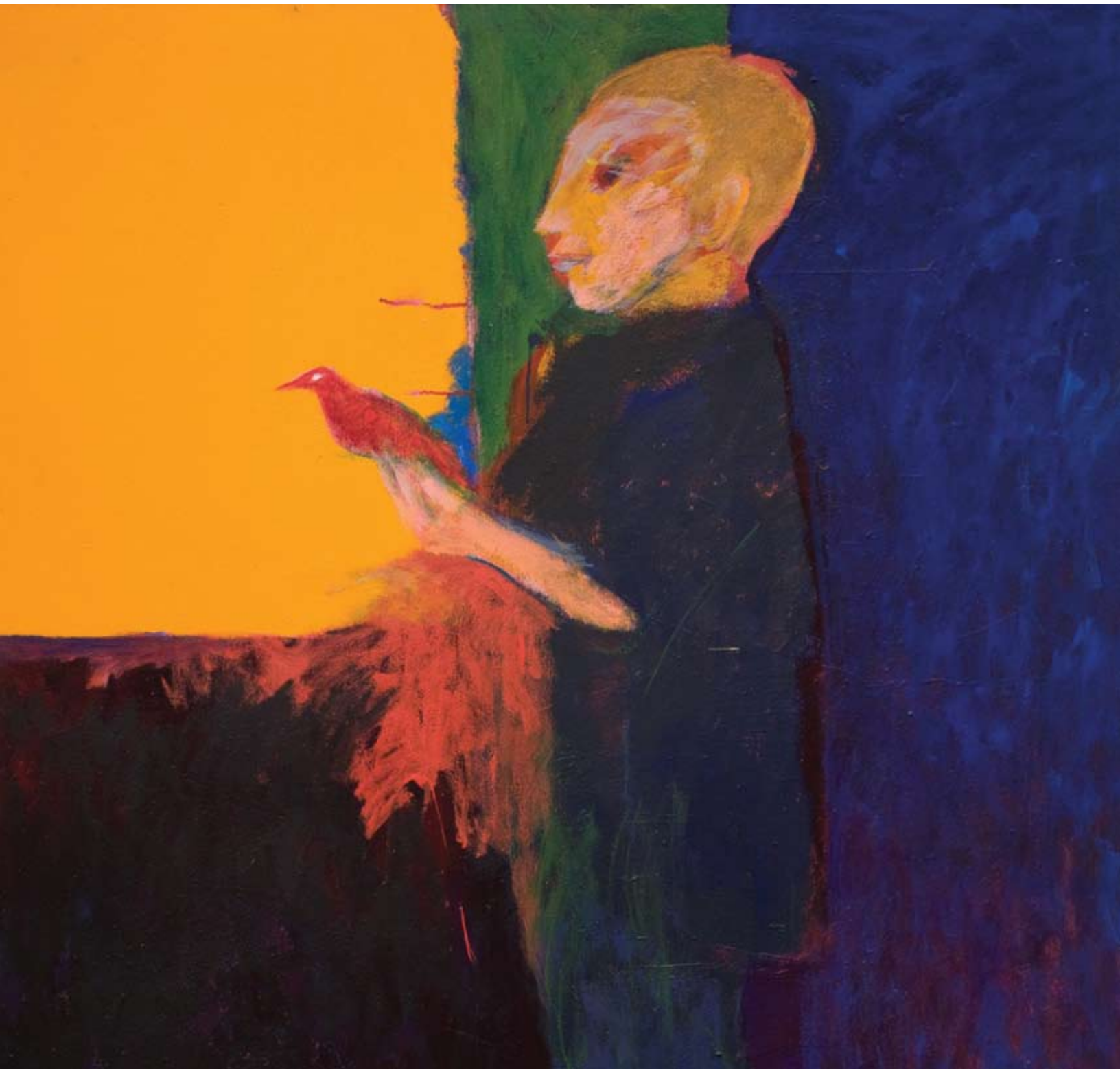
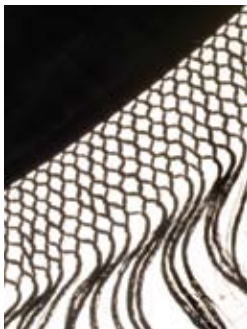


NDSU NORTH DAKOTA STATE UNIVERSITY FALL 2008  
magazine







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# NDSU Volume 9 Number 1 FALL 2008 magazine

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## editor's note

My grade school had a silent lunch period. We were expected to sit on those old brown benches that were a sliver waiting to happen, and then after we'd eaten, they made us sit on the floor along the wall. The silence was enthusiastically enforced by college students who patrolled the rippled old floor of the gymnasium and handed out all kinds of punishments to anyone who made noise. I think their favorite was to make kids stand facing the wall. Does anyone even do that any more? I think of myself as a very docile and dutiful person, but one day I got caught. To this day, I maintain that I had leaned over to my friend only just about to say something, but he made me stand with my nose to the wall. Shocked and humiliated, I stood in the little stretchy pants and matching striped top my mom had ordered from the JC Penney catalog, blubbering, clinging to the thought that my older brothers ate cold lunch so they were outside playing and wouldn't know of my shame.

I should have realized news of this kind spreads like wildfire. This was when children walked home from school, I suppose we walked a mile or so, and no doubt it was uphill the entire way. The longest mile of my life, I walked that winter day, trudging over snow banks, dragging my plaid book bag, begging my brother not to tell. He toyed with me until we were a few steps from our back door, agreeing not to tattle and then changing his mind, evoking a fresh round of pleas. Of course he blabbed the second we were inside the house, though I'm not sure Mom caught the details, since I did my best to drown him out by wailing in hysterics. After all that misery, Mom wisely laughed and it was over. Unfortunately, the scars have lasted.

Years later, my brothers had a paper route, and my job was to collect the subscription fees – \$1.10 for two weeks of news, and half the time people made me come back because

they didn't have the money and didn't want to bother to write a check. Often they left me standing outside in the cold while they pretended to look for money in sofa cushions. Naturally, I wanted to seem cool, so I was never wearing a stocking cap, and those headbands that cover your ears had not yet been invented. It was an odd job with many drawbacks, but I cleared \$10 a month, so I dealt with the strangeness of people.

The first time I went to collect at the new neighbor's, the nice young wife did invite me inside, though I thought it was creepy that the man, who was talking on the phone while I waited for her to scrape up the money, seemed to be paying a little too much attention to me. But then, just as he hung up the phone, I realized who he was, at the exact moment he recognized me. He started to ask if I had attended the grade school in the neighborhood, while I was yelling "You made me stand against the wall." He roared with laughter, and we've been friends ever since.

I don't mean to say I had anything but a lovely, goofy childhood. But I envy college students for a while every fall. They make it look so easy, being young and wearing purposely tattered jeans and sweatshirts, or these days, lots of them wear their pajamas to class. They casually pad around in flip flops and pink flannel pj pants, talking on their cell phones, whereas I've never made anything look easy in my entire life. I hope they are more aware than I was of how amazing an opportunity it is to be a student. I hope they are savoring this great time of life, wearing pajamas all day, talking if they feel like it over lunch, devoting the bulk of their time to learning how to learn.

Thank you for reading.

# on the cover

## JASON'S JOURNEY

1970, acrylic on canvas, 68" x 54"

## Betty LaDuke

Betty LaDuke's 2008 exhibition, *Children of the World*, features 144 paintings, drawings and photographs depicting the strength and resilience of children. At least a dozen countries are presented in early works – black and white photographs dating to 1955 – large-scale paintings, journal sketches and vivid color photographs from her current travels.

Although she attended an arts high school, LaDuke's first encounter with the camera happened in Mexico as a 19-year-old activist working in a poor rural village. Her early photographs include many of the images that still populate her work: children, both shy and bold; birds caged or exploding to freedom; spiny landscapes; and iconic images of mother as nurturer and protector.

LaDuke is emeritus professor of art at Southern Oregon University in Ashland and makes her home primarily in Oregon, though her upbringing in the New York Bronx lingers in her voice. She continues a busy travel schedule in support of Heifer International, an animal and agriculture organization, and has a new exhibition based on those adventures, *Dreaming Cows*.

LaDuke's work is displayed in museums and universities throughout the United States. She is the mother of author and activist Winona LaDuke who appears literally or symbolically in many of her mother's artworks.





# contributors



**Najla Ghazi Amundson** joined North Dakota State University in May 2008, as media relations director. Her essay “Wearing the hijab for the first time” on p. 42-47, is excerpted from a piece written for a communication class during her doctoral program at NDSU. She has a

master’s in journalism from Northwestern University, Evanston, Ill., and a bachelor’s in journalism from South Dakota State University. Najla has worked in television news, public relations, advertising, higher education, and freelance media consulting.



**Kevin Brooks**, an associate professor of English at NDSU, writes about his experience traveling to Africa to help a student make a film, “Trip of a lifetime,” p. 8-15. Everything he knows about making films he has learned from his stepdaughter, Caity Birmingham (*MFA Colombia College, Chicago*), and from the on-the-fly training he has received working on *African Soul*, *American Heart*. He lives in Fargo with his wife, Elizabeth Birmingham (who might have been nervous about the trip, but never let it show), and their son Griffin. The film premiered November 9 at the Fargo Theatre.



**Joel Hagen** is a staff writer at NDSU who retains a childlike fascination with all things scientific and an interest in crime procedurals. He first met Berch Henry while writing a short article on NDSU’s Forensic DNA Facility in its early building stages. Hagen knew he wanted to go back for the full story once the lab was well established, “A new way for DNA,” p. 18-27. What he found when he returned was a distinctive working relationship between two DNA veterans, a unique facility created to find answers other labs can’t, and a process that helps analysts stay as detached as possible while investigating the worst actions of others.

**A TRIP OF A LIFETIME DOESN'T NEED TO COME TO AN END**





When I told friends and family members I was going to southern Sudan as part of a documentary film crew and humanitarian aid project, many asked me in different ways, “Do you think this trip will change your life?” I always answered with confidence, “no.” I was just hoping to survive the trip without getting sick, shot at, killed in a plane crash, or stranded in a remote Sudanese village. I was pretty sure the trip would be memorable, a once-in-a-lifetime adventure, but not life changing.

Of course I was wrong.

The life changes, however, are not as monumental as that phrase seems to suggest. I am not a religious person, so I think people were subtly asking me if they thought I might find God on the trip. I did not. Nor have I changed my job or political views, left my family, started looking for jobs in Africa, or made any other major life upheavals one might imagine. My life has changed in more subtle ways: I have expanded my circle of friends, new doors are now open to me, and new paths are visible.

I’ll come back to those changes, but first, let me tell you my story.

In the summer of 2005, I met Joseph Akol Makeer, one of the Lost Boys of Sudan, Fargo resident since 2003, and North Dakota State University student since 2004. Joseph had been asked by World Magazine to write an article about John Garang’s significance to the Lost Boys of Sudan and the larger Sudanese community in America. Garang was a military and political hero to most of the southern Sudanese, but he was killed in a helicopter accident July 31, 2005. Joseph was contacted to write this piece because he was already working on his memoir, *From Africa to America*, but his writing coach, NDSU’s Center for Writers Director Mary Pull, was not on campus that day. I was, and my chance meeting with Joseph began the life transformation that I resisted for the next two and a half years. Joseph would stop by my office every once in a while for help with things like tying a tie, or to get a little bit of academic advising; I was pretty sure I could do more, but I was nervous about getting overly involved. I didn’t know how much help he needed or wanted, so I simply responded, and was not proactive.

Joseph decided to take English 120 from me in the summer of 2006. I feared that might be the end of our friendship. His English is good, but the demands of that class, condensed in a four-week semester, forced me out of the role of friend and into the role of teacher-evaluator. He did get an opportunity to write about contemporary challenges facing the Sudanese, I continued to learn more about him and Sudan, but it took a while for the visits to resume after that class ended.

In the summer of 2007, I noticed that a handful of Lost Boys were working on documentary film projects, and some of them were starting to go back to Sudan, a Comprehensive Peace Agreement having been signed in 2005, shortly before Garang’s death. I jokingly said to Joseph, “Now that you have written a book, why don’t you make a film?” Later that summer, he invited me to the film crew’s first meeting. Joseph has a great sense of humor, but I am learning that I need to be more careful about the jests I make.

By October, our group, now called African Soul, American Heart, had organized a fundraiser and put together travel plans for Joseph and a crew of three. At this point, I was not planning to go (see the list of my fears in paragraph 1), but on November 10, one month before take off, one crew member backed out and I was asked to fill his spot. Somehow I stuffed those fears (and a host of others) down and said “yes.” I regretted that decision for the next 30 days, but when the plane left Fargo that cold December morning, my fears melted away. My only lingering concern: I might have a life-changing experience.

And of course I did.

Nairobi, where we started and ended the trip, is a bizarre blend of modern post-industrial wealth and extreme poverty. While we shot some footage in Uhuru Park, Nairobi’s equivalent



**THE VILLAGERS THEMSELVES LIVED WITHOUT ELECTRICITY, YOUNG GIRLS AND WOMEN STILL POUND SORGHUM (A GRAIN) ALL DAY TO MAKE THE FAMILY'S SINGLE MEAL.**





of Central Park, a boy of about 12 approached us. He didn't ask for food or change, he asked if we would pay for him to go to school. You don't forget a panhandling like that easily.

