TELLS THE FACTS AND NAMES THE NAMES

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The Perils of Nanotechnology

By Steven Higgs

The Project on Emerging Nanotechnologies (PEN), a partnership between the Woodrow Wilson International Center for Scholars and the Pew Charitable Trusts, waxes ecstatic on its website, when describing the future of nanotechnology, calling it "the next industrial revolution." New cancer therapies, pollution-eating compounds, more durable consumer products, detectors for biohazards like anthrax and "novel foods" are but a few of the nanotech applications PEN cites.

"They promise to change everything from the cars we drive to the clothes we wear, from the medical treatments our doctors can offer to our energy sources and workplaces," PEN says. "Nanotechnologies are changing the way people think about the future."

Few would argue with that assessment. A report published in the November 2007 issue of the journal *Environmental Health Perspectives* says that nearly 400 "manufacturer-identified nanotechnology-based consumer products are now on the market." PEN anticipates global research and development investments in nanotech of nearly $9 billion per year.

But many in the scientific world do question the manner and pace at which this emerging technology is moving into the marketplace and, more specifically, the human body.

The *Environmental Health Perspectives* report summarized a 2006 workshop held at the Wilson Center that included 26 scientists from government, academia, industry and nonprofits, titled "Hazard Assessment for Nanoparticles – Report from an Interdisciplinary Workshop." Dr. Ellen Silbergeld, an environmental toxicologist from Johns Hopkins University, opened the gathering by suggesting that the evaluation of environmental risks

Sheep, Cows, Pigs and the Consequences of Intensive Livestock Production

By Alexander Cockburn

As Mexico reels from the swine flu panic, there's angry talk of the disastrous impact on that country of North American methods of intensive livestock production, with the initial swine flu deaths occuring near the huge pig factories in the state of Veracruz. These are owned by Granjas Carroll, a subsidiary of Smithfield Farms, active in North Carolina. Intensive pork production in that state in the late 1980s sponsored the emergence of the H1N1 swine flu virus.

Mexico has been on the receiving end of such disasters for almost 500 years. Soon after the Spanish conquerors overwhelmed the Aztec capital of Tenochtitlán in 1521, the colonist-pastoralists began to take over agricultural lands for sheep and cattle.

Among such lands was what later became named the Valle de Mezquital, in highland central Mexico, centered on the Tula and Moctezuma river drainages in what is now the state of Hidalgo. In the early sixteenth century, the Valle was the site of intensive irrigation agriculture by the Otomi Indians, with such crops as maize, chiles, maguey, nopal, squash and beans. The soils were good and vegetative cover on the hills rich enough to catch the sparse rainwater and keep the water table high enough to feed the springs and irrigation systems. There were forests of oak and pine.

Old World grazing animals entered the Valle in the late 1520s, in the form of cattle, horses, pigs and goats. By the 1540s there were forty-one flocks of sheep of around a thousand head each. With them came African slaves as their shepherds. Soon Indians were complaining about damage done by the alien stock to their lands and crops. The Spanish governor banned cattle and horses from the densely populated central regions, but with the competition for forage thus diminished, the sheep population erupted. By 1565 there were two million sheep in the Valle. Meanwhile the Otomi were dying. Through the century, the population fell by as much as 90 per cent. The Great Cocoliste epidemic of 1576-81 was the *coup de grâce*. Sheep began to take over from people, as the Spanish increased their stocking rates to as much as 20,000 head of sheep per station.

This profusion of animals rapidly changed the terrain. Vegetation diminished and often only bare soil remained. Fields went to pasture. Forests were chopped down for more pasture, also for use in the Spanish mines. During the last quarter of the century, semi-arid species such as mesquite, cardon, yucca, thorn scrub, lechuguilla maguey started to take over. The fallow lands of the decimated Indians and the pastures of the colonists were now covered in mesquite bush and thistles. With less and less to eat, the sheep population dropped sharply.

The weight of sheep killed for meat dropped too. "By 1600", Elinor Melville writes in *A Plague of Sheep. Environmental Consequences of the Conquest of Mexico* published in 1994, "sheet erosion scarred the hillsides and covered the flat and sloping lands with slope-wash debris. In a final blow to irrigation agriculture, springs were dying out in many parts of the region. By the end of the sixteenth century the landscape was the eroded and gullied mesquite desert traditionally associated with the Valle de Mezquital."

One hundred years later, the Valle fi-

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posed by nanoparticles should be focused on "nanoscale interactions that take place in the normal functioning of biological systems."

