguishes oneself as a physician. "My own bias is that there's so much information out there, and it's become increasingly easy to access this information. You can carry it in your palm book, you can have a CD-rom, and so the real task of the physician is not to accumulate all this information but to put it to use. The interface between the physician and the patient is critical. Where you separate yourself from a layperson is in your ability to interrogate the patient, develop a bond with them, and milk the body for clues to disease. So I'm very concerned with physical diagnosis, the examination of the patients at the bedside," Vergheese said. "I think ultimately that's the only thing that differentiates us from people who have access to the same data set that we have, is our ability to take the patient's body and allow it to dictate what we do next, rather than blindly sending patients to every diagnostic suite in the hospital, by hit-or-miss methods, stumbling onto something that is wrong and trying to fix it.

"The great irony to me about the huge increase in the amount of knowledge is that I think physicians of two, three, four generations ago, were much better detectives at the bedside than we are. And yet, we now have ways to confirm everything that we do at the bedside within a few minutes with a CAT scan, angiogram, ultrasound or echo. It should have made us even better at diagnosing things at the bedside because we can confirm what we suspect was the problem. Instead exactly the opposite has happened. Medical students and physicians, I think, have very little faith in their skill at the bedside. They're too reliant on technology, and the technology, rather than making them better, has made them subservient to technology."

Verghese said that individuals choose their doctors not because they believe the doctor has some super knowledge, but because they have a sense that the doctor is going to invest much in this patient-physician relationship. "It's built on experience. Doctors will use all that relationship at the bedside too. To sift out the subtext of what you're saying, to look and do certain maneuvers that wouldn't normally be done on your body, but something you've said has triggered the doctors to do that. Those qualities I think are the great intangibles.

"Whenever I worry that I'm about to be replaced by a robot, I remind myself that this is the one thing that the robot cannot do: fire up medical students to see the bedside as being our operating room, to see that as being the epitome of our skill, to teach them that, and to have them get excited at finding something that I bring to their attention. That is priceless, and as technology gets more sophisticated, that will always be the one thing we can offer. I'm not impressed with book knowledge. I'm not impressed with knowledge per se because there's so much of it now. It's so accessible. I think it's become even more important to be very skillful at the bedside," he said.

Verghese believes that medicine is both art and science, and that the physical exam has a powerful therapeutic effect for patients. In the realm of medicine, Verghese makes an important distinction between healing and curing. "People come to you with an obvious physical complaint, but there's a subtext to what they're saying. It's almost a parental, kind of 'help me father,' sort of subtext. They might not even be aware that they are saying that. So even as you take care of the physical problem, you have to have something in the ritual that brings them the spiritual solace that they don't even know they're seeking," he said. Verghese uses the analogy of someone breaking into our home, taking our things, and the police returning all of the things within an hour. "You'd be healed, but you've not been cured. Your sense of violation will continue for a long time after that. I think we have to be much more cognizant of that, and you can't heal just by listening and just by expressing empathy, I think you heal also by the rituals of medicine.

"And, the most important ritual is putting the hand on the patient, feeling the pulse, all these things we do that involve touch that are diagnostic, that are important to us, they have reasons, but they also are a timeless, time-honored ritual as sacred to us as saying mass is for the priest. I'm a huge believer in physical diagnosis and my great sadness is that there is not that many people in the country left skilled in physical diagnosis, like physicians of four generations ago. They're dying out. We're not training those kinds of physicians, and there are

not that many options for them to continue to develop those skills," he said.

Verghese says his great thrust with medical students is to make them see the noble romance and the passion in the physical exam in medicine and point out that it's a win-win situation. Being able to milk the body for clues is the one thing that will distinguish this group of medical students as physicians compared to their peers. "I'm trying to teach them the kind of skills so that if they were to go to an HIV clinic in India or rural Haiti, where there will be a whole line of people waiting outside the clinic, and no X-rays, no labs, no nothing, and you have to use your senses to pick out the three people with tuberculosis of the apex of the lung to be admitted out of the 90 who are deserving. I'm trying to teach them to have the confidence to be able to do that. I think it would be a shame if we're training students who can only function with all the support that the medical-



industrial complex of Western society gives them. I'd like to train physicians who can be competent anywhere. One of the paradoxes is that physicians who train outside this country, especially in less privileged countries like Africa, India, often place a great deal of emphasis on physical diagnosis because it still remains the crux of diagnosis. It's not cost-effective to get an X-ray on everybody. I'd like to train students who are capable in those realms too. I'm encouraged that so many of our students like that idea," he said.

Verghese is trying to set up an elective in a rural HIV clinic in India, and he notes that Texas Tech students have tremendous interest in going there to practice for a month. He says he thinks

the medical students will find that they will not have the technology they are accustomed to having and will need to have the confidence in their physical diagnosis skills. "Once they get that, it will make them better physicians," he said.

