Secrets Revealed, Revelations Concealed: A Secret City Confronts Its Environmental Legacy of Weapons Production

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Secrets Revealed, Revelations Concealed: A Secret City Confronts its Environmental Legacy of Weapons Production

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Abstract

Oak Ridge, Tennessee was born as a planned and secret community established during World War II to contribute to the development of the first atomic bomb. Sacrificing their own civil liberties toward the goals of democracy and freedom, residents lived behind guarded fences and learned not to discuss their work with family, neighbors or co-workers. Their clandestine work became public following the bombing of Hiroshima, but the environmental legacies of weapons production increased and remained secret throughout the Cold War. In this paper, I discuss the cultural and environmental legacy of Oak Ridge and then draw on ethnographic interviews with residents, former workers, and participation in public hearings to show how the culture of secrecy has shaped the community of today, while efforts to confront the environmental legacy of the city continues to both unite and divide the community. I conclude that the history of secrecy has limited organized efforts to confront the ongoing environmental problems facing the community, while individuals act independently to investigate past and potential exposures. Paradoxically, however, the history of secrecy contributed to the development of a proud community with a commitment to environmental stewardship, democratic principles, and concern for peace and stability that many outsiders have failed

to recognize in condemning the community as a showcase of military toxic waste.
[Keywords: Oak Ridge, secrecy, radiation, risk perception, science and society, atomic bomb, depleted uranium]

Introduction

In the summer of 2005, the City of Oak Ridge, Tennessee celebrated the 60th anniversary of the end of World War II, by commemorating the city's strange and fascinating history as a "Secret City" and its pivotal role in the development of the atomic bomb, where U-235, or "enriched" uranium was separated from natural uranium and delivered to Los Alamos. Yet the stories behind the scientific achievements that made the bomb possible were not the sole focus of the Secret City celebration; the event was as much focused on stories of the community's civic history when, in 1942, what was once sparsely-settled rural farmland was swiftly turned into a planned and controlled clandestine community of 75,000 people enclosed by a barbed-wire fence and patrolled by armed guards. This early "gated community" had seven gates through which few could pass, and its purpose concealed from not only the inhabitants of nearby Knoxville, but even from the state's governor himself, until August 6, 1945, when Hiroshima was bombed and the secret city of Oak Ridge was at last revealed.

This paper emerged from a broader ethnographic study on depleted uranium and the impact its production and use has had on differing communities throughout the world. This empirical study has included extensive qualitative interviews and oral histories with former workers, scientists and managers of the Oak Ridge facilities, current and former residents, union organizers, public health specialists and civic leaders. In addition, from 2004 to 2005 I attended hearings of the Oak Ridge Local Oversight Committee, and from 2004 to early 2006, I attended numerous public hearings on environmental contamination, health concerns of residents and former workers of the Oak Ridge facilities, and Secret City festivals and protests organized by anti-war groups from outside the area.

I first discuss the anthropological literature on secrecy, and then draw on historical, sociological, and published local histories, along with some of the oral histories I collected, to summarize the history of the development of Oak Ridge as a secret city and its transformation into a professional and technological research center that is now more commonly regarded as a suburb of nearby Knoxville. I follow this discussion by presenting my empirical findings

on how some individuals have responded to the legacy of secrecy as it has shaped contemporary environmental-health concerns.

Secrecy and the Culture of Surveillance

As Gusterson (2004) has shown, secrecy related to production is not unique; indeed, it is quite common in corporations where loyalty to one's employer is internalized in much the same way that nationalism stirs unquestioning allegiance to a flag and political-economic system. But when a company's production or development secrets are at stake, or working conditions poor or unsafe, such voluntary loyalty may be insufficient to control production. Thus, employee surveillance increases, not only of worker's job performance, but of their bodies as well, such as the routine administration of testing employees' urine for illicit drug use,[1] or through random lie detector tests. In addition to such surveillance, workers are frequently required to sign contracts in which they agree not to reveal company secrets and/or to relinquish intellectual property rights to their own work product, thereby limiting their ability to publish or publicize their own achievements. And in nuclear weapons laboratories, as Gusterson (2004) has shown, surveillance of workers' personal and sexual lives, finances, and political beliefs are routinely accepted as a normal condition of employment. Moreover, Gusterson (2004) suggests that in such a climate of secrecy, knowledge is produced by scientists who sacrifice individual acclaim for their achievements in exchange for participation in social projects where their own contributions remain invisible. In this way, he suggests, scientists become workers who produce a product for the state, which owns and controls the ways in which this knowledge is produced and controlled. While such scholarship is the reverse of how knowledge is produced in universities (where professional advancement is based on one's public record of contribution to the field), the invisibility of individual scientists in weapons production, and their lack of control or ownership over the data they produce, becomes normalized. Thus, experiments, discoveries, and all types of data are hidden from public view and only selectively revealed to the public at the discretion of the governing authorities who control its production and access.

Reppy (1999) has pointed to the routinized way in which secrecy pervades our culture, indicating that it serves as a potent tool for social organization and control. But the contours of secrecy are less than sharp, she argues, creating blurred boundaries between that which is concealed to the public, and that which is revealed. This ambiguity of secrecy contributes to the produc-

tion of knowledge and cultural practices in unique and important ways. First, while secrecy may facilitate production, it can also limit the dissemination of scientific findings and ideas. Second, while secrecy may create impenetrable boundaries that unite people as "insiders," it can also create atmospheres of distrust among colleagues, neighbors, and friends.

Merten (1999), for example, shows how the enculturation process into secrecy that adolescent American girls commonly produce and participate in, is critical to the formation of social identities that mark inclusion and exclusion into specific groups, and is a process that is continually negotiated and tested by those who participate. Identity as an "Oak Ridger" was forged as workers at Oak Ridge were admonished that they must keep secret not only the nature of their jobs (of which they themselves knew little), but also the nature of their personal lives. These threats were enforced through both threats (of imprisonment or death if one were charged with treason, or of banishment from the community, if one lost one's job), and through a process of socialization in which being entrusted with matters of national security made one an honored member of an exclusive group. In contrast, those who were not a part of this secret history remain to this day outsiders in many respects, viewed by many as unable to grasp the cultural legacy that has characterized the community of today. This outsider status has contributed to frictions within the community as issues of toxic exposures and environmental contamination are debated, leaving those who raise the issue subject to disrespect by many who feel that the sacrifices veterans of the Manhattan Project and Cold War era made toward national security are not well respected or understood by environmental critics.

