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Recovery and Identification of Civilian Victims of War In Croatia



The aftermath of war; destroyed homes in the town of Glina.

An hour after leaving Zagreb and traveling south toward the current border between Croatia and Bosnia, we were overwhelmed by the devastation caused by the conflict that began in August 1991. The Croatian military had regained this territory from Serbian forces in August 1995. Small villages consist almost entirely of ruins of former homes; partially destroyed walls of concrete and terra cotta blocks are the remnants of sturdy houses that are generations old. Roofless and without doors or windows, the houses bear the scars of war created by rockets and artillery. Also visible are the pockmarks from grenade fragments and automatic weapons.

Photos by Dana D. Kollman.

Fires consumed all the combustible parts of the homes, including the furniture and other comforts and keepsakes. In the early spring of 1996, the fields of these farming communities remain untilled because they are still seeded with land mines. Although a few residents are beginning to return and rebuild, most are still absent, having fled to places of safety. Other villagers are absent because they lost their lives during acts of brutality when they would not desert their homes.

Residents set fire to their agricultural fields in order to detonate land mines.

These were our first impressions as part of a joint Croatian-United States forensic investigation team during its initial visit to the area around the small town of Glina to search for burials, systematically recover the remains, determine the cause of death, and identify the victims. The three-person team representing the Smithsonian Institution was headed by a forensic anthropologist (Dr. Douglas Owsley), accompanied by an archeologist and a criminalist on loan from the Baltimore County Police Department's Crime Laboratory. The Croatian contingent was led by forensic pathologist

Dr. Davor Strinović, Department of Forensic Medicine and Criminology at the University of Zagreb, and physical anthropologist Mario Šlaus of the Zavod du Arheologiju at Zagreb. The recovery effort was sponsored by the Croatian-American Joint Science Board.

The goal is to aid the development of forensic anthropology in Croatia by demonstrating techniques and instrumentation employed in the discovery, excavation, and examination of human remains. Depending on the preservation and completeness of the remains, forensic anthropologists can supply information on age at death, sex, race, stature, time elapsed since death, dental and osteological pathology, perimortem trauma (injuries occurring at the time of death), and cause of death. In some instances, skeletal attributes also provide clues to lifestyle, occupation, habitual patterns of activity, and other sociobehavioral characteristics.

The primary objective in Croatia was to establish the identification of the deceased and to determine the cause of death. The forensic team also recorded cranial and postcranial skeletal measurements for an osteometric data bank being developed for this region, which will aid future personal identifications by providing important comparative data. This initiative is patterned after the forensic anthropological data bank that has been developed for North America by the Department of Anthropology of the University of Tennessee, Knoxville.

Prior to assembling the joint team, Croatian government investigators interviewed friends, relatives, and neighbors of persons that are missing. Files have been created on those reported killed or missing, including detailed physical descriptions, photographs, and data about the time and circumstances of their death or disappearance. The investigators were thorough in collecting evidence and when the government teams visited areas of reported atrocities, they successfully located the aftermath of many multiple or mass burials.

The roads leading from the village of Glina to these scenes of tragedy were single-lane dirt tracks that were deeply rutted and eroded. They are rarely used, as the former inhabitants are gone and the roads have received no maintenance. In most areas, formerly cultivated fields on both sides of these roads were delineated with plastic tape warning of the danger of mines. Many of these fields were on fire; their owners hoping that the heat would explode mines and release or expose trip-wired booby-traps. Several abandoned bunkers and rifle pits held commanding positions along the rude roads. The bunkers were constructed of sand-filled





Probing a suspected burial site to determine the location and outline of the grave. The decomposed bodies of four males, who were shot in the adjacent house, were recovered.

ammunition boxes with roofs of logs or planks covered with sod.

During the fieldwork, the many liaison matters were expertly dealt with by a military commander and a high-level civilian government official; both, along with their personnel,

were dedicated to the task of investigating all such burials in Croatia. The crews were escorted to and protected at every location by Croatian police. Military personnel successfully led the vehicle convoy over unmined roads and paths past areas cordoned with razor wire. Upon arrival at a reported burial site, a military explosive ordnance disposal team first cleared the work area for mines. While the forensic team was occupied with their tasks, these specialists continually broadened their search area and, in addition to finding and collecting mines, also gathered live but unexploded grenades, rockets, and mortar and artillery shells. Loud explosions attested to their success in locating and disposing of these remnants of war that are retarding the return of former inhabitants to the area and their pursuit of a peaceful livelihood.