Paraphrasing her presentation, the report said: "Unique interaction between nanoparticles and biological systems afford great promise for medicinal applications. But the unintended consequences could be harmful."

Nanotechnology uses tools like atomic force microscopes to visualize and manipulate matter and produce materials at the atomic and molecular scales, according to Jennifer Kuzma, an associate professor at the Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota. Kuzma is a former study director at the National Academy of Sciences, where she specialized in genetically engineered plants in the food supply. She said in a phone interview that she was drawn to the parallels between agricultural biotechnology and nanotechnology, specifically as they apply to food and agriculture, and has been researching public policy as it relates to nanotechnology for the past five years.

More precisely defined, nanomaterials measure 100 nanometers or less in at least one dimension. And they can be produced in two ways, Kuzma said. One is a bottom-up approach, such as using tools to pick up and move atoms. The other is to break molecules apart into nano-sized particles using electricity or light, through processes known as electrospray or photolithography respectively.

"You can assemble these things from the top down by brute force by breaking big things apart," she said, "or you can do it by bottom-up methodology as well."

Size and manipulation, however, are but two of three criteria in the definition of nanotechnology, she said. The third is "novel properties based on size." Specifically, nanomaterials have high-surface-area-to-mass ratio. "It's the scale, it's the manipulation, and it's the novel properties," she said. "Those three parts make it nanotechnology."

"Unique interaction between nanoparticles and biological systems afford great promise for medicinal applications. But the unintended consequences could be harmful."

The applications for nanotechnology are seemingly endless. The PEN website breaks existing nanotech products into eight categories: Appliances, Automotive, Cross Cutting, Electronics and Computers, Food and Beverage, Goods for Children, Health and Fitness, and Home and Garden. Each has multiple subcategories.

Carbon nanotubes, which are lighter and stronger than steel, can be used to produce lighter vehicles, Kuzma says, not to mention stronger bridges and self-cleaning and scratch-resistant eyeglasses. Silver nanotubes have antibacterial properties and are used in a variety of consumer products, including silver-coated food packaging materials.

"There's a washing machine on the market that releases silver into the wash cycle in a nano form to keep it suspended and working correctly and get into your clothes and kill the bacteria and keep your clothes fresher longer," she said. "There's are also silver-coated nano socks and things that you can buy that will prevent bacterial growth and smelly clothes."

Of more interest to Kuzma, however, are nanomaterials' capacities to serve as "delivery agents" for medical and other purposes. She cites cancer therapies and pollution-eating compounds as two of her "favorites."

While chemotherapeutic drugs like methotrexate are effective in killing cancer cells, they are nonspecific and can "kill everything" when used in the body, she said. As cancer cells grow and divide, they take up more and more folic acid. And nanoparticles, made up of complex organic molecules called dendrimers, attached to folic acid, penetrate tumors and can deliver drugs more directly to the cancer cells. These are being tested in animal and clinical trials.

"It would help kill the tumor without the side effects of chemotherapy, or with minimal effects of chemotherapy," she said. "There are people working on that sort of thing with these more active molecules that will target certain tissues and deliver compounds into them."

Among the items the PEN website lists are nanotech cosmetics and baby products.

The Zenyaku Kogyo Co., Ltd., for example, touts its Arouge Deep NanoMoisture™ Care Set as follows: "Arouge uses advanced technology to create extremely small moisture molecules. Because they are so small, they rapidly penetrate the deep layers of your skin."

A company called Pure Plushy promotes its Benny the Bear plush toy: "With the additive of Silver Nanoparticles, our product has been clinically proven to fight against harmful bacteria, molds and mites."

GNS Nanogist sells a product called NANOVER™ Wet Wipes, which it says is "safe to use for children's toys" and "soft like cotton, protect babies' frail skin."

But, as the scientists attending Wilson Center workshop and others have observed, such claims of safety may not be as well grounded as the companies assert.

Kuzma said she normally does not respond to questions about whether products have received adequate testing before hitting the market. But she's un-

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equivocal about cosmetics. "We haven't done enough testing," she said when asked about nanotech moisturizers. "Just in general, our regulatory system for cosmetics is abysmal."

In 2006, Friends of the Earth called for Samsung's "Nano Silver" washing machine to be taken off the market. "Concerns have been mounting that nano silver poses unacceptable risks to beneficial bacteria in environmental systems and to human health."

And, in an essay titled "Emerging Technologies," which will be published later this year in the American Academy of Pediatrics' third edition of its *Handbook on Children's Environmental Health*, Dr. Philip Landrigan from the Mount Sinai School of Medicine says flatly that children should not be exposed to nanomaterials under any circumstance.