The meanings of secrets are not always clear. As Merten (1999) has suggested, it is not learning the secrets themselves that is so important, as learning how to interpret the meanings of these secrets. In indigenous societies, for example, initiation rites often entail learning secrets, but the rules and expectations regarding secrecy are explicitly revealed to initiates. In contrast, in American culture, secrecy may well prevail among institutions and social relationships, but not only are the rules and expectations often unclear and subject to negotiation, but so, too, are the meanings attached to these secrets.

At Oak Ridge, however, during the Manhattan Project and throughout the Cold War, the rules and expectations were very clear—one did not speak of one's work to anyone, and one did not question rules, procedures, or even the objective of one's work. To do so would be treasonous. The meanings attached to these secrets—what it meant to work at Oak Ridge, were also fairly clear. While working and living in secret at Oak Ridge had many meanings—chief

among them, ending the war—keeping the secret also meant having housing and job security and avoiding the front lines—which for many young men and their families gave incalculable value to a secrecy not well understood, but trusted as critical to the wartime effort.

But Howard (1987), who grew up in Oak Ridge during the Cold War era and was himself the son of a scientist at the Oak Ridge National Laboratories (ORNL), indicates that secrecy became so enculturated among Oak Ridge residents that when the fences came down in 1949, the shared values of discretion and silence were so ingrained that the political climate of the Cold War only served to deepen the significance of secrecy in the area, while the meanings attached to this secrecy became less clear.

> ...it was really after the war that secrecy in Oak Ridge became most pervasive. The gates and fences were gone, yet secrecy persisted in the everyday life of the 1950s in subtle and powerful ways. There was still a formal apparatus to prevent the development of public knowledge—loyalty oaths, security clearances, lie-detector tests, badges and so forth—but what was most effective was an almost unconscious conspiracy of silence in which secrets were protected by voluntary non-communication. This was a culture of secrecy, which extended even to matters that weren't military or classified. One result that might be surprising to outsiders is that it was possible to grow up in Oak Ridge and not have any idea how important a role the city continued to play in nuclear weapons production (Howard 1987:278).

Howard's observations reflect the critical difference between two classic books regarding secrecy and surveillance. In George Orwell's classic *1984*, secrets are maintained through surveillance and coercion. In contrast, in Aldous Huxley's classic *Brave New World*, surveillance and coercion are far less necessary; by shaping thought, or through what Noam Chomsky has popularized as "Manufacturing Consent," the values and belief systems of those in power can be so successfully enculturated into the lives and thinking of ordinary citizens, that coercion is no longer necessary.

> The *really* interesting thing to ponder is the way this emergency mentality [of the Manhattan Project] was made into a permanent part of everyday life, to support the production of nuclear weapons after the emergency had passed. The routinization of bomb production was accompanied by

> the routinization of secrecy. Who needs fences and guard towers when people have stopped noticing what's going on anyway? By discouraging discussion of technical details, the system discouraged discussion of the rationale of the entire process. People did their jobs and kept quiet when the question of responsibility came up. People who didn't know never found out because they were diverted from thinking that there was anything to find out (Howard 1987:281, original emphasis).

How, then, might this "culture of secrecy" contribute to perceptions of, and responses to, the environmental legacies and health concerns associated with weapons development in Oak Ridge? To consider this question, I discuss the history of how Oak Ridge developed from a rural farm community to a secret city and ultimately, the technological research center that it is today. I then turn to a discussion of current civic and environmental activism in Oak Ridge, reflecting on how the unique cultural history of Oak Ridge as a "Secret City," shapes local lives today and community responses to environmental hazards.

A History of Place, Space and Social Identities

The rural farmland of east Tennessee that came to be prized by the U.S. government for its seclusion and for its access to electricity (through the Tennessee Valley Authority's depression-era hydroelectric dams), was long regarded as a place of refuge and self-reliance for those with a pioneering spirit, ever since it was deeded to the federal government by treaty with the Cherokees in 1798. Most white settlers received their acreage—largely uninhabited by the Cherokee—through federal land grants provided in compensation for their service to the Revolutionary War. These land grants enabled them to establish small subsistence farmsteads that never provided much prosperity, but did provide sufficient crops to support a family. Trade was primarily through barter, and because farmers had little wealth and an ethos of self-sufficiency, few owned slaves. The seclusion and frontier spirit of self-reliance protected the farming community both from the brutalities of the Civil War in the late nineteenth century, and from those of the Great Depression in the 1930's. And while there were few African Americans in the community, neither was there institutionalized segregation. The region was in fact noted for joining the cause of the Union during the Civil War, and a trail was established through the region to assist runaway slaves (United States Department of Interior 1991).

But all was to change during the Second World War, with no prior warning, except that of a single, wild-haired fifty-year old man who called himself a prophet. John Hendrix was born in the region known as Bear Creek Valley in 1865. He led a rather unremarkable farming life until his daughter died, his family left him, and he turned to God. God turned to John, so the legend goes, and told him to venture into the woods and lay with his face on the ground for forty nights. On the fortieth night, God assured him, the future would be revealed.

On the forty-first day he emerged from the hills with the revelation that "Bear Creek Valley some day will be filled with great buildings and factories and they will help toward winning the greatest war that ever will be.... Big engines will dig big ditches and thousands of people will be running to and fro. They will be building things and there will be great noise and confusion and the earth will shake.... I've seen it. It's coming" (Robinson 1950:18,19).