Verghese says mining his own memory for stories is too taxing, too painful, and so he will work next on a novel instead of a memoir. His newest dream is of writing a novel that would inspire individuals to follow the calling of medicine, the way Somerset Maugham's "Of Human Bondage" did for Verghese when he read a sentence with the line about "finding humanity there in the rough." Verghese says at a very young age, he had the sense that medicine was the ultimate, and very safe, way of expressing one's creativity. He recently sold the novel to Knopf Publishers. The new book is about medicine and several generations of physicians. "I have to write fiction that matters and that changes things. That's my goal. I want to write a book that will do for a generation of college students what 'Of Human Bondage' did for me, to make a soul-shaking kind of decision to pursue medicine with a passion that goes down to your very roots. I'd like to do that for others." ←



R E B

A celebrity in Hollywood tries a drug to get away from the stress of life. A mother takes a prescription painkiller to relieve her backache. A man living on the street does whatever is necessary to score his next hit.

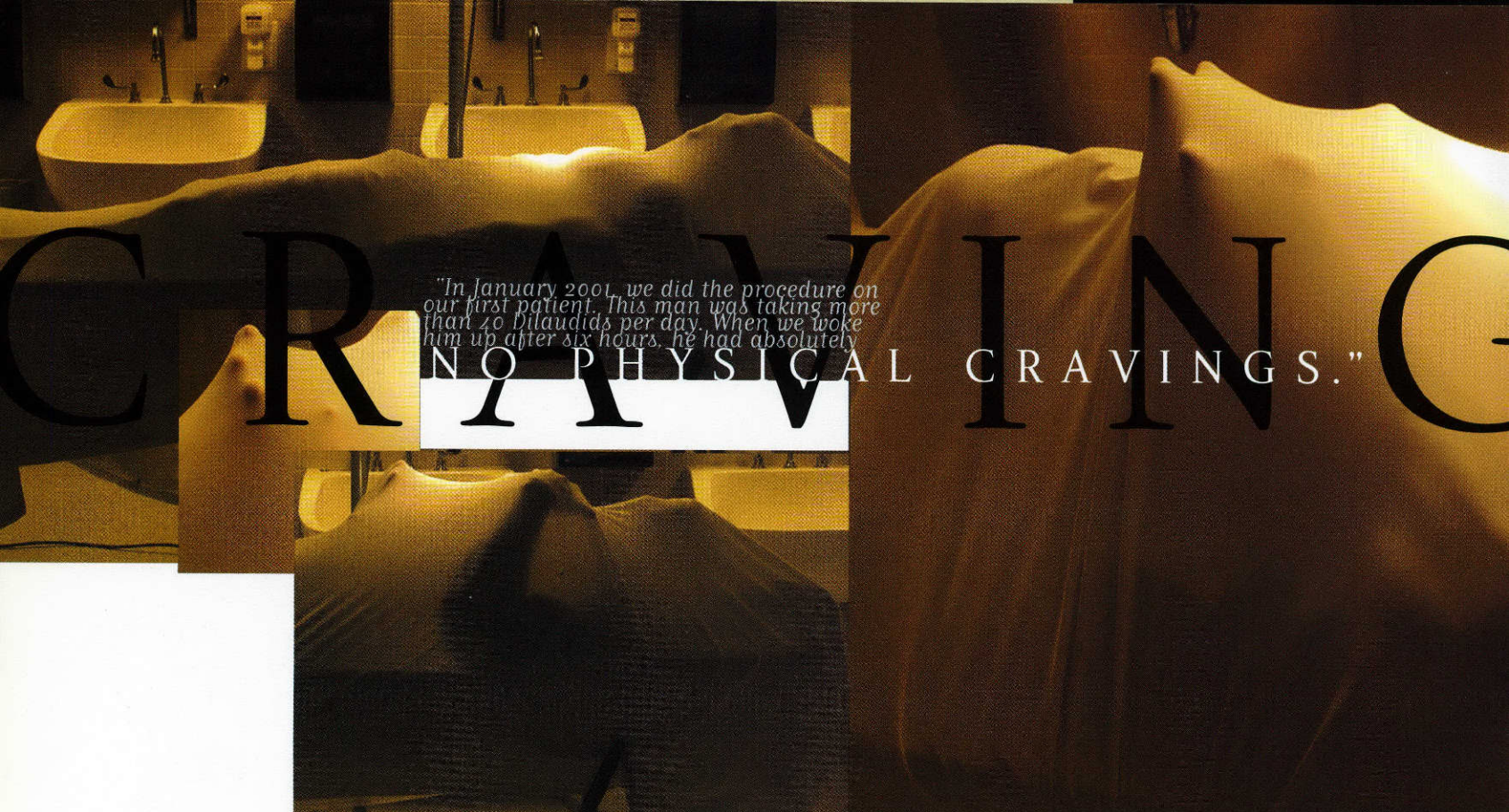
These are some of the more than 2 million people addicted to opiates in the United States, and every day they battle their addiction and its increasingly negative effects on their lives.

Now, Texas Tech University Health Sciences Center offers a program to help these people regain control of their lives and overcome their addictions.

TEXT andrea watson PHOTOS artie limmer



O R N



CRAVING

"In January 2001, we did the procedure on our first patient. This man was taking more than 40 Dilaudids per day. When we woke him up after six hours, he had absolutely

NO PHYSICAL CRAVINGS."

The health sciences center at Texas Tech is offering a rapid detoxification program for people addicted to opiates, such as heroin, methadone and prescription painkillers. The Texas Tech Health Sciences Center is the first university in Texas and one of only a handful of centers across the country to offer such a program.