The primary concerns about health threats from nanomaterials stem from their size, which is in the same range as virus particles, DNA, and protein molecules, according to Landrigan. "Nanoparticles may be able to produce toxic effects as a consequence of their ability to enter cells," he writes. "Small size enhances cell entry and appears to be a major determinant of toxicity." Nanotubes, on the other hand, are predominantly fibrous and do not enter cells, he continues. But they remain in the extracellular spaces, where they can induce chronic inflammation.

In the July 3, 2008, issue of the journal *Nature*, two researchers from Brown University explored the most common comparison to nanomaterials' health threats in a paper titled "The asbestos analogy revisited."

"Two recent studies provide important new insight into the possibility that carbon nanotubes may induce mesothelioma – a disease that is rare in unexposed populations and is thus a sensitive marker for asbestos exposure," wrote Agnes B. Kane and Robert H. Hurt.

One of the studies, from the Medical Research Council at the University of Edinburgh in the United Kingdom, reported that multi-walled carbon nanotubes (MWNT) injected into the abdominal cavities of mice created inflammation, lesions and scarring on the mesothelial lining. The distribution and severity of these reactions are similar to those induced by the long fibers of brown asbestos, which have caused toxicity and carcinogenicity in longer-term animal studies, Kane and Hurt said.

Kane and Hurt say these studies identify key physical properties of carbon nanotubes that may be relevant for potential toxicity and carcinogenicity: fiber length and biopersistence: "Taken together, these two pioneering studies provide scientific evidence for an asbestos-like pathologic response to carbon nanotubes, at least in certain cases."

Kuzma, whose specialty is public policy, said the explosion of nanotech products on the market in the past few years has been accompanied by increased attention to regulatory activity in North America and Europe. The U.S. Environmental Protection Agency (EPA) and Food and Drug Administration (FDA) have both issued white papers and guidance on how they intend to address health threats from nanotechnology.

EPA has implemented a voluntary nanoscale materials framework, through which companies can submit safety information on a voluntary basis. "The EPA envisioned that would help them figure out what to do about nanotechnology as they saw more and more data come in from this voluntary mechanism," Kuzma told me. The FDA has said it will regulate nanoproducts under existing laws. "In other words, no special regulation for nanomaterials that come under their jurisdiction through the federal Drug and Cosmetic Act," she said.

Canada appears poised to propose the first mandatory regulations specifically for nanotechnology. And recent reports from the European Food Safety Agency have acknowledged the lack of information and adopted a precautionary tone.

"These things are evolving right now on an international scale and on a supranational scale in the case of the EU," Kuzma says. The U.S. and EU approaches to nanotechnology illustrate longstanding differences in the manner in which the two address environmental health threats. The United States has always taken a "science-based approach," focusing on risk, safety, cost-benefit analysis and economic-benefit analysis. The EU has added to those parameters social values, such as consumer right to know and choose, product labeling, transparency, public participation and independent expert evaluation of safety studies.

Kuzma adds that the Obama administration has issued notice in the *Federal Register* that it is considering revisions in federal regulatory review that would incorporate many of these social values into U.S. policymaking. "It's really going to be an interesting time because that could change," she said. "Our ability to focus on some of these not strictly science-based parameters might change, finally."

Meanwhile, rigorous study of the potential health impacts from nanomaterials should be accelerated, the scientists attending the Wilson Center workshop concluded.

"Even though opinion diverged on the most relevant tests," the *Environmental Health Perspectives* report said, "there was consensus that, for adequate risk management, nanoparticles nearing commercialization should be subjected to a battery of short-term *in vitro* and *in vivo* tests to determine broadly the effects on key target organs and possible molecular mechanisms of toxicity." **CP**

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nally received its modern name, "the place where mesquite grows," and became the Mexican symbol for arid poverty, a symbolism it retains even though today the region receives Mexico City's effluent, which renders it the site of intensive agriculture. Those who do not know the history ascribe its present fertility to modern technology and the sewage of Mexico City. But, as Melville says, it is not an indigenous landscape, it is a conquest landscape.

David Hamilton Wright, a biologist at the University of Georgia, once wrote that "an alien ecologist observing... earth might conclude that cattle is the dominant species in our biosphere." The modern livestock economy and the passion for meat have radically altered the look of the planet. Today, across huge swaths of the globe, from Australia to the western plains of the United States, one sees the conquest landscapes of the European mass-meat producers and their herds of ungulates. Because of romantic ideas of "timeless landscapes" it is hard to grasp the rapidity of this process, with spans as short as thirty-five years between the irruption of a herd onto virgin terrain, over-grazing, soil erosion, crash and eventual stabilization, with the plant communities finally leveling out, though reduced in richness and variety, and the land altered forever.