He died in 1915, his revelation no more than a local tale, until 1942 when the government sent letters to the area's 1,000 households, condemning their land, and offering them from $34.16 to $44.10 an acre (Robinson 1950). Residents had two to three weeks to leave their homes, crops, and livestock, and would not receive any payment until after they had quit the premises. Thus began the building of the community of Oak Ridge, and what was to become the largest manufacturing center in the world at that time. Its mission was accomplished—with the secret of its existence successfully concealed—within three years.

This pre-World War II history of land appropriation and displacement is given scant mention in the narratives that detail Oak Ridge's past, but is important to understanding the very personal and social impacts that development of the Oak Ridge military complex wrought. While many of those who were evicted were offered jobs at the new military-industrial complex, enabling them to prosper far beyond the subsistence standards farming had provided, they were among the youngest residents. For older farmers, the condemnation of their land and homes had profound impacts.

> ...the economic and technical problems inherent in such hurried-up moving, monumental as they were, did not compare to the mental trauma. One has to understand the cultural and ancestral roots to which rural folk become attached to the land after a few generations in order to understand the shock which results from such uprooting (Irwin 1987:21).

Irwin continues,

> ...young folks could look toward the future with enthusiastic optimism and quickly adjust. Old folks couldn't. They were, to some extent, living in the past, among the familiar hollows and ridges they had known all their lives. They lived among their relatives and neighbors and lived in their memories among their ancestors—their people. This would not be the case when they moved to new places, and among strange people (Irwin 1987:22).

The low sum paid to homeowners was insufficient to replace their homes and farms and, unlike the TVA's displacement program of the prior decade, no funding was provided for relocation. And not only was the sum paid based on depression-era prices (U.S. Department of Interior 1991), but the mass exodus of farmers in search of arable land—limited by the flooding associated with the TVA's Norris and Watts Bar Dams constructed in the 1930s—led to an inflation of prices in the surrounding communities (Irwin 1987). But this cost, in many respects replicating colonial and current displacement of indigenous peoples for the establishment of protected areas or hydroelectric dams, was regarded as necessary and justified by the government for the greater social good that was envisioned in the name of social progress.

Another reason the region was regarded as attractive was that the south had an abundance of low-waged labor. Thus, the majority of workers were recruited throughout the south, while professionals were more likely to be recruited from the northeast. African Americans were among the most enthusiastically recruited as workers, due to their high unemployment rates. Fearing integration of the community might create production problems, segregation was planned by the federal government, with substandard housing intentionally designed, or what former Oak Ridge resident Thelma Present (1985:7) described as "built-in slums." Blacks were housed in overcrowded, inferior "hutments," lacking water, electricity, or glass windows, and were forbidden from sharing quarters with their husbands or wives. Thus, for the first time the region saw planned segregation as policy, while elsewhere blacks and whites fought side by side for liberty and freedom against the racial and ethnic genocide of the Nazis in World War II (Johnson and Jackson 1986; Olwell 2004). Johnson and Jackson (1986:22) suggest that the inferior housing offered to blacks in Oak Ridge was justified by the city's planners on the grounds that they would "prefer" such living quarters.[2]

At the same time that the city instituted racial segregation (while providing blacks with what were better paying jobs than available elsewhere in the south), in other respects the city was a model of what might today pass for "smart growth." Roads and neighborhoods were designed around the natural topography of the area, in order to both maximize the natural beauty of the area, and to speed roadway construction. Shopping centers, schools, churches, and cultural amenities were located within walking distance of homes, neighborhoods had sidewalks and access to public transportation, and because housing was so crowded, homes were placed at angles in order to provide a sense of privacy to inhabitants (Johnson and Jackson 1986).

Among the unique cultural features that contributed to the building of the community was what Present (1985) noted in a series of letters to her friend, Margaret Mead, as the youthfulness of the new community, with the majority of newcomers in their twenties. The newcomer status of the vast majority meant that few living there had any family ties to bind them to the land, or to call on for social support. Thus, as elders were forced off the land and young people flocked to the area, courtships and marriages were hastily established, new families started, and new friendships were nurtured among people who could not ask personal questions of each other. In this climate, kinship based on ancestry and biology was replaced with a new form of "kinship" based on marital alliances and fosterage among families who quickly came to depend upon each other for exchange of information (limited though it was), access to suitable housing, strategic resources, and child care.

Although the city was intended to be temporary, to last no more than a few years, the social and environmental amenities incorporated into the city's design contributed to the sense of community and cohesion that not only led many to remain in the community after the war, but also reinforced the sense of secrecy, because one's life was closely monitored and witnessed not only by the government, but by the community as well. It has been said that up to one in four adults was a government informant, working as waitresses or secretaries, lingering in dormitories or bathrooms, or dating and socializing with unwitting workers and scientists (Seary 1992). The fear of speaking of one's work prevailed to such an extent that even children learned never to ask what their parents did for a living, with billboards prominently displayed throughout town warning "What you see here, What you do here, What you hear here, When you leave here, Let it stay here." For many, such secrecy was normalized, while for others, the fences provided a sense of protection (not unlike gated communities today) with doors left unlocked and neighbors free to

enter and exit each other's homes at will. Margaret Mead (1946 in Present 1985:20) compared the enclosure of the community to a ship at sea, where one is "in a closed-off secure world," while Present (1985:21) noted a friend's observation that people felt safe because "nobody who had a criminal record of any kind could work here." The gates and surveillance thus "protected" one from the outside world, as much as they served to control and monitor the population. Present (1985:8) reflected:

> Still, something disturbed me about the apparent acceptance of and resignation to the Army's authority. The guards at the gates and the required display of passes to move in or out of the city were taken as facts of life. Even more pervasive was the feeling that the gates protected the insiders from a possible invasion by the outside world. However, the aura of secrecy that had permeated the community had created a common bond, resulting in a tightly knit city where everyone was wholeheartedly involved in whatever it was that might shorten the war.