The program, operated by the Department of Anesthesiology, allows people to become free of the craving for the opiates while under general anesthetic, said Alan Kaye, M.D., Ph.D., chairperson of the department and director of the Texas Tech Rapid Detoxification Program. The team includes various members of the department including Kaye, Hemmo Bosscher, M.D., an assistant professor at Texas Tech, and Joe Duke, a licensed professional counselor at the health sciences center.

"Because the person is unconscious, he or she won't have to deal with the symptoms of withdrawal," Kaye said. "Those withdrawal symptoms are the No. 1 reason people will continue to take the drugs. This makes that part of the process much easier on the patient's body."

Typical withdrawal symptoms include overstimulation of the central nervous system, increased heart rate and high blood pressure.

With the rapid detoxification program, the patient is placed under anesthesia and given high doses of an opiate antagonist, a drug that works against the opiates in the body, speeding up the withdrawal period. Patients are under the anesthesia for four to six hours and are hospitalized for 24 to 36 hours. Patients generally only wake with mild flu-like symptoms, which last a few days, Kaye said.

"Following the procedure, the patient wakes up with no more physical craving for the drugs," he said.

The patient also receives an oral dose of the opiate antagonist for six months following the procedure to eliminate any further physical cravings. The oral antagonist also neutralizes any opiate ingested while taking the antagonist.

The detoxification procedure was first tried in the early 1990s by psychiatrists looking for a way to treat their patients with addictions, Kaye said.

"Anesthesiologists have come to the forefront of this procedure in the last couple of years," he said. "Because you're putting the patient under general anesthesia, it is important to know how to monitor the patient's vital signs and know just how to adjust the drugs to keep the patient safe and healthy."

Traditional detoxification treatments, which usually involve isolating the patient until the drugs have been eliminated from the body, can take weeks or months during which the patient must endure the full effects of withdrawal symptoms. In some cases, this form of withdrawal can lead to serious complications because the body cannot tolerate the symptoms and the lack of drugs.

Another traditional treatment, methadone, often does not help free the patient from the addiction because the patient can become addicted to the methadone, Kaye said.



"They don't really get free of the drugs," he said. "It's another conventional treatment program that doesn't work very well. People stay on it for a lifetime."

Another key problem with traditional detoxification methods is the high rate of relapse. Most detoxification programs have success rates of only 12 to 20 percent. Other rapid detoxification programs similar to the one at Texas Tech University Health Sciences Center have had success rates as high as 70 percent at six months to one year after detoxification.

While the results of the procedure have been excellent, Kaye said the department is not content to merely perform the rapid detoxification procedure, they want to investigate how the work can be used to help those addicted to substances other than opiates.

"This procedure is specific to opiates," he said. "But there is some research suggesting that alcoholics become physically addicted to alcohol because their bodies produce a product from the alcohol that causes the release or production of an opiate derivative. So the same kind of procedure could eventually be used. We're looking to the science behind all of this."

Kaye said researchers already have begun looking at how different drugs work within the body to find ways to eventually adapt the procedure to work for other types of addictions. He cautions, though, that this development will take a great deal of time.

Kaye acknowledges that treating the physical cravings is only half of the battle. Therefore, every patient admitted to the rapid detoxification program must undergo a psychological screening and must have a therapist waiting to provide pre- and post-procedure care to deal with the psychological issues of addiction, he said.

"We all have psychosocial issues to deal with," Kaye said. "We also have our own mechanisms for seeing how patients are doing. We won't do this procedure for anybody unless they tell us they have a commitment to be off the drugs."

Duke works with the Department of Anesthesiology to conduct the counseling screenings. The screenings include an interview with a licensed mental health professional, a mental status exam and, if necessary, any additional testing to confirm the patient's mental status. Duke said he also contacts the patient's therapist to ensure the necessary follow-up care will be given.

"It's very simplistic to say that you can be detoxed and you're no longer physically addicted," Duke said. "But, addiction totally consumes an individual's life. Those long-term effects have to be addressed by a mental health professional. Hopefully, even before the procedure they're in counseling to prepare, but after, it is vitally important to have a long-term relationship with a counselor. You need someone to help explore the mechanisms behind why the drug problem existed in the first place."

Duke and Kaye both stress the importance of the patient being willing to remain drug-free after treatment because of the physical changes induced by the rapid detoxification program.



LIFE

"Once you go through this, you're biologically different. You are a different type of person. We think this is humane. It's good science and it's a good thing. This procedure can