By 1795, nearly 112,000 cattle were grazing the ranges of Tamaulipas, along the Mexican Gulf coast. These herds–plus no less than 130,000 horses–inflicted major environmental damage on the native grasses. The grasslands began to give way to thorn bushes. By the 1930s the pastures had been so overgrazed and degraded that forty acres were required for each cow.

In a three-week period in May 1806, as Lewis and Clark moved through Montana in the course of their survey, they and their party – the Corps of Discovery – killed 167 animals, about eight a day. Reviewing their entire itinerary, the historian Donald Worster reckons that over twenty-eight months they probably shot – for their needs as opposed to random slaughter – "something between five and ten thousand." But there was plenty of random slaughter as well. They killed grizzlies, mountain lions, wolves, bobcats, marmots and of course buffalo. They could pick and choose because the western plains displayed a richness of animal life that overwhelmed many travellers.

By the end of the 1870s, the buffalo was nearly gone. Among the reasons offered by Andrew Isenberg in his excellent 2001 book *The Destruction of the Bison, An Environmental History, 1750-1920*: the introduction of the horse, courtesy of the Spanish; the introduction of the rifle, particularly the repeating rifle; the fungibility of buffalo hides as trading currency for the white man's goods.

Through the 16th century, the population fell by as much as 90 per cent. The Great Cocoliste epidemic of 1576-81 was the *coup de grâce*. Sheep began to take over from people, as the Spanish increased their stocking rates to as much as 20,000 head of sheep per station.

Colonel Richard Dodge, himself a keen hunter, reckoned that hunters killed over four million in the mid 1870s alone: "Where there were myriads of buffalo... there were now myriads of carcasses. The air was foul with sickening stench and the vast plain... was a dead, solitary, putrid desert." The plains, mountains, valleys profuse with creatures but half a century before were now empty in what one traveller along the South Platte called "the uniformity of its cheerless scenery." Of the Great Plains, Barry Lopez has written, "If you count the buffalo for hides and the antelope for backstraps and the passenger pigeons for target practice and the Indian ponies (killed by whites, to keep the Indian poor), it is conceivable that 500 million creatures died."

And with these creatures went the Indians' food and way of life. When he was 10 years old, Plenty-Coups, chief of the Crow in Montana, had a dream that the white man came with his cattle and destroyed the natural life of the plains. He was right: "When the buffalo went away, we became a changed people... The buffalo was everything to us." Three centuries earlier, the First Viceroy of New Spain had written to his king: "May your lordship realize that if cattle are allowed, the Indians are destroyed." The buffalo went. Indian time ended. The only place to get food was on the reservations, courtesy of the Indian agent. For a while, the Indians made a few dollars gathering up the buffalo bones, shipping off the skeletons, a year or two after the hides. In the buffaloes' stead came the white men's cattle.

The cattle came up from Mexico, west through the Appalachians, or from the Florida panhandle. In 1850, with the exception of coastal California and east Texas, there was barely a cow or a steer west of the Mississippi. There were more cattle–nearly a million–in New York state than anywhere else. In the whole of the United States the number of cattle–excluding milk cows–added up to almost 11.5 million. By 1870 the total was up to 15 million and by 1900 that had more than doubled again, to 35 million. Texas alone had 6.5 million, and Kansas, Iowa and Oklahoma had some 2.5 million each on the range or in feedlots. In that half-century, industrial meat-eating came of age.

From the fourteenth and fifteenth centuries–when reliable records began to be kept–to the mid-nineteenth century, the European diet varied little. Grains took up about 90 per cent of a family's food budget: rye, buckwheat, oats, barley, maize. From the moments that the victuallers and provisioners in the Napoleonic wars pioneered the organization of the mass-production line and also modern methods of food preservation, the stage was set for the annihilation of both time and space in matters of food consumption. The vast cattle herds that began to graze the pastures of the western United States, Australia and Argentina signaled the change.