The first clues to soil disturbances were visual surface anomalies such as depressions, unusual soil concentrations, changes in vegetation, or the presence of sub-surface soils. There are a variety of remote-sensing techniques that can be used for validating surface features or for detection of soil disturbances when such clues are not present. These tools range from the simple to the complex and include probes, resistivity meters, magnetometers, and sophisticated ground-penetrating radar devices. Considering that our areas of investigation were remote, and often in rugged terrain accessible only by foot and with no available electrical power, the highly portable and effective stainless steel probe was the obvious choice for our field studies. The investigator determines the amount of resistance to the probe in undisturbed soil. When inserted in the less compacted soils resulting from previous excavations, the ease of entry is apparent. Disturbed soil stratigraphy was verified by examining a soil coring sample.

Once a burial was delineated, the upper soils were removed by supervised military personnel with shovels. The pyrotechnic specialists regularly checked for booby-traps. After exposure, the remains were photographed and detailed notes taken and drawings made of the positions of the

bodies and their coverings and clothing. A precise method of control was employed that included the assignment of identifying numbers and provenances to the remains of these victims. The bodies were carefully removed from their temporary graves for transport to Zagreb. The soil around and beneath the individuals was thoroughly checked for additional evidence.

Our first investigation was of a burial reported to contain five victims. The pit was deep, having been dug through several stratigraphic layers of heavy clay soils. It appeared to have been excavated mechanically, probably with a backhoe. The grave contained the bodies of four men in various positions and the skeleton of a dog. Several possessed identifying cards and papers, and one man's trouser pocket contained a large sum of money. One individual had the end of a length of chain attached to his ankles, possibly used to drag the body to the burial place. All had been shot. Near the burials was a one-man bunker protected with banked earth and a look-out or sniper's perch in a tree. The men reportedly had been killed in the adjacent house, and an examination of a ground-floor room disclosed the pockmarks left by weapons fire on the concrete walls. On the floor were numerous 7.62 mm shell casings that can be fired from an SKS or AK-47 automatic weapon.

While the first multiple grave was being excavated, a second crew was dispatched to the reported site of another burial about a half mile away. This second site was accessible only by foot over a cleared path through the mined fields. Located at the base of a gentle slope along the edge of a swampy field, the grave was evident by a boot that protruded up through the soil and by a cloth-covered object that later proved to be the knee of another victim. The grave was a shallow burial sparsely covered by soil. Three individuals were found covered by a plastic sheet. Two were reported to be brothers and the third a cousin. They had been shot and some body parts were missing. Local people reported that the men had decided not to abandon their farm and home by fleeing and shortly thereafter were gunned down in a field and left there. Unfortunately, feral pigs attacked the bodies before villagers could safely return and attend to their dead relatives and neighbors. Approximately a week later, the decomposing and partly scavenged bodies were transported into the woods and quickly buried.

A third site was investigated and contained the remains of a woman. Her death was caused by gunshot wounds and had resulted from her refusal to leave her home. She was buried in front of her house which had been vandalized with graffiti that served to identify the perpetrators. Having died during December, this woman and all of the men in

the other burials wore multiple layers of heavy winter clothing, i.e., long underwear, several pairs of long pants, skirts, an apron, shirts, vests, sweaters, a scarf or shawl, and heavy coats.

The first day of fieldwork culminated with the investigation of a purported slaying and burial of a woman on her farm. She was said to have been buried in front of a brick and tile milk house. Probing identified a potential burial shaft and diligent digging in the early evening began to expose a rectangular pit. It was extraordinarily deep, but the bottom was eventually reached. To our surprise and emotional relief, we did not find the remains of the missing woman but instead the complete skeleton of a cow.

Subsequent plans called for exploring a deep well reported to contain the remains of a large family and for also investigating the burned remnants of the nearby house. Croatian government officials excavated the well prior to the arrival of the full forensic team. Excavation of the well required heavy equipment before the bottom was reached. The information obtained from local residents was inaccurate; the well contained no bodies.

Unlike most houses that are made of concrete and terra cotta block in this part of Croatia, this house had been a small, wooden structure with a clay tile roof and packed clay floors, except for a concrete floor in the kitchen. The house was burned in late 1991 and remained untouched since that time. The larger, charred pieces of the burned structure and the non-combustible furnishings, appliances, and equipment were carefully removed to expose the underlying debris. The floor of the entire structure was then closely inspected for human remains. Small, calcined fragments of human bone were found among the ashes in the kitchen. Two clusters of small animal bones were located in other rooms of the house. These bones were identified as belonging to an immature pig; a neighbor reported that the family had been butchering a pig on the day of the attack. The kitchen was isolated for special treatment. The remaining rooms were carefully cleaned with flat-blade shovels; no other osteological evidence was found.