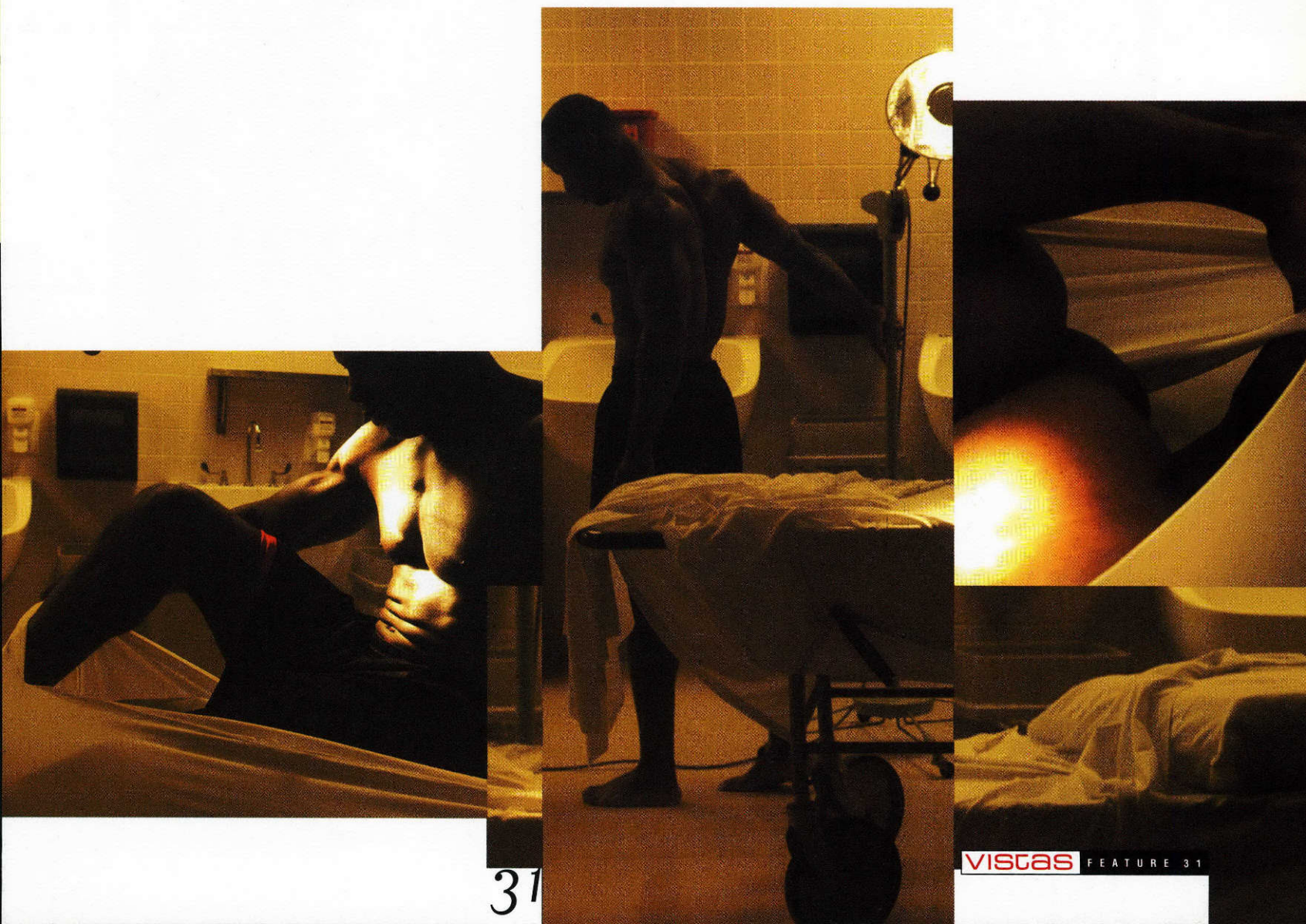
GIVE SOMEONE THEIR LIFE BACK."