These observations correspond in many respects to those made of the secret cities of the former Soviet Union. For example, Weiner (2002) notes that in the secret city of Arzamas-16, now known as Sarov, Russia, which similarly closed off its residents from the outside world through both physical fences and state-monitoring and control of all activities, but did not allow residents to leave without government permission until as late as 1998, residents have shown a reluctance to move. This reluctance, Weiner (2002:133) notes, is due to limited housing and employment opportunities outside the city, but also due to the security residents feel from crime, violence and drug use that comes of "government controlled isolation."

And like secret cities throughout the world, Oak Ridge drew some of the world's greatest scientists together, along with highly qualified technicians and well-educated managers from all across the nation and all over the world, to work on projects they knew little about, start families and create multi-cultural communities in a virtual wasteland of mud and construction, all without speaking of one's work or daily life, and focused on their professional objectives with an efficiency, tenacity and commitment to success that few could rival.

Only a handful of those in the top echelon knew the details of what they were working on, while many others correctly guessed the nature of their work, but dared not speak it. One anonymous woman who was aware of what she was working on, indicated to me that even though she understood the

objective of the project, she did not think that even General Lesley Groves grasped the devastation and scale of what the bomb would do. Speaking of the subject only to her husband, a high-level corporate executive working with the federal government on the project, and himself having the highest-level security clearance, she indicated that the secrecy was kept through a fear not just of what would happen to oneself, but what could happen to any friend or colleague who learned of the nature of the project they were working on. In addition, the hectic life of starting and raising families in a pioneer spirit, where middle- and upper-class women found themselves cooking on oil and wood stoves, living in tiny pre-fab homes slapped together at cartoon-speed, showering in cold water, waiting in long lines to purchase basic food, and living on diets so mundane that some eventually put together a cookbook entitled "365 Ways to Make Spanish Rice," left them with plenty of other things to talk about aside from issues of national security.

"The early days in Oak Ridge were a comedy," this anonymous informant said, citing the struggles to purchase and cook food, traverse a city with only one or two main roads and few private cars allowed, work alongside new friends and colleagues whose own work was unmentionable, while simultaneously trying to master a scientific and technological feat of profound consequence before Germany did the same. When the bomb was finally dropped she said, "We were so thrilled to finally be released from the secret...that we had been keeping all those years."

Yet the ending of the war did not release them from all secrecy, as the Cold War took off and Oak Ridge continued in its national security mission to develop what we now call weapons of mass destruction. Historian Russell Olwell, in his book, "At Work in the Atomic City," describes the community culture that facilitated the perpetuation of this secrecy. Pointing out that Oak Ridge

> more closely approximated a military base than the rural village that predated it. The army administered Oak Ridge without pretense of democracy, and for the duration of the war, it allowed no local elections, free press, or freedom of assembly. Because Oak Ridge was owned and managed by the U.S. Army, military work and civil society overlapped there, making it difficult to see where the former ended and the latter began. The army's security system created a "city behind a fence," a community developed in isolation from the rest of the country. Under these conditions, work in Oak Ridge took on a patriotic and military character that profoundly shaped life in the city (Olwell 2004:3).

Olwell (2004:3) concludes that this history contributed to a "patriotic consensus" in which national defense took precedence over competing values and civil liberties.

> This consensus had several key elements: a concept of workers as surrogate soldiers serving their nation, enforcement of secrecy restrictions about work at the facility, and the prioritization of production speed over worker health and safety. This consensus was not monolithic, as workers and residents questioned some elements of military control from the start. These embedded rules set the parameters of much of Oak Ridge's civic history, limiting worker and community activism (Olwell 2004:4).

Yet the community was indeed active, creating cultural institutions and centers that continue to this day. They established a symphony orchestra, churches, theaters, a woman's group that focused on discussion of current events and literature, and one of the best public school systems in the state. Consequently, in June of 2005, as the city geared up to celebrate the dropping of the atomic bomb, this history was presented less as a celebration of military victory, and more as a celebration of community pride, with public narratives of seemingly common senior citizens telling stories of their own coming of age in times of war, stories that spoke to the heart of moral complexity and human achievement, rich with civic pride and hope for the future amidst the troubling 21st century we now enter with both caution and concern.

Memories of the Past

"Don't Miss the Fun at the 2005 Secret City Festival," a promotional web-site advised. Featuring arts and crafts and antique booths, a rock climbing wall and petting zoo for the kids, not to mention games of Bombs Away, Rations Reality, Spy Spotter and Crack the Code, (alongside a lavender festival of all things), as well as re-enactments of World War II battles, a visit by Enola Gay navigator "Dutch" Van Kirk, jitterbug dancing to big band music, and the dedication of a commemorative walk to the Manhattan Project veterans, the ability to boast and reminisce about the secret past infused the festival participants and speakers with a palpable pride and call for public recognition and respect of their roles in what they viewed as bringing peace to the world.

"During World War II," Bill Wilcox, one of the organizers of the festival and a former administrator with the Manhattan Project, said in his public speech

at the Festival (June 18, 2005), "we heard about the horrors week after week, month after month, year after year." Wilcox pointed out that the firebombings of over sixty Japanese cities, along with the 54,000,000 people who were killed by other humans during the war, led to a determination to do whatever was necessary to bring an end to the killings. "What we took pride in was that the shock of the Manhattan Project's success got to Emperor Hirohito," thereby bringing an abrupt end to the war and its killings. "We learned to keep secrets and restrain our curiosity," he said, "and lived with rules we didn't agree with and sometimes didn't understand," in an effort to reach that peaceful end.