The kitchen was then sectioned into quadrants for purposes of control and the exact positioning of pertinent artifacts. Excavation of the quadrants was accomplished in two levels. The upper level contained large charred fragments of the

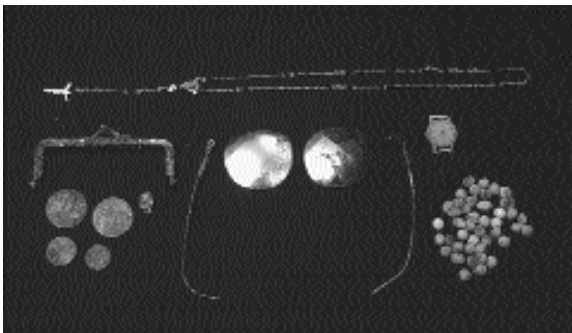
building, segments of the clay-tiled roof, and curved pieces of whitewash that at first glance resembled burned bone fragments. The lower level consisted of fine ash particles among which were scattered kitchen implements and a large concentration of small human bone fragments that had been calcined from extreme heat. The commingled bone fragments were from two adult females, one significantly older than the other. Among the bone fragments were several metal dental crowns, one of gold, and personal articles including metal eyeglass frames, a chain that once held wooden rosary beads and the metal fasteners of a coin purse.

The neighbors believed that the family had been killed by knives or axes, as no gun shots were heard. However, expended shell casings and spent bullets from a 7.62 mm assault weapon and two different caliber pistols, a 9 mm and a 32 automatic, were recovered.

While excavation of the kitchen ashes was underway, Croat team members investigated a rumor which circulated among the neighbors. It was said that the matron of the house had buried a chest containing family heirlooms and keepsakes under the floor. Using probes, two buried objects were found; a wooden chest and a glazed steel box containing national costumes, laces, shawls, pictures and family papers and documents that were considerably damaged by moisture. Examinations were conducted in the morgue and laboratory facilities in the Anatomy Department of the Medical School of the University of Zagreb. Various states of deterioration among the remains reflected differences with respect to the acidity of the soil, burial depth, and length of time since interment. Many consisted of bones having small segments of soft and connective tissue still covered by clothing. Adipocere was present in some remains; and in several cases, the tissues had almost totally saponified on the skeleton and as such, they resembled figures constructed of plaster of paris.

The autopsies and forensic examinations were conducted jointly by the pathologist and forensic anthropologist who continuously dictated notes to a nearby member of the team equipped with a notebook computer. A vast amount of information about each individual was recorded relating to clothing, age, sex, stature, antemortem injuries and diseases, perimortem trauma, and postmortem damage when present. Important observations were recorded by the ever-present camera of a full-time photographer. Portable photographic studio equipment had been brought from the Smithsonian Institution in order to photograph all bones that showed trauma and other burial artifacts. Also photographed were bones that revealed diseases, mended bones, surgically implanted devices, and those showing past health problems.

The metal hinge of a purse, coins, eyeglasses, and a rosary chain and beads found in association with calcined bone fragments.



The remains of each individual were carefully examined by plotting the position of bullet entrance and exit holes in their clothing or damage to the bones. Each of the multiple garments was described and cataloged as it was removed and the contents of garment pockets were inventoried. As outer layers were removed, the continuity of bullet holes was verified in lower garments and finally matched with entrance and exit wounds in the body or with projectile-fractured bones.

Time-consuming attention was given to the analysis of the bone fragments of the women burned in the house, as they were the most difficult from which to extract data for identification. The two sets of fragmented remains could be effectively sorted on the basis of bone size and robusticity, osteoporotic changes in the older woman, and perceptible differences in the color of the calcined pieces of bone of each woman. The rewards were significant: by determining their ages, health conditions, past diseases, dental work (the gold crown), and the metal framed eyeglasses, the identities of the two women could be established.

The identities of others were ascertained by matching forensic data with information collected by officials during earlier interviews. In North America, personal identification is often confirmed by the comparing and matching of detailed bone and dental features seen in antemortem radiographs with those present in the skeleton or dentition being examined. In Croatia and Bosnia, however, even when such records originally existed, medical facilities were often targeted and destroyed. As a consequence, identification criteria depend heavily on descriptive information provided by friends and relatives. As a supplement to the information contained in the antemortem database, when probable identifications were indicated, family members were brought to

Zagreb to discuss the findings of each investigation with the forensic team. Friends and relatives attending these conferences were shown photographs of clothing and personal items and relatives often recognized apparel belonging to a missing individual based on the garment's color, style, or pattern.

Through this collaborative effort, a tremendous amount of work in the field and laboratory was accomplished. Croatians and Americans worked side-by-side, sharing their expertise and knowledge to complete these unpleasant but necessary tasks. All were rewarded by knowing that the results of their work provided the relatives of the missing villagers with important facts concerning the fate of their loved ones as well as providing data to the Croatian government concerning the circumstances surrounding the deaths of some of its citizens.

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