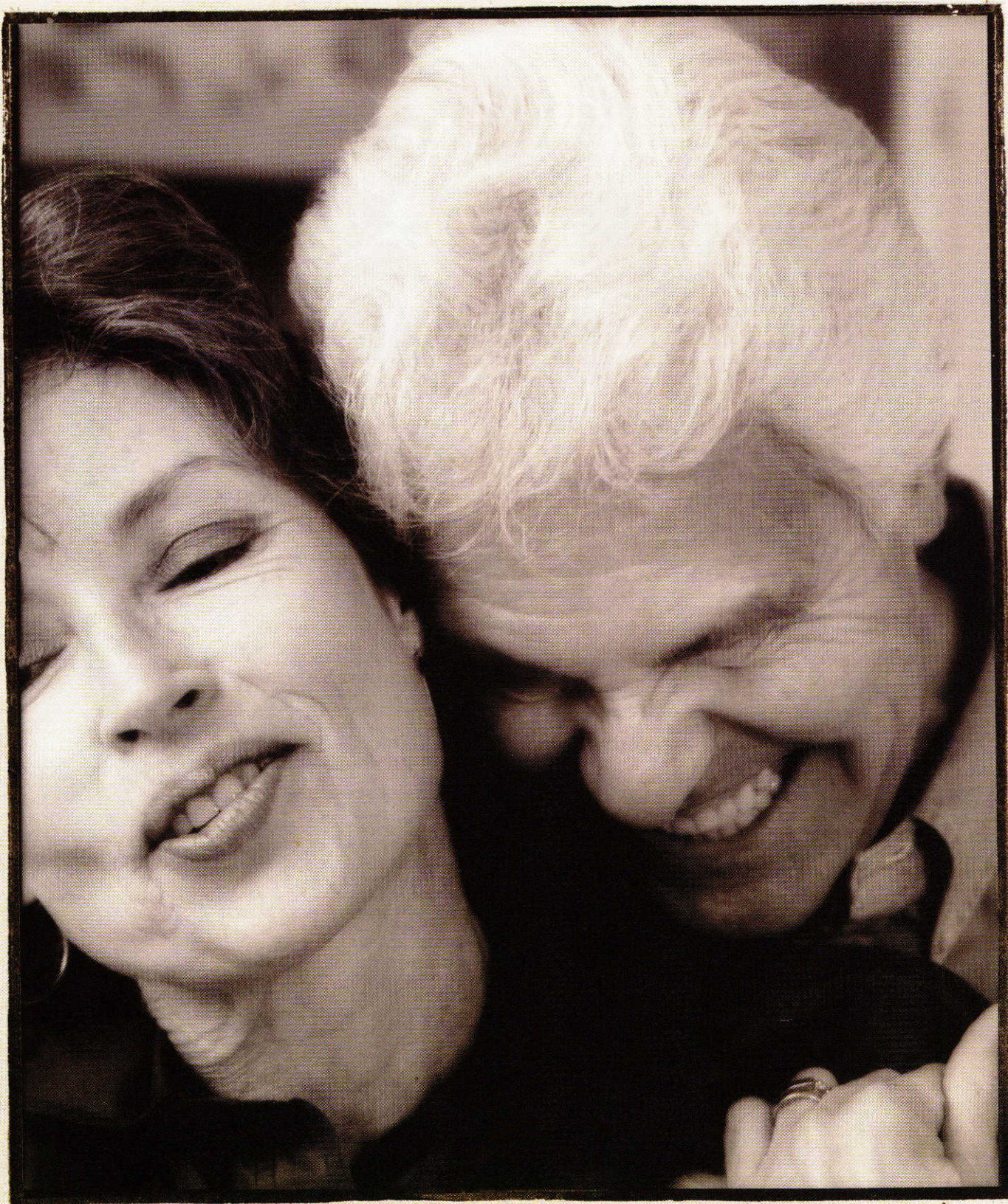
"Once we do this procedure, we change their physiology," Kaye said. "In other words, if they tried to take the same amount of the drug that they were taking before we did the procedure, the odds are that they would overdose and die because their bodies are different. Their settings at the cellular level have changed."

Kaye said he hopes to conduct research to find out what is taking place within the addicted person's brain and how it changes following the rapid detoxification procedure.

"The first opioid receptors were described in 1972 and since then have been found to be all over the body," he said. "That's good pharmacology that we now understand. We know that receptors basically reset themselves following this procedure, but we're not sure how or why. We're going to do some studies with advanced technologies, such as certain imaging techniques, to see what's going on at the receptor level."

Kaye said that whatever mechanisms are behind the effectiveness of resetting the biological receptors, this represents a way for patients to completely rid themselves of the physical cravings for opiates and to work to put their lives back together. ◀





SUSAN & CLYDE HENDRICK

WHO WROTE THE BOOK

OF

Love

BY

PAMELA TAYLOR BLOOM.



PHOTOGRAPHER:

ARTIE D. LIMMER.

2002



Of Love ...

WILLIAM PROXMIRE, the former Democratic senator from Wisconsin, once argued against federally funded studies on love by saying, "I'm against it because I don't want the answer."

Fortunately for the rest of us, a husband-and-wife team of researchers at Texas Tech didn't agree. Horn Professor of Psychology Clyde Hendrick, Ph.D., and Psychology Professor Susan Hendrick, Ph.D., have made the study of love and sexuality their life's work, a commitment that grew from their belief that the yearning for a satisfying love relationship is a fundamental human need.

The Hendricks began their research almost 20 years ago, developing measures for love styles and sexual attitudes that have been used all over the world, translated into Chinese, Japanese, Indonesian, Spanish, French, German, Swedish and Polish.

"People everywhere are interested in love," Susan said. "A person's style of love and sexuality is as unique as the individual, and we believe that better understanding of one's own style, and one's partner's style, can lead to more deeply satisfying relationships."

The Hendricks based their Love Attitudes Scale on the work of John Alan Lee, Ph.D., a Canadian sociologist who, in 1973, developed an interview questionnaire called the Love Story Card Sort, following a review of the available literature on love. The results of Lee's work revealed several fundamental orientations toward love relationships, and he structured these major love styles around the analogy of a color wheel, with three primary love styles (Eros, Ludus and Storge), and three secondary styles (Pragma, Mania and Agape), each of which were mixtures of two primaries. Lee also liked to emphasize that, just as there is no one "right" color, there is no one "right" type of love.

Although the word Eros seems synonymous with passion, the Hendricks say that the Eros lover is consumed with more than physical desire.

"Eros has a deep desire to get involved on all levels very quickly," said Susan. "They have an intense focus on the partner, and want to become intimate both sexually and emotionally. Typically, the Eros lover doesn't push the partner into this intensity, but allows things to develop."

Self-confidence and a high degree of self-esteem are major characteristics of Eros, allowing intense, monogamous attentiveness to the partner without jealousy or possessiveness. The Eros lover also has a definite image of the physical characteristics he or she seeks in a partner. "For instance," said Susan, "if you are always drawn to a partner who is tall, dark-haired and brown-eyed, then you are likely an Eros."

