

UMaine Today

CREATIVITY AND ACHIEVEMENT AT THE UNIVERSITY OF MAINE

NOVEMBER/DECEMBER

2004

It's personal

Just how far will
information gathering go?

**Trust or
consequences**

**Listening to
shipwrecks**

**In the shadow
of wildcats**



From the President

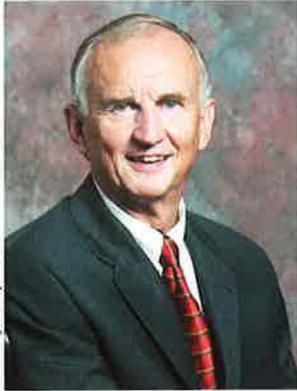


Photo by Kathy Rice

DISCOVERY IS THE ESSENCE of higher education institutions like the University of Maine. It's at the heart of our basic and applied research, and inseparable from the academic and experiential learning that goes on in and out of classrooms and laboratories. To discover is to encounter the unexpected, to find new ways of thinking about the world, to contribute information that expands our understanding, and to explore who we are as people and a society.

As such, discovery is much more than the euphoric, culminating "aha" moment. It is a dynamic, ongoing process that can take years to develop and, in the end, may or may not yield tangible results. Yet we must keep asking the ques-

tions and seeking answers to what we do not know.

In this issue of *UMaine Today*, as in so many others, members of the University of Maine community demonstrate the importance of discovery and the creative thinking it takes. In each case, their research and educational activism push us back to the basics, begin to answer long-held questions and urge us to consider other perspectives.

For example, research by Ph.D. wildlife ecology student Angela Fuller and professor Dan Harrison involves backtracking in order to better understand the elusive and threatened lynx. Marine archaeologist Warren Riess undertakes a similar process, taking a step back in time by exploring shipwrecks in an effort to contribute to our understanding of the past.

Philosopher Jessica Miller's research goes back to the basic, yet often unfathomed tenant of trust that has far-reaching social implications. With his knowledge of the latest advances in information technology, spatial engineer and lawyer Harlan Onsrud is involved in ongoing inquiry about its capabilities and limitations. In Cooperative Extension, a youth program dares to question, then re-envision, society's long-standing definition of beauty.

And then there's Linne Mooney. In her more than two decades of scholarship devoted to the study of medieval manuscripts, she has compiled a database of more than 200 scribes who were working in England from 1375–1425. Mooney also is one of the pioneers in using computer technology in manuscript research. This year, she made headlines around the world with a classic "aha" moment — identification of the scribe who wrote for Chaucer.

Discovery. It's what we're about at the University of Maine.



Robert A. Kennedy
Interim President



ON THE COVER: Advances in information technology have increased personal data compilation capabilities — and privacy concerns. Today in this country, there is no broad right to control or limit personal information collected by others. As a result, more than ever, personal information on individuals is reaching the public domain. The quandary is how to keep the control of a person's private information in the hands of that individual, says National Research Council committee member and University of Maine Professor Harlan Onsrud. Onsrud explores issues related to personal information security in the story "I Spy," beginning on page 12.

Photo illustration by Kathy Rice and Valerie Williams



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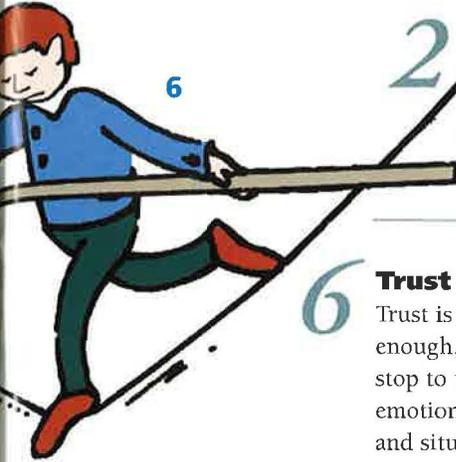
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Following Lynx

Angela Fuller has spent two winters tracking the threatened wildcat in an attempt to learn more about the habitat it needs to survive.

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Trust on the Line

Trust is what we do everyday. What we don't do enough, says UMaine philosopher Jessica Miller, is stop to understand the basis for the complex emotional attitude that we use to interpret people and situations.

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Marine archaeologist Warren Riess has been exploring and documenting shipwrecks for three decades. He recovers historical data — like evidence of advances in shipbuilding technology — to paint a clearer picture of early-American merchant trade.



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I Spy

Legal scholars and technology analysts are scrambling to find a balance between ownership of one's personal data and high-tech information-gathering capabilities. Privacy and an effective marketplace are at stake.

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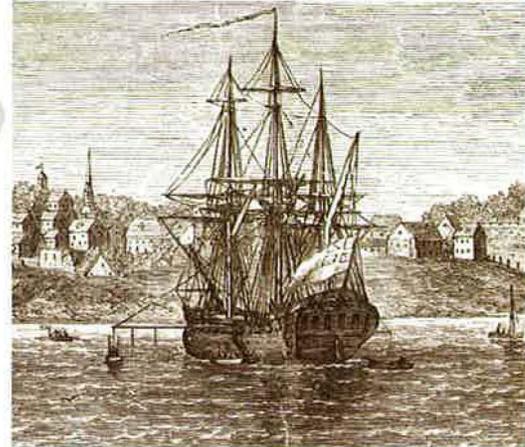


Image 800108: "New York in 1776." Picture Collection, The Branch Libraries, The New York Public Library, Astor, Lenox and Tilden Foundations

Finding Adam

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Finding Adam

For centuries, the identity of the scribe who worked for Geoffrey Chaucer and who wrote the earliest existing versions of *The Canterbury Tales* has remained a mystery. Until now.

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In Maine, there's a movement to Turn Beauty Inside Out. As a result, teens are learning a new definition of beauty: good hearts, great works and activism.



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for the University of Maine's daily news update and for the online version of UMaine Today magazine.

Tracking the elusive cats to learn their habits and habitats will inform species recovery and forest management practices

Following Lynx

By Nick Houtman

BUSHWHACKING THROUGH the Maine woods in winter is no picnic. Snowshoes are required, but deep powder can hide downed trees and layers of ice that make the going treacherous. Moreover, snow can pile atop dense stands of small conifers, creating hard-to-see holes deep enough to swallow the unwary traveler. Short days limit the daylight hours. Temperatures are often below zero.

None of this has stopped Angela Fuller. For the last two winters, the University of Maine Ph.D. student in the Department of Wildlife Ecology and a crew of wildlife technicians have strapped on their snowshoes, packed a lunch and put monitoring equipment on their backs to track one of Maine's most elusive forest animals, the Canada lynx (*Lynx canadensis*). Their goal is not to observe lynx directly. (In fact, Fuller has never seen a lynx in the course of her fieldwork.) They want to understand how lynx move through different types of woodlands

and what they need to hunt their favorite prey, the snowshoe hare.

The lynx is a tawny-colored wildcat, just under three feet long from tufted ears to stub tail. In the U.S. outside of Alaska and Hawaii, it is listed as threatened under the federal Endangered Species Act. The size of the American population is unknown, according to the U.S. Fish and Wildlife Service, but during colonial times in the East, lynx were reported from Pennsylvania to Quebec. Maine had a bounty on lynx that was not repealed until 1967.

Today, Maine is considered the species' southern limit, although lynx have been seen in New Hampshire. Larger populations exist in Canada and Alaska, where they are hunted for their fur. Researchers also monitor lynx in Minnesota, Montana, Idaho and Washington.

Lynx research takes Fuller and her crew into northwestern Maine, not far from the Canadian border. On a typical day, they are



up well before dawn to drive 20 miles to a logging road. As the sun breaks over the horizon, they fire up snowmobiles and turn on radio telemetry equipment. They head down logging roads where they listen for the telltale beep of a nearby lynx in their receivers. Their goal is to get close to one or more of the animals that state and federal researchers have outfitted with radio collars.

Once a lynx is located, the researchers zero in not on the animal itself but on its tracks. They follow the tracks back in the direction from which the animal came, studying how forest characteristics might have influenced its movements.

"We have a general idea where the lynx are located, but they can move around a (home range) that's 20–55 square kilometers

(8–21 square miles). So we're traveling on a lot of roads to figure out where it is. We want to find it as soon as possible, because then we have to walk in on snowshoes to

where we pick up the tracks. And that's where we actually start our work," Fuller explains.

Her research is of interest to federal agencies that are developing a national recovery plan for lynx, and to forest landowners who are increasingly driven by environmental objectives.

"Fuller's work is a key piece of research that will help us to better understand the ecology and management of lynx in the Northeast," says Mark McCollough of the U.S. Fish and Wildlife Service, which has funded Fuller's work. McCollough, a UMaine graduate, represents the Northeast on the national committee devel-

oping the recovery plan.

"It's possible that forest practices have increased the number of snowshoe hare in Maine and, thus, lynx. But forest management practices change. There's no guarantee that we'll continue to manage the woods like we do now."

Angela Fuller

Fuller has already contributed to the planning effort. Part of her UMaine master's degree research focused on the abundance of snowshoe hare in forests managed using partial harvesting methods."She found that hare are less abundant in partially harvested sites than in the dense, new growth of regenerating clearcuts. The implication, says McCollough, is that clearcutting is desirable at some level if forest managers want to provide habitat for hare and lynx.

Other organizations that conduct or support lynx research in Maine include UMaine's Cooperative Forestry Research Unit (CFRU), which provides Maine forest landowners with science-based management information. Since 1999, the Maine Department of Inland Fisheries and Wildlife has been studying lynx with a focus on habitat and population status. The Nature Conservancy and the Maine Agricultural and Forest Experiment Station also provide funding for Fuller and other scientists.



A forest research partnership

FOR ALMOST 30 YEARS, Maine forestland owners have had a direct pipeline to the science that matters most to them via the Cooperative Forestry Research Unit (CFRU) at the University of Maine. From spruce budworm and wood supply assessment to nutrient cycling at harvest sites and biodiversity, CFRU's efforts help landowners address the difficult questions that they face day in, day out.

CFRU is one of the country's oldest research partnerships between forest landowners and a university. When it was established in 1975, it was guided by a broad vision linking forest industry concerns to scientific resources at UMaine. Early projects addressed silviculture methods, insects and economics.

Today, under the guidance of Robert Wagner, director and UMaine professor of forest ecosystem science, the focus has evolved to address new issues affecting sustainable forest management — looking at the whole forest and all of its biological riches. Studies of American marten, snowshoe hare and Canada lynx are leading to forest management practices to protect these species, enhance forestland values and provide timber for the forest products industry.

Two long-term CFRU-supported studies at Austin Pond and Weymouth Point have documented the effects of management practices on tree growth and the environment. They are among the longest-running projects of their kind in North America, providing crucial information to guide sound management of northern forests.

Hundreds of CFRU technical reports and other publications can be searched online (www.umaine.edu/cfru/).

Biologists estimate that Maine's lynx population is in the hundreds and growing, although its true size is not well known. If lynx are indeed expanding their population in Maine, it may be a relatively recent phenomenon, one that could be a result of an abundance of snowshoe hare or the ways in which forest owners have been managing their lands, Fuller adds.

As a master's student, Fuller, who grew up in Colchester, Vt., worked on a landmark study of another northern forest mammal, the American marten. Marten are smaller than lynx, and their trails frequently snake under logs and downed trees.

Today, Fuller's Ph.D. project is one of several lynx research efforts advised by UMaine Professor of Wildlife Ecology Dan Harrison. Under Harrison's guidance, students are evaluating habitat relationships of lynx and snowshoe hare in the managed forests of northern Maine. Since coming to Maine in 1988, Harrison has lead a program focusing on predator-prey relationships in forest ecosystems, as well as interactions among species such as the Eastern coyote, bobcat, fox and wolf.