To get to Joseph's remote village in Sudan, we had to charter a plane, and we had to catch that chartered flight in Lokichoggio, Kenya, the United Nation's and World Food Program's base of operations in northwestern Kenya serving Sudan, Ethiopia and Uganda. Lokichoggio is a tiny shantytown home to the Turkana tribe and a few companies providing modern accommodations for aid workers and people like our small crew. We stayed in the ridiculously named "Hotel California." Unlike the Eagles' lyrics, we could leave, but leaving meant confronting the poverty and subsistence life of the Turkana walking miles and miles in scorching heat carrying bundles of wood for building or cooking while UN vehicles and planes drive and fly around them. As individuals, we generally feel helpless when confronted with the world's problems; seeing the enormous UN efforts just to keep people alive, even as those around them struggled mightily to make it on their own, amazed and saddened me.

Before heading into Sudan, we spent two days at the Kakuma UN Refugee Camp, home to Sudanese refugees like Joseph since 1992. Kakuma provides an even sharper clash of wealth and poverty than Nairobi, because on the surface we saw only poverty, but inside a dirt-floored restaurant we found a satellite TV broadcasting Premier League Soccer, and among the little shops of Kakuma are solar powered Internet cafés. Africa increasingly has access to cell phones, satellite TVs, and the Internet, but that is because the infrastructure to support this wireless culture has encircled the globe; what's still so sorely lacking in Kakuma and much of eastern Africa is infrastructure on the ground: good roads, clean water, schools and health facilities. Kakuma has roads, but they are not good; the camp has schools, but the students have few options for employment or college once they graduate; the health facilities provide basic care, but function primarily as a stop gap measure to the central problem of malnutrition. Again we witnessed the UN making a Herculean effort to barely meet the basic needs of the 60,000 inhabitants. On the surface, Kakuma seems to provide the Sudanese and other refugees with a safe haven and a modicum of services; to live there for 5 years, 10 years, or 17 years would take more stamina and mental stability than most of us could muster.

Duk Payuel, Sudan, Joseph's home village, was very much an African village. A modern clinic (modern meaning cement floor and tin roof) was constructed in May of 2007 thanks to the fundraising efforts of Joseph's cousin, John Dau, and a church in upstate New York. The clinic staff had a satellite phone and a laptop, but the generator ran for only one hour per day. The villagers themselves lived without electricity; there was no Internet café in this one-shop village; young girls and women still pound sorghum (a grain) all day to make the family's single meal. All buildings are mud, grass or tree branches; all roads are dirt. The county's lone vehicle takes one hour to travel a distance that can be walked in two hours. These places were like nothing I had ever seen or experienced, so in that sense my world was significantly expanded, but it







is the people I met who have changed my life, and they are the ones who keep this journey in motion for me.

As much as I had done with Joseph leading up to the trip, I always felt as if I was just helping a friend. In Nairobi, we began to meet more cousins and friends, and I began to realize that the project was not about helping Joseph, but about helping a village, and to some extent, a fledgling country. I had a long talk with Philip Leek, a young man about Joseph's age, son of the governor of Jonglei state. I learned that he was frustrated to still be in school at the age of 30, his education having been interrupted so many times by the civil war in Sudan, but he was optimistic about the South's future, if the North would let it separate in 2011. I met Sam Deng in Duk Payuel, Sudan. He was jovial and outgoing, a tall handsome man in his thirties wearing a bright red shirt. By late afternoon on the second day, he was somber and pulled me aside. He asked if I could help him get into an American university. He told me that he had completed high school in Uganda after he left Kakuma; he started teaching there, and could have been a headmaster, but he returned to Sudan after the Comprehensive Peace Agreement was signed in 2005 to help with the rebuilding. Like Joseph, he cares for his own family, four orphaned children from his extended family, and he works for the county government, earning about 500 Sudanese Pounds (\$250) a month. Deng is doing good, important work in southern Sudan, but he senses that he could do more with an education degree from the United States. The young men and women of southern Sudan desperately want their country and their children to escape the cycle of war, poverty and famine. Too many have died, they say, for them to not get things right this time.

Coming into contact with people like this has not done much to change my day-to-day life, but my problems and challenges have been put in a whole new perspective. My circle of friends is much wider than I ever could have imagined, my connections to the world much more diverse than my upbringing in rural Manitoba prepared me for.

In Kakuma, a new and different door opened. Kakuma was established at first to hold 10,000 Lost Boys, but 17 years later it is a sprawling camp housing at times close to 100,000 refugees from nine different countries. After our crew toured the Kakuma Hospital, a young Congolese refugee jumped in the UN van we were taking back to the UN compound. He had just been getting shots and tests so he could attend the United States International University in Nairobi, starting in January 2008. His family has lived in Kakuma since 1999, unable to work regularly or make much of a living, but they had managed to save enough money to send their oldest son, Martin, to university for a semester. I told him that North Dakota State University had a generous multicultural scholarship that helped Joseph through school, and that if he were interested in applying, I'd be glad to help him out. I didn't know that international students were not eligible; when I returned to NDSU, I learned that there was very little I could do for him, short of paying for his education. Keeping him in school at USIU is cheaper than bringing him to NDSU, so for now, we try to patch together funding semester by semester. We exchange e-mails two or three times a week; he tells me about his classes (very challenging!), we work on scholarship essays and submit them to these slightly



**MY CIRCLE OF FRIENDS IS MUCH WIDER THAN I EVER COULD HAVE IMAGINED, MY CONNECTIONS TO THE WORLD MUCH MORE DIVERSE THAN MY UPBRINGING IN RURAL MANITOBA PREPARED ME FOR.**







**WHEN PEOPLE SAY, "IT IS HARD TO KNOW WHERE TO START HELPING," I SAY, "IT DOESN'T MATTER, JUST START HELPING."**



strange memorial foundations, I learn about his life, and learn about the plight of the Congolese. The Rwandan genocide of 1994, I have learned, was only the beginning of a multi-country war that spilled over into the Congo, and Africa's second largest country has become the battleground to various national and ethnic clashes. Six million have died since 1999; the Congo vies with Sudan and Somalia for the ignominious title of "greatest humanitarian disaster of the 21st century." I now exchange e-mails with Martin's father, too, who is leading the family through the process of resettlement. As the Sudanese return home from Kakuma, the United Nations High Commission for Refugees (UNHCR) has given up on peace in the eastern Congo and has turned its efforts to resettling the displaced Congolese. I send e-mails to the UNHCR employees I met in Kakuma lobbying for help; I ask my family in Canada if any of them would be willing to help me sponsor the Buhendwa family, because the Canadian government permits private sponsorship, but the United States government does not. This is the way my life has changed: regular e-mail contact with Africa and the UNHCR, learning about the day-to-day life of refugees, recognizing that with some effort, but surprisingly little effort, I can help one individual, and perhaps one family, move from the purgatory of long-term encampment to a college education and eventual resettlement in the United States, Canada or Australia.

My life also has changed in a host of fairly trivial ways:

- ❖ I know the geography of Africa, and east Africa in particular, very well.
- ❖ I follow African news and actually understand most of what is going on.
- ❖ I cook Ethiopian food on a semi-regular basis.
- ❖ I have begun to read and write about African literature.

All roads, of course, do not lead to Africa. I still like to golf, curl and play Yu-Gi-Oh with my son; our family still takes vacations; we hang out with our friends; I will still be working at NDSU for many, many years. I do need to be careful not to overextend myself on the African Soul, American Heart project, or in my attempts to help the Buhendwas, and yet at the same time, I still hear the words of John Dau, Joseph's cousin, words he spoke when he came to Fargo to help our initial fundraising efforts: "The American people have done much to help the Sudanese, but you can do more." So when I started to look around Fargo this summer, wondering if I could do more, I realized that many faint paths, even in this city, do lead to Africa. Through the volunteer agency Giving + Learning, I met a Somali couple, just a little bit older than me, who resettled to Fargo in April 2007. Their English is very limited; they still seek assistance from others in the Somali community when they shop for groceries or do other basic tasks. The husband is in a wheelchair, partially paralyzed by 15 bullets he took as a child, 10 of them to the head. We made an immediate connection because I took a map and showed them where I had been; they told me their history through the map – forced out of the Ogaden Desert in Ethiopia, into a Red Cross hospital in Mogadishu, then eventually to Da Daab, the refugee camp in eastern Kenya that is twice the size of Kakuma, before arriving in Fargo. Because of this connection, I am beginning to understand the failed state of

Somali, its complicated history, and I am hearing the same story I have heard from the Sudanese and the Congolese: the citizens of these countries simply want to live in peace, raise their families, educate themselves and their children, and make the most of their lives.

My life has changed because I can now see these opportunities to give and learn, and because I am not overwhelmed by the helplessness of the geopolitical conflicts. When people say, "It is hard to know where to start helping," I say, "It doesn't matter, just start helping." I have not yet gone to a Save Darfur rally, or been part of any other public demonstration; those are good and necessary acts, and they address systemic problems, but I think it is also important to try and provide small scale, personal support. Few of us are likely to contribute to the political solution of the ongoing crises in the eastern states of the Congo, the western state of Darfur in Sudan, or the failed state of Somali, but we can work with others to build an orphanage or school, help young men and women get an education, or smooth the transitions to North American life for a few families.

Many people in Fargo have done more than me for much longer, without having to take a trip to Africa. Many families welcomed and supported Sudanese refugees, Cardinal Glass has employed them, the public schools have worked with them, social service agencies have looked out for them. But I suspect, whether one starts by helping in Fargo or Africa, once this journey has begun, once this relationship has been established, it will be a journey for a lifetime.



# excerpts

*Joseph Akol Makeer*

Joseph Akol Makeer is a graduate of North Dakota State University with a degree in criminal justice. He plans to pursue a master's degree. Ultimately he hopes to return to southern Sudan to be part of bringing justice to people there. He is looking for a job in law enforcement and finishing a movie about his life. He has written a book, *From Africa to America: The Journey of a Lost Boy of Sudan*, about his experiences when, at age 10, he walked across the desert to Ethiopia and later to a Kenyan refugee camp. Ten years later, Makeer was reunited with some of his siblings and was able to bring them to the United States, where he continues to raise them. He is married and has three children.



We, the people like myself who are here today, we are the lucky ones. We get food, we get electricity, and a lot of things, so we are the fortunate ones.

Because I am here in America, I can eat what I want because I have money and I have access to health care.

There are those who are poor because they are being victimized, maybe by their leaders or by war actually. So these people are the group who are in need the most.

I was born in Sudan but I don't think that they have me in the record because I was born in the village and the government was only focusing on those who are in the north.

My kids are American. My son was telling me "How come Daddy you are a lost boy and I am American?" I didn't tell him much but I told him that it's a matter of you are not a lost boy because I am with you. I am a lost boy because I was without my parents. He has no knowledge of what it is. I think he will learn it more.

I just graduated last May so I am so glad that I made it and I set a good example to my siblings, to my tribe, and to my family. And also I'm so happy that my sister is in National Guard. She was telling me that she's going to protect our family. When I ask her why is it that you need to go to the ND National Guard, she said, "I want to be part of the protecting, part of the army so that I will protect part of our family." She is very smart.

The country where I came from, there are no laws protecting people. I am one of the people who believe that there must be justice in the world and I should be part of it.

Most people are not educated in Sudan and it is very difficult to change your life.

Whenever there is a difficulty you have to overcome it. You have to keep trying and you will be successful. That's what I always share with my siblings and I will be sharing with my kids in the future when they grow up.