"I wasn't enthused about the Secret City Festival and I didn't think their secrets were anything to celebrate," Emily,[3] a 54 year-old woman who grew up near Oak Ridge, remarked. Emily isn't concerned about the making and dropping of the bomb. For Emily, who suffers from a number of neurological, muscular, immunological and skin ailments that she attributes to exposures she received from drinking well water and eating home-grown vegetables as a child, the city continues to maintain a steadfast hold on secrecy, failing to reveal where toxins were dumped, what residents and workers were exposed to, and celebrating what she says is selective testing of fish, wildlife, water, soil and air while refusing to test the bodies of those exposed. At her own expense, Emily has joined with a group of others who grew up in the community or worked in the facilities, who have had body-burden tests to determine the levels of toxins and heavy metals in their bodies. She indicates that her testing revealed significantly high levels of arsenic, cadmium, mercury and nickel in her blood. In response, she went door to door in the neighborhood where she grew up, locating those who lived in the area during the fifties and sixties, and tracked them down to learn about their and their children's health problems. She said she found clusters of cancers, birth deformities, immunological and neurological problems among those who grew up eating the food grown in the soil and drinking of the well water.

Yet while Emily does not suggest that her research is a study of environmental problems in all of Oak Ridge, but only of her one small neighborhood, she indicates that she has repeatedly been told by environmental health specialists, representatives of the Department of Energy (DOE), and others that her health problems could in no way be related to her exposures, because her neighborhood was located beyond the Clinch River, where such toxins were known to be disposed. Undeterred, Emily went to a map store, obtained a series of geological maps showing where limestone caverns ran underground, linking the Oak Ridge reservation to local aquifers beyond the Oak Ridge city

limits, and then took her maps to geologists to confirm her suspicions that the limestone caverns could provide a conduit for toxins to reach her community.

But toxic wastes were supposedly not dumped anywhere along these geological routes. So, inspired by long-standing rumors of illegal dumping, and to explain how her well water or potato garden might have been contaminated, she says that she tracked down the men who did the dumping. Claiming that barrels of radioactive and chemically toxic substances were routinely dumped into ponds and shot full of holes to sink them, or buried in poorly designed pits that have since sunk and potentially contaminated aquifers, she has placed dots alongside these alleged dump sites and brings the maps to public environmental and health meetings to show how the epidemiological study of allegedly faulty data provided by DOE does not reflect the reality of environmental exposures. It is the refusal to look at other data on human suffering in the region, she suggests, along with the history of keeping secrets, that have made it nearly impossible to establish any linkage between environmental exposures and human health in the Oak Ridge region.

Tesh (2000) points out that one of the reasons it is so difficult to establish such linkages is because most of the work on environmental exposures is done on laboratory animals, and that what is hazardous to a non-human species may not be hazardous to humans, and vice-versa. In addition, she writes:

> Studies of human populations, however, also fail to provide clear information. The populations exposed are usually too small, information about exposure levels is usually too weak, the latency period before cancer shows up is usually too long, and the possible confounding factors are usually too many. Thus, scientists can seldom find more than a weak link between a community's health problems and environmental pollution (Tesh 2000:5).

Consequently, the difficulty in establishing a linkage between exposures to environmental toxins and human health concerns is not necessarily limited to Oak Ridge, but reflects limitations in the scientific process itself, where human experimentation is strictly limited, and the near infinite number of potential chemical combinations makes assessing their combined effects nearly impossible.

After my first encounter with Emily, I began seeking out workers who had allegedly dumped toxins in the ponds and shot them full of holes. In no time at all, I found several elderly men who spoke of driving to undisclosed ponds

in the middle of the night, dumping barrels filled with toxins and radioactive materials and either shooting them themselves, upon threat of losing their jobs if they did not, or watching as armed guards in towers did so. "Let me just say we dumped things out there that to this day aren't even supposed to exist," one retired chemist confided to me, while declining to disclose exactly what he dumped. "Let's just say it was hot!" he laughingly replied, as he brought the interview to a close.

Another retired chemical operator, who worked for the Oak Ridge facilities from 1944 to 1984, elaborated.

> We had many, many cylinders that we didn't have any idea what was in them. They weren't on inventory. We'd take them down and hang them up over the pond. We had a thing built down at the pond and then we'd get back about a hundred yards and shoot 'em with a rifle and when we did it would drop down in the water. The stuff in there then would leak out in the water.... We knew it was bad stuff, but we didn't worry about it. We had a job to do. All of us had kids at home we had to feed.... Supposedly they cleaned those ponds out. But I wouldn't want to go swimming in one of those, I'll tell you that (Anonymous informant, personal interview, July 22, 2005).

Alleging that he dumped mercury, aluminum, PCB's, Strontium 90, uranium, and other radiological and toxic materials into ponds ("some of it in paper barrels"), or buried "hot" (radioactive) machinery throughout the region, the man I'll call Charlie accompanied me, Emily, and others to the site of a new residential housing development situated adjacent to Oak Ridge's K-25 gaseous diffusion plant, which is now slated to be decontaminated and demolished (while efforts to preserve parts of it as a cultural heritage site continue). The neighborhood, designed to replicate a small-town neighborhood of affordable homes starting at $149,000, with large front porches and quaint, homey poly-resin architecture, boasts of its idyllic location adjacent to the Clinch River, where fishing of bluegill, catfish, and bass abound. As a man and his three or four-year old daughter proudly took pictures of their new home site, Charlie stood but a few yards away pointing to the spots in the Clinch River where he alleged that he dumped radioactive and toxic materials for decades. But the dumping, he says, is not his biggest concern. He feels the biggest threat to the community may well come from "the atmosphere." Pointing to the TSCA incinerator next to K-25 and the new idyllic neighbor-

hood, he said "we got that incinerator out there and the wind blows west-east most of the time and it carries stuff up here." While air quality around the incinerator is monitored, there remains considerable controversy as to how effective the monitoring is.

The TSCA was named after the Toxic Substances Control Act and began operating in 1991, making it the nation's only incinerator burning a combination of radioactive wastes, PCB's and other toxic metals. In addition, the Tennessee Valley Authority (TVA) coal-burning plants emit arsenic, mercury and radioactive particles, while two private companies in Roane County burn radioactive wastes. Nonetheless, on February 3, 2006, the Agency for Toxic Substances and Disease Registry (ATSDR), a division of the Center for Disease Control, issued a public health assessment indicating that the incinerator does not pose a public health hazard (ATSDR 2006).