Fuller's winter tracking begins in January. She and her crew live for three months at a time in a logging camp owned by Clayton Lake Woodlands in Aroostook County. Their duplex cabin includes shower and kitchen facilities. "It's kind of posh compared to what I was used to on the marten project," where months were spent living in a trailer with no running water or electricity, Fuller says.

When it comes to tracking lynx, gender matters. Male lynx are typically easier to follow — and for longer stretches — because they tend to stick to trails and open areas, Fuller says. Females with kittens like patches of dense vegetation, and tracking

them can mean crawling through blow-downs and thick brush.

"I have never seen a lynx when we're tracking, only ones that were trapped (as part of state and federal research studies)," she says. "Two of the technicians saw one off on a side road from the main logging road. When they heard the telemetry signal, they waited at the intersection behind some trees. The lynx came walking straight toward them. It sat, scratched itself, rolled in

the road and urinated. They got to watch it for a long time. They were really excited. It ended up walking right by them."

Crew members get to the heart of Fuller's research as they work along the track, establishing small plots to survey vegetation every 325 feet. In each, they painstakingly count the trees and saplings of different species, estimate average tree height and the density of tree canopy. They also take a basal measurement of tree trunks in a cross section of the plot.

Relating vegetation to lynx behavior means thinking like a lynx. "When you're following the tracks, you have to think backward in terms of how (the lynx) was making decisions. I'm trying to figure out if lynx are selecting similar vegetation as snowshoe hare. Or are they located in areas that have high snowshoe densities?"

The crew records areas where the lynx might have stalked a hare, rested briefly or slept overnight. They note the tracks of other animals that crossed its path, as well as the twists and turns of the lynx.

Places where the lynx killed a hare get special treatment. "Sometimes it takes time to figure out where the lynx came from, where it ended up and what happened in between. How long did the chase take? Was the lynx bounding or jumping? Was it in an open area when it killed the hare and then

"Fuller's research will help landowners understand how their forestry practices influence this elusive cat. Better scientific understanding about the animal will help landowners respond to government and public concerns about how their actions influence the lynx."

Robert Wagner



Photos courtesy of Angela Fuller

dragged it into a more closed canopy area? I'm measuring all these things," says Fuller.

Fuller once watched from a plane as a lynx stalked a hare. "You'd think it would capture and kill immediately. But hare are very fast and more efficient than lynx at going through dense vegetation. The hare came out of the vegetation and the lynx slowly stalked it. The lynx never had a burst of speed until that final moment when it was actually going to kill. It conserves its energy until it knows it can finally reach (its prey)."

Although scientists know little about most aspects of lynx reproduction and behavior, the predator-prey relationship between lynx and snowshoe hare has been thoroughly investigated. Population cycles of the two species are closely linked. Researchers in Canada have recently suggested that if a changing climate alters the balance between lynx and hare, other changes could ripple through northern forest ecosystems.

For Fuller, the ultimate question comes down to how forest practices such as selection harvesting, clearcutting and pre-commercial thinning affect that balance.

"It's possible that forest practices have increased the number of snowshoe hare in Maine and, thus, lynx. But forest management practices change. There's no guarantee that we'll continue to manage the woods like we do now.

"What's important is long-term planning for forestry — thinking about how the landscape composition will change through time, the placement of different cuts, juxtaposition with mature forest — and how, on a landscape scale, that will affect different species." ■

Angela Fuller uses radio telemetry to find lynx tracks and a global positioning system (above) to record the location of tracks and vegetation plots. She and her team strive to understand how lynx move through different types of woodlands and hunt snowshoe hare.

Trust

When it's on the line, it can undermine social justice and equality

By Margaret Nagle

AT A PROFESSIONAL CONFERENCE, a hospital emergency room doctor tells colleagues that he examined a child with head trauma and suspected child abuse because the baby's parents live in a trailer and the father has a tattoo.

In another part of the country, a department store employee calls security when a 17-year-old African-American girl, who was waiting for friends near a cosmetics counter, leaves the store. Despite finding that she did not shoplift as suspected, the store presses charges because the teen sampled a trial-size bottle of lotion, which then spilled. As reported by the *Buffalo Evening News*, the girl was arrested for "intent to damage," a misdemeanor. She was ordered to pay \$22.50, sentenced to six months' probation and required to attend shoplifting school.

A patrolman in Rhode Island tails a car with Missouri license plates for a mile before pulling it over for not having a Rhode Island inspection sticker. When the man of Cape Verdean (West African) descent asks if he was pulled over because of his race, the officer responds by demanding to see his license, registration and proof of insurance. According to the Associated Press, the driver could not immediately find the documents in his sister's car until he called her

on his cell phone. The driver showed the officer the requested materials, but was still issued a ticket for not having registration or proof of insurance. The American Civil Liberties Union is representing the driver in his racial profiling lawsuit, now in federal court.

Call it racial profiling. Prejudice. Discrimination. But what's often overlooked in such all-too-common scenarios in today's society is the issue of trust. In this case, it's the extent to which being distrusted by those in power can affect people's lives, says philosopher Jessica Miller, who has spent the past decade studying the value of trust and distrust in interpersonal relationships.

"Being marked as untrustworthy by people who have some control over you is not only morally debilitating, but has real economic, political and social effects," Miller says. Learning that you are so distrusted is likely, in turn, to affect your ability to trust those authorities.

Trust is what humans do every day. You either trust a person or a situation, or you don't. For most of us, it's that simple.

It's when you try to define trust that the complexity and importance of this moral action becomes clearer. One commonly held view among social scientists is that trust is about calculating the probability that a person will cheat you. It is a simple matter of trying to figure out if it will benefit someone more to cooperate with you or cheat. With this definition, you trust when you think it will pay.

But according to Miller, such a "strategic view" is missing a critical criterion — the nature of the relationship between or among the trusting and trusted parties. What's needed is recognition of the context and the basis for our attitudes of trust and distrust — the many factors that inform our moral attitudes and the way we see people.

"Some look at trust as a behavior or a belief," says the University of Maine assis-

tant professor of philosophy.

"My view is that trust is a complex emotional attitude, a kind of a frame for looking at or interpreting a person, situation or event."

By reflecting on frames of trust and distrust, we can question our face value of people. Indeed, with better understanding of the dynamics of trust and distrust by members of different social groups in an inequalitarian setting — especially between a subordinate group and one that is controlling — societal and cultural underpinnings can be reexamined and reinterpreted to help ensure they don't undercut social justice and equality.

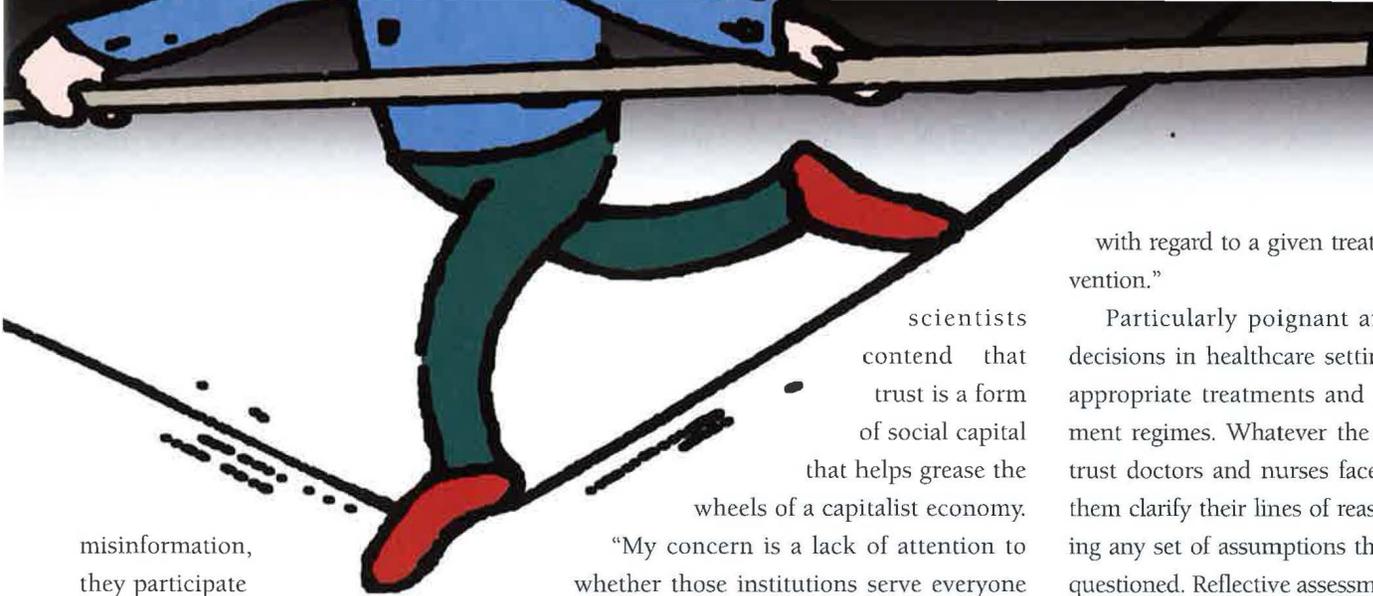
"Trust and distrust are moral categories mediated through complex social arrangements. Thus, they have the power to cement or change those relations," Miller says.

TRUST, ACCORDING TO MILLER'S definition, is an interpersonal, moral phenomenon. When we trust someone, we hope for an absence of ill will and a benevolent response to our expectations. When there is trust, there is a feeling of optimism.

Ironically, we often don't recognize the depth of our subconscious trust — and what we explicitly want the trusted someone to do — until our trust is betrayed. The very act of trusting disguises our vulnerability to others and makes it possible to cooperate in risky ventures.

"Many of our morally weighty expectations in others are encoded in our trust of them, not in explicit agreements like contracts and promises," she says. "Most people have a pretty good sense that trust is very important in their lives. Without trust, people would have trouble getting out of bed. It's fundamental to human life."

Being the object of distrust can prevent people from realizing their full human potential. When authorities distrust people on the basis of stereotypes and



misinformation, they participate in a kind of moral debilitation, says Miller, whose current research project focuses on distrust of drug abusers.

Miller cites the example of the drug addict who goes to his doctor for relief from nonmalignant pain. "To assume at the outset that that person is not telling the truth and is not in pain is to silence him in a way that stunts his ability to do what's needed to become healthier," she says. Another example is distrust of drug-using mothers in prison: "When social workers don't communicate clearly the options for reuniting mothers in prison with their children, the women make choices that don't always reflect their true desires."

On a larger scale, lack of trust has far-reaching societal implications. The enforcement of drug laws in this country reveals a certain distrust of young African-American males, says Miller. Distrust in the form of racial profiling also is clear in the targeting of Arab-Americans under the Patriot Act. Often distrust is rooted in entrenched cultural figurations, such as the "young black man" and the "welfare mother," which both foster and result from distrust of African Americans, the poor and women.

"In the United States in particular, there's a lot of talk about eroding bases of trust. Many researchers are investigating the question of whether trust has declined in our major institutions like church, government and Wall Street. Those social

scientists contend that trust is a form of social capital that helps grease the wheels of a capitalist economy.

"My concern is a lack of attention to whether those institutions serve everyone equally well. Trust is a social good that is not always fairly distributed," she says.

Miller asks: What are your expectations of others — social workers, friends, lovers, police, physicians? "If you want to know the obligations or virtues somebody is supposed to have, look at whom they're trusted by — and with what," says Miller, who is writing a book on the philosophy of trust.

IN HER RESEARCH, Miller "follows the thread of trust" in practical, ethical issues. The goal is to be reflective about our current moral understandings, especially the theory of trust and how trust relationships actually work. She is among a group of feminist ethicists reviewing, rehabilitating and revisiting the importance of trust to our moral lives.