The Ludus lover plays love as a game, in some respects an outgrowth of courtly love, and he or she likes the game best when it is played with several partners at a time, so that Ludus can enjoy the varieties of the adventure and also prevent any serious attachments. This lover does not favor a specific physical type, but likes all the flowers of the garden and enjoys sex as good, clean fun.

"Some people find the description of Ludus rather distasteful, and make moral evaluations of it," Clyde said. "But Ludus has no intention of hurting people and actually lays the rules of the game on the table very early in the relationship. Ludus just wants to have a good time and let other people have a good time, too."

"Storge," said Susan, "is love by evolution." An unexciting kind of love style, Storge rarely makes the earth move. It is a "feeling of natural affection," according to Lee, similar to the love one might feel for a favorite sibling. Storge is based on friendship, and strives for a safe, companionable relationship with a partner who shares similar values and attitudes.

"This similarity is much more important to Storge than physical attraction or sexual satisfaction," Susan said, "because this love style values long-term commitment over short-term excitement."

Pragma, one of the secondary love styles, illustrates the lover who goes shopping for a mate with, as Clyde said, "the shopping list approach." The pragmatic lover isn't looking for fireworks, but for an appropriate mate with whom he or she can build a satisfying life. Pragma differs from Storge in that it is more likely to have conditions before developing a relationship, while a Storge partner can more easily grow to love someone without being concerned about their financial resources or family background.

According to the Hendricks, Mania is not unlike a case of the flu.

"A Manic lover yearns for love, but somehow it always becomes painful," Susan said. "This lover is jealous and full of doubts about his or her partner's commitment. They also experience dramatic physical symptoms, like the inability to eat and sleep, and often experience intense excitement alternating with debilitating depression."

The behavior of the Manic lover often precipitates the end of the relationship, because he or she attempts to force the partner to commit instead of waiting for the commitment to evolve. This result in turn confirms the Manic lover's worst fear.

"Mania," said Clyde, "obsesses about the partner so intensely that they simply cannot enjoy the relationship. To use a weather analogy, in a rainstorm, a Manic lover will stand outside, self-destructively getting soaked and waiting for thunder and lightning to strike."

Agape, the researchers say, is the most rare of the love styles.

"The Agapic lover is the closest thing the romantic world has to a saint," Susan said. "Agape focuses on the partner's welfare and is selfless and giving."

The Agapic lover forms a relationship because of what he or she may be able to do for the partner, instead of what the partner can provide. Sensual concerns are not relevant to this idealistic lover, who places a higher value on spirituality.

"Continuing our analogy," Clyde said, "in a rainstorm, the Agape lover would give you his or her umbrella."

The Hendricks found Lee's love styles interesting, comprehensive and illustrative of the complexities of love as experienced in relationships. They decided to use these styles in their research and developed a scale with which to measure them in individuals.

An initial scale existed that was based directly on Lee's theory. It was a 50-item true-false scale developed by Lasswell and Lasswell in 1976, with six subscales. Although the Lasswells' initial use of the measure confirmed the existence of the six styles, the scale was largely unused until the Hendricks began their work in 1982.

"We changed the response format of the scale to a Likert format, A = Strongly Agree and so on, and added new items," said Susan. "We also developed and added background questions concerning age, religion and family background."

The scale was first administered in 1982 at the University of Miami to 813 undergraduate subjects. Analysis of correlations among the items resulted in nine factors, and although the results appeared to support Lee's theory, they were not as clear as the Hendricks had hoped.

The researchers undertook a major revision of the measure, eliminating items that loaded on multiple factors, rewriting the Eros subscale, and revising most other items so they were similar in length. The revised questionnaire became the Love Attitudes Scale, a 42-item measure with seven items for each of the six styles. The new scale was administered at the University of Miami during the 1983-1984 year to 807 undergraduates, with the scale given to a subsample of 112 students a second time four to six weeks later for test-retest reliability.

"Again we factored the love items using the principal components method," Susan said, "with the best solution showing six factors, each of which very clearly reflected one of the six major love styles."

In the fall of 1984, an additional study was conducted at Texas Tech University with nearly 600 subjects, and it confirmed these prior results. The researchers then changed the wording of some of the love items to eliminate generality, and they administered the revised scale to more than 700 individuals. Extensive analyses showed results nearly identical to the previous study.

The Love Attitudes Scale appeared to be a reliable instrument, but the Hendricks still wanted to examine its real-world validity, so they began to study the scale's relationships with background variables including gender, religion and ethnicity, and personality-oriented characteristics such as self-disclosure, personal constructs and sensation-seeking.

"In much of the relationship literature and in nearly all of our research, gender differences have been a consistent result," said Susan. "We consistently find that men are more Ludic, whereas women are more Storgic, Pragmatic and Manic."

Results for Eros and Agape have been inconsistent, essentially showing no differences between the sexes. The Hendricks note that with men and women scoring similarly on Eros, both genders appear to be equally passionate in their relationships, but women also may be more concerned with some of the more practical aspects of a love relationship.

Women generally report as more Manic, a style that is very different from the sensible Storge-Pragma configuration. "We don't know if women are really more possessive and dependent than men," Clyde said. "It's possible that women are just more willing to admit to mania than men are."