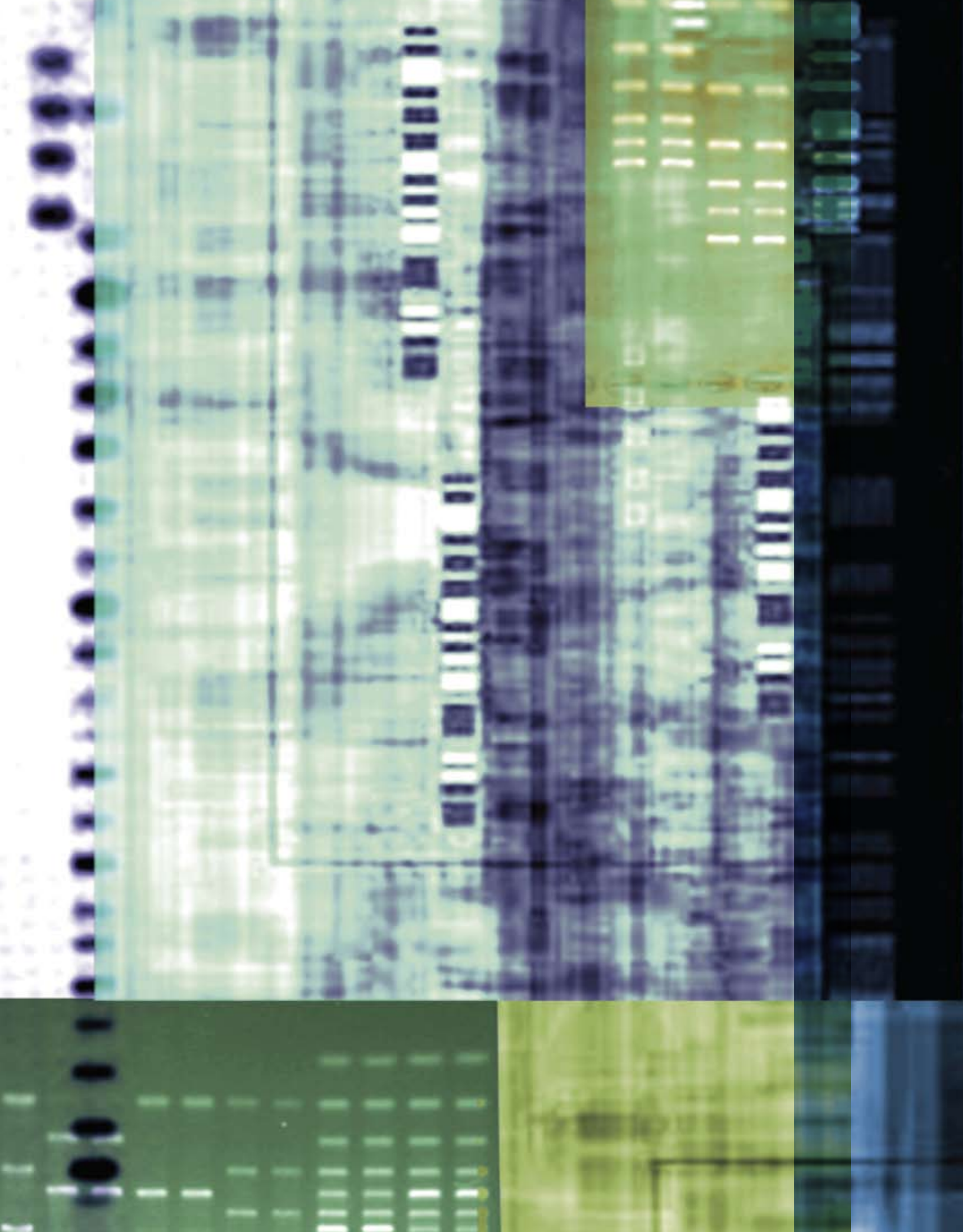
I think war doesn't solve the problem in any way because every human being is very competitive, and human beings cannot be disciplined by violence, like torturing. It makes someone to be so bitter, to commit a crime again, or to be so bitter to the world that he cannot help again. So I think war is the worst thing in the world. If we talk, if we share, if we tell the truth, if we respect each other gender to gender, man to woman, boy and girl, all of those. If we do those things I don't think there will be war. Peace is one of the things that people should be focusing on.

I don't care whether we're Sudanese or Kenyan, Ugandan, South African or whatever, we need to come as one continent that can solve our own problems rather than asking always help from outside.

Some of us witnessed our parents being killed and if we start talking about the war that will pop up in our minds again and we will see them and get very depressed and some cry. So we avoid it all and don't talk about it. We talk about the present, daily life. I know a person should be forgiven. Forgiveness is one of the other things, like justice, the good things. Like if you put those who kill my parents, if you put them in jail for their whole lives, that's a justice, but if they can agree, or if they apologize, that would be more powerful than just to throw them behind bars for all that time.

The best thing is for a person who commits a crime to say sorry, so you can know what he did. If he can speak from his heart, from the bottom of his heart, that he made something wrong, I think peace and justice are the same on that point. If you throw someone in jail and his family suffers, that's a terrible cost. You caused other victims, like the kids and the family.







# A NEW WAY FOR DNA

It starts with a phone call. The caller is a detective, or perhaps an attorney. The subject is almost always grim: a child molested; an unidentified body found; an old woman murdered; a serial rapist struck again. The call is received with clinical dispassion and centers on basic questions: Was a rape kit taken? How many samples are available? How old is the evidence? Such simple questions set off a chain of events that will likely ease grief, solve mysteries and deliver justice.

Starting this fall, such calls ring through to the third floor of the Industrial Agriculture and Communication Center building at North Dakota State University. Here, smack in the middle of the building like a cell's nucleus, is the nation's newest forensic DNA facility. This is where a small team of scientists use sophisticated equipment to extract the secrets stored in DNA – deoxyribonucleic acid – the miniscule molecule in cells that contains genetic information unique to each individual life form. What they discover will be used in court to help determine innocence or guilt.

The scientists taking those calls will be Berch Henry and Thomas Wahl, veterans of police crime labs who are bringing their expertise to NDSU, where they will focus it on the trickiest of DNA identification cases and on teaching others their craft. This facility will be the first in the country to combine teaching with a functioning forensic DNA lab. Besides taking on cases for criminal investigations, Henry and Wahl will

DOCTORAL STUDENTS IN BIOCHEMISTRY WILL BE ABLE TO ADD AN EMPHASIS IN FORENSIC DNA – **THE FIRST SUCH PROGRAM IN THE NATION.**



study ways to maximize results from the smallest amounts of DNA evidence. Other NDSU faculty will advance their related research by using the lab's specialized equipment. Government forensic labs will be able to send scientists and technicians to NDSU for training. And doctoral students in biochemistry will be able to add an emphasis in forensic DNA – the first such program in the nation.

The facility also serves as another piece of Sen. Byron Dorgan's vision for a research corridor between Fargo and Grand Forks. Over time, the lab can pull in research grants, train a pool of employees for high-tech and biotechnology industries and raise NDSU's profile.

But the heart of the facility is the ability to analyze DNA for identification purposes in criminal and civil court cases. Henry and Wahl came to NDSU in July 2006 – both leaving jobs with the Las Vegas Metropolitan Police Department – to build a state-of-the-art lab using a \$3.5 million grant from the National Institute of Justice. It often takes three to five years to create an operational forensic lab. Henry and Wahl built theirs in two. They converted more than 1,100 square feet of space into four separate lab areas and an office, and they were poised to accept cases as soon as they received final approval on Sept. 24 from the International Standards Organization.

Under the terms of the grant, they must be self-sustaining in three years. While that may be difficult, Henry is optimistic. Unfortunately, he says, crime is a growth industry. Forensic DNA labs around the country battle months-long backlogs that continue to grow as DNA identification becomes the new “smoking gun” in court cases. But unlike backlogged government crime labs, Henry and Wahl will be able to pick their cases. They expect to work routine forensic DNA analysis jobs with deadlines, but their real focus will be on “salvage” cases. They want to work complex cases where little evidence remains and where only the right equipment, technology and experience get results, results that identify a missing loved one, put a rapist or murderer behind bars or even free someone wrongly accused or convicted of a crime.

## BUILDING BLOCKS

Henry and Wahl have been on the front lines of forensic DNA analysis since it became part of the modern crime solver's toolbox 20 years ago. They were colleagues at the Las Vegas Metropolitan Police Department – Henry, 59, was the DNA Analysis Unit lab manager and technical leader; Wahl, 54, was a criminalist and DNA analyst at this lab that he also helped create – but both burned out from working with inadequate resources in a city where the population, and crime, were booming.

“We had a backlog as far as you could see and that's just not the ideal way to do things,” Henry said. “It doesn't help your analysts to have 20 people beating on them for results. I went through that for years.”

Wahl finally retired from the department with no other job on the horizon. Henry was about ready to do the same.

Meanwhile, 1,600 miles away at NDSU, Derek Killilea, professor of chemistry and molecular biology, and Robert Sparks, associate professor of chemistry and molecular biology, were laying the foundation for a forensic DNA facility. With active support from Dorgan and NDSU

administration, they landed the \$3.5 million start-up grant. After three years the facility would need to support itself through casework, consulting revenue and new grants.

Once NDSU had the funding, it needed scientists. Henry was sold, and in turn sold his friend Wahl on the unique prospect of building a lab from scratch on a university campus with sufficient funding and the autonomy to choose their cases. Henry and Wahl designed the lab to fill a needed niche in forensic DNA analysis – analysis of complex cases with very little left to test; old, degraded samples; or mixed samples.

As program and laboratory director, Henry runs the facility, manages the budget, and finds new customers and grants. Wahl, as senior forensic DNA analyst, supervises the hands-on casework and manages the facility's quality assurance program. Like the two nucleotide strands that make up the double helix of DNA, they complement each other. They know each other's strengths and divide up the work almost without talking.

When Henry talks to you, his focus is complete. Yet he seems relaxed as he leans back in his chair. His left arm drapes over the top of his head while he scratches the opposite ear. Occasionally he removes his square, wire-rim glasses and spins them around by the stem. With his fair hair, pale blue eyes, short white beard and burly build, it's easy to imagine him on a Viking ship. The southern influence from his hometown, Little Rock, Ark., can still be heard, particularly when he uses phrases like “drum up some business” and “bang for the buck.”

Wahl talks with his chair swiveled to the side while speaking, one arm on the armrest, the other on the table. Comb grooves are visible in his silver hair, and his white moustache and goatee are trim. The top three buttons of his shirt hang open, and he seems relaxed even while describing the odor of crime scenes. Almost the only time his slightly raspy voice shows irritation is when he recounts the story of a suspect convicted on flawed bite mark testimony. (The man was released 10 years later when DNA evidence matched a known, incarcerated rapist who then confessed.) Forensic DNA analysts are a unique breed. They have to be the stereotypical detail



oriented, analytical lab geeks. At the same time, they need the stomach to work with grisly case evidence, the verbal skill to explain their results to juries and the confidence to stand behind their work when lawyers try to bend or discredit their testimony.

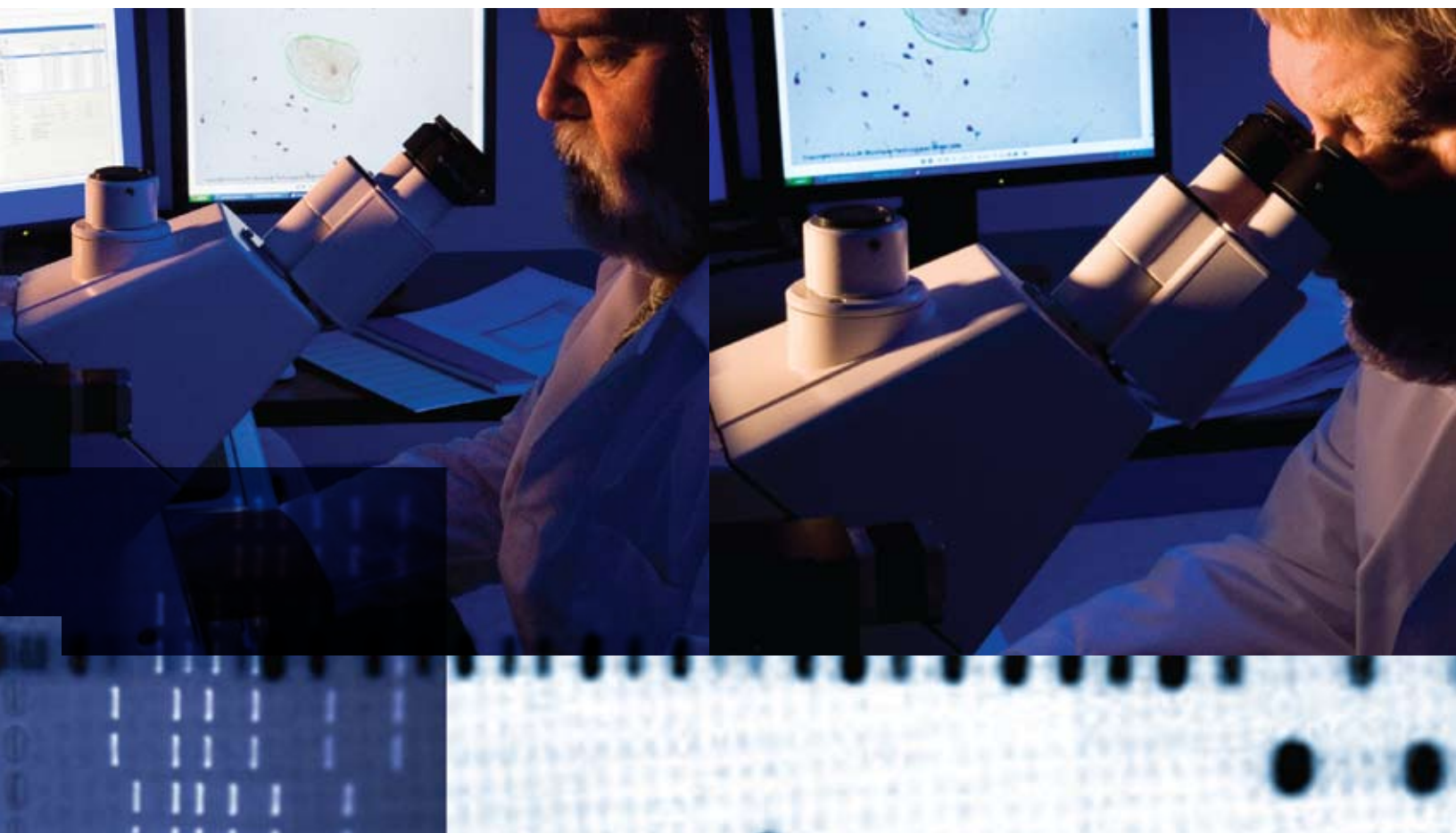
“Court is like theater,” Wahl says. “You go to court and you’re on stage so to speak. If I know it’s a high profile case and the defendant has a very good attorney, I know I’m probably in for a long day on the stand.”