Miller also is a clinical bioethicist, who conducts grand rounds (formal presentations) on ethics at Eastern Maine Medical Center in Bangor, Maine, and at other healthcare facilities in the state.

"The moral goal of bioethics, and of ethics in healthcare more broadly, is to delineate the moral responsibilities of healthcare providers in increasingly complex clinical and research settings," notes Miller in her most recent paper on mutual trust in the physician-patient relationship.

"A physician's view of the reasonableness of trust in a particular patient is affected not just by his or her relationship with that patient, but also by what is going on institutionally, professionally, legally and politically

with regard to a given treatment or intervention."

Particularly poignant are end-of-life decisions in healthcare settings, including appropriate treatments and pain management regimes. Whatever the quandaries of trust doctors and nurses face, Miller helps them clarify their lines of reasoning, including any set of assumptions that needs to be questioned. Reflective assessment is key.

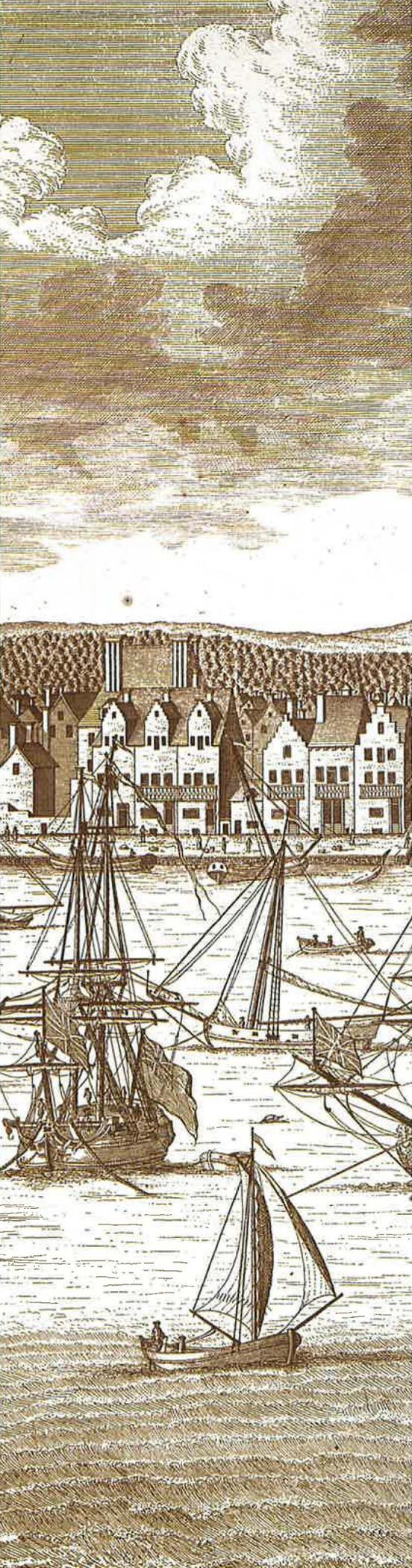
"Doctors and patients don't deal with each other in a vacuum," Miller says. "Institutionalized trust and distrust need to be brought to light in order to reflect on and assess healthcare practices."

The same can be said for any of our daily interactions with others. As part of popular culture, the media promotes a climate of distrust in major institutions. At the same time, we live in an era of increased specialization (i.e., the family physician versus specialists) and technological advancements (i.e., e-mail versus face-to-face communication) that decrease opportunities to form intimate, trusting relationships.

The fact is, we increasingly are forced to put our trust in more and more strangers in order to live. "On any given day," Miller says, "dozens of our interactions are facilitated by trust: leaving children at daycare, getting a haircut, giving the housesitter the house keys, sharing gossip or worries about the boss at work, giving the gas attendant a credit card.

"The attitude we take toward unknown others is often not just a matter of individual psychology. Rather, it reflects clear cultural patterns of representation, some of which are morally questionable or even morally malignant."

What's needed, argues Miller, are ways to "re-align the social fault lines" of trust and distrust. Through new, unconventional moral understandings, action can be taken against behaviors, systems and policies that undercut social justice and equality. ■



Remains of the day

Marine archaeologist Warren Riess
recovers history in the centuries-old shipwrecks
of the great galleons, schooners and merchant vessels

By Nick Houtman

IN A CHANCE MEETING on a pier at Maine's Fort William Henry State Park in 1991, two young scallop divers told marine archaeologist Warren Riess about some lead ingots they discovered on the sea floor near Pemaquid Harbor. They had even tested the soft metal with a dive knife, but the bars were too heavy to lift out of the mud. And, unfortunately, the divers were no longer sure of the exact location.

For Riess, news of the ingots was a tantalizing lead; it could have been a real break in solving a more than 350-year-old mystery. For 14 years, the research associate professor of history at the University of Maine's Darling Marine Center in Walpole, Maine, and scores of colleagues have been looking for the remains of a 17th-century English galleon, the *Angel Gabriel*, which had gone down in or near the harbor in a hurricane in 1635. If true, the ingots find was a glimmer of hope. Merchant records indicate that the *Angel Gabriel* had carried lead on previous voyages, although the ship's manifest for her fateful trip to Pemaquid has never been found. Up to that point, Riess and his colleagues had searched in vain.

During subsequent scuba dives, they kept an eye out for lead ingots. They even considered using a metal detector and resurveying areas, but time and money were against them. To this day, the location of the lead and other evidence of the shipwreck remain the stuff of legend.

This much is known: The ship carried supplies and settlers bound for Pemaquid, England's northernmost outpost on the New England coast, Riess says in his 2001 book, *Angel Gabriel: The Elusive English Galleon*. The ship's arrival, which would have been cause for celebration, turned to tragedy when the vessel was hit by the storm within hours of anchoring in the harbor. Most of the passengers made it to safety, but most of their belongings were lost.

Today, the *Angel Gabriel* is one of the more than 800 shipwrecks of vessels 40 feet and longer known in Maine waters — historical treasures now fading into obscurity. Historians know they're out there, somewhere, but time is running out.

A 1719 engraving, "A South Prospect of Ye Flourishing City of New York in the Province of New York in America," illustrates the prospering shipping industry. A ship similar to the , unearthed in New York City by maritime archaeologist Warren Riess, is on the right (center of the page).

Image 54699: John Harris after William Burgis. Print Collection, Miriam and Ira D. Wallach Division of Art, Prints and Photographs, The New York Public Library, Astor, Lenox and Tilden Foundations



Remains of the day

Studying shipwrecks is risky business. Although archaeologists work to preserve the past, says Riess, who has led more than 29 such research projects in the Northeast, the act of retrieving artifacts is, in itself, a destructive act. That's especially true the longer wrecks remain submerged. "You can save the artifacts, but the shipwreck is gone. You have to be very, very careful in what you do," Riess explains. "Imagine reading a collection of letters from Thomas Jefferson to George Washington and having each one fall to dust as you turn a page. You had better be asking a lot of questions."

RIESS HAS SPENT much of his 30-year career studying archaeological sites on the sea floor. He investigated a Roman merchant vessel in the Mediterranean and directed a study of the *Nottingham Galley*, a British shipwreck in the Gulf of Maine, raising its nine cannon and other artifacts. For his Ph.D. at the University of New Hampshire, he studied the *Ronson*, an early 18th-century merchant vessel discovered in New York City two blocks from the East River in 1982. He arranged to have the bow of that ship preserved at the Mariners' Museum in Virginia.

Such nuggets of the past are a far cry from typical treasure hunting for riches, but for historians, they are just as exciting. They can reveal details about people's daily lives, the dynamics of trade and the technologies that influenced the balance of power between nations.

Marine archaeology is a young science whose methods were developed in the 1960s and '70s from the work of George Bass, Richard Steffy and others at the Institute of Nautical Archaeology (INA) at Texas A&M. It was there that Riess completed his master's

work, tracking the history of the *Angel Gabriel*. He also participated in an INA excavation of another colonial-era ship, the *Defence*, near Stockton Springs on Maine's Penobscot Bay. Many of the thousands of artifacts from the *Defence* are now in the Maine State Museum.

Riess and his colleagues approach a potential site by asking questions about its historical significance. They look for documents in historical societies and seaports. They talk with locals living near the shipwreck site and, if possible, descendants of the ship's passengers.

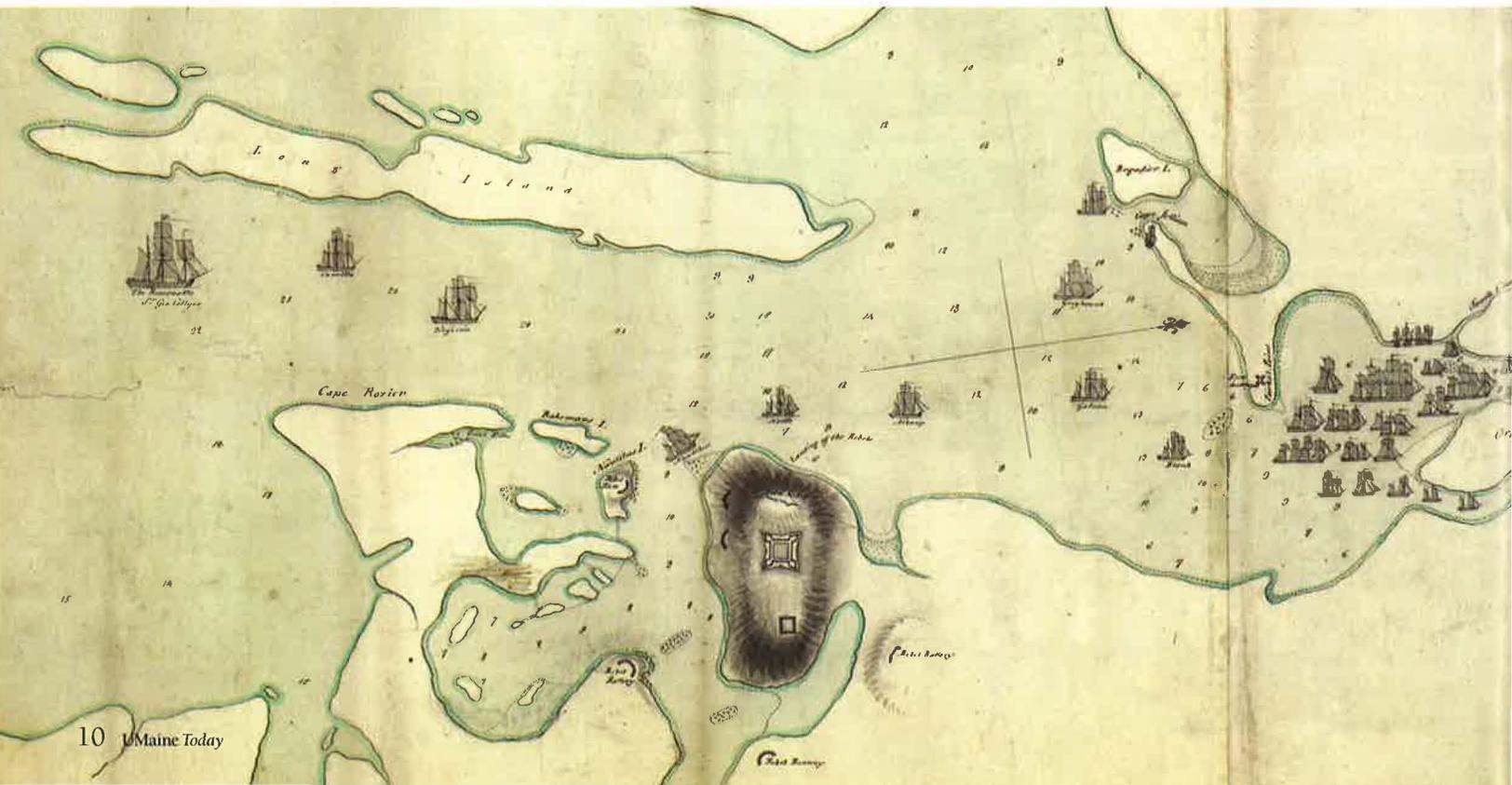
Since conservation is important, they go to great lengths to plan for the care of significant artifacts — wooden and metal pieces that deteriorate quickly once moved from their saltwater resting places — before they even start surveying. More than half the budget for a typical project can be spent on post-excitation treatment.