The stereotype of men as game-players who avoid intimacy is supported by the researchers' findings of a consistent gender difference on Ludus, with males always reporting themselves as more game-playing. The Hendricks emphasize it is important to note that this difference reflects that men disapprove of Ludus less than women do, but do not actually endorse it.

Additional research conducted by the Hendricks has indicated that sex-role orientation may play a bigger role in love and sex attitudes than one's actual gender does. Results of an early study for gender were consistent with other studies, but findings for gender-role orientation were impressive: Androgynous subjects

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been printed on large paper.*

No. 123

most endorsed Eros and Pragma and, along with feminine subjects, most endorsed Agape. Masculine subjects most endorsed Ludus; feminine subjects most endorsed Mania; and Storge showed no differences.

"It's interesting to realize that, at least when it comes to love attitudes, our idea about what constitutes male and female may be more important than our actual gender," Susan said. "We also conducted a small study to compare the love attitudes of homosexual and heterosexual men, and found no real differences, something I've also observed in my clinical practice.

"I think the benefits of our work are applicable to lovers of every orientation, because gay, lesbian and bisexual partners have all the same relationship issues that heterosexuals have, including the same jealousies and communication problems."

In addition to studying the love styles with regard to religious, cultural and social contexts, the Hendricks also studied the influence of determining characteristics such as personality and style of communication. One personality-related variable measured in almost all of their work is self-esteem, with resultant findings that individuals with higher self-esteem score higher on Eros and lower on Mania than other groups.

The Hendricks also examined the personality-related variables of self-disclosure and sensation-seeking.

"Communication is one of the most important aspects of an intimate relationship," said Susan, "and one aspect of communication is self-disclosure, the act of openly revealing oneself to one's partner."

The self-disclosure measures, the Sensation-seeking scale, and the Love Attitudes Scale were administered to 218 undergraduate subjects at Texas Tech, with several interesting results. Eros lovers were not particularly interested in having a variety of sensory experiences, nor were they easily bored. In addition, they were found to be the most disclosing to a lover, but not to a friend, and they also elicited self-disclosure from their partners. Ludus proved to be easily bored, as well as given to disinhibition, and had a negative correlation with disclosure to both lovers and friends.

"Our next step," said Clyde, "was to study actual dating couples, using the Love Attitudes Scale and other measures, and see if we could predict which couples would stay together over a measurable span of time."

They analyzed the data to reveal ways in which couples who stayed together over an approximately two-month period were different from those who terminated the relationship, and found differences on several variables. Couples who stayed together scored as more disclosing, more satisfied, and higher in esteem, commitment and investment. Not surprisingly, they also differed on Eros and Ludus, with intact couples less game-playing and more passionate than those who ended the relationship.

Consistent results across two different types of analyses convinced them that a good amount of passion and a low dose of game-playing are the best ways to help a dating relationship mature into a satisfying relationship, and that passionate love is also a strong predictor of satisfaction for married couples.

One of the most intriguing questions raised during the Hendricks' research is the question: Which is more powerful, reality or perception? It appears that a lover's perception of their partner may influence the lover's own satisfaction more than the actual behavior of that partner.

According to the researchers, the perception of one's partner is comprised of reality, defined for these purposes as "jointly perceived attributes," and illusion, or one's private perception of the partner. When an individual has high ideals and high self-esteem, he or she tends to have a more highly idealized perception of the partner, and in return this idealized perception results in greater relationship satisfaction.

Throughout their research, the Hendricks have focused on creating a body of work that integrates multiple areas of relationship constructs, in order to better study the complex nature of relationship satisfaction. Their current work focuses on the connection between love styles and sexual attitudes and surprisingly, apart from their work, little research has been done in this area.

"Researchers who study love and researchers who study sex work in completely different circles," Susan said. "But in romantic relationships, love and sex are inextricably tied together. We think the real key to relationship satisfaction is to understand the complex, evolving nature of the link between the two."



x.—*“This work is intended to help people understand themselves and their mate and how to better relate to each other. It is not intended as a way to screen partners out. Learning that your partner has a different love style or sexual style than you do can enhance communication and understanding.”* — S. Hendrick, 2002.

They began their inquiry into this link when they read "The Social Organization of Sexuality," (Laumann, Gagnon, Michael & Michaels, 1994), a large-scale survey of sexual practices in the United States. The Hendricks were intrigued that the group of respondents who were happiest were those with only one sex partner, as opposed to those with no or multiple sex partners.

Several years earlier, they had developed the Sexual Attitudes Scale, a research measure with four attitude constellations. Permissiveness reflects a casual attitude toward sexuality; Sexual Practices reflects responsible, tolerant sexuality; Communion is idealistic sexuality; and Instrumentality is the expression of biological sexuality. Along with this scale, the Hendricks used a background inventory; the Love Attitudes Scale: Short Form; the Relationship Assessment Scale; the Self-Disclosure Index and Opener Scale; a commitment scale; and a new measure they developed, the Perception of Love and Sex Scale; to conduct research on the link between love and sex.

Results showed that Eros, Commitment, Investment, Self-disclosure, Sexual Desire, Emotional Satisfaction, Physical Pleasure, and two Perceptions of Love and Sex subscales ("Love is most important" and "Love comes before sex") had particularly high correlations with each other and were highly related to relationship satisfaction.