Both Henry and Wahl exhibit a laid-back self-assurance gained from decades in the field. Both of them talk about graphic crimes the way a mechanic might talk about a car. They focus on the evidence, not the emotion, of crimes. For example, while recounting his testimony on a rape case, Henry says, “All I can tell you is that sperm was detected in her vagina. How it got there? Hey man, I don’t know. I wasn’t there.”

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## ||| HENRYWAHL |||

Henry's interest in science was solidified by his sixth grade teacher, Mrs. Barton, who borrowed a projection microscope so the students could examine pond water. Watching the floating paramecia and amoebae led Henry to a love of the microscopic. He went on to earn degrees in microbiology and was teaching genetics at the University of Nevada School of Medicine in Reno in the late 1980s when two students told him they wanted to start a DNA laboratory for the Washoe County Sheriff's Department. He built their DNA facility, the first lab west of the Rockies doing casework to his knowledge. In 1998, Henry became lab manager of the DNA Analysis Unit for the Las Vegas Metropolitan Police, where he met Wahl. But the lab was understaffed and overworked. Henry worried about things dropping through the cracks. "It's frustrating because you really want to do a good job, but you can only do so much," Henry says. Then the NDSU opportunity knocked.

Like Henry, an early experience with a microscope and pond water drew Wahl into the sciences while he was growing up in west central Wisconsin. He fell into the forensic field by applying for a crime lab training position at the Wisconsin State Department of Justice Regional Crime Lab in Milwaukee in 1980. Wahl has since testified in more than 300 cases and is court-qualified as an expert witness in 21 U.S. and two Canadian jurisdictions. He was still working with the Las Vegas Metropolitan Police when he met the producer who wanted to set a TV drama in a crime lab. Wahl remembers not thinking much of it as the "struggling" producer went through his lab. His reaction later, when "CSI: Crime Scene Investigation" hit it big: "Lucky guy."



Along with Henry and Wahl are two rookie analysts, NDSU graduates Jack Foster and Megan Palmer. For the past year, Palmer and Foster have been training in the exacting work of forensic DNA analysis and how to hold up under intense pressure in court. It's Palmer and Foster who have spent a vast majority of their time in the lab validating every extraction and analysis technique and, once cases start coming in, it's Palmer and Foster who will perform most of the hands-on casework analysis.

Jack Foster, 31, grew up in rural North Dakota, and his small-farm work ethic serves him well in DNA analysis. He's the type of person to keep working on a problem until he figures it out – a nice trait to have when reading 2,000-page instruction manuals to troubleshoot glitches. Before joining the DNA lab, Foster worked three years at the NDSU Veterinary Diagnostic Laboratory where he performed diagnostic tests for animal diseases like West Nile virus and anthrax.

Megan Palmer, 24, is the most soft-spoken of the quartet. She's a Type-A personality who prefers to keep busy. To that end, she also is working toward a master's degree in biochemistry. She had planned to work in mortuary science, but found she wasn't comfortable working with grieving families. She shifted to forensic pathology and eventually into forensic DNA analysis.

When Foster met Henry and Wahl, he was impressed by their straightforward manners. They let him know the lab was funded by grant money with no guarantees beyond that. Palmer was working on her biotechnology thesis the summer of 2006, working out of an office across the hall from the start-up lab. She met Henry and applied for a job.

For his part, Henry says both Foster and Palmer displayed the self-confidence he was looking for in lab analysts, yet they knew when to be quiet and listen.

"You want people to keep their mouths shut and learn, but when the time comes for them to step to the plate they need to do that," Henry said.

## WORKING CASES

Detectives interview witnesses, victims and suspects. Crime scene investigators hunt and gather evidence. DNA analysts analyze DNA evidence. That's it. They don't mix duties. So forget the dramatic TV scenes of lab scientists out in the field confronting suspects.

"You would never see that," Wahl says. "It would be highly unusual. We are in a specialized world. Very few people can grasp everything about a certain field."

To clear misconceptions, Henry and Wahl detailed the way forensic DNA analysis really works. While there is no typical case, this is the basic chain of events once Henry picks up that ringing phone.

Henry and Wahl first determine if NDSU has the capability to do the analysis needed in a particular case. They need to know what evidence is available and what questions the client needs answered. The goal is to determine what evidence to analyze for probative value – evidence that will give them the best results for use in court. For example, in the case of a sexual assault, they might just need to analyze the rape kit swab and reference samples from the victim and suspect. A homicide might have 50 to 100 pieces of evidence to consider for analysis. Henry's biggest case involved a suspected serial killer in Reno. Almost 1,000 items had been collected as evidence; he ended up analyzing 10.

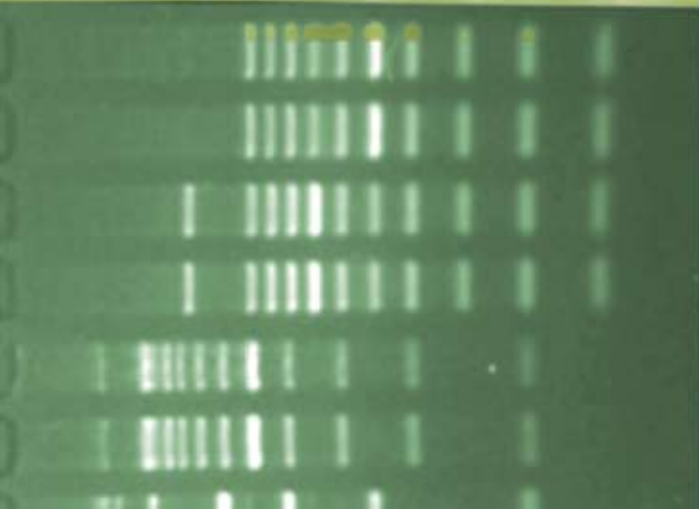
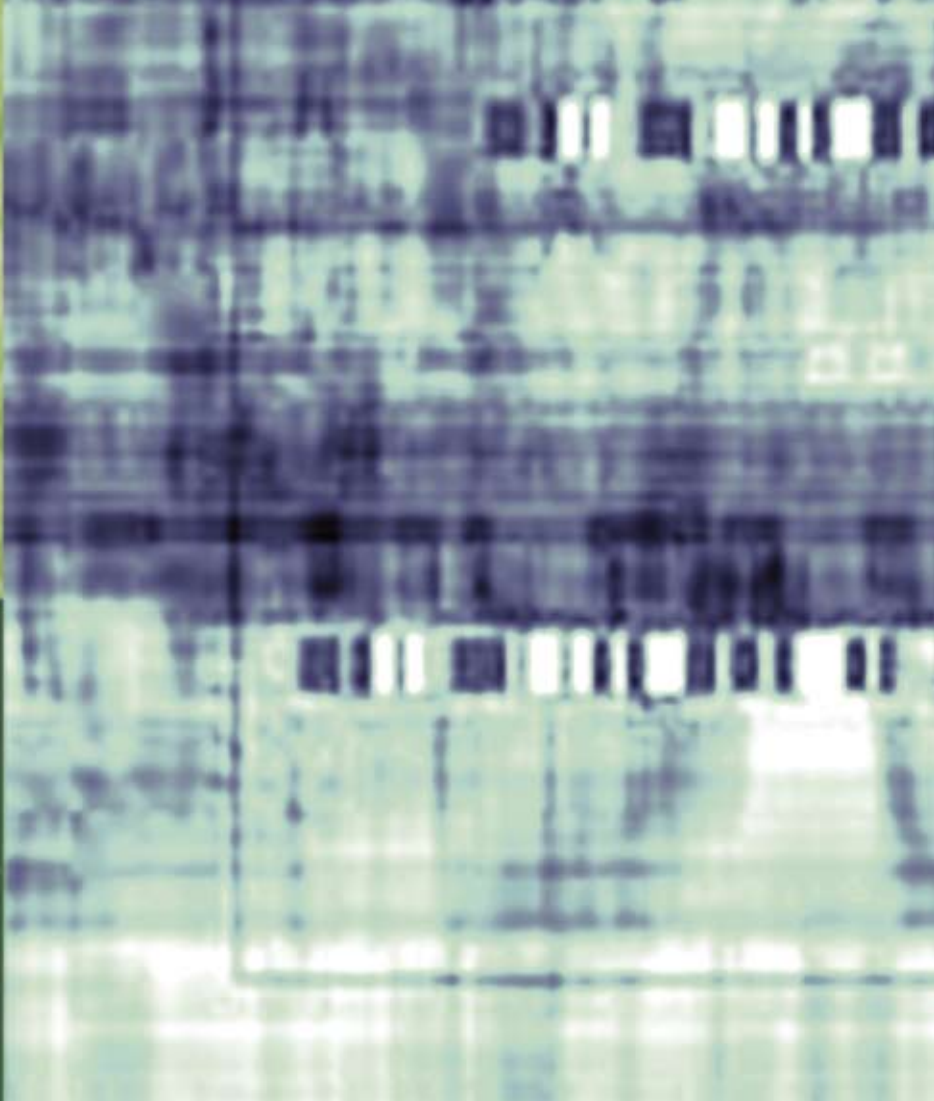
Choosing what to test keeps time and expenses down. A straightforward three-item case from start to finish costs about \$3,000. The more samples, the higher the bill.

The evidence arrives, typically via Federal Express, and is then examined, documented and evaluated to determine whether DNA analysis will work. For complex cases, this is where the NDSU facility plans to fill its niche in DNA analysis.

The showpiece of the lab is a Zeiss P.A.L.M. MicroBeam Laser Catapult Microscope, a large white machine that takes up half a room. The Zeiss LCM will make possible research and casework analysis that other labs can't perform. Such equipment costs too much for government labs that wouldn't use it enough to justify the \$250,000 price tag. This specialized microscope allows analysts to capture cells from mixed samples containing cells from two or more donors. Because DNA testing may destroy samples, the Zeiss LCM can provide the edge needed in cases where little evidence is left. Only a handful of labs in the country have this technology; one successful analysis of a high-profile case could secure the NDSU facility's reputation.

Today Foster is using the Zeiss LCM to cut out mouse lung cells as part of a research project for assistant professor of microbiology, Jane Schuh. (See the last issue of NDSU Magazine for more.) Seated at the Zeiss in a polo shirt and jeans, Foster clicks a button and the computer monitor projects an image of the cell wall structure in electric blue. It resembles a topographic map, with large open white spaces like lakes surrounded by numerous blue lines. The white spaces are lung pockets, the blue lines, cell walls.

Foster hands control over to Palmer, who uses the cursor to trace around the desired cells. Then the Zeiss LCM shows its true power. The







laser cuts along the path Palmer laid out. Once done, the Zeiss LCM shoots the laser at the cells to create a small pocket of pressurized air. The cells are popped, catapult-like, into one of the eight tiny test tubes attached to the machine's automated tray.

Blink and you'll miss it on the monitor. You'll miss it anyway. One nano-second, the cells are there; the next, there's a hole where they used to be.

Palmer and Foster now move on to the next evidence-related demonstration – the “fabric of shame.” Dressed in a lab coat and latex gloves, a pair of yellow goggles perched atop her auburn braids, Palmer spreads out a quilt composed of 42 different fabric squares. Each of the squares – denim, silk, spandex, nylon, wool, polyester, cotton, and various blends – is stained with various body fluids. Some of the stains are easy to spot. Others are not.

Next to her, a black, rectangular box about one foot long drones loudly as three fans keep the unseen halogen light from overheating. Palmer attaches a metal snakelike hose to one end of the box. On the other end of the hose she hooks on a light-filtering device.

Foster turns off the overhead florescent lights and Palmer passes the halogen alternate light source over the quilt. To the naked eye the light is a blinding bright blue. With a pair of orange-tinted goggles on, the light from the hose looks dim and yellow. Certain stains show up under the light.

“See how that is all wicked out?” Palmer asks, indicating a stain that has spread over one quarter of its patch of fabric. “Can you see the two different stains? On silk, you can't see that stain with the naked eye.”

We finish looking at the fabric and enter the lab's largest room where DNA is extracted from evidence. For those whose only exposure to DNA labs is through television shows, this room is something of a letdown. No floor-to-ceiling windows to let in golden Miami sunsets through expressive blinds. No detectives removing sunglasses to mumble quips about finding the truth. You wouldn't be able to hear them anyway over the low level hum of the air vents, florescent lights, refrigerators and computer server. Palmer and Foster don't even notice the noise anymore.