Once underwater investigation begins, risks range from the many dangers associated with scuba diving to the ultimate frustration — failure to find the ship. Underwater visibility at some sites can be near zero, requiring divers to feel their way along the bottom.

High-tech equipment such as a magnetometer and side scan sonar towed through the water can turn up everything from old lobster traps to engine blocks and discarded cable. If shipwreck remains are located, lying in waters as much as 100 feet deep off the Maine coast, divers must lay out a carefully marked plot, just as they would with archaeological digs on land. Underwater excavations can last many years; scientists need to know how finding a ship might illuminate important gaps in their knowledge.

"You have to ask yourself," says Riess, "whether you want to spend the next 10 years of your life on this project."

For Riess, the *Angel Gabriel* with its cargo of much-needed



supplies for an English outpost is one such project. Another is the Penobscot Expedition, a string of shipwrecks in the Penobscot River near Winterport, Maine, that constituted America's worst naval defeat before Pearl Harbor.

IN 1779, 40 ARMED American ships sailed into Penobscot Bay to challenge the British at Castine. When attacked by a British naval squadron, the American fleet, crewed largely by volunteers, turned upriver. The British captured about 10 vessels; to avoid the same fate, sailors scuttled and burned the remaining ships.

Often, in the course of investigations, tips from recreational divers and fishermen can prove invaluable. So it was with the expedition. After Riess began his investigation, a newspaper story about the search led to a call from a local diving instructor.

"He told me, 'I know where one of the ships you're looking for is located. I'm quite sure.' So we met him down on the pier the next morning, and I rolled out my maps. I showed him what the magnetometer had picked up so far. He saved us a lot of time and effort."

Archaeologists from the U.S. Naval Historical Center's Underwater Archaeology Branch are now working on the expedition. They recently excavated another ship at what is known as the Phinny Site on the Penobscot River.

In the past year, Riess has focused on a question about British colonial history: What led to the dramatic reduction in trade costs during the early 18th century? The question is important because it can help to explain the expansion of European colonial power during this period. The *Ronson*, the only existing example of a trading vessel from that era, may provide answers.

Named for Howard Ronson, the owner of the modern-day building site on which the old hull was found, the ship was a three-masted ocean trader about 100 feet long, 26 feet across the beam and capable of carrying at least 200 tons. Riess has found documents of five ships built on Chesapeake Bay around 1730 that appear to match the dimensions and age of the *Ronson*.

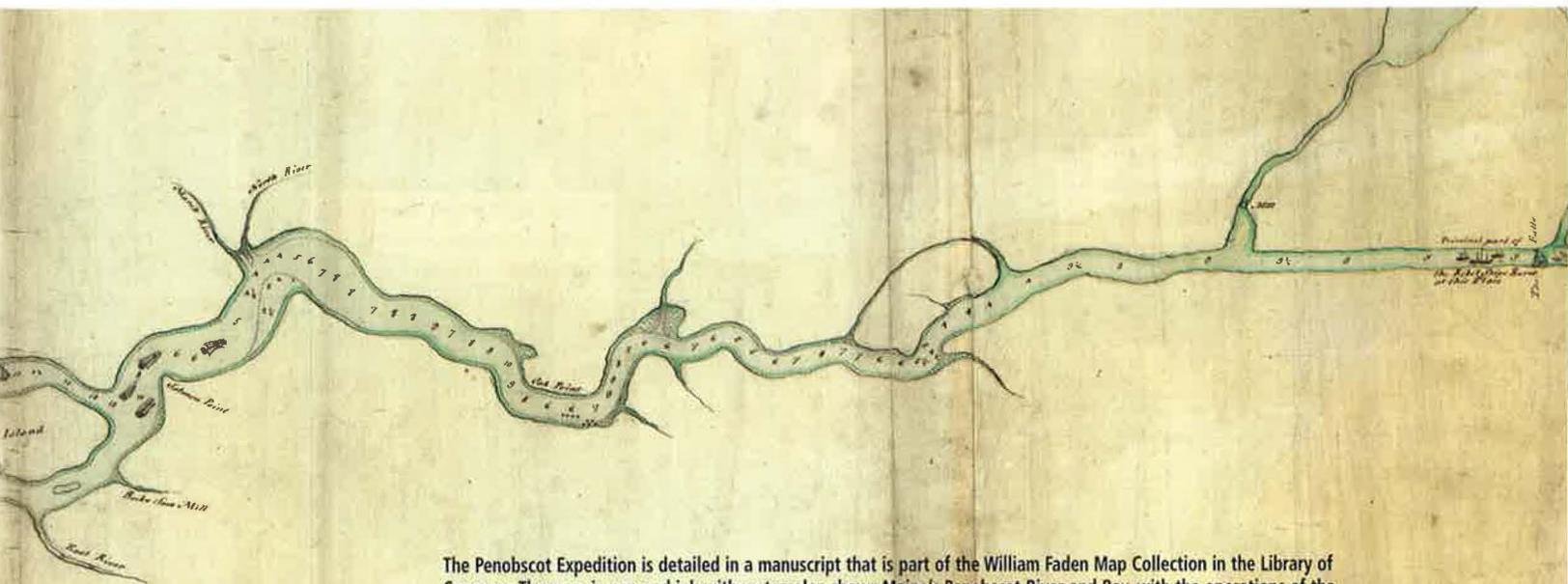
Last summer, with assistance from Bowdoin College junior Carrie Atkins, Riess continued his investigation. Using detailed drawings made during the 1982 excavation of the hull, Atkins built a scale model to test a theory about the ship's design. Riess thinks that the British combined the midsection of Dutch merchant ships with English designs for the bow. Computer modeling tests run in 1993 by Walter Wales, a UMaine mechanical engineering student, confirmed that such a ship would have had increased stability in the water, thus requiring fewer crew members to respond to wind shifts.

"Labor was the biggest part of shipping costs," says Riess, "and the larger hold would have carried more cargo."

Ship technology was one factor in the economic development of the growing British empire, says Riess. Equipment and cargo carried on merchant vessels and ships of war also provide glimpses into people's day-to-day lives. Riess recalls the thrill of finding a medicine cabinet on the *Defence* while he was feeling his way in murky water.

"I remember the feeling when I realized it still had all the bottles — two still containing their medicines," he says.

"I think of myself as a historian who uses the archives and archeological information to understand how technology influenced coastal and international trade, shipping and warfare. Those come together in ships as key information (about colonial history)." ■



The Penobscot Expedition is detailed in a manuscript that is part of the William Faden Map Collection in the Library of Congress. The map, in pen and ink with watercolor, shows Maine's Penobscot River and Bay, with the operations of the English fleet, under Sir George Collyer, against the division of Massachusetts troops acting against Fort Castine, August 1779. River depths are shown, with "full soundings" almost to Bangor. Forty armed American ships sailed into the bay to challenge the British at Castine. When attacked, the American fleet, crewed largely by volunteers, turned upriver. The American sailors scuttled and burned 30 of the ships to prevent them from being captured.

Image courtesy of the Library of Congress, Geography and Map Division



I SPY

How do you keep personal information private amid ever-increasing information-gathering capabilities of new technologies?

By Nick Houtman



Z. Wakanowa, 40, commutes one hour daily, has lived in six cities in last four months.

J. Sole, 45, twice married/divorced, never voted, reads tabloids.

T. Jackson, 37, buys cigarettes online, goes skydiving.

S. Tyler and W. Stan, rendezvous weekly at Starbucks, jointly own property in Maine and California.

H. Rampart, 30, single, plays violin, donates to right-wing politicians.

EVERY DAY, WITH A PHONE CALL, a click of a mouse, or a beep of an automatic teller machine, Americans give away more personal details about themselves than ever before. From our buying habits and financial status to our children's names and the books we read, information once considered private has become part of a digital data mecca for businesses and government.

Increasingly, corporations use personal information databases to target marketing activities, calculate insurance risks, manage employees and make loans. Government agencies that traditionally collect data to ensure that we keep licenses current, obey the law and pay our taxes are now under pressure to expand their information-gathering activities in the wake of 9/11. Controversial examples include an airline passenger database, face recognition software, and the Pentagon's Total Information Awareness project.

Just how much private information is really available? Today, for a fee, Web sites will search databases that include real estate records, voter registration, phone records, magazine subscriptions and changes of address. Sites promise to find cell and unlisted phone numbers, peruse military records or "find the dirt" in criminal files.

Wait a minute. Is this really legal? Can't individuals control the accumulated details of their own lives? Although the United States has a

tradition of protecting many individual freedoms, says lawyer Harlan Onsrud, there is no broadly encompassing right to control or limit personal electronic information collected by others. The playing field is thus tilted in favor of those who collect and sell such information as though it were a commodity like grain or pork bellies.

The issue is complicated by a tradition of openness in American society. Access to information, some of it personal, is a hallmark of the court system, media and local government. Even in our public libraries, people have free use of the books, CDs and videos; it's also in these hallowed halls of information access that many librarians have taken a stance against opening their lending databases to scrutiny in the name of homeland security.

With the latest advances in information technology, the question, says Onsrud, is how to keep the control of one's "private" information in the hands of that individual. (Just where the line is between information traditionally considered private and intimate knowledge for the sake of national security is a whole other discussion.)

Onsrud, a professor in the Department of Spatial Information Science and Engineering at the University of Maine, focuses on legal issues related to information systems. With fellow faculty member Silvia Nittel, he hosted a recent research workshop on location privacy to investigate technological, legal and institutional approaches that would give users greater control over the collection, use and storage of informa-

tion from the electronic devices they use and sensors to which they may be subjected.

Simultaneously, the researchers want to preserve the open information marketplace of American society. Their goal is to restore a balance in social policies to the benefit of both privacy and the marketplace.

"We really do want the marketplace to be effective and efficient," says Onsrud. "We also want to protect privacy. The assumption here is that by protecting privacy, you can make the market grow. My argument has been that information industries can offer more services and make far more money by advancing technological approaches that give consumers direct control over information about them."

In essence, he says, personal information security can give consumers confidence to use new technologies without fearing an invasion of their privacy.

Onsrud and others have proposed that information technologies be designed to automatically include a standard licensing agreement, allowing individuals to define when, where and under what circumstances their personal information is used. As an example, he cites GPS (global positioning system) chips now built into cell phones, which provide location information for emergency responders. Marketers could use the same information to send advertisements for retail stores in a user's proximity.

"Say you're in the market for a certain brand or style of pants. You request your 'communicator' to notify you when you pass a store meeting your criteria. Or perhaps you request it to notify you when your friends are near. You're in control. However, you don't want it to tell you about other sales and services you haven't requested," he says.



I SPY

Users also need the option of controlling when and exactly what information will be collected on them, and how long — or if — it will be stored, Onsrud says. They need to be able to change these options easily, continuously, automatically. It's important, he adds, that information technologies be designed to give people choices.

“One promising way you might enforce this is through a contractual relationship — a standard contract that makes preference choices legally enforceable. The preference settings of a ‘communicator’

might initially be set to provide maximum privacy protection. In time, as users desire more services, they may be asked by their ‘communicator’ if they want to change a setting in order to receive a specific service.

“The choices made are automatically enforced through the technology and are made legally enforceable through the contract that might be with the ISPs (Internet service providers) or through an intermediary. If you discover later that you're getting communications that you're not supposed to be getting, or that information about you has been sold without your permission, then they've breached a contract with you.” At that point, he says, an individual can bring a private enforce-

ment action, just as one would with any other contract breach, perhaps resorting to damage amounts pre-specified in the consumer contract.