"These results really affirm the links between emotional and physical components of relationship satisfaction," Susan said. "Moreover, people tend to believe that love is more important than sex, that sex demonstrates love, and that physical affection is important in a relationship whether or not it involves sex per se."

The Hendricks also found in some studies that men, more so than women, believe that sex demonstrates love, a result the researchers say they hardly found surprising. They believe it reflects the basic biological component of female investment in raising the young and male investment in reproduction. But they also found that a declining sexual component in a relationship resulted in a loss of satisfaction for men and women equally, an outcome that surprised them.

While research shows that lovers with similar styles tend to stay together more often than those who differ, the Hendricks emphasize that couples with different styles should not give up on the relationship.

"This work is intended to help people understand themselves and their mate and how to better relate to each other," Susan said. "It is not intended as a way to screen partners out. Knowing that your partner has a different love style or sexual style than you do can enhance communication and understanding."

They also emphasize that a blend of love and sexual styles exist within each individual, and that these styles can change across the lifespan of an individual or a relationship.

"We have an impoverished language when it comes to love," said Clyde. "When we have as many words to describe kinds of love as the Eskimos have to describe snow, then we'll be getting close to having sufficient words to describe the complexity of the emotion."

"We believed in this work 20 years ago, and we still do," Susan said. "If we can help people improve the quality of their relationships, even with small changes in awareness and behavior, then we will both feel we've made a valuable contribution." ←

THE END.



David R. Smith, M.D.
Pediatrics



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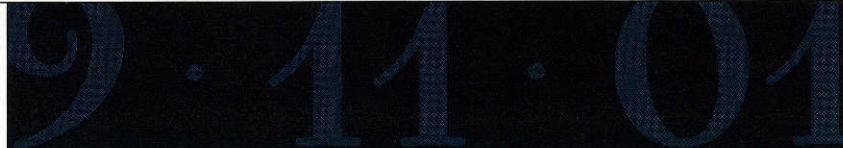
FOR DOCTORS

BY DAVID R. SMITH M.D. PORTRAIT: ARTIE LIMMER

During the last legislative session, Texas Tech University Health Sciences Center was granted permission to raise its enrollment cap for its School of Medicine. Although our present cap of 120 students per year may eventually approach 200 students, it is critical that we not focus on the "number." ■ And while it's good to say at the national level there may be sufficient doctors, I think we can drill down particularly in Texas, where we see a broad expanse of 108 counties and 135,000 square miles, that is not the case. ■ The projections of a sufficient number of doctors are perhaps not totally accurate when looking at the big picture. The fact is Texas is growing, becoming more diverse and aging. These human factors will drive demand. With the trends in diversity, such as the growth of Hispanics, African-Americans and the elderly population, and an increasing demand placed upon the profession by chronic illness, such as diabetes, current estimates may be understated. A greater premium also will have to be placed on prevention as health care costs continue to soar. ■ Texas Tech has a history of keeping doctors in West Texas, and the fact is that we still struggle to look all over the nation to fill our residencies. Our goal is to have more of our own graduates available to enter our own graduate residency programs. And data shows that the majority of residents will practice within 50 miles of where they based their residency. This fact reinforces why we have made a major effort at expansion in Amarillo, Odessa, Midland, Abilene and El Paso. The Health Sciences Center has spread a broad net across this area in order to focus on these growing health trends. ■ The focus is not on numbers, but on why there is a need for doctors. We need more Texans taking care of Texans and they need to reflect the diversity of the population. This is a strategic decision to make a difference in the health status of West Texas, and to be in sync with the realities of the population changes and growth in this state and region. ■ Now we have an opportunity because of the legislative decision to expand 20 additional students over the course of the next biennium with approval from the Texas Higher Education Coordinating Board. We need to be realistic; there may be some opposition in other parts of the state. But, we need to stay focused on that need and on the excellence that this health sciences center provides in health education. ■ We already have made the initial investment with things such as four libraries and more than \$100 million of construction either underway or soon to become a reality. Texas Tech has invested in more than the basics, whether it is the teaching nursing home or the new research tower in El Paso. ■ We are setting the standard with our initiative with border health research and outreach efforts to bring the best possible patient care to remote areas. Our burn center, cancer center, diabetes center, international pain center and level one trauma care center are all examples of how the Texas Tech University Health Sciences Center is providing quality care for West Texas 24 hours a day. ■ Our commitment is to continue to thrive and grow as a health sciences center. We are the fastest growing health sciences center in the state of Texas, and one of the fastest growing in the nation. ←

DAVID R. SMITH, M.D., IS THE PRESIDENT OF THE TEXAS TECH HEALTH SCIENCES CENTER AND IS INTERIM CHANCELLOR OF THE TEXAS TECH UNIVERSITY SYSTEM.

In the wake of the terrorist tragedies Sept. 11, 2001, Texas Tech students, faculty and staff attended a memorial service in the United Spirit Arena days later. For many weeks, American flags surrounded Memorial Circle on campus in tribute to victims of the attacks in Washington, D.C., New York City and Pennsylvania.



JOEY HERNANDEZ

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