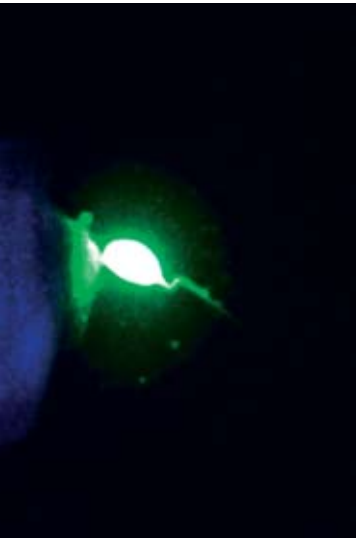
Two long slabs of slate reach out from one side of the room. Each slab is filled with computers, extraction machines and measuring boards, one of which has a high-definition stereomicroscope mounted over it to catch details of small items – such as a speck of blood in a diamond ring's setting. Foster shows some test photos on the monitor. A small piece of blood-stained fabric shows up so clearly that it is easy to see the weave. One square centimeter (about the size of George Washington's head on a quarter) of the stained fabric provided enough DNA to analyze 50 times over.

The Zeiss LCM, the halogen alternate light source, and the stereomicroscope help examine and select evidence, extract DNA and separate mixed samples. Once they have the DNA in hand, they quantify it. They need to know exactly how much DNA they recovered so they can add the right amount to the biochemical process known as PCR – polymerase chain reaction. This process uses a mixture of primers, nucleotides and DNA polymerase (a bacterial enzyme). Too much or too little DNA added to the PCR mix can ruin results.

The DNA and PCR mix is heated, which causes the two strands that make up DNA to break apart. As the solution cools, the primers (which are tiny pieces of DNA) get to work. Bits of primer attach to the now single strands of DNA only in the region of interest. The enzymes build on the primer to create two new strands of DNA. The heating and cooling is done over and over, up to 30 times. Like a molecular Xerox, soon there are millions of copies of tiny, specific parts of the original DNA strands. These small pieces of DNA are compared to the DNA of the known suspects and victims.

Results come in one of three forms – DNA match, non-match or inconclusive.

If the samples match, the analyst puts a statistical weight on it to help juries understand the probability of finding someone else with the same DNA profile by chance. The odds can be astronomical, but for simplicity's sake, the NDSU analysts typically make an identity statement when the chance of finding another person with the same DNA profile is 1 in 700 billion, 100 times the world's estimated



population. This doesn't include cases of identical twins, who have the same DNA profile.

In other cases, the samples may not match. More than 200 convicted felons have been exonerated by DNA evidence since Gary Dotson became the first in the United States to have his rape and kidnapping conviction overturned in 1989. Exonerations are highly visible in the media, yet less reported are the innumerable instances where DNA analysis keeps cases from going to court because it proves the accused likely isn't guilty.

Television shows may give the impression that DNA is always clear-cut, but it isn't. Inconclusive results also happen. Mixed DNA samples with cells from two donors can provide ambiguous results. Get 10 analysts to look at mixture data, and you can get 10 different interpretations. Determining a sound interpretation is the hardest part of the job, Henry says. However, with the Zeiss LCM, the NDSU facility will be able to better separate cell mixtures to get a profile from one donor – making interpretation easier and less ambiguous.

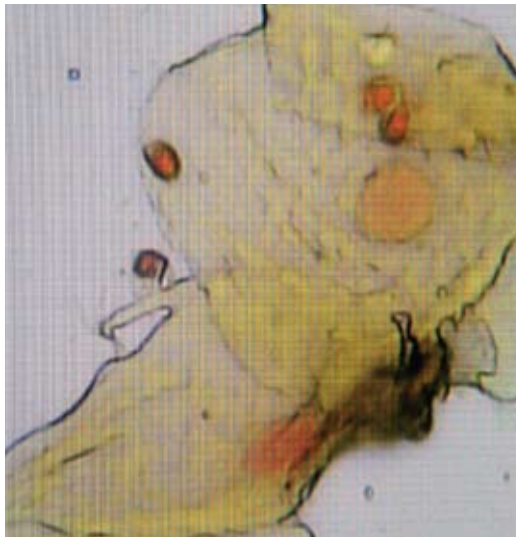
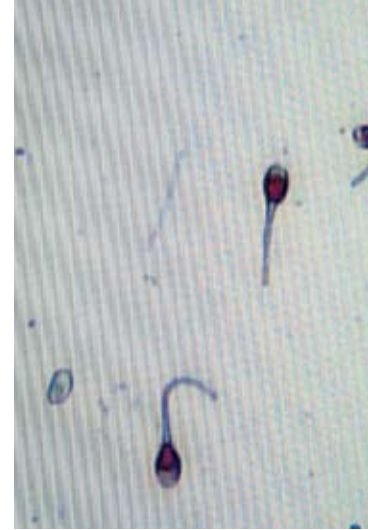
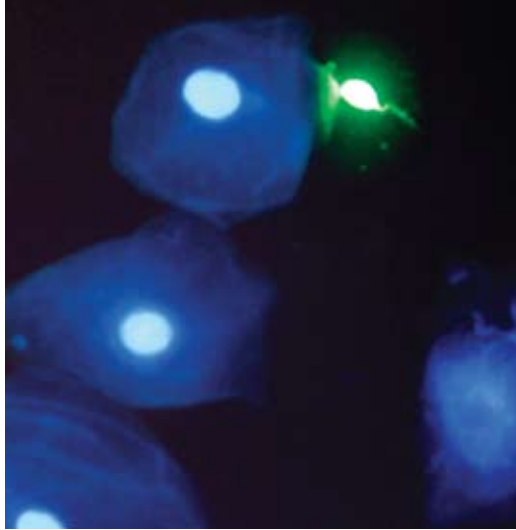
Whether the DNA is a match, non-match or inconclusive, the analyst must testify as an expert witness if the case goes to trial. This can be tricky since expert witnesses are allowed to provide opinions. But Wahl and Henry believe in being neutral, objective scientists, a belief they sometimes have to remind themselves to hold.

“You got some two-year-old kid that was sexually assaulted, you know that's going to piss you off,” Henry says. “You can't show that.”

They go toe-to-toe with lawyers who try to push their conclusions and opinion one way or the other, but they stick to what the evidence shows. What they do know is DNA: DNA they know was at a crime scene; DNA they know matched or did not match a person. Forensic DNA analysts tie the suspect to the crime scene. Beyond that, why the suspect was there and who did what, they can't say. That's for the jury to decide.

“You don't know what really happened,” Henry said “And I've been fooled. We both have. I've been fooled enough times to know better.”

—J. Hagen





A black and white photograph of a shawl. The shawl features a prominent diamond-shaped mesh pattern in the center, which tapers towards the top. From the bottom corners of this mesh, long, thick fringe hangs down, creating a dramatic, layered effect. The background is a solid, dark color, which makes the intricate details of the shawl stand out. The overall composition is elegant and minimalist.

# *Shawls*





The shawls of women carry their stories.  
Look at them, touch them.

Is the weave tight or open? The texture  
soft or harsh?

From this we know whether a woman was privileged or  
bought her passage to a new land with servitude.

The old hand-woven shawls of German-Russian women  
are striped orangey-red, olive, sage and indigo.

Preserved now, they are layered together, nested in pris-  
tine white papers.

Resting there they whisper of trousseaus and marriage,  
of babies, grandmothers and a happy, industrious culture.



In the Ukraine, factory-made plaid shawls are rough  
and heavy as grey winter twilight.

The texture here is of persecution, prayer and shoulders  
that must bear the burden of betrayal.

Telling of a people invited into a cold new land, then  
forced to leave at the point of a gun with what they  
could carry.

All these shoulders, yoked to a hard life, are covered  
in wool.

This is the texture of sustaining faith, the promise of a  
hereafter and songs of mourning.

Carded, spun and woven by the adept hands of a spin-  
ner with a gift for fabric.

Each six-foot length would wrap and hold a woman  
and her babe.

At sixteen her stride changes. Her body moves with a  
different ease, the thistledown lightness of a free-running  
child anchored by the gravity of womanly hips. A new  
head shawl replaces her girlish scarf – black wool of the  
lightest weight, the finest weave, square cut, the hem  
handkerchief-stitched, and fringed in black knotted silk.  
Long fringe and elaborate knotting are a sign of wealth  
and status. Wrap, tuck, tighten and knot under her  
chin so no wisp of hair escapes. The fringe dances as  
she works.



Her head covering symbolized all her responsibilities.  
It defined her as respectable; as belonging to her family  
and community.

Beneath it her hair was uncut.

A long woven rope of hair, unbound and carefully  
dressed each Saturday.

Washing was a seasonal luxury so sweet oil kept it clean  
and soft.

Oiled, combed, braided, pinned and wrapped again.

A head shawl for waking; an old scarf for sleeping.

Always covered, but for that single precious hour.

Her time to care for herself.

*North Dakota State University's Emily Reynolds Costume  
Collection is home to a set of shawls and head scarves once  
worn by women of the Germans from Russia who immi-  
grated to North Dakota in the 19th and 20th centuries.*

—L. Baker



*A numbers GUY*

Beep. Beep. Beep. The student's arm flails toward the nightstand, trying to whack quiet the annoying sound of the alarm. It's Saturday. No time to roll over or snooze. Need coffee, soda, anything with a large jolt of caffeine helps ease into what's ahead. Get dressed. Bolt out the door. Sprint to a room filled with computers in the building phonetically known as "eye-ack" or IACC or its more formal title of Industrial Agriculture and Communications Center at North Dakota State University.

At the same time, someone else greets this morning with graceful anticipation. He's been planning for this event all week, spending the last seven days figuring out what to say. It's something he and his students never miss, these Saturday research sessions from 9 a.m. to 2 p.m., even if students receive no college credit for it. They show up. Just as they have on every Saturday for about the last 25 years. The names of students may have changed from year to year. But one thing is constant. "I had some very bright students. Just that interaction, knowing it's coming on Saturday, was just very exciting and a lot of fun. I looked forward to those. That was the highlight of my week," says Bill Perrizo, Distinguished Professor of Computer Science at NDSU, smiling.

Students remember the sessions too. Taufik Abidin, now a senior software engineer at Ask.com, says Perrizo always brought a dozen donuts for students who attended. Elizabeth Wang, now an assistant professor at Waynesburg University in Waynesburg, Pennsylvania, recalls his commitment. "In order to expose us with some frontier research areas, he could think about them over and over again before Saturday. We don't know how much sleep he lost while he was working on the new problems. And we don't know how many holidays he spent in his office doing research." Fei Pan at the University of Southern California says Perrizo trains his students to brew ingenious ideas and be creative in their research.

Perrizo has advised at least 25 Ph.D. students and about 60 master's degree students from around the world. Add that to the literally thousands of undergraduates he's taught in 36 years at NDSU and Bill Perrizo has touched a lot of lives.

Though he's had to curtail the Saturday research sessions during the past year due to health issues, it hasn't stopped this numbers guy from pursuing other research opportunities, like the one with many zeros after it. His current research focuses on pursuing the \$1,000,000 Netflix Prize.

The nearly 11-year-old online DVD rental service began its five-year contest in 2006. "In the summer, I bet I put in 70 hours a week working on it. Sometimes I am here at four in the morning," says Perrizo. "I get an idea. I'm in data mining, which is what this is. This is going to be the

benchmark for all data mining research for the next 20 years."

The problem, which is being chased by about 25,000 teams worldwide, involves creating a computer algorithm that will accurately suggest movies you may want to watch, based on your ratings of previous movies you've rented. Netflix already uses a program called Cinematch to do this, but it seeks a system that will beat the accuracy of its current system by 10 percent. Perrizo admires the company's contest approach. "That probably is 50,000 scientists worldwide working on this problem for five years. Now, you do the math. How much is that an hour? About a penny an hour? You can't buy scientists for a penny an hour," he chuckles. "That's smart."

Netflix has provided contestants with a data set of 100 million movie ratings by its customers. If you are a data miner, being awash in that amount of data might be close to achieving nirvana. "It's the only data set in data mining we've ever had that's real life, massive and as challenging as you want it to be," says Perrizo. When there's a bazillion numbers, finding the patterns and useful information in all those digits becomes problematic. Think of trying to find your car in the Metrodome Stadium when you don't remember where it's parked or locating a group of specific grains of sand in the Sahara Desert.