Nevertheless, the very nature of information makes it difficult to control. Former ambassador, public policy expert and author Harlan Cleveland noted that information is inherently different from other possessions. It travels at the speed of light, expands as it's used and has a tendency to diffuse. Owning information is thus problematic, as copyright holders can attest, but some privacy advocates would still like to rely on the concept of ownership to restore individual control over personal data.

However, the ownership rules that control electronic information are different, Onsrud explains. “Problem is, we're moving into this age where you can no longer give your book away. Now it's in electronic form,

Power to the people

IN THIS DIGITAL AGE, how can individuals exert control over their lives, including their identities and creative works, without curbing the culture that fosters everything from music to science? University of Maine Ph.D. student Jim Campbell is working with Professor Harlan Onsrud to pave the way for information technology that encourages an environment of openness, as well as power to individuals.

Campbell's project focuses on three issues: motivation to share, access to information and conditions of use. While current copyright law gives individuals and corporations legal rights to control access and use of their work, Campbell seeks to give individuals the chance to define the conditions in which their own work can be used.

“What would it take to motivate an individual to make his or her work available under less restrictive conditions than exist under traditional copyright law?” he asks. “And if people want to share their work, what's necessary in terms of infrastructure and support to make it possible for others to get access to it?”

As an example, he points to licensing options that have been assembled by Creative Commons (<http://creativecommons.org>), a nonprofit organization working to promote community-minded goals in information technology. Other elements of such conditional openness, he adds, are ways to find sources of information, summaries of content and clearly defined conditions of use.

Campbell is a partner in the Bucksport, Maine, firm Modular Media. As a researcher, he brings experience in marketing for Fortune 500 companies, and in producing programs for television and radio. His goal is to contribute to the preservation and expansion of the public domain and intellectual commons.

Z. Ryder, a vegetarian, buys products online.

C. Robert keeps tropical fish, last bought a household appliance with a credit card in 1999.

Once you start looking five to 10 years down the road with these pervasive identification technologies, it gets to be more and more of a challenge. The way to address the challenge is through an integration of legal and technological methods.

Harlan Onsrud

controlled by a license rather than by the social bargain struck through traditional copyright law. In day-to-day practical living, you've lost some of the ownership rights that you previously had under copyright."

In the future, new technologies are only likely to increase privacy concerns. The remote access RFID (radio frequency identification) tag, a replacement for the product bar code, is already used to track business inventories. "Potentially, they'll be embedded in virtually everything you buy — from magazines to underwear," says Onsrud.

Segments of the grocery industry have already embraced RFID technology with the goals of reducing overhead and increasing efficiency. In the grocery store of the future, shoppers will not have to wait in checkout lines. They will load up their carts and walk past an RFID scanner that identifies their purchases and sends data to computers that tally the bill and charge a customer's account.

"Once you start looking five to 10 years down the road with these pervasive identification technologies, it gets to be more of a challenge. The way to address it is probably through a

combination of legal and technological methods. Quick legal or technological fixes in isolation from each other won't work," Onsrud says.

Such efforts will need to take homeland security into account. The government's ability to spy on individuals has long been constrained by measures to protect privacy. But in a post-9/11 world, those policies are shifting toward greater surveillance.

In a paper delivered at the location privacy workshop earlier this year, Onsrud noted that "privacy is sometimes confused with security." An invasion of privacy arises when personal data is used without an individual's awareness or consent. On the other hand, security breaches involve information access by unauthorized third parties. To guard against the latter, he wrote, technological security measures are needed.

One speaker at the location privacy workshop suggested hypothetically that security may ultimately stem from fostering a small-town culture. "His point was, if you want to protect against terrorism, put the power in the hands of everybody to observe everybody else, because we are a mutually supportive society. We don't need to depend on some overseer. It becomes more of an equity issue that we should all have access to everyone else's business rather than have a corporate or

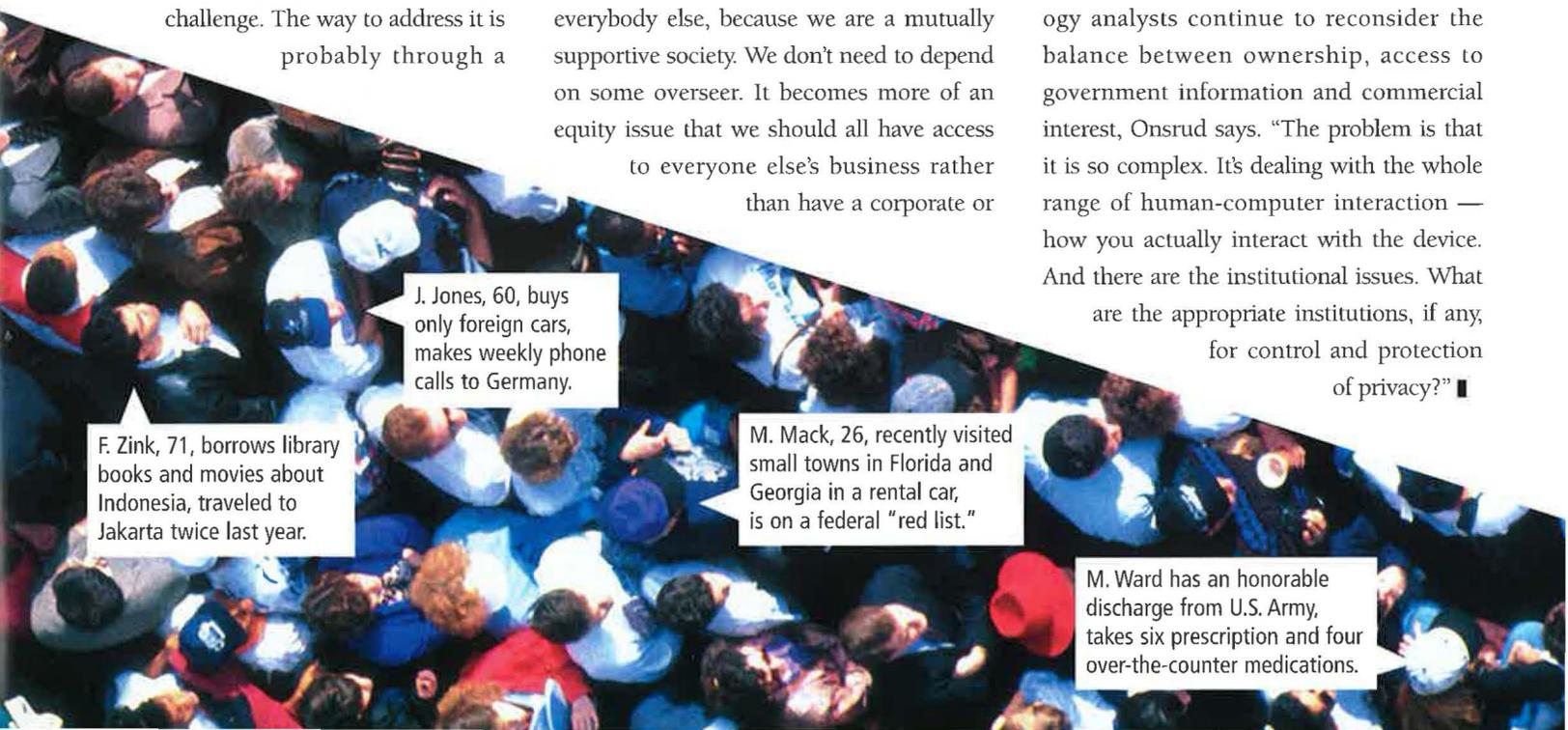
government elite in control," Onsrud says.

Such an approach may face limits in large communities, not to mention an absence of personal privacy, but it harkens back to the nation's roots when most Americans lived in small rural towns. That period also saw an emphasis on the importance of freedom and self-determination, values at the core of what it means to be an American.

Today, availability of personal data raises questions about how we protect such values — what it means to be a free person with the power to exercise self-determination.

A key to being a person, Onsrud has written, is the ability to be autonomous, or self-defining. That's why misuse of personal information can be viewed as a violation of an important human right. "We haven't developed a cohesive body of human rights law in the U.S. such that an individual has a right to the pursuit of happiness versus a corporation that does not," says Onsrud, referencing a treatise by Charles L. Black Jr., of Columbia and Yale law schools.

As a result, legal scholars and technology analysts continue to reconsider the balance between ownership, access to government information and commercial interest, Onsrud says. "The problem is that it is so complex. It's dealing with the whole range of human-computer interaction — how you actually interact with the device. And there are the institutional issues. What are the appropriate institutions, if any, for control and protection of privacy?" ■



J. Jones, 60, buys only foreign cars, makes weekly phone calls to Germany.

F. Zink, 71, borrows library books and movies about Indonesia, traveled to Jakarta twice last year.

M. Mack, 26, recently visited small towns in Florida and Georgia in a rental car, is on a federal "red list."

M. Ward has an honorable discharge from U.S. Army, takes six prescription and four over-the-counter medications.

Therfore lordynges alle of gods bifette
 If y^e gods thynke I wate as in my carde
 As thus though that I telle som what moore
 All y^e wibes than ye han herd before
 Complendes in this litel tretys here
 To enfore with effect of my wateere
 And though I nat the ogame wordes ceie
 As ye han herd yet to gods alle I prey
 That shal me nat for as in my sentence
 Shul ye norshy fynden difference
 fro the sentence of this tretys lyte
 After the which this mynne tale I write
 And therfore bykneth schett y^e shal ceie
 And lat me tellen al my tale of prey

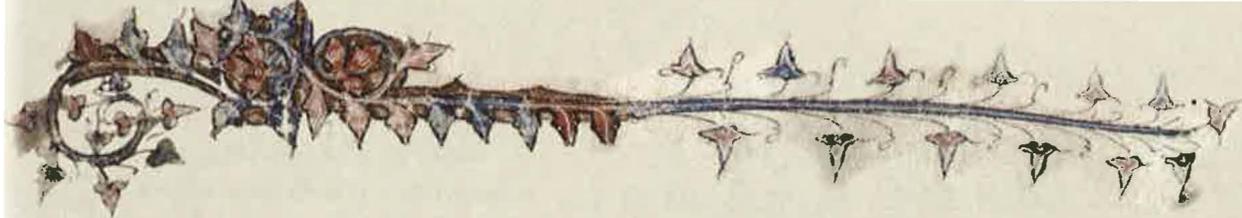
Explicit

Where bygynneth Chaucers tale of welbec



A yong man called welbeus myghty and yere bigat
 ay on his wyf that called was prudence a doghter
 which that called was sophie. Upon a day bifel y^e
 he for his report is went in to the feldees hym to pleie
 his wyf and eel his doghter hath he left in with his hous of which
 the doer ceien faste yfene the of hie olde fore han it epped
 and gotten laddes to the Galles of his hous and by synce
 been entred and betten his wyf and wounded his doghter with
 fyue mortal woundes in fyue condyng places this is to sayn in
 hy feet. in hy handes. in hy eyes. in hy nose. and in hy mouth
 and liden hye for dead and wenten away. I shau welbeus se
 tomyed was in to his hous and caught all this wylthof. he lye a
 mad man yertynge his clothes. gan to wepe and crye. I praye
 ce his wyf as ferforth as she doghte bi doghte hym of his synnyng
 for to stynte but nat for thy he gan to crye and wepen eue longer
 the moore. This noble wyf prudence remembred hye. Upon this
 sentence of prude in his booe that cleped is the remedie of lous
 they as he sayth he is a fool that deffoulyeth the woodey to ceien in
 the deeth of hye thus til she haue sent hye fille as for a certen
 tyme. And thanne shal man don his diligence with amynable
 wordes hye to reconforte and preyen hye of hy synnyng for to
 stynte. For which reson this noble wyf prudence suffred hye
 housbonde for to wepe and crye as for a certen wyge. And shau
 she caught hye tyme she seyde hym in this wyse. I shal my
 lord quod she why make ye youe self for to be lye a fool for so
 the it apteneth nat to a wys man to maken such a wordes youe

Comendius de remedio amoris



Finding Adam

Medieval manuscript research solves age-old mystery about Chaucer's scribe

By Margaret Nagle

GEOFFREY CHAUCER never finished his classic *The Canterbury Tales*, but the stories were told and retold in manuscripts for decades before the introduction of the printing press in England in 1476. The problem is, medieval scribes had a habit of embellishing, correcting or omitting text — or just making mistakes — when they copied. With no surviving copies of *The Canterbury Tales* written in Chaucer's hand, the question has long been which existing manuscripts are closest to the original.