The speed with which the rhythms and sensibilities of a pre-industrial time were abandoned may be judged by descriptions of Haussmann's famous La Villette abattoir, modelled on the old 1807 design approved by Napoleon, and by accounts, virtually contemporaneous

with the Union Stockyards in Chicago. La Villette was opened in 1867. Siegfried Giedion describes it in *Mechanization Takes Command*:

"The whole installation bears witness to the care with which the individual animal was treated. The great *lairages* (*bergeries*), with their lofts under the high roofs and their careful design, might have stood in a farmyard... In this curious symbiosis of handicraft with centralization lies the peculiarity of this establishment... each ox had a separate booth in which it was felled. This is a survival of handicraft practices, to which the routine of mass slaughtering is unknown. The long houses in which the cattle were slaughtered consisted of rows of single cabins set side by side. Long since, technical installations and slaughtering in large halls have superseded them. It may well be that this treatment in separate booths expresses the deeply rooted experience that the beasts can be raised only at the cost of constant care and attention to the individual animal. The Great Plains beyond the Mississippi, where free tracts of grassland can be dominated from horseback and where the herds grow up almost without care, are implicitly related to the assembly line. In just the same way the peasant farm, where each cow has its name and has to be attended when giving birth to its calf, is linked to handicraft methods in slaughtering."

Giedion's omission here is the feedlot, where the midwestern farmers were able to take the 2-year-old "stockers" from the range, then convert their corn into the weight that the "feeders" swiftly put on, before being dispatched on the final stage of their journey through life.

By 1850 the slaughterhouses of Cincinnati– "Porkopolis"–had been refining the continuous production line for over twenty years.

Many a nineteenth-century traveller stopped in Cincinnati or, later, Chicago to marvel at the efficiency and heartlessness of this unending, furious dispatch of animals to feed New York, Boston, Paris, London and the increasing industrial armies, and military armies too, that desired to eat meat. In these years between 1807 and 1865–the opening of the Union Stockyards in Chicago–was perfected the production-line slaughter of living creatures, for the first time in the history of the world. At one end of the trail lay the prairies, the open range, the boisterous pastoral of the cattle drive, where the cowboys sometimes spared a longhorn: "Reed Anthony, Andy Adams' cowman, tells in J. Frank Dobie's *The Longhorns* how he and other Confederate soldiers guarding a herd of Texas steers saved the life of one because he would 'always walk out and stand attentive to the notes of "Rock of Ages" sung by his herders.'" Spared were two or three or ten or a hundred or a thousand from among the millions and millions of creatures that plodded to railheads like Abilene, and thence eastward, or to abattoirs nearer at hand and then bought up by government agents to be sent to the reservations to feed Indians who no longer had buffalo to hunt.

Between 1807 and 1865 – the opening of the Union Stockyards in Chicago – was perfected the production-line slaughter of living creatures, for the first time in the history of the world.

By the 1880s, so Terry Jordan writes in *North American Cattle Ranching Frontiers*, free grass "greatly encouraged over-stocking, as did a serious misreading of the pastoral capacity of the fragile short-grass plains and the speculation-fueled, hyper-commercialized cattle boom of the early 1880s. The resulting cattle glut both severely damaged the ranges and, by 1886, led to a crash in beef prices. Livestock dumped on the market because the depleted pastures could no longer support them further depressed prices. Even so, thousands of additional cattle died due to the deteriorated condition of the ranges." The terrible winters of 1886 and 1887–the worst in recorded memory–finished off the boom. Millions of cattle died, and the pastures savagely degraded. Across the years, the cattle grazed on the tall grasses–big and little bluestem, particularly where ranchers fenced off the water courses and springs from their competitors. Ironweed and goldenrod invaded, along with Kentucky bluegrass. Short grasses and annual weeds took over.

In the late eighteenth century, when the first cattle herds arrived in what the Spanish colonists called Alta California, the region presented itself as a Mediterranean landscape, but of a sort that had been extinguished in Europe for many centuries. There were meadows with perennial bunchgrasses, beardless wild rye, oat grass, perennial forbs: 22 million acres of such prairie, and 500,000 acres of marsh grass. Beyond this, there were eight million acres of live oak woodlands, and park-like forests. Beyond and above these, the chaparral.

By the 1860s, in the wake of the gold rush, some three million cattle were grazing California's open ranges and the degradation was rapid, particularly as ranchers had been overstocking to cash in on the cattle boom. Floods and drought between 1862 and 1865 consummated the ecological crisis. In the spring of 1863, 97,000 cattle were grazing in parched Santa Barbara County. Two years later, only 12,100 remained. By the mid-1860s, in Terry Jordan's words, "many ranges stood virtually denuded of palatable vegetation." In less than a century, California's pastoral utopia had been destroyed; the ranchers moved east of the Sierra into the Great Basin, or north, to colder and dryer terrain.