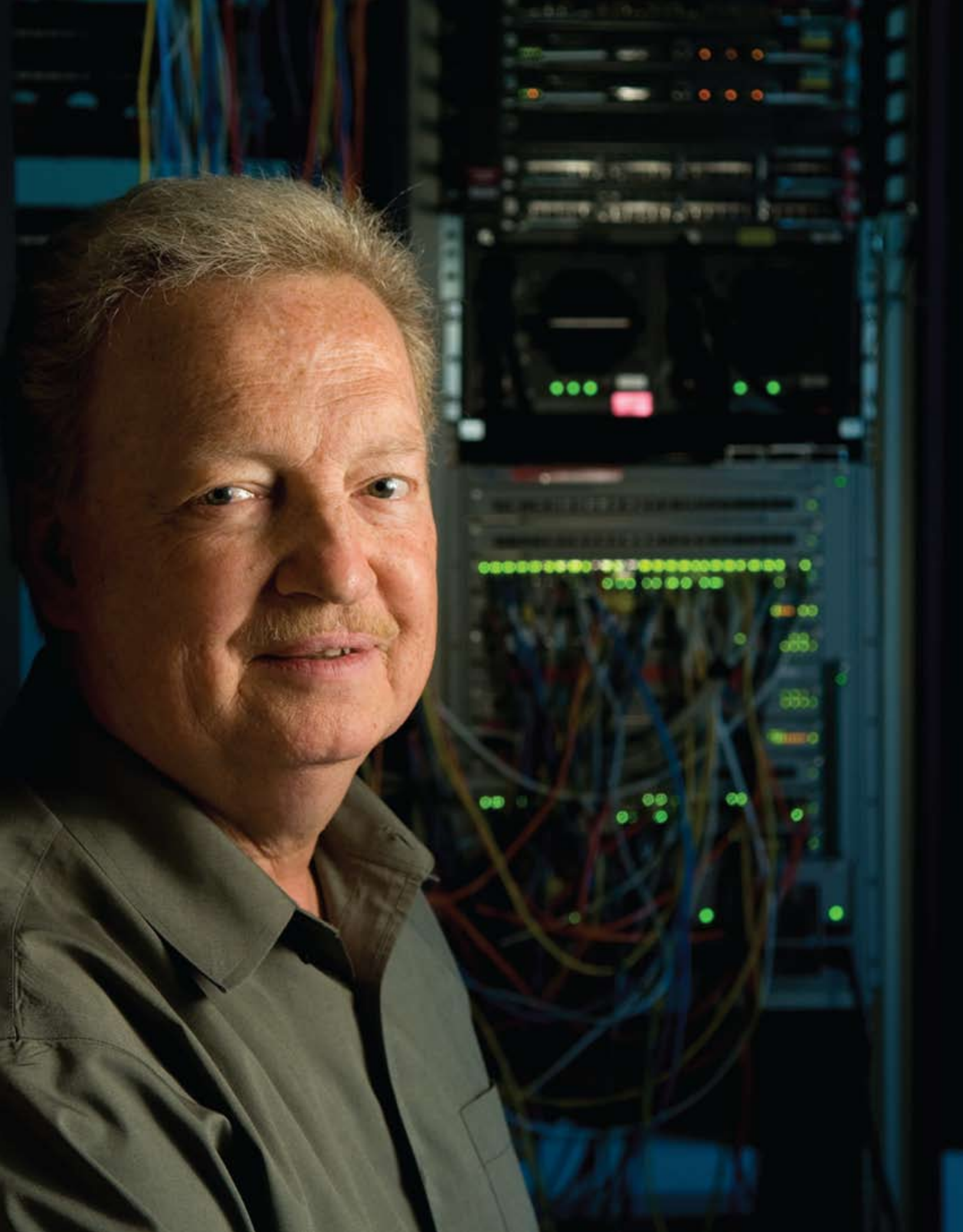
"Data mining is what we call ad hoc querying. It's not so crystal clear what you're after. You have a feeling that there's valuable information in this data set. You want to find it, but it's not so clear what it is. That would be data mining," says Perrizo. Maybe it could be characterized as a technologically superior approach to detective work, like a gumshoe with a hunch who looks for details and patterns that provide useful information to solve a case.

Experts such as Perrizo use the sets of numbers and write algorithms that are almost like global positioning systems to find information in treasure troves of data. In everyday life, a recipe, for example, is just an algorithm for producing a food product. And an algorithm is simply a recipe for how you want to do something in a computer program.

In the Netflix contest, thousands of computer supercoders and others work to write algorithms that will boost the success of Netflix's Cinematch by 10 percent. So far, a team called BellKor from AT&T Labs boosted it by 8.43 percent. Netflix also awards a \$50,000 annual progress prize to the team leading the pack to solve this business intelligence problem. For the ultimate winner of the contest, Netflix requires a royalty-free but non-exclusive license to use the software.

Suppose somebody does win the prize over the five-year period. According to contest rules, everyone else gets 30 days to beat them, which Perrizo says, would lead to a feeding frenzy of science.





“I would be a fool not to be working on this because this is where it’s at for data mining researchers right now,” says Perrizo. “I’ve gotten into it, I’m afraid. I can’t let it go now.”

Perrizo’s unique approach to data mining involves vertically structuring data, then writing computer programs that will efficiently, accurately and elegantly mine the data for useful information. His name for vertically structuring the data is P-Trees which stands for predicate trees – not for Perrizo. “But if people make that mistake, that’s OK with me,” he says with a wry smile.

He points out that today all data is horizontally structured. Think of a spreadsheet with rows of names, addresses, numbers and other data stretching from left to right. For a computer to process such data, it painstakingly looks at the first piece of data, then the next and the next and the next until it finds what it’s looking for. “That works fine unless the depth of it is like it is with Netflix – a hundred million or a billion records deep,” says Perrizo. “Well, you have to look at every one of them one at a time. It takes forever.”

With Perrizo’s method, the data is turned on its head, sliced up to change it into a vertical structure resulting in long, skinny pieces of data that are then compressed into a predicate tree to better manage it. “That wouldn’t be all that useful if you had to uncompress every time you wanted to process the information. But we don’t. We can process the compressed trees.”

He thinks his two years of work can keep his team, called P-Tree Code Monkeys, in the Netflix race. He remains undaunted by the David vs. Goliath nature of his quest. Others participating in the contest have room upon room filled with computer servers. Although Perrizo uses a personal computer as well as NDSU’s Center for High Performance Computing, it sometimes takes four days for an operation to process. He is nothing short of gleeful about the upcoming expansion of the high performance computing center, which will increase the number and power of processors available. “Now I’ll be able to do something,” he says, with a broad smile. “It’ll be 600 times faster than what I’ve been able to do. What would have taken me six days will now take me a hundredth of a day.”

He also mentions that he doesn’t think he’d have a shot at the Netflix prize if it weren’t for colleague Greg Wettstein, systems administrator of the computing center. “In my opinion, he’s one of the best systems programmers in the world. It’s a rare talent to be a systems programmer at the level that he can do it. He can set up an environment for me to do my applications programming that’s absolutely world class. I call him a coding savant.”

He asked Wettstein to take a look at a computer program he’d written that was giving him some trouble. “I think in five minutes he said, ‘Have you got some GO TOs in here?’ And I had a couple. It’s 10,000 lines of code. I don’t know how you can look for a few minutes and figure that out,” says Perrizo with admiration. Wettstein appreciates Perrizo’s approach to personal and professional challenges, saying it’s based on highly reasoned and analytical assessments of a situation.

So Perrizo continues to work on what it may take to win the Netflix Prize. He is already a University Distinguished Professor. He’s published more than 200 refereed publications. Early in his career, he received multiple grants to work on an Air Force project designing a worldwide information system for the U.S. Department of Defense and its allies. “It was a pretty ambitious project which actually failed – not because of me,” he laughs. His accolades include winning the 2006 Knowledge Discovery and Data Mining Cup, a contest once characterized as the “Holy Grail” of Computer Aided Detection to find pulmonary embolisms or blood clots from radiological imagery.

As for any “aha!” moments or major discoveries in his research career, “I get one every week. But 99 percent of them don’t work out,” he says. Some did. Perrizo holds a patent for his vertically structured data approach to database and data mining. He holds another patent for concurrency control, which, in a database, is like a traffic cop, making sure that one computer user’s activity doesn’t affect another’s. “Maybe at this point, you have a little flexibility to look at ‘what would I do to top things off here?’ ” says Perrizo. Thus, the quest for the Netflix Prize. “The person who wins is going to be the renowned data mining researcher for a long time. And the million dollars probably doesn’t hurt either.”

How Perrizo got to this point in his career – with humor and dedication – seems to parallel the rest of his life. His mother was a teacher and his father a farmer in southern Minnesota. Somehow, he became a mathematician. “I just always liked numbers. Give me a problem that’s hard to do in mathematics. I just love to go after it.” He had some catching up to do academically since he didn’t have a senior algebra course with his 15-member high school graduating class. But when he went to the University of Minnesota, his Ph.D. committee member, Len Shapiro, remembers him well.

Perrizo later encouraged Shapiro to join NDSU as chair of the computer science department. Although Shapiro would later move on to Portland State University, he clearly outlines Perrizo’s achievements. “Bill’s contributions in the areas of transaction processing, query processing, data mining, distributed databases and bioinformatics are outstanding and have advanced the cause of science in many significant ways.” There’s another aspect Shapiro appreciates. “I most admire Bill’s ability to juggle his impressive professional life and still maintain deep and loving family relationships.”

Perrizo speaks with obvious pride about his wife who is a part-time teacher at a private school and his three grown kids. One daughter manages all the domestic violence homeless shelters in New York City. Another daughter is a professional actress who's appeared in Broadway shows and now lives on the West Coast. His son in Minneapolis is a massage therapist. Not a computer scientist among them. "No, not even a hint of anything scientific!" he replies with mock exasperation.

He'll debate with his daughters, both of whom are in the humanities. "They say, 'You can't use numbers to do everything.' And I say, '*Au contraire*.' We always use numbers. We always end up with the absolute quantification of yes or no. That's 0 or 1. We make decisions. We say yes or we say no. That's absolute quantification. So why are you saying I can't get from this massive accumulation of data to that ultimate quantification through numbers? I should if I can. If I can't, I'll use art to decide," he says with passion. "So it's an argument between artists and scientists. In my opinion, scientists are right because everything we do is a decision." But even this self-professed numbers guy will concede one point to his kids. "Now that doesn't mean that sometimes I'll wake up in the morning and the entire solution to a problem will be there, like a work of art. It would take me weeks to sequence it or write it down."

That passion for numbers is something Perrizo clearly passes on to his students. He looks for students with an innate drive to see a problem, solve that problem and make a contribution. "People remember their teachers and generally, their careers are shaped by not only the choice of what career they go into, but the quality of their career is shaped by their teachers," he says. Mementos from former students line the bookshelves in his cramped office, like an international travelogue – wooden owls and tea from China, sandalwood from India, and folk art from Sri Lanka and Bangladesh are just a few. Like endless lines of computer code swimming with speed and elegance across a screen, invisible strings still connect him with former students, now on their own research quests.

His former students are in Lebanon, China, Bangladesh, Sri Lanka, India, Alaska, Arizona, Minnesota, Pennsylvania, Arkansas, Washington and elsewhere. Imad Rahal, now an assistant professor at St. John's University, Colleagueville, Minn., had Perrizo as his master's degree and Ph.D. adviser. Rahal says he admires "his strong belief in himself and his advisees, his patience and willingness to go the extra mile for his advisees, his love for life and the support that he provides for his students loooooong after they graduate. He is the person who made a researcher out of me. He instilled the love of research in me and showed me that I can do it."

Former student Kirk Scott at the University of Alaska has written a book on javascript computer programming in Russian. He is now on sabbatical in Kazakhstan. Elizabeth Wang at Waynesburg University says her former professor had a great impact, illustrated in her own recent teaching evaluation which said: "Indeed she is one of the best researchers in the university. Not only does she publish many important papers, but she also involves her students in her research."



# We always use numbers. We always end up with the absolute quantification of yes or no. That's 0 or 1.

Wang notes that Perrizo challenged her as her adviser and expected hard work. But she also remembers his compassion. When stranded in China in 2003 due to international travel restrictions, she contacted her adviser. “Dr. Perrizo wrote a very touching reference letter for me and also asked a senator to write a letter to the U.S. Consulate in Beijing. As a result, not only I, but also my son, were able to come back to Fargo so that I was able to continue and finish my Ph.D. I don’t know what would have happened without Dr. Perrizo’s help.”

As his students continue to build successful research careers, Perrizo continues his pursuit of the Netflix Prize. If you tried to characterize Perrizo’s work as a movie in the Netflix collection, the classic “It’s a Wonderful Life,” springs to mind. With emphasis on the main character played by actor Jimmy Stewart who is at once approachable, smart, humorous, compassionate and determined, that might offer a glimpse of Bill Perrizo. The 65-year-old will continue the research quest posed by the Netflix five-year contest into 2011, even as he works around his schedule of teaching, chemotherapy and doctor appointments.

Whether Perrizo wins the million dollar Netflix prize – well, it would be nice – but maybe the journey matters more than the destination. Mathematical proof of his success already exists. There’s proof in his legacy of distinguished research, of successful students, and of a loving family.

Over the past year, Perrizo curtailed his marathon running. He used to do some woodworking and remodeled nearly every square inch of his old house. Now he’s becoming a coffee connoisseur. But in self-effacing fashion he points out, “I guess my life’s pretty boring, actually.”

As German colleague Walter Dosch at the University of Luebeck notes, “Despite his scientific success, he remains a modest and open-minded person with a good sense of humor.” Dosch served as a board member with Perrizo in the International Society for Computers and their Applications. “I have no particular story to tell about Dr. Perrizo. His lifework is a story by itself.”