Charlie remains cynical about any assurances of safety. He recalled a disposal incident in the past when he was told to bury a drum he was assured was safe, but found when he took it to another building to test it himself "every radiation instrument they had went off and they came out of that building like bees out of a hive." He returned the drum to its original location, where he was assured again that it was safe and that "they calibrate their instruments different than [we] do." Charlie responded, "Yeah, they put batteries in theirs."

But, he says of Oak Ridge, "I'd rather be here than any place I know of." And it is his love of Oak Ridge and the friends and co-workers that he has made over the years that have led Charlie to begin speaking out about his role in illegal dumping of hazardous and radioactive materials, eventually leading him to Washington, D.C., where he testified before Congress on his role in disposal. His activism, along with that of Sherry (a pseudonym) and others, led to the establishment of the 1996 Worker Health Protection Program (WHPP), which provides a mobile CAT-scanning facility for workers of three DOE gaseous diffusion plants (Oak Ridge, Tennessee; Paducah, Kentucky and Portsmouth, Ohio) to monitor any respiratory or other health problems that might be detected among those who were exposed to radioactive and toxic substances in the course of their work. The CAT scanning facility has been very successful, and current and former workers form long lines for testing whenever the facility is in Oak Ridge. Yet Charlie, Emily, Sherry and other individuals who have been active in accumulating evidence of environmental exposures and their possible association with health problems in the area, have all voiced concerns that they have been subjected to social persecution, their telephone conversations may have been monitored, and their lives endan-

gered by their activism, fearing that residents and the DOE seek to keep such exposures secreted from public view and discourse. And though there is no evidence that any of their fears in this regard are legitimate, or that DOE has done anything to monitor or threaten them, their collective *perception* that by violating the code of secrecy in Oak Ridge, they have been subjected to such threats, is very real indeed.

Public Discourse on the Environmental Legacies at Oak Ridge

The participants at the Oak Ridge Secret City Festival made little mention of the toxic and radiological releases that resulted from their work on the bomb, and those participants I interviewed did not feel it would have been appropriate to do so. Feelings were mixed, from denial that there is any problem at all, to realizations that the releases were indeed real, but given the context of the times, in which the exigency of ending the war effort, combined with a lack of knowledge about just how bad some of the toxins were, raising the issue would detract from the historical legacy of the Manhattan Project itself and ongoing efforts to preserve parts of the facilities as a national memorial of our nation's cultural heritage. Moreover, a very real concern prevails among residents that rather than confront the environmental heritage of Oak Ridge, it is far more important to refute allegations that frogs glow in the dark and one-eyed babies are the norm, or no one will want to live in Oak Ridge, property values will drop significantly, and those who live there will be stigmatized as reproductively unfit.

A common response to claims of environmental hazards has been, "Oak Ridge is the most studied eco-system on earth."[4] Similarly, the Oak Ridge "Citizen's Guide to the Environment," put out by the Oak Ridge Chamber of Commerce indicates that "Oak Ridge is one of the safest cities in which to live because it is one of the most monitored, sampled, and analyzed," (Oak Ridge Chamber of Commerce 2002:7). Presenting credible data on the quality of air, agriculture, drinking, surface and ground water, fishing, and wildlife, the report does present an optimistic view that despite a historical legacy of hazardous releases, the city has conducted extensive clean-up, changed operations within the facilities since the 1970s, and continues to monitor the environment. Yet, as Emily and others have indicated, very little is mentioned in the report concerning human health, with the exception of a mention of the existence of epidemiological data on cancer mortality and infant deaths suggesting that there is no need for concern (Oak Ridge Chamber of Commerce 2002).

These findings are consistent with those of Amy Wolfe (1987:465), an anthropologist employed by Oak Ridge National Laboratories, who found that perceptions of risk are associated with both professional status, and length of residence in the city. She found that those who have resided in Oak Ridge since the Manhattan Project tend to feel more secure than newcomers who lack the same personal, professional and economic stakes in the community, and who do not have the shared history of achievement associated with the facilities. Moreover, she also found a distinct difference in risk perceptions between scientists and workers.

Similarly, for the elder professionals I've spoken with, their good health and age are evidence of the healthy environment in which they live, while to retired workers, their own age is less evidence of a healthy environment, and more a testament to how their bodies have born the sufferings of cancers, immunological disorders, radiation burns, and respiratory ailments which they have battled and continue to live with. Moreover, to many of these workers, whether janitors, truck drivers, secretaries, or technicians, the memories of the early deaths of their co-workers suggests that their long lives are indicative of luck, rather than healthy environments.

"I've just known so many people who have died," Emily says, pointing out that "The community wanted a clinic, some way to be tested to see if we were okay, and that's what we've really been asking for. But instead, they test the fish or they use research from Russia or, here's all these sick people, instead of testing all these sick people they use these remote statistics and try to apply them to us, and that makes the people in the community so angry." For while workers can be tested, community residents (or former residents) must rely upon their health care providers for such testing, and there is a pervasive distrust that the health care system in Oak Ridge is controlled either directly by the DOE, or indirectly, through the culture of surveillance and secrecy that prevails.

In every instance when distrust of the health care system was mentioned, respondents pointed to the case of Dr. William Reid, a kidney-specialist formerly employed by the Methodist Medical Center. When he noticed that he was treating several people for kidney cancers or weakened immune systems, he contacted Martin Marietta Corporation, which then managed the federal nuclear complex at Oak Ridge. Inquiring about what possible chemicals he should test for among his patients, he was surprised to receive no concerned response to his inquiry. Instead, within three weeks the hospital initiated a disciplinary process against him (Thompson 1992). Reid pressed on, however, working with the Mayo Clinic and two other private clinics to test the blood,

urine, hair and bone of his patients for heavy metals, and found elevated levels of lead, mercury, cadmium and uranium (Thomas 2002). The persecution against Reid escalated, and he ultimately left town amidst what several residents, patients, and even other physicians in the area described as being "railroaded out of town.[5]

But in an article in *Time* magazine profiling Reid's muckraking, the scale of exposures became national news.