These days, travelers heading north through California's Central Valley can gaze at mile upon mile of environmental wreckage: arid land, except where irrigated by water brought in from the north, absurdly dedicated to producing cotton. Some two hundred miles north of Los Angeles fierce stench and clouds of dust herald the Harris Beef feedlot. On the east side of Interstate 5, several thousand steers are penned, occasionally doused by water sprays. After a few minutes of this Dantesque spectacle, the barren landscape resumes, with one of California's state prisons at Coalinga–unlike the beef feedlot, secluded from view–lying just over the horizon to the west. **CP**

Some of these reflections first took form in an introductory essay accompanying the artist Sue Coe's astonishing paintings and drawings of slaughterhouses in the U.S., assembled in the book Dead Meat. *They were developed in a later essay in New Left Review.*

Adventures in Indian Country, Part II

The Takeover at Wounded Knee

By James Abourezk

Wounded Knee was a bitter pill that sat, undissolved, in the stomach of Sioux Indians since 1890. Even today the image of a well-armed cavalry troop slaughtering a group of freezing, hungry Indians is a history of shame for our military and for our country, notwithstanding the government's claims that some of the Indians were armed and dangerous.

I took my seat in January, 1973, as the junior U.S. Senator from South Dakota. On the evening of February 28, one of my staff excitedly told me that Wounded Knee had been taken over by AIM, led by Russell Means and Dennis Banks. AIM wanted to attract attention to Indian grievances, choosing Wounded Knee as the site for its confrontation with the government. Russell Means was an Oglala Sioux who left the reservation in his youth and had lived in urban centers in his adult years. He was by far the most aggressive of the leadership, highly articulate and, as it turned out, opportunistic. Dennis Banks, originally from Minnesota, was a quiet, soft-spoken Chippewa who is just the opposite of Means. Although both are articulate and intelligent, Banks is not given to loud pronouncements and all the bluff and bluster for which Means is famous.

The government at first suspected that AIM would try to take over the BIA building in Pine Ridge, the headquarters of the Oglala Sioux Tribe, but because the government had fortified the building, AIM's plans changed. They decided to move on Wounded Knee village.

After driving into Wounded Knee in a car caravan, the AIM contingent held a press conference, during which they announced their takeover of the village. The U.S. Marshals Service, which already had a presence in Pine Ridge, immediately moved in to surround Wounded Knee. After learning of the takeover, I went to my office, where I tried, unsuccessfully, to reach someone in Pine Ridge who could tell me what was happening. Then, using a Pine Ridge telephone book, I called the first number I found listed in Wounded Knee, which belonged to someone named Wilbur Riegert. It was an amazing coincidence. It was Riegert's house that had been taken over by AIM as their headquarters.

Russ Means, whom I knew from years earlier, answered the phone. When I asked him what was happening, he told me that the Indians were holding nine hostages. They would not be released, he said, until Henry Kissinger, Bill Fulbright, Ted Kennedy, and I came to Wounded Knee to listen to the Indians spell out their grievances. Our conversation was cordial until I heard Russ mumbling under his breath, "CBS is here." Suddenly his voice changed. He began shouting demands and conditions into the telephone. I told him that I would see what I could do about the negotiating team and would get back to him. That night, as I watched the CBS evening news, Russ Means was prominently displayed in the story on Wounded Knee, impressively shouting demands into the telephone at an unnamed caller.

"Senator," he said in his most pompous radio voice, booming in volume and startling in quality. "Do you intend to go to Wounded Knee and exchange yourself for those nine hostages?"

I called him later and told him that, except me, none of the people he had requested was willing to go to South Dakota. I told him that I would go, and that I would be accompanied by Carl Marcy of Fulbright's staff and Tom Sussman of Kennedy's staff. There would, however, be no one from the administration.

"If Kissinger won't come, then I want John Ehrlichman," Means said. "Russ, what have I ever done to you that you would force me to ride in the same airplane with Ehrlichman for three hours?" I responded.

Laughing, Means conceded my point. He decided to accept Marcy, Sussman, and me. I called George McGovern and convinced him to go with us. He had just lost the presidential election and was gearing up for his 1974 re-election race for the Senate.

On the following day, reporters continued to call my Senate office, trying to get information on the takeover. Wounded Knee was big, big news. What appeared to be the entire national press corps gathered in the Interior Committee's hearing room for the press conference. It was my first exposure to the national media, and I was nervous. Staring into the lenses of at least a dozen television cameras, I opened the conference with a statement about my intentions for the trip to Wounded Knee, then I asked for questions. One of the first questions came from Hal Walker, who was then a reporter with CBS Television News.