# AFTERWAR



*Returning veterans say that wartime deployments are harder on the family than on the soldier, who, after all, has a clear job to do, plus adventure, travel, and comrades in arms. Home is just home: same dishes, laundry, budget woes, same teenage angst, but the adults coping with it are doing it alone. So they learn new strategies and skills. Relationships are permanently changed. Then homecoming occurs. We know reintegration is a problem for both soldiers and their families by looking at the related divorce and suicide statistics. It happens successfully too.*

*Far from home, everybody missed the same things: family, privacy, fast foods, reliable communication, a cool breeze. Hot is the first word used to describe Iraq. Lonely won top emotion. Refuge, the best descriptor for being back in the workplace.*

## DEB KNAPPER STILL HEALING

Deb Knapper joined the North Dakota National Guard right after high school because she had liked playing soldier with her brothers and she didn't have a clue what she wanted to do with the rest of her life. The money was pretty good; the weekend drills provided great camaraderie. She loved practical jokes and her buddies were great jokers. She served 20 years and it never got harder than sandbagging a flood. Her main job was pushing paper. Then, just days before her Guard career was over, her unit got the call. She had the option to stay, but out of loyalty decided to go. But when she got to Iraq, Knapper discovered she'd made a wrong choice. She hated everything about the experience and didn't want to be there. Teeth-gripped stubbornness kept her going through repeated extensions of the company's tour.

In the Guard she was an E-5 or sergeant and a member of the 142 ECB (HV) Engineering Battalion. The code means "engineering combat battalion, heavy," with "heavy" indicating they build big horizontal and vertical structures. At North Dakota State University Knapper is one of the supervisors who keeps the campus clean and functioning. She is a strong, stocky woman with shaggy blonde hair. Her back gives her trouble now. Something behind her blue eyes still glitters with fear. In war zones, everything beyond the perimeter of the military base is called "outside the wire" and the base area is "inside the wire." Knapper rarely left the base, but a soldier doesn't have to be outside the wire to have a traumatic experience in Iraq. For Knapper, it was the mortars.

A mortar is a muzzle-loading weapon that fires shells at low velocities, short ranges and high-arching ballistic trajectories – in other words, it lobbs them. It usually looks like a long metal tube. It can be fired from a trench and carried by one or two. Fortunately, the insurgents were mostly rotten shots; Knapper's company had only a few close calls, yet loud noises still cause her to panic.

Day and night the boom of exploding mortar shells marked an erratic beat that had new arrivals hitting the sand, sensitive types ducking and flinching, and toughened vets listening for the clues that signal friend or enemy, distance





and timing, sprint or keep walking. There is nothing at home that even comes close to the noise or terror, although backfiring cars and the 4th of July have been known to send combat vets under picnic tables. After sitting guard duty in a perimeter tower, she knows she is a combat vet.

Knapper's year in Iraq is documented with photographs; the same kind of pictures she might take at home only instead of posing by her car she is posed in front of a truck in a convoy while wearing a mix of jungle and desert camouflage and gripping an M-16 rifle. She captured the sardine-can quality of cots crowded into a tent and covered with U.S. flag (her bunk) or green camo blankets, each cot with a stuffed animal gift from home – a dragon, a bear, a cat. Mosquito netting, helmets, water bottles, mirrors, canned cheese, drying towels all make a bunk into a sanctuary.

Since coming back she's gained weight due to stress and a thyroid problem that almost delayed her return home. She had to argue her way out of the base hospital so she could get back to Fargo for her son's 11th birthday. She has an anxiety disorder. Her blue eyes dart constantly, checking for threats. It's hard to relax and impossible to sleep.

Knapper found serenity on the job.

Co-workers in her department were welcoming; some had war experiences of their own to talk about and everyone on campus was supportive. Tasks were familiar, surroundings quiet. Peace at last.

Her home life was turbulent; the chaos of re-establishing authority, of adjustment and teenage troubles. You miss a whole year of their lives and when you're with them again, bam, all their pent-up fear flies out as resentment: As "I wish you'd just go back to Iraq." A panic attack is triggered and you hear "What's your problem, all I did was drop my books." Words like that send you back to that mental place where everything is still sand, heat, and hostility and maybe you're stuck there until you're dead. You can't explain it to a teenager, they don't welcome that kind of vulnerability from adults, plus most teens believe they're invincible.

Still, all that long year her one repetitive thought was "I just want to go home." She came home in 2004, retired from the Guard in 2005, and doesn't plan to leave home again.

## JUSTIN GRAMS NOTHING STAYS THE SAME

Justin Grams' life was forever changed during the time he spent in Iraq, but the changes all happened at home. He was deployed in 2006 and landed first in Kuwait, a routine stopover on the way to the Iraq base. He was exhausted from the 20-hour flight and like every newcomer was instantly overwhelmed by the 132-degree heat. Calling his wife, hoping for a little sympathy, she announced "I am pregnant!" and that was how he learned he was going to be a dad for the first time.

Grams joined the Minnesota National Guard at 18 for college money, not ideology, and it helped him get his degree. He married his high school sweetheart. His dreams and ambitions were clear to him: Work in higher education administration. Continue school. Advance. After

# SHE GOES ABOUT HER WORK PRETENDING EVERYTHING IS FINE AND NOTHING REALLY HAPPENED. SHE DOESN'T WANT PEOPLE TO LOOK AT HER AND SEE HER FIRST AS A KILLER.

graduation he quickly won a job as an admission counselor at NDSU. The recruiting job kept him on the run and it was great. Leaving was tough, but his boss assured him that nothing would change in his absence.

In Iraq his job was to refuel jets – work that presented no challenge and little danger. He kept his head down, did what he was told, worried about his wife. It looked like the baby was going to arrive early. An understanding company commander arranged for Grams to have emergency leave, a bureaucratic loophole that let him fly right home rather than wading through the rules and delays of a regular leave. He met his daughter, Ava Lillian Grace, as soon as she was born and was with her for the first two weeks of her life, a sweet, peaceful time, falling in love. When he returned home to stay, she was four months old and had just started sleeping through the night.

Ava wasn't the only change going on at home. An unanticipated opening for an assistant admission director, and a series of interviews by telephone and instant messenger meant Grams came back to a brand-new job, smack dab in the middle of the high school recruiting season. He had five new counselors to supervise and hadn't been part of hiring any of them. Other office staff had changed. Spaces had changed. His supervisor's promise that nothing would change is still a joke between them.

Reintegration can be wonderful. "The life I left is completely different than the life I came back to," said Grams. "A new job, new child, my wife finished her master's degree while I was gone."

## BRENT FRIEDT HOME IS ENOUGH

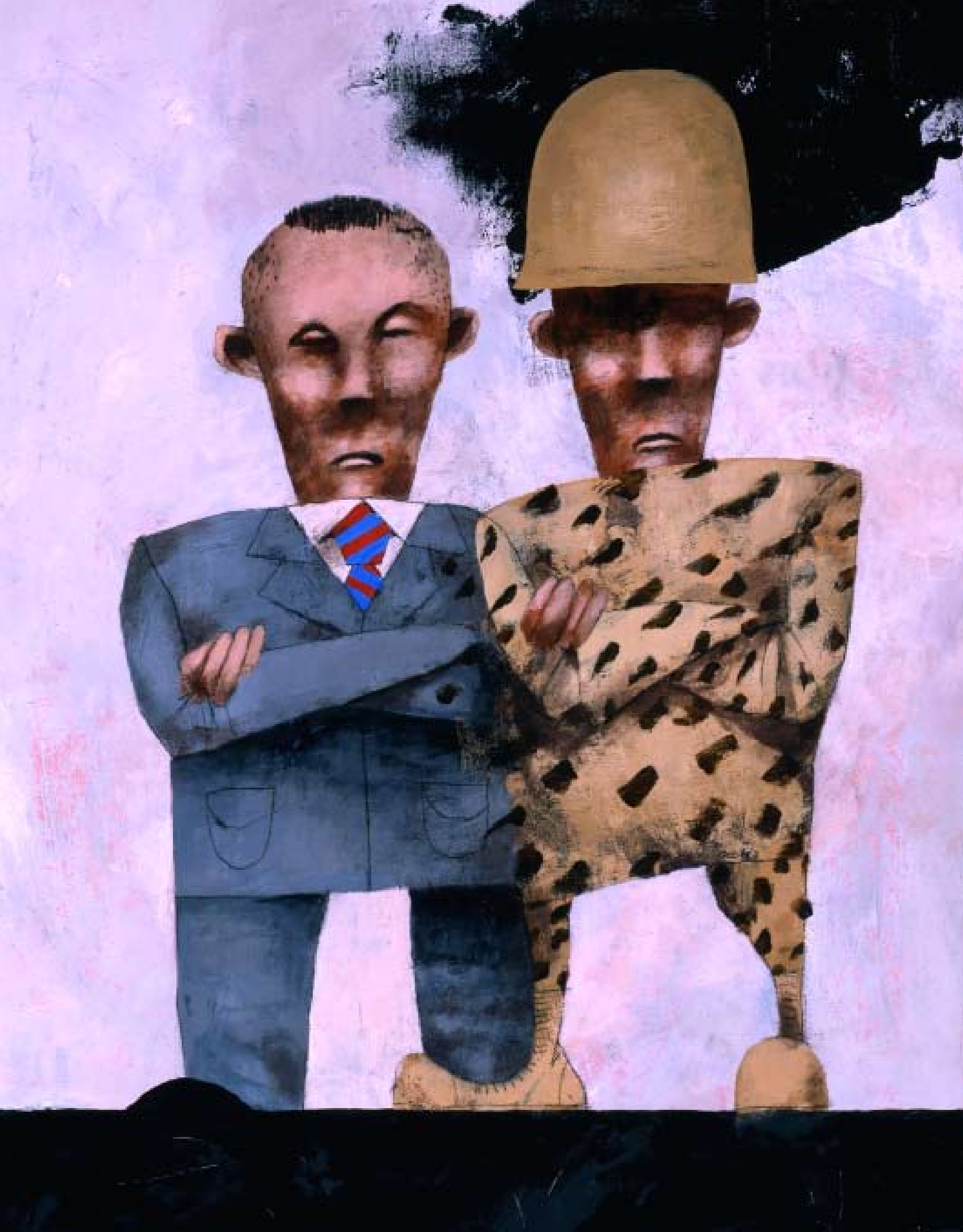
To this day Brent Friedt backs his vehicle into parking places so he can get out fast. When he walks into a room he can tell what's been moved or changed. He plans escape routes automatically.

None of that means Friedt disliked Iraq. Fear was not what rode his back; amazement maybe, and eagerness. On base and in his Engineering Battalion, Friedt was the go-to guy. He could find it, fix it, or find the guy who could, and that talent netted him favors from the Blackhawk pilots flying between Iraq and Kuwait. On the sly he'd barter his welding skills to pilots in exchange for two Subway sandwiches from their runs to Bagdad. His superior turned a blind eye until he ordered KFC.

He had fun. Every day there were new people to meet and new things to learn. He learned how the Blackhawk worked and even flew it around base a few times, sat in a tank, and occasionally rode shotgun on some convoys in his dump truck. "Our first trip up there you see tanks firing off in the distance and all of a sudden its like 'cha chicht,' lock and load and put it on safety. I guess I am in a war zone. It was a reality check watching those tanks firing," he said. "I found out what a mortar can do when it hits beside you. It was pretty freaky."

In Iraq the convoy riders and regular army soldiers who work outside the wire are called cowboys. Friedt fits the image: tall, broad-shouldered, loose-limbed, the modern cowboy without much to tie him down.





Friedt was called up with only 48 hours notice. He barely had time to say goodbye, and no time to adjust, clean out his apartment or sell his car. His mom took care of mothballing his life in Fargo. She managed his finances while he was away and was waiting at the airport when he came home. He got his daughter a cell phone so they could better stay in touch. He missed his son's high school graduation.

He had 30 free days to start his life over when he got back: to find a place to live, a bed, a car, and get reconnected with his kids. Heading back to work at the campus heating plant where he is a boiler operator, his first thought was "Now I've got to remember everything." He missed the adventure and the adrenaline of Iraq.

Friedt continues to replant the roots of his life and gets a kick out of providing transportation and moral support for his daughter's athletic events. It is enough.

## CHRISTINA WEBER RESEARCH ON N.D. WOMEN VETERANS

Christina Weber wrote her doctoral dissertation on Historical trauma: The case of children of Vietnam veterans. She climbed the academic ladder from community college through a doctoral program in part because she escaped the pain of her childhood home by being an out-standing student.

Weber's father returned from the Vietnam War in 1969, angry and addicted. Home ceased to be a safe haven and became an unpredictable, even dangerous, jail as her father, hating all things military, refused to seek help from the Veteran's Administration and spiraled deeper into depression, anxiety, addiction, and abuse. It took twenty years for him to seek help and to be diagnosed with post-traumatic stress disorder.