> Between 1951 and '84, the Oak Ridge plants pumped 10.2 million L (2.7 million gal.) of concentrated acids and nuclear wastes into open-air ponds, called the "witches' cauldron," from which the chemicals would evaporate or leach into a nearby stream. Barrels of strange brews and experimental gases, some so volatile that they would explode on contact with oxygen, were sealed and dropped into a quarry pool. A neatly stacked collection of 76,600 barrels and oil drums, filled with nuclear sludge and now rusting, is larger than the main building at Oak Ridge. Millions of cubic meters of toxic material, including PCBS and cobalt 60, were dumped in trenches and covered with soil. In 1983 the Department of Energy acknowledged that 1.1 million kg (2.4 million lbs.) of mercury had been lost. It went up the smokestacks, drained into the soil and flowed into the stream that runs through town. After that revelation, mercury was found at the city's two high schools and in the blood of workers at one of the atomic-research sites. An unknown amount of uranium went out smokestacks (Thompson 1992:53).

The response to the *Time* article, along with Reid's actions and a series of stories profiling health problems in Oak Ridge that ran in Nashville's *Tennessean* newspaper, created deep divisions within the community, illuminating the complex emotions that the issue raises, ranging from indifference to fear to denial to rage. The divisiveness of the issue, along with the culture of secrecy that lead many to fear losing their jobs, stigmatizing their community, or disclosing classified information, may explain the lack of organized environmental action in Oak Ridge. Because for all the concern about environmental hazards in the area, there are no grassroots environmental action groups in Oak Ridge addressing the toxic legacy of weapons development.

One long-time resident who is active in the community as a board member of the Oak Ridge Local Oversight Committee, attributes much of the disinterest to a flood of newcomers to the region who may speak of concern for the

environment, but show little interest in actively addressing environmental problems. He suggested that a decade ago, if there were a town hall meeting, fifty or sixty residents would show up, while now, he says, they're lucky if five or six show up. This observation would suggest that it is not only the legacy of secrecy that limits environmental activism, but also the limited connection newcomers have to place, a paradox I return to further on.

The Oak Ridge Environmental Peace Alliance is the most visible, if sole, grassroots environmental group addressing environmental issues in Oak Ridge, and it is based in nearby Knoxville. Its focus is "to create a tension in the Oak Ridge community which will make a space for change," and is focused more on ending weapons production than addressing environmental health issues (www.stopthebombs/orepa/mission.html 11/25/05). Environmental activism is more commonly confined to the efforts of individuals, such as Emily or Charlie, and others who have mobilized informal groups to gather data and testimonies, which they have then made public through a variety of channels to shape public opinion and change local and national laws.

In addition, governmental environmental and public health organizations in the area are disproportionately represented by members associated with the Department of Energy and the Oak Ridge facilities. Although their representation on committees and boards does not mean that they are not concerned with exploring and addressing environmental and public health concerns, and I have met many members who do demonstrate a genuine concern for quality research and assessment, there is a distinct perception among many community members that these boards and committees act as guardians of the secrets that have not yet been revealed, secrets as to just what residents were exposed to, and just what health hazards they continue to face.

Moreover, the boards on these committees are disproportionately white, and many, but by no means all, African Americans have expressed outrage that their contribution to the war effort was not only minimized, with African American scientists, although few in number, virtually invisible from the historical narratives that focus on African Americans as exclusively uneducated. Many African Americans are also outraged that health problems have not been adequately explored in the African American community of Scarboro, which is the community adjacent to Oak Ridge's Y-12 plant, where uranium was successfully separated.

The issue of secrecy thus pervades the Oak Ridge community and has shaped how people perceive not only the origins of their health problems, but their identities as citizens, as well. During the Manhattan Project and the Cold

War, keeping the secret meant both survival and what Dennis (1999) points to as a test of loyalty to one's nation. Since the close of the Cold War, however, the community has shifted from acting collectively as guardians of the secrets of production, to one divided by differing perceptions on issues of both secrecy and access. Because the AEC and DOE kept secret the knowledge they possessed concerning employee and community exposures and health concerns for so many decades, many people do not trust that current governing agencies such as the DOE or the ATSDR are fully disclosing accurate and complete evidence regarding environmental exposures and health concerns. Thus, there is an increasing call in the community, spurred more by individual activists than collective organizations, for greater *access* to environmental and health data, as well as for more attention to environmental toxins that have entered human bodies, rather than continuing research by public agencies tied to the DOE which primarily monitor toxins in the environment.

Hecht and Struminger (n/d) point to the history of secrecy surrounding uranium production as a form of "epistemologies of surveillance," in which knowledge regarding the health and safety of Navajo and Namibian uranium miners was produced through surveillance practices that limited access to such knowledge.

> Sometimes these limits [to access] constituted deliberate acts of secrecy; other times they resulted from colonially-structured absences in education or communication that nobody bothered to correct. Either way, however, challenging the boundaries between knowledge and secrecy, especially about their own bodies, became one of the most important means by which Navajos and Namibians charted and navigated colonial power relations (Hecht and Struminger n/d:3).

Similarly, in Oak Ridge, challenging the boundaries between knowledge and secrecy has been a way in which workers, their exposed children (now grown), and African Americans have attempted to negotiate their identities as citizens, while shedding the concept that in so doing they are in anyway "disloyal" to their governments. Indeed, calls for access to knowledge have been made through citizen participation in public meetings, law making, and public events that demonstrate the principles of democracy and freedom that the founding citizens of Oak Ridge worked so hard to achieve—and for which they accepted secrecy as a necessary cost. But now such a cost is no longer regarded by many as necessary, at least not when it comes to the health of

workers and the community, for whom, as Hecht and Struminger (n/d) show for uranium miners, secrecy has come to be inscribed on bodies. By making the sufferings and afflictions of their bodies visible to the public, citizen activists are compelling their governments to grant them access to the knowledge the history of surveillance in Oak Ridge generated about their bodies and their communities.