"Senator," he said in his most pompous radio voice, booming in volume and startling in quality. "Do you intend to go to Wounded Knee and exchange yourself for those nine hostages?"

Panic! How could I say "no" with all those people listening? What would people think of me if I admitted my fear? "No, I do not," I said, knowing full well that this answer could mean the end of my Senate career.

Smelling politician's blood, Walker swooped in for the kill. "Do you mean to tell us, senator, that the life of one U.S. senator is worth more than the lives of nine innocent hostages?" His voice boomed even louder.

I saw the wreckage of my life reflected in the lenses of all those television cameras focused on me, recording, without any mercy, my final humiliation. I was desperate. "I don't look at it as the life of one U.S. senator," I croaked. I knew it was me speaking, but my voice sounded as though it was coming from someone else. "I view it as the life of one coward."

At first, I only vaguely heard the roar of laughter coming from the dozens of reporters clustered in that hearing room. Then I realized they were laughing, not at me, but at Hal Walker.

Our small party requisitioned a small Air Force jet early the next morning and flew to Ellsworth Air Force Base near

Rapid City. From Ellsworth, the Air Force took us by helicopter to the small airstrip just east of Pine Ridge village. We were met there by Joe Trimbach, the FBI agent in charge of what was by then turning into a major confrontation between the Indians and the government.

My agreement with Russ Means was that, as soon as we arrived in Wounded Knee, the hostages would be released. Trimbach set out to inform the Indians of our arrival, and McGovern, Sussman, Marcy and I decided to wait in Pine Ridge, the headquarters both for the Oglala Sioux Tribe and the Bureau of Indian Affairs. It was located some 12 miles southwest of Wounded Knee.

We set up camp in the Crazy Horse Café, the only eating establishment in town, and waited nearly four hours for Trimbach to return. Finally Trimbach returned to tell us that he could get no response from the AIM leadership. Tired of waiting, I told our group, "I know Russ Means. Let's go directly to Wounded Knee and talk to him."

Wounded Knee was named after a small nearby creek, which had been the site of a domestic quarrel, in which an Indian supposedly was shot in the knee by his wife. I had no idea if that was true, but it made for a great story. To reach Wounded Knee, one must drive east of Pine Ridge on State Highway 18 for seven miles, then turn north for another seven miles. By 1973, the village consisted of a few houses scattered around the area, and Clyde Gildersleeve's general store and Indian museum, operated by his son-in-law, Jim Cyzinski. The entire village was dominated by a white wooden church, built on the highest hill overlooking Wounded Knee. The church stood as a silent sentry over the mass grave into which the Indians, massacred by the Army in 1890, had been unceremoniously dumped.

Immediately after the AIM takeover of Wounded Knee, the FBI and the U.S. Marshals Service established checkpoints on all roads leading in and out of the village. Inside the government's perimeter was a no-man's land, referred to by both sides as the "demilitarized zone." Inside the Indian perimeter were bunkers built and manned by AIM's warriors – mostly Vietnam veterans, some of them armed with Soviet assault rifles.

George McGovern and I went into what I thought could very well be the Biblical valley of the shadow of death. At the government's checkpoint south of Wounded Knee, we were transferred into a car driven by John Terronez, the Justice Department's Community Relations representative.

I tied a white cloth to a tree branch and hung it out of the car window. With Terronez driving and McGovern and me in the back seat, we started the slow and agonizing descent into the village of Wounded Knee. As McGovern, Terronez and I progressed deeper into the Indian perimeter and closer to the village, we found ourselves staring directly into the barrels of an assortment of weapons – shotguns, rifles, automatic weapons – all

"Why don't you end it now before someone gets hurt? You may have to face a kidnapping charge, but that would be better than a murder charge if someone gets shot."

aimed directly at our heads by the meanest looking bunch of Indians I had ever seen. The tension in the car increased

When we reached the village and got out of the car, we were met by Russ Means. The first question I asked was, "Where are the hostages?" He pointed to a group of people standing nearby in a cluster, and said, "There they are."

I walked over and told the hostages that we had come to rescue them, that they were now free to go.

"What do you mean, leave?" they said. "We live here. We're not going anywhere."

The afternoon meeting on the plateau could not exactly be described as a roaring success. Banks and Means wanted a tepee set up in which to conduct the negotiations, but they could not find one. Meanwhile, the cameras were rolling. We were surrounded by the network camera crews and an assortment of newspaper journalists. We stood in a circle, and Russ Means opened the session by denouncing me for lying to him. I was stunned by the accusation, not yet used to his brand of showmanship. When I challenged him to name one time when I had lied to him, he would only respond dramatically, "Many times." Then, a minute later, he casually strolled around behind me, out of hearing of the reporters, and whispered in my ear, "Don't take what I said seriously."