Now University of Maine Professor of English Linne Mooney has found evidence to solve the mystery. Through her research on medieval manuscripts, Mooney has identified the scribe who wrote the earliest surviving copy of *The Canterbury Tales*.

Just as important, the UMaine literary scholar has determined that the scribe, Adam Pinkhurst, probably worked under Chaucer's direction in the 1380s–90s. Chaucer wrote a short poem gently chiding a scribe who worked for him named "Adam." He was scolded for having so many errors in his manuscripts that Chaucer had to correct them in proofreading.

Scholars have long accepted that the so-called Hengwrt manuscript, now in the Hengwrt Collection at the National Library

of Wales, and the subsequent Ellesmere manuscript, now in the Henry E. Huntington Library in California, were written by the same hand. What hasn't been known until now is the scribe's identity and where he came from, lived and worked.

Pinkhurst probably came from Surrey, where his surname derived from Pinkhurst Farm, near Abinger Common, between Guildford and Dorking. The son of a small landowner, he would have gone into London to learn the trade and make his living as a writer of court letter.

Mooney matched Pinkhurst's handwriting in the manuscripts to his signature on an oath he took when he joined the Scriveners' Company of London shortly after 1392. With this identification, Mooney has learned important facts about the scribe, including evidence that Chaucer may have supervised Pinkhurst when he made the first copies of the author's prose translation of Boethius' *Consolation of Philosophy* (*Boece*) and *Troilus and Criseyde*, written in the 1380s.

Pinkhurst also may have been working for Chaucer in the late 1380s and in the 1390s when he was writing *The Canterbury Tales*, Mooney says. "Therefore, the Hengwrt and Ellesmere manuscripts were not just

written by someone hired by Chaucer's executors to copy his last unfinished work, but by a scribe who had worked for Chaucer over a number of years. This lends still more authority to these two copies of the *Tales*."

Even if the manuscripts were written after Chaucer's death, she says, they were written by someone who had a close working relationship with the author while he was creating the *Tales*. The scribe would have known Chaucer's intentions for ordering and linking the *Tales*, which remained unfinished with the poet's death in 1400.

Mooney, currently a Visiting Professor of Medieval Literature at the University of York in Britain, presented her findings to the biennial congress of the New Chaucer Society in Glasgow, Scotland, in July.

Mooney made her discovery while serving this past year as a Visiting Fellow at Corpus Christi College, University of Cambridge, Britain. Her most recent work in the United Kingdom (2003–04) was supported by a National Endowment for the Humanities grant for collaborative research with John Daugman at the Cambridge Computer Lab. Their research involved computer-assisted identification of medieval scribal handwriting. ■

Beauty SECRETS

Maine girls learn how important it is to Turn Beauty Inside Out

By Margaret Nagle

THE SCREAMING HEADLINES, provocative ads and glitzy glamour photos are a siren song. Despite Jennifer Heald's directions to the contrary, the small group of fifth-grade girls can't help flipping through the glossy, color-blasted pages of the latest issues of *YM*, *Teen People* and *Elle Girl* they've just been handed.

"As you go through the magazines and cut out images, what messages are you getting about what young women are supposed to be?" prompts Heald, as the girls paste the pictures on poster board.

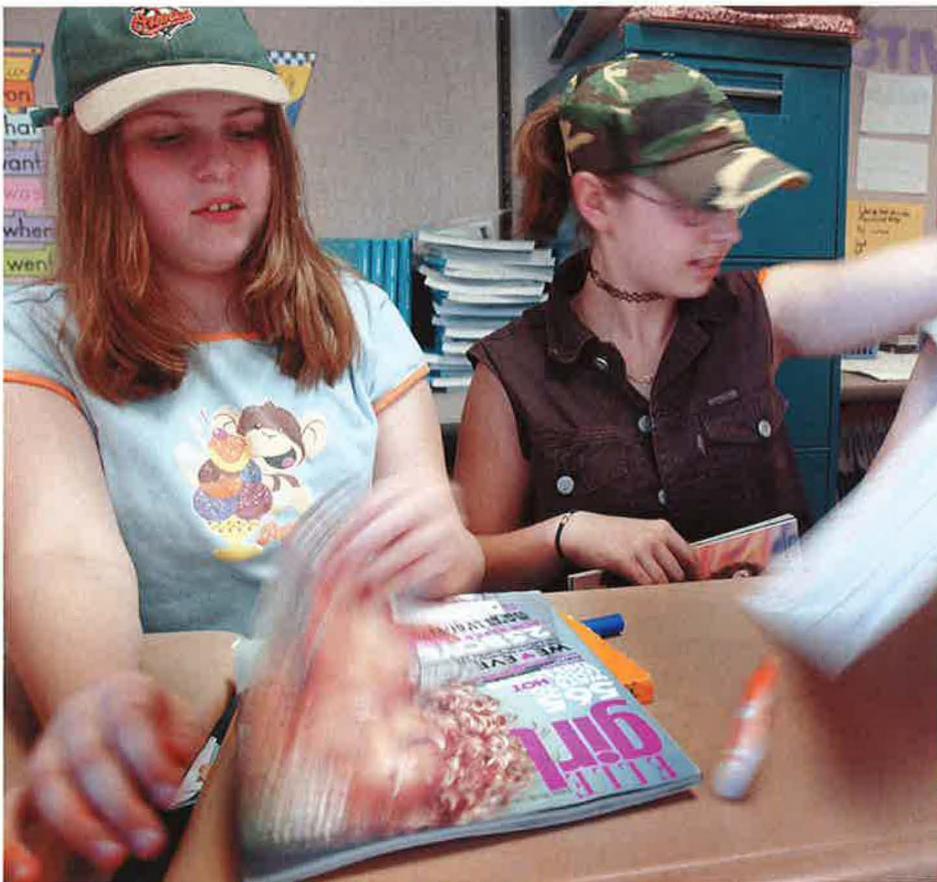
"These women are interested in making other people happy," says Brandi.

"Here the message is to be skinny and wear bikinis," says Elise, holding up an ad.

"And wear high heels."

"And wear a lot of makeup, look pouty and sexy, barely have any clothes on, have long hair and really big — ugh, I can't say it."

Once the girls have their collages compiled, they compare the images and media messages to their earlier list of characteristics of the important women in their lives. What the girls find in the teen magazines doesn't jive with the strengths of their mothers, aunts, grandmothers, sisters — loving, caring, fun, intelligent, strong, honest, cool, artistic, ambitious, talented,



Photos by Fred J. Field
Artwork by Turn Beauty
Inside Out, Maine participants



accepting, messy. Women who speak their minds, work hard and are "super duper."

In this basic exercise in media literacy, the differences between real life and media portrayals of women are stark. Girls learn how the media work, how they produce meaning and how they construct reality.

"This gives girls an opportunity to talk about what's real and to realize there are many ways to be a woman in the world, not just the ways they see on television or in magazines," says Extension Educator Aileen Fortune. "These activities help girls develop an informed and critical understanding of the nature of mass media, the techniques used and the impact on the consumer. Girls soon recognize that advertisers in magazines or on TV aren't going to make a penny unless you don't like the way you look."



Why Can't you Just be your self

To begin to change culture, girls and boys need to grow up with new skills.

May 26, 2004

Dear Editor,

We are from (TBIO) Turn Beauty Inside Out at Sea Road School. In Our group, ~~we~~ of 5th grade girls, we discovered that true beauty is great hearts, good works, and activism.

While searching through numerous magazines we have gotten the impressior that women are, to put it simply, just body conscious paper dolls with attitudes. Of course the women in our lives are not. We've described the women and girls in our lives as beautiful because of who they ~~are~~ ^{are} on the inside, and the way they look at life. We think brains make them beautiful.

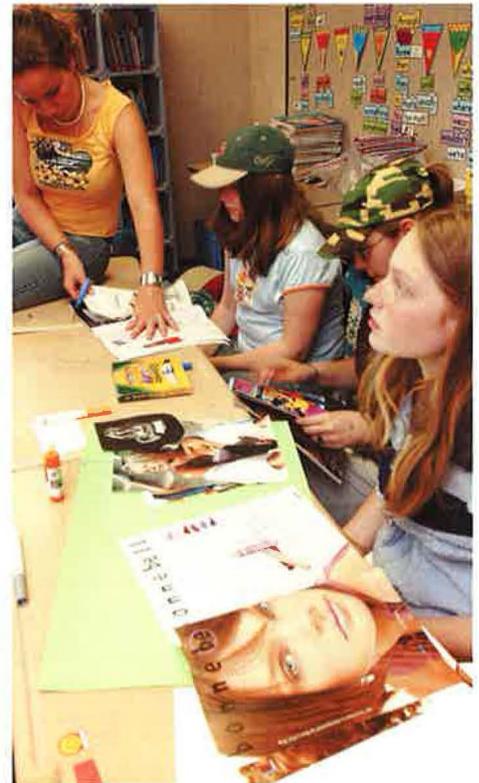
We've ~~decided~~ ^{spent} a lot of time in TBIO reflecting on ourselves & how we can be beautiful in our lives through our actions & our hearts. We hope that our community will support us in becoming strong, confident women.

Sincerely,
Tori Dorr,
Eliza Hughes,
Caitlin Dalrymple

Media literacy is just one component of a program for girls and women called Turn Beauty Inside Out, Maine. Developed by University of Maine Cooperative Extension, Turn Beauty Inside Out is designed to heighten awareness of a new cultural definition of beauty: good hearts, great works and activism. Through York County Extension, community and school groups receive an "awareness kit" of activities, educational materials and resource lists focusing on issues of body image, self-esteem, media literacy and leadership.

Last spring, Sea Road School in Kennebunk, Maine, added Turn Beauty to its after-school program. The six-week segment for girls was led by Jennifer Heald, school-based youth advocate with Caring Unlimited, York County's Domestic Violence Project, and Rachel Phipps, youth services coordinator for Kennebunk and Kennebunkport.

At Kennebunk's Sea Road School, the girls also collaboratively wrote letters to the editor for their local newspapers about the importance of community support in helping boys and girls "understand it's what's on the inside that matters." In the sixth and final week of Turn Beauty Inside Out, the girls were joined by the multi-generations of women most important in their lives.





The women we know are...

Aunt Tammy - Funny and sweet

Olivia Phillips - Nice and a great friend
speak their minds P.S. Happy B-day

Brandi - Nice likes to get in trouble
honest work hard

My mom - She likes to listen to music
Sings volunteer awesome

Strong Smart Confident
LIKE TO DANCE

Kind Smart
actors really cool

The media says women should be...

Pretty LOT OF MAKE UP
Sad

Barely any clothes
Constantly think

Skinnny
Moody

Sad

big boobs

bad

MAD

Long hair

beautiful
cleavage
paying attention to their bodies
EVE
belly button

Thinks their all that

“Megan loves it,” says Vicki Davis of Kennebunk, the mother of one of the girls in the Sea Road School program. “She’s learned to accept herself better; she now says good things about herself.”