But Weber has steel in her spine. Her own gifts and some perceptive teachers turned her attention to understanding her father's behavior. Today the NDSU sociologist teaches and conducts research on social memory and

trauma, particularly in relation to war and gender identity. She also teaches feminist theory, a research method that includes drawing on one's own experience as a source of scholarship.

Because of her research interests, Weber won a 2008 Larry Remele Memorial Fellowship from the State Historical Society of North Dakota to interview North Dakota women veterans returning from deployment in Iraq. Isolation is the most common reintegration pattern she's found so far. The stories she's collected show a harsher reality than is reflected in the other stories here. Her research and the scholarly paper published in the *Minerva Journal of Women and War* (vol. 2, number 2 - Fall 2008) include examples like this:

There is a woman who had to kill people in Iraq. At Iraqi bases and checkpoints, sharpshooters are required to be at the gate and, if the signal is called, that person has to shoot anybody who comes through. The officers pick the best shooters for that duty. She was a terrific shot. She had to fire her weapon and to see the human being she killed.

The woman is safely home from Iraq, but, as Weber's research predicts, is isolated and living the double life that big secrets create. She goes about her work pretending everything is fine and nothing really happened. She has no interaction with military people who might share her experience and her feelings. She wants people to know what goes on in war, wants to help others, but it's just too hard for her to tell. Yet, Weber says, when she finally starts the story she can't stop talking: "I had to kill. I had to."

This woman was diagnosed with post-traumatic stress disorder, placed on medication, and in the care of a psychiatrist. She talked to Weber on her doctor's advice because it was an anonymous way to tell another person what happened to her. So now two people know: the therapist and the scientist. Her husband doesn't know, even though he is also military.

"She said it was easier to tell me because I'm a stranger and I'll never see her again," Weber said. "But she doesn't want people to look at her and see her first as a killer. She doesn't think anybody will see her as anything else but that."

Grams found a way to blend his Iraq experiences and his focus on students at NDSU by helping to create the Student Veterans Association, which looks for ways to support students who are serving now and to train teachers to help with the veterans' unique issues in the classroom.

Knapper and Friedt are both trying to get on with their lives, one by healing herself and her family and the other through being content with the ordinary.

The women Weber meets are beginning to tell their truth.

A wide variety of research on reintegration issues confirms that every combat veteran, male or female, needs time and support to decompress, adjust, take it easy, and recover. It can take up to five years to fully recover, even longer for some.



Wearing the Hijab



# FOR THE FIRST TIME

ESSAY BY NAJLA GHAZI AMUNDSON

I was born and raised in Akron, Ohio, to Muslim parents from Aleppo, Syria. We lived in an upper-middle class suburb, predominately white and Christian. My parents had doctoral degrees. Dad was an engineer at a large company and mom stayed home with my younger sister, brother, and me. My parents spoke Arabic at home and we responded in English. Our family did not attend Mosque, we did not fast nor did we celebrate Muslim holidays. The women in my family did not wear hijabs. But I knew I was Muslim. My parents taught me that being Muslim was a way of life. I learned about my religion when I asked questions, when I listened to my parents converse, from the rules of our home and the choices I was taught to make. My religion was also strongly tied to my ethnicity. To be Muslim was to be part of the Arab culture.

I grew up during the 1970s and 1980s, during the overthrow of the Shah of Iran and the Iran hostage crisis. That's when Nightline first went on the air and Ted Koppel began each show with the number of days the hostages had been in captivity. Then the oil crisis. Neighbor kids would tell me my family should go back to where we came from and ask why my Dad didn't wear a rag on his head. Just as I emerged as a new television reporter, the first Gulf War erupted. My beat was the local Air Force base. Most of my reports focused on National Guard troops being shipped off to Iraq. Then, there was 9/11 and now we have the ongoing "War on Terror" making Arab and Muslim synonymous with terrorist and anti-American.

I maintained a particular identity and I guarded it heavily. As an elementary student, I didn't look like my blonde-haired and blue-eyed classmates, but I tried to appear like them as much as possible in clothing, hair, behavior, and talk. This emphasis on mainstream appearance hit a high in college when I represented my state in the Miss America Pageant. I also had chosen a career in broadcast journalism and became a well-recognized figure in my community as an evening television anchor. My position placed an emphasis on appearance.

As I saw it, the only way to relate the "I" to "we" was to blend into the dominant culture. So as I got older and gained more control over

my own decisions, I took the route of least resistance. I spent much of my life not discussing my religion, or even my ethnicity. My parents knew what I was doing and so did I. They never said anything. I am sure they were ashamed of my choices. But some things are difficult to talk about. I wasn't strong enough to be without a "we."

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## The DECISION

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The decision to wear the hijab and write an autoethnography came about quickly. I came up with the idea about a year ago, but decided the timing wasn't right. The night before the fall semester began, I was home with my husband, children and one of my friends, Anna (also a graduate student). I brought up the idea again and Anna enthusiastically encouraged me to follow through on it.

I wasn't so sure.

From an upstairs closet, I dug out a headscarf someone had sent my boys from overseas. I fiddled around with the black and white checkered fabric, trying to remember how I had seen others wear it. As I looked at myself in the mirror, I imagined what others would see.

I scanned Google for more information on hijabs. I wanted to know what it should look like. I had several scarves from the Middle East, but I thought they might be for men. I did not want to wear anything that would be unconvincing or worse yet, disrespectful.

I found a site called "Hijabs R Us," which made us laugh out loud. We scanned some other sites, awed by the hijab "fashion world." One site claimed it sold the newest trends in hijabs. Trendy hijabs? Who knew? They came in a dizzying assortment of colors, patterns and fabrics.

All I thought about that night was the following day. I wondered how long would I need to wear the hijab to get my study done.

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## WEARING the Hijāb

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I wore a hijab for eight days. It is 7:50 a.m. when I enter class. I look at my class for only a split second as I enter. About 12 of them look at me at once. There is a sense of surprise or

uncertainty in their eyes. But I can't look at them for any longer. I look down and don't look at them for at least eight minutes. Why can't I look? Why do I feel like I can't look rather than I chose not to look or didn't look?

I go to the board and write the day's list of activities. As I face the board I keep thinking about them looking at me. When I finish I take a quick count of the students and see that I still have several missing so I say we'll wait to start to make sure everyone can get here. My voice doesn't even sound like my voice. It sounds quiet and it almost cracks. When I finally begin speaking I am so careful not to add uhms or ahs. I don't want them to think I'm incompetent.

They are all smiling at me. Big smiles. Interesting. Do I have something on my face? Oh – I have something on my head. That couldn't be it, could it? Maybe they're relieved I don't have an accent? Wow, they really smile a lot.

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## COMMUNICATION Pāttērn̄s

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At least for the first two days I wore the hijab, there was a noticeable difference in my verbal and non-verbal communication patterns. I did not smile as freely as I normally would. I stood as though I was at attention. I did not use hand gestures often and I did not use the space in front of the classroom to walk around. I felt uncomfortable with eye contact.

My voice was monotone. I revealed little personal information except for the basics such as education and professional experience and some information about my family. In the past, I have revealed a lot about my personal likes and dislikes, my children, my dogs, my parents; you name it. I tell jokes, smile and really work at making the students relax.

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## POWER and Fēminīsm̄

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The tremendous anxiety I felt about wearing the hijab was soon replaced by a sense of power and control. I was making a statement. Through the hijab, I was shouting to others, "I am Muslim and your dominance does not make me fearful of you!" There was also a sense of respect that wearing the veil commanded. The ability to stand out as unique amid a sea of hegemony says I am fearless. I have the confidence and pride to show you who I am.

I took one of my first big ventures outside of campus with my mother-in-law. We went to a craft fair in a city park on a Saturday afternoon. I asked if she was OK going to the fair with me wearing the hijab. She said, "I don't care. I know who you are." So we went. Here I am, wearing this hijab at a craft fair. I mean, a craft fair is about as all-American, Midwestern as it gets. As I walked around looking at the folksy Americana looking stuff, I noticed that people would glance at me and then look away. But their diverted glances only made me feel more certain of myself. I felt a growing confidence in who I was and where I come from. People knew as soon as they saw me: I am Muslim. In many ways, it was a relief to finally come out.





Wearing the veil also left me feeling the burden of physical appearance had been lifted. The notion of woman as object rather than person is embedded in our cultural psyche. By covering myself I was uncovering my humanness. I could not be judged on physical appearance because there was nothing to see.

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## Hybrid IDENTITY

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I am part of a religious culture in spirit but I am physically separated from others who share my beliefs. I am part of an ethnic culture, but am one of the few Arabs living in my community. I am part of American culture but it is blended with the culture of my parents' country of origin. So what happens when your cultural background is not purebred? While my DNA is primarily Middle Eastern, my being is influenced by multiple cultures. I am Arab, American, Muslim, Liberal, Feminist, Mother, Daughter, Scholar, Writer, Journalist, Wife, and Friend. I feel connected to my ethnicity, my religion, my heritage, my family, and my career. I don't want to use the word "belong" here. Because belonging is subjective. One may be a member of a culture, but whether they sense a belonging to that culture or group can only be known to that person.

One particularly revealing illustration of this was a conversation I had with my eldest son, Zachary. He wanted to be taken to his seventh grade registration.

When I told him we could go he said, "Can you take that off?" He didn't think I should have to wear it to his school. I was wearing it to my school – wasn't that enough? After trying to persuade me to change my mind, he gave up. He said it was more important to him to find out about his classes than it was to be worried about what I was wearing. I asked him why he wouldn't want me to go with him like that. He said his friends would ask him all sorts

of questions – it would be the talk of the 7th grade for a while and he would have to explain it to EVERYONE.

I called his father and said, "Zach would like you to take him to orientation. Maybe you could come home early to do it today, or maybe tomorrow?" Zach began to sob.

He cried, "You are brave enough to go out with it on and I'm not brave enough to have you come with me to school! I feel bad. I am not ashamed of you, I just don't want my friends saying anything about you!"

I hugged him and said, "Zach – I know you are not ashamed of me. But this study shouldn't affect you." I told him, don't feel guilty about not wanting me to come to school. If this were a life-changing decision I was making, that would be different. We would need to deal with this. But, this isn't a life-changing decision.

Looking back on this conversation, I find it interesting that I thought of this study as not life-changing. In hindsight it really was life-changing. I didn't realize it then, but it has and will continue to affect the way I see myself. I am freed now to call myself a Muslim.

I briefly considered taking off the hijab for him. Peeling off one part of my identity to focus on another – but decided against it. What does this mean in terms of hybrid identities? Is it possible to be American, Muslim, Arab, all in harmony or is there something about the hierarchy in the American system that does not allow for that. Are we really a melting pot?

It is Sunday morning and my husband and I enjoy our weekly ritual of drinking coffee and reading the paper together.

My husband is of Norwegian descent. He was born and raised in northern Minnesota in a town of about 1,200 people. He does not like to draw attention to himself nor does he completely understand why anyone would want to. I know as we sit there, he wants to broach the subject of my hijab. I know he is curious, and perhaps a bit anxious about it.

"So ... When do you plan to take it off?" he asks.

"I'm not sure yet. Why? Does it bother you?" I ask.

"Well. I suppose not. I'm just wondering when you'll be done."

I decide to step up the conversation a notch. Something I tend to do, and something he tends to dislike.

"Well, how would you feel if I chose to do this forever?" I say.

He blinks slowly and looks at me knowing what I am doing.

"I think we would need to talk about that," he says calmly.

"So, you wouldn't accept me as a Muslim woman?"

"I married a Muslim woman, but I didn't marry someone who wears a veil. There is a difference."

So, symbolically, the hijab does much more than simply state "I am Muslim."



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## Epilōgē

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Several weeks after my study, I was listening to one of my favorite morning radio shows. One of the hosts made a racist comment about the Muslim religion. I was so bothered by it, I turned off the radio and vowed never to listen again. Now, the “old me” (the one prior to wearing the hijab) would have left it at that. That would have been my contribution to the situation: To get angry and to do nothing. If I did something, it would mean revealing my religion. I got to my office and couldn’t work because I struggled with the question, “What will you do with your privilege?”

I knew what I had to do.

I wrote an e-mail to the radio host and explained that his comment disappointed me. I said, I am a Muslim and I know we are all not like the comment you made.

I have never made it known I was Muslim. I knew that by telling the host of a radio morning show, it would possibly come out the next day in a way that might not be favorable.

Instead, I received a lovely e-mail back that said he had made a mistake and he would talk about it on the show the next day. He did not want to perpetuate generalizations.

That was a huge step for me. Wearing the hijab has connected me with my religious and cultural identity. I feel more part of the “we” even though distance separates me from others who are like me. I feel more at peace with the mix of identities that make me who I am. This increased comfort has also created a new desire to continue making connections to my heritage. I have taken an interest in learning Arabic. I hope to have my father take my boys to the Mosque. I have made mental plans to attend a wedding in Syria next summer. I hope to take my two older boys with me.

My feeling of vulnerability lessens each day. Today, rather than continually suppress the subordinate parts of my identity, I let them be fluid and free. My identity is still in motion and I expect it always will be.

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