The meeting eventually broke up, and we went back into Pine Ridge. That evening, McGovern and I returned to Wounded Knee and joined the Indians at AIM headquarters in Wilbur Riegert's house. We stayed until midnight, listening to the full-blooded, or traditional, Indians as they laid out their grievances. They were joined at night by Crow Dog, the Rosebud Sioux holy man.

To me, their complaints were genuine. The tribe had been taken over by mixed-blooded Indians through elections that the traditional Indians neither understood nor wanted to participate in. The Sioux had historically chosen their leaders by consensus, according to the amount of respect that each leader commanded in his area of expertise, as a warrior, a hunter and so forth. To have the Bureau of Indian Affairs tell them they must emulate the white man's way of choosing leaders through elections was an affront to the traditional full bloods. Consequently, over the years, they had refused to take part in the elections held for tribal chairman and council members, and were now paying the price for standing on principle, because their wishes were being ignored by the younger oligarchy of mixed-blooded Indians who dominated the election process.

Their grievances had never been addressed either by the tribal leadership or by the Bureau of Indian Affairs. What offended their sensibilities was the constant interference in their lives by the government and by the mixed-blooded oligarchy, with no concomitant benefit. Land ownership, for example, was an alien concept to them. Land was to be used by those who lived on it, but it was not to be "owned" by anyone. The original sin regarding land ownership occurred in 1887, when the Congress passed the Dawes Allotment Act. The Act took the land out of tribal control and allotted each Indian adult 160 acres of land to be held in trust by the government. Because the land could not be sold, with the passing of each generation, ownership of the allotted quarter section had to be shared by all the heirs of the original allottee. As generations passed, an individual share of 1/256th of a quarter of land was not un-

common.

To make matters worse, because 160 acres of relatively unproductive land can only sustain a few head of cattle, the Bureau of Indian Affairs combined several quarters of land into what the BIA called a "Range Management Unit," then leased out the unit to someone with a large herd – always a white or a mixed-blooded rancher. If an Indian landowner in the middle of the unit chose not to lease his land, his only recourse was to build a fence to prevent the lessee's cattle from eating his grass. Most Indian landowners had no money to build a fence, and when the lessee's cattle ate their grass, their compensation for the trespass ordered by the government was exactly what it would have been had they agreed to join the Range Management Unit in the first place – a pittance. The Allotment Act obviously was intended to "civilize" the Indians and to get their land out of common, tribal ownership and into the hands of white men.

McGovern and I listened to their grievances, and it was nearly midnight when we rose to leave. I said to Russell Means, "You know, Russ, this thing is going to have to end at some point. Why don't you end it now before someone gets hurt? You may have to face a kidnapping charge, but that would be better than a murder charge if someone gets shot."

Means obviously had been thinking about this, because he responded immediately. "You're right. We'll do it, but you have to tell the FBI that we want to know exactly who's going to be charged and with what crime, and how much bail will be set for each person. We need to give our lawyers this information so that they can be ready."

I agreed. I immediately passed Means' request on to FBI agent Trimbach, when we returned to the government checkpoint. McGovern, Marcy, Sussman and I flew back to Ellsworth Air Force Base, where we spent the night, then to Washington the next morning, believing that the matter had been resolved.

Of course, the confrontation did not end until some 70 days later, causing me to believe that the government did not want it to end. Someone in an official position obviously must have seen a political advantage in a publicized confrontation with a small band of militant Indians.

Both Banks and Means were arrested and tried in Minneapolis, as well as in the federal court in South Dakota, and again in state court in South Dakota. Means was sentenced to prison. When he came up for work release, no one would hire him, so I hired him to work in my Sioux Falls field office. I got only one complaint from a constituent, who called and said that it was outrageous that I would pay him minimum wage (then $3.25 per hour). No one else complained out loud.

Russell went to an acting career and Dennis Banks became a businessman somewhere in the southeast, maybe Kentucky.

I authored and passed significant pieces of Indian legislation during the 1970s, one being the Indian Self Determination Act, as well as the Indian Child Welfare Act, and the Indian Religious Freedom Act.

Although the Indians learned from the Wounded Knee takeover how to organize themselves, I'm not certain it benefited them to any extent. The same grievances still exist, the same bureaucracy still stifles Indian life, and the same misery still holds on America's Indian reservations. **CP**

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