There remains a paradox, however, in that the history of secrecy has limited community activism in Oak Ridge, leaving it to a handful of individuals to challenge the Oak Ridge facilities and the state. At the same time, for those who have actively challenged the history of secrecy and called for greater access to knowledge, it is their very connection to the Oak Ridge community that has propelled them to act. Thus, while some regard citizen activism as a form of disloyalty to the founders of the community and the "company town," those citizens who are activists on environmental/health concerns regard their identities as "Oak Ridgers" with pride and it is because they and their parents worked so hard toward the war and Cold-War efforts, that they feel themselves empowered as citizens engaged to heal both their bodies and their communities. This identity as an "Oak Ridger," and a shared history may explain, in part, the lack of activism and civic engagement by many newcomers to the area. In addition, the public relations campaign of Oak Ridge as "the most studied eco-system in the world," may contribute to perceptions by newcomers unfamiliar with the past, that the idyllic natural landscape in which they live is, indeed, no more environmentally contaminated than other communities, if not less so.

Conclusion and Discussion

In conclusion, while this paper cannot go into detail about the multitude of issues and divisions within the community, perhaps the most important revelation has been that while some have demonized Oak Ridge as an atomic wasteland of toxic sludge and incandescent deer, understanding the toxic legacy of the community requires also understanding the historical legacy of the community. The community of Oak Ridge emerged from a pioneer spirit bringing people of all classes, regions, and nations together, bound by an oath of secrecy and national loyalty. From this legacy of shared secrecy, a community came of age together during the hardships and horrors of warfare and therefore learned to live communally, with mutual dependency and civic engagement a necessary means to emotional and civic survival. Weiner (2002)

has noted a similar sense of loyalty to one's employer and nation, and a sense of shared history that came of the unique workforce and community in Sarov, leaving older residents of the former Soviet secret city with a sense of connection to both the community and the nuclear-sector that employed them.

Further, in contrast to the image some have, such as the protestors who annually converge on the Y-12 facility in Oak Ridge on August 6th to commemorate the dropping of the atomic bomb and bring attention to the continued production of nuclear weapons at Oak Ridge, that the city is one led by a warrior elite of conservative, environmentally hostile unenlightened suburbanites, veterans of the Manhattan Project believed themselves to be working toward peace, not war. For the majority of residents I've spoken with, to define Oak Ridge as a toxic wasteland is not only delusive and defamatory, but strips the landscape and the community of a history that may well be troubling, but has, for these founders and most of their descendants, brought peace to the world, economic prosperity to the nation, and fostered identities as citizens and kin that are wholly consistent with the values of environmentalism and peacemaking.

Still, in challenging secrecy and calling for investigation into environmental health concerns, it is important to keep in mind the history of the community that emerged from the Manhattan Project. Those who worked on the Manhattan Project did not view themselves as makers of weapons of mass destruction, but instead, as instrumental in ending the war. Despite the hardships they endured in terms of daily comforts, and the federal surveillance that constantly hovered over them like some Orwellian nightmare, they also took pride in having one of the largest public transportation systems in the nation, having their housing, healthcare, schools, and other social needs provided by the federal government, and living in a well-educated, multi-cultural community that for all its divisions and shortcomings, rivaled some of the most utopic socialist visions of today.

It is through the battle for access to secrets about environmental and worker exposures, and knowledge about health problems associated with such exposures, that members of the Oak Ridge community are challenging the social roles in which they've been placed and the interpersonal and structural boundaries that have marginalized them as outsiders.

Finally, as the Oak Ridge National Laboratories emphasize their research in environmental and medical technology over weapons production, they all but bury the continued weapons production in a language of social responsibility toward the environment. Just as Irwin (1987) observed that one could grow up

in Oak Ridge during the Cold War and remain unaware of its continued role in weapons production, the military research that continues at Oak Ridge is obscured in a public relations gloss of sustainability and technology meeting the social needs of current and future generations. Yet despite the linguistic trickery that distorts the reality of the Oak Ridge National Laboratories as engaged in weapons production, it is the pride and confidence in these social achievements and its potentials in the fields of medicine and the environment that one hears most audibly from Oak Ridge residents.

If the environmental health hazards in Oak Ridge are to be fully explored and addressed, it will take not just an appreciation of the voices and concerns of residents and workers who believe their health has been jeopardized and their injuries compounded by secrecy and lies—a belief based on compelling evidence that former workers and residents have been compiling—but it will also require a recognition of the rich and complex cultural legacy of the community that came together through secrecy, but now leaves to its descendants shared and conflicting histories of civic engagement, social and democratic values, spiritual beliefs, multi-faceted meanings of war and peace, environment and community. And through such exploration, more secrets will be revealed and stories will be told.

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ENDNOTES

[1]With the passage of the federal Drug-Free Workplace Act of 1988, both federal and private employers have escalated the use of drug testing of employees and applicants (Phelps 2003).

[2]Another issue raised by the segregation and racism African Americans were subjected to has been environmental justice, since the African American community was established closest to the Y-12 gaseous diffusion plant, thereby exposing residents to what may have been even greater toxic releases than were their white counterparts. The issue of environmental justice, however, is beyond the scope of this paper and will be addressed in future publications.

[3]Emily, and all other informants other than those speaking publicly who are quoted in this paper, are pseudonyms.

[4]This statement, for which I've found no supporting data, may well have come from a 1997 Opinion piece by the *Oak Ridger* newpaper's Editor, Dick Smyser, who wrote, "Often in the

past I have suggested that Oak Ridge is likely one of the most closely environmentally monitored cites—places. Maybe THE most closely monitored, given all the regular checks made on air and water here especially...we are also one of the most closely scrutinized—and also most regularly demonized—places anywhere too." (Smyser 1997, emphasis his).

[5]Reid would not consent to an interview, nor would a former colleague of Reid's who suggested Reid's findings were credible. Declining to be interviewed about "health problems in Oak Ridge," Reid's physician colleague told me, "I can't talk to you about those things."

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