Michelle Fortier-Oosterman, who also has a daughter in the program, says the Turn Beauty Inside Out message is particularly poignant for girls headed into middle school. “It’s important for girls this age, when they’re starting to be interested in boys, to not lose sight of themselves — who they are and what they can be as women,” she says.

Other Turn Beauty “thought-changing” activities include “Stepping Over the Line,” in which participants focus on their similarities — books, pets, sports, etc. “Lunch Tables” addresses clique behavior; “Alien Invasion” focuses on the definition of a girl.

“True Beauty” is the project’s signature activity, in which girls explore how beauty is defined in their schools and communities. By sharing powerful stories about the women in their lives, the girls reconceptualize the meaning of true beauty.

“The girls are not exposed to some of these ideas, but we find they’re hungry for them; they ring so true and are ever-present in their lives,” says Phipps. “The hope is this will help girls find and use their voices, and support and become allies for each other.”

Turn Beauty Inside Out began as a campaign of *New Moon* magazine, an ad-free bimonthly for girls 8–14. In 2000, in reaction to *People* magazine’s annual “50 Most Beautiful People” edition, *New Moon* published its own special issue, “25 Beautiful Girls.” The now annual *New Moon* edition in May/June celebrates girls’ inner beauty and kicks off a yearly Turn Beauty Inside Out campaign, focusing on different media and their portrayal of girls and women.

In collaboration with *New Moon* in 2002, Fortune brought the campaign to Maine as part of Cooperative Extension’s Gender Project. Fortune has spent 22 years

Sixteen community groups collaborate with Extension to offer Turn Beauty statewide.

as a parenting and child development specialist in York County, and as a leader in Extension’s Gender Project, which explores gender socialization and equity issues in homes, schools and communities. A primary focus is on how cultural definitions in society dictate what it means to be male and female in this country.

“Research shows that the media are powerful, daunting forces in raising our children,” Fortune says. “As media and

culture define masculinity as increasingly violent and femininity as more sexualized, the challenge is what to do about it. How can we give parents the tools and support to help their children deconstruct the media and decide for themselves who they are in the world?”

To begin to change culture, girls and boys need to grow up with new skills that, coupled with parental and community support, help them move beyond stereotypical limits and become happy, healthy, whole adults. For girls, it’s about recognizing and valuing what constitutes true beauty, and that there is much more to people than outward appearance.

Extension’s Community Awareness Kit contains educational curricula compiled from the best state and national programs in the areas of media literacy, body image, leadership, and empowerment for girls and women.

“So much of this is about working in small groups in communities. It’s in communities that conversations and networking inspire local action. These conversations in homes, schools and community settings become the bridge between individual action and cultural change,” Fortune says. ■



Headed Into Med

SIBLINGS JULIA AND SWORD CAMBRON of Jonesport, Maine, want to spend their lives helping people. To do that, the University of Maine biochemistry majors with minors in chemistry plan to enroll in a medical scientist program next year to earn

both M.D.s and Ph.D.s. Sword wants to pursue a career in neuroscience; Julia a career studying and treating genetically based disorders.

"I've been interested in medicine since first grade," says Julia, 19. "One of the main reasons I'm interested in the field is we had a family friend die of a rare bone cancer."

Julia and Sword took a semester of college courses at the University of Maine at Machias before transferring to UMaine in 2001. Because they take the same classes, Julia and Sword study together and "fill in each other's weak points." Each has a 4.0 GPA.

"You have to have curiosity to survive the curriculum of a science major," says Sword. "The more I've studied, the more interested in science I've become. Studying the basic sciences, you start to see the applications to medicine and the importance of getting the adequate foundation on which to build a knowledge base for medicine."

According to Julia, "you have to love what you're doing," especially when the semesters of pre-med students get "insanely busy."

"A lot has to do with being home schooled," she says. "We never get tired of learning."

For the past two years, the pair has been involved in organometallic chemistry research led by UMaine chemists Alice and Mitchell Bruce, who study the basic mechanisms, properties, synthesis and medicinal applications of gold(I) complexes, which include auranofin, a drug used to treat rheumatoid arthritis. They believe this research will lead to a greater understanding of the action of gold-based drugs in biological systems. In the research laboratory, Julia and Sword also work with Ph.D. students.

The siblings took their MCATs (Medical College Admission Tests) last year and are now applying to medical schools. Ideally, they say, they would like to attend the same university in New England for their graduate work. But their plans don't stop there.

"The ultimate goal for me is to open my own facility and clinic focusing on collaborative research and the application of new treatments for diseases," says Julia.

Sword, who has 14 years of study ahead of him following graduation from UMaine this May, also hopes to establish a research clinic, first in this country and later in a third world nation.

AS A SCIENCE TEACHER in training, Jessica Odell asks lots of questions. "If we're going to be teaching science, shouldn't we know what it's like to do it ourselves? When an experiment (in the classroom) doesn't work, what do you do? How do you look at things from a different perspective?"

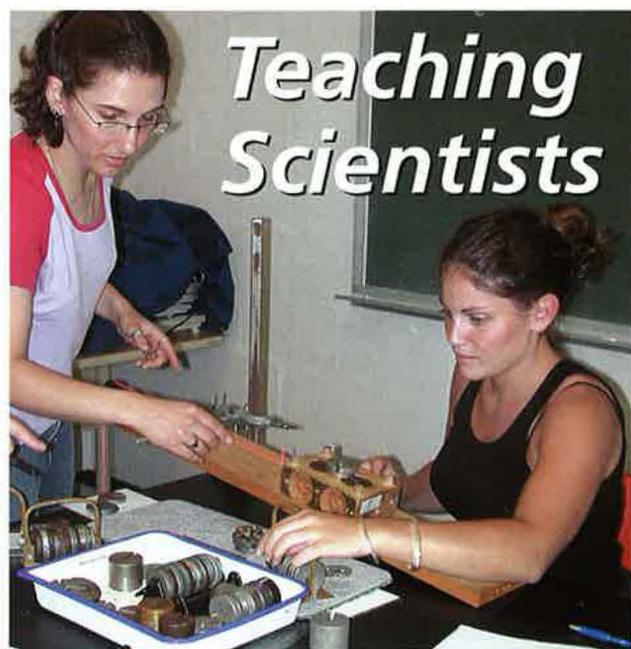
Odell is at the crest of a new wave in science education, part of the first group of graduate students in the University of Maine's Master of Science in Teaching (MST) program.

The opportunity to develop a broad range of science education skills attracted her to the MST. Her coursework touches on many sciences; her graduate committee includes professors in Earth sciences, chemistry, physics education and biology.

For her thesis, Odell is surveying UMaine science students on one of the pillars of scientific knowledge — the conservation of mass and energy. To determine how well students learn both the concept and its application, she is testing their knowledge before and after they complete introductory science courses.

Other researchers have found that students struggle with the conservation principle even after receiving instruction. The results of her project will help her and other science teachers to develop classroom activities that help students grasp the concept more effectively.

One of the MST program highlights for Odell was a semester spent doing research at Jackson Laboratory in Bar Harbor. Her research with lab scientists Kevin Flurkey and David Harrison focused on thyroid hormone deficiency in mice. It turns out, she says, that a lack of the hormone affects the immune system. In mice without the hormone, the immune system ages more slowly than it does in mice that have normal thyroid hormone levels. The health consequences of that are unclear at present.



Middlebury College pre-med junior Abbi Sanders (right) works in a physics lab taught by Jessica Odell.

Photo by Nick Houtman



Shipshape Composites

ENGINEERS in the University of Maine's Advanced Engineered Wood Composites (AEWC) Center are working with the U.S. Navy and Maine businesses to improve ship-building technologies.

With two new federal grants totaling \$2.36 million from the Office of Naval Research (ONR), the researchers will focus on redesign of the high-speed Mark V Patrol Craft and the reliability of fiber-reinforced composite ship components.

Engineers will build a prototype with improved handling.

Improving the Mark V's seaworthiness is a goal, says Robert Lindyberg, manager of technical services for AEWC. The Mark V has developed a reputation for a very rough ride, affecting the performance of SEAL teams and boat crews. Working with Hodgdon Yachts of East Boothbay, Maine, Lindyberg and other UMaine engineers will design and build a prototype that meets the Navy's needs with improved handling characteristics.

In the second project, engineers will study composite material manufacturing processes. Navy tests have revealed significant differences among similar composites produced by different manufacturers. The research goal is to determine why such differences occur and how manufacturers can consistently produce reliable materials for ship construction, says Habib Dagher, AEWC director.

Collaborating on the composites research is Applied Thermal Sciences of Sanford, Maine.

Peering into the Genome

IMAGINE HAVING A MICROSCOPE so powerful, it can reveal the three-dimensional nanostructure of genetic material within a cell. Next year, scientists in Maine will have such an instrument — the 4Pi Confocal Laser Scanning Microscope.

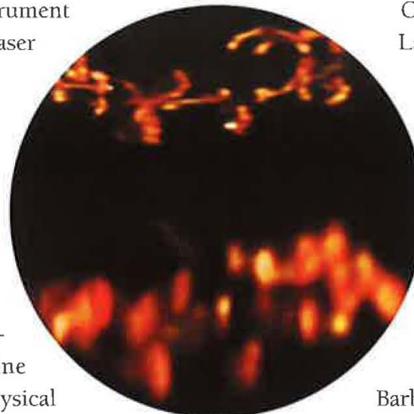
The most advanced optical microscope in the world will be the first such instrument in the United States in 2005. It was made possible by a \$732,624 National Science Foundation grant to a Maine interdisciplinary biophysical research program, the Institute for Molecular Biophysics.

The institute brings together expertise in biophysics and engineering at the University of Maine; molecular and cell biology at Maine Medical Center Research Institute (MMCRI), Scarborough; and genetics and genomics at Jackson Laboratory, Bar Harbor. IMB's goal: to

explore the structure and function of genes and chromosomes in cells to understand precisely how genes control both normal development and disease.

Once installed at Jackson Lab, the 4Pi microscope will enable researchers to examine specific structures in a cell — such as a single gene on a chromosome — at a resolution four to seven times greater than previously possible.

As IMB co-director Barbara Knowles of Jackson Lab and UMaine describes it, astronomers have space telescopes to understand the universe, and physicists have giant particle accelerators to isolate elements of energy and matter. Now geneticists and biologists have an advanced tool to examine the very structure of mouse, human and other genomes.



The 3-D structure of mitochondria in mammalian cells is recorded with the Leica TCS 4Pi (top of image). A comparison is made between the 4Pi mode and standard confocal mode (bottom of image).

Image provided by Jackson Laboratory, ©Bewersdorf, Hell, Rosenmund, Schmidt-MPI Göttingen, Germany



BEST BARGAINS ✓

IN ITS ANNUAL GUIDE, *The 357 Best Colleges*, the Princeton Review has listed the University of Maine as No. 20 in its "Best Bargain — Public" category. The publication determines academic ratings for institutions, then compares those rankings with tuition costs to create a list of the top 20 public colleges and universities in this category.

"We're pleased with the Princeton Review's ranking, which supports our belief that UMaine is an outstanding value," says UMaine Interim President Robert Kennedy. "We are proud to offer the benefits that come with being a land-grant state university in a wonderful place to work, study and live."

Other universities recognized in the same category include the University of California-Berkeley, the University of Washington, the College of William and Mary, the University of Texas-Austin, Kansas State University and North Carolina State University.

Decreasing Diversity

FOR MOST OF THE PAST 4,500 YEARS, cod was king in the Gulf of Maine's coastal waters. Today, the groundfish have given way to the Jonah crab, with potential long-term consequences for coastal fisheries, according to a recent University of Maine research report published in the journal *Ecosystems*.

With crabs and lobsters at the top of the proverbial heap, the Gulf may have entered a new stable phase marked by the presence of expansive kelp beds and the near absence of sea urchins. These findings also could signal the likelihood of significant biological changes in other heavily fished parts of the world's oceans.

The authors of the report, Robert Steneck, professor of marine sciences at UMaine's Darling Marine Center, and former UMaine graduate students John Vavrinec and Amanda Leland, analyzed fishing records and previous studies to gather evidence for the changes brought on by fishing pressure in marine ecosystems.

For example, ancient coastal middens have revealed evidence suggesting that Native American fishing activities were beginning to affect near-shore ecosystems several thousand years ago. Analysis of colonial and modern fish landing records shows that such changes accelerated with the adoption of new fishing technologies.

It is a revolution of sorts — an overturning of the established order brought on by fishing pressure — that leads to major changes in the coastal marine ecosystem, according to the article, "Accelerating Trophic-level Dysfunction in Kelp Forest Ecosystems of the Western North Atlantic." In the Gulf of Maine, the revolution was brought on by the drastic reduction in the number of cod and other top predators in the past century.

"While there is no fear of these species going extinct," Steneck says, "entire sections of the food web have become so rare that they no longer perform critical ecological functions in the marine community. This is called food web (or trophic-level) dysfunction."

When such species as cod were no longer able to perform their function of keeping their prey species in check, the ecosystem entered a new phase, marked by abundant sea urchins and a lack of kelp beds. Urchins ate so much kelp that they created areas known as "urchin barrens," where only low-growing algae could survive.

In turn, the harvesting of urchins during the 1990s has led to the re-emergence of kelp beds and the dominance of crabs and lobsters.

"The problem is this 'trophic-level dysfunction' is accelerating. Ecosystem changes persist for shorter and shorter periods of time because the 'driver' species increasingly fall below functional population densities," Steneck says. "When a threshold is reached, the system changes fundamentally. Everything that came before it is thrown out the window. What this does in the long run is make the system unpredictable."

For the first time, adds Steneck, the low diversity of marine organisms, including Maine's fabled groundfish, have left the system too reliant on a single species (lobster) and too vulnerable to continued and unpredictable large-scale fluctuations.

Funding for the research came from the Pew Foundation for Marine Conservation, Maine Sea Grant, the Maine Department of Marine Resources and the National Undersea Research Program.



SEA VEGGIES

SOME OF THE TASTIEST FOODS from the sea don't come with shells or scales. According to University of Maine marine biologist Susan Brawley, five types of sea vegetables growing in intertidal zones along the northeastern coast of the United States are particularly delicious and nutritious, with lots of omega-3 fatty acids, iodine and vitamins; several also have lots of calcium:



In Maine, **PORPHYRA** is red seaweed that comes in at least five varieties, each with its own distinct nutty-salty flavor. Commonly known as purple laver or nori, it is dried and crumbled into soups, salads, popcorn or casseroles.



PALMARIA, commonly called dulse, is a thick, red sea vegetable with a nutty taste. Dried or smoked, it is added to sandwiches, soups and popcorn. Palmaria has long been a popular snack with Down East natives.

BROWN ALGAE or kelp include Alaria and Laminaria that can be dried for flavoring soups, or pickled for salad.

IRISH MOSS has deep red leaves that are boiled to release carrageenan, a tasteless, gelatin-like substance. For centuries, it has been used in New England to make puddings and custards.





Science at the pool

A NEW WETLANDS science curriculum for students in Orono, Maine, schools this fall eventually could help their community to conserve critical amphibian habitats known as vernal pools.

In the next year, Orono students will study two vernal pools, one near the schools and another on private property. UMaine graduate students will help to teach the younger students how to identify different wetland species and their egg masses — signs of reproducing populations.

The project will integrate subjects such as language arts, mathematics and computer science. A Web site will be developed for students to share data, photographs, maps and reports.

University of Maine wetland ecologist Aram Calhoun met with Orono teachers this summer to help plan the new curriculum that is based on research by her and several UMaine graduate students. The classroom and field research will give middle and high school students experience with collecting, managing and interpreting scientific data.

The multi-year project has grown out of two earlier efforts: a high school environmental science program called Wetland Connections; and a test of vernal pool conservation steps, developed by Calhoun and UMaine master's student Damon Oscarson.

In the latter, Calhoun and Oscarson worked with citizen volunteers in the rapidly developing communities of Falmouth, Maine, and three Farmington River watershed towns in Connecticut. They identified, mapped and assessed vernal pools in the towns, then ranked them for conservation purposes.

The goal: to help each community determine where to focus its wetland conservation efforts and where to allow development to proceed. "We know that we can't save every vernal pool on the landscape," Calhoun says, "but we can pick the ones that have the best chance to keep sustainable populations of animals."

www Rural Education online

A LEADING RESEARCH JOURNAL devoted to rural education, published at the University of Maine, is now exclusively online (www.umaine.edu/jrre) with open access.

The *Journal of Research in Rural Education*, founded in 1982 by the UMaine College of Education and Human Development, disseminates the results of educational research relevant to rural settings. Topics include learning and instruction; educational leadership and policy; and the cultural, historical and economic context of rural education.

By going online, every aspect of the editorial process is rendered less expensive and more efficient, according to Theodore Coladarci, the journal's editor and UMaine professor of educational psychology. With newly posted articles announced through the journal's listserv, as well as the listservs of several organizations, articles quickly reach many more readers than was possible with a print version. There are no changes in content or editorial policy.

Articles published prior to the online conversion have been archived and indexed in a searchable database.



Making the past part of the plan

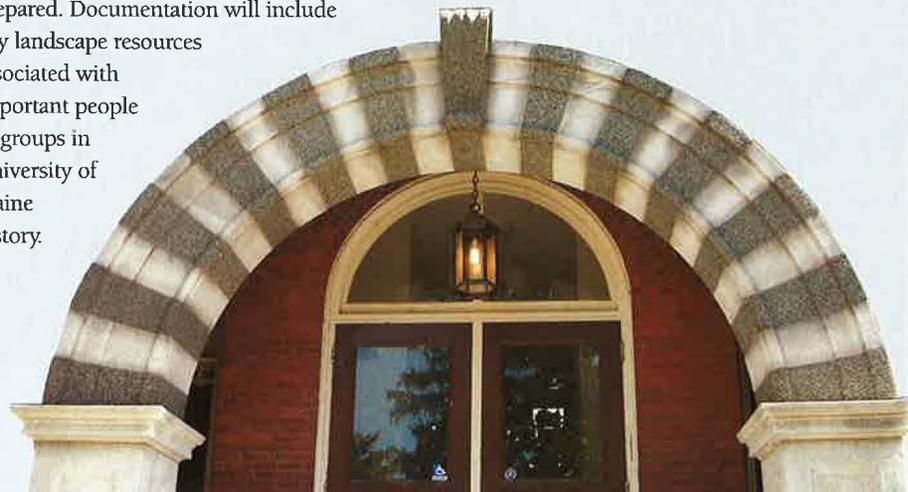
A RECENT \$175,000 AWARD from the Getty Grant Program's Campus Heritage Initiative will fund a preservation plan for the buildings and landscapes included in the University of Maine's National Register Historic District.

The preservation plan is expected to be a model for incorporating historic preservation into a campus master plan.

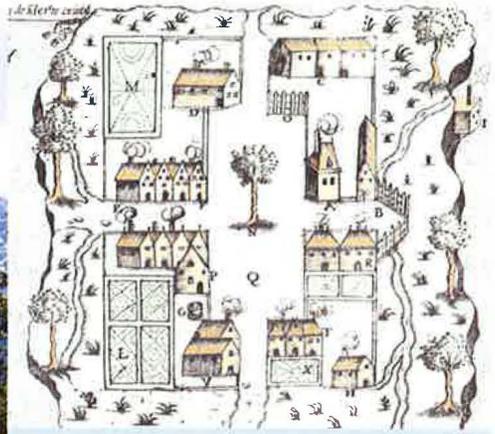
Ten buildings constructed between 1870 and 1908 are on the National Register of Historic Places. The facilities, all part of the earliest construction at the then fledgling university, are centrally located on the 660-acre campus.

A team of historical architects, and structural, mechanical and electrical engineers will extensively evaluate each building in the National Register Historic District to determine existing conditions. As part of the project, original and subsequent architectural drawings will be reviewed, and diagrams and a narrative of the campus landscape history prepared. Documentation will include

any landscape resources associated with important people or groups in University of Maine history.



LASTING IMPRESSION



The University of Maine's Canadian studies coursework and research in such areas as political science, economics, geography, forestry, history, North American French culture, language immersion and borderlands issues are reflected in images of Canada: (left to right) the seat of national government in Ottawa; Alberta's natural beauty; Samuel de Champlain's plan of the French settlement on St. Croix Island, 1604-05; a rural community in Newfoundland.

A QUARTER-CENTURY AGO, the University of Maine Canadian-American Center was designated a National Resource Center on Canada by the U.S. Department of Education. As such, the then 12-year-old program began receiving federal funding for Canadian studies initiatives, such as library collection development, summer institutes and educational workshops to benefit K-12 teachers, business leaders, college students and faculty, and the public.

That year, 1979, the University of Vermont and UMaine formed a consortium called the Northeast National Resource Center on Canada. The two institutions were joined by the State University of New York at Plattsburgh in 1983. Today, the consortium, one of only two in the United States, is the national leader in teaching, research and outreach on Canada.

The University of Maine as the lead institution in the consortium offers the most comprehensive group of courses on Canada in

the U.S. Students pursue academic and research opportunities on Canada in such disciplines as anthropology, business, Earth sciences, economics, English, forestry, history and political science.

Given Maine's proximity to the Francophone populations in Quebec and the Maritime provinces, and the state's Franco-American heritage, an important academic component is coursework in North American French. Graduate programs, supported by federally funded fellowships, are offered in history and French. Summer institutes for teachers provide foreign language immersion and area studies knowledge, particularly in history and geography.

Students and faculty are supported by a major research collection on Canada in Raymond H. Fogler Library at the University of Maine. Considered one of the finest in the U.S., the collection includes Canadian federal documents, and a microfiche collection of more than 65,000 monographs and serials published in Canada or about Canada before 1900.



Sustainable Growth

UMaine students working with faculty and other university forestry experts are involved in tract inventories and mapping, stand improvement, tree planting and other silviculture activities.

Photo by Kathy Rice

FOR MORE THAN A DECADE, the forests managed by the University of Maine have grown in size and value with the help of the Green Endowment.

The Green Endowment of Forest Land, established by the University of Maine Foundation, offers individuals and industry the opportunity to donate forest lands to UMaine. The gifted lands, titled to the foundation, are managed by some of the leading forest experts in the Northeast.

The woodlands are used for research and education, and managed for sustainability. Proceeds from timber harvests in University Forests benefit UMaine's forest resource programs by funding student activities in the College of Natural Sciences, Forestry, and Agriculture.

Ten-year management plans are written for each woodlands tract managed by the university, addressing such areas as timber, soil, water and stand diversity.

Since 1992, 7,500 acres of woodlands throughout the state — half of the total acreage of the University Forests — have been donated through the Green Endowment. The university now manages inland and coastal forest tracts from Whitneyville to Carthage and from Gray to Cary Plantation.

"Since the start of its forestry program in 1903, the University of Maine has been recognized as having some of the best forest resource programs in the country," says Bill Livingston, who coordinates the distribution of the Green Endowment funds for the college.

"The Green Endowment is an innovation that is helping us to improve on our excellent reputation. Revenues from the endowment have benefited over 300 students in the last four years by helping to fund special fieldtrips, new equipment, student travel to meetings and seminars, and student research projects. Clearly, students have greatly benefited from these generous gifts of land and the educational experiences our forest resources provide."

UNIVERSITY of MAINE
FOUNDATION