

**DOCUMENTATION CENTER OF CAMBODIA
Phnom Penh, Cambodia**

MAPPING THE KILLING FILES OF CAMBODIA 1999

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Preface
By Youk Chhang

Acknowledgement
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DOCUMENTATION CENTER OF CAMBODIA
Phnom Penh, Cambodia

MAPPING PROJECT 1999:

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THE ANALYSIS

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“The Number” -- Quantifying Crimes Against Humanity in Cambodia

Craig Etcheson

Introduction

1999 was the fifth year of the Documentation Center of Cambodia’s (DC-Cam) Mass Grave Mapping Project, and this report describes the fieldwork in those efforts. This year’s report details missions by DC-Cam Mapping Teams to twelve of Cambodia’s twenty-one provinces, including Banteay Meanchey, Kampong Chhnang, Kampong Speu, Kampong Thom, Kandal, Kratie, Phnom Penh, Prey Veng, Siem Reap, Takeo, Mondulhiri and Ratanakiri provinces. Thus the report covers all corners of Cambodia, from the densely populated south to the jungle-clad north, from the remote reaches of the east to the far western rice bowl, and provinces in Cambodia’s heartland around the Great Lake.

As in previous years’ work, there is a depressing uniformity of findings: witnesses testify to torture and murder on an astounding scale, and remains of mass graves and former Khmer Rouge prisons provide their own mute testimony, littering the countryside as physical evidence of these crimes. It happened everywhere, and it happened in much the same way across the country. This confirms that the Khmer Rouge terror was both massive *and* systematic, which meets one of the key criteria in the definition of crimes against humanity. A brief review of some of this year’s findings drives home this stark reality.

Torture

Historian David Chandler recently published a masterful new work, *Voices of S-21: Terror and History in Pol Pot’s Secret Prison*. In assessing his subject, Chandler argues that torture was one thing that made S-21, the headquarters of the Khmer Rouge secret police, unique in the nation-wide network of Democratic Kampuchea’s internal security centers:ⁱ

Thousands of men and women charged with lesser offenses or imprisoned as class enemies succumbed to malnutrition, illness, and savage treatment in provincial prisons, but in general these people were not tortured to produce evidence of their crimes.

The evidence generated by interviews with hundreds of witnesses to events at these same provincial prisons, gathered over the last five years by DC-Cam investigators, does not always correspond with this conclusion. Indeed, various forms of torture seem to have been common at most of the zone-, region-, and district-level prisons operated by Khmer Rouge security forces throughout Cambodia, and sometimes it was used to extract admissions of guilt from the prisoners. The 1999 data bears this out.

For example, four witnesses who were detained by the Khmer Rouge in Kampong Thom Province at two different prisons there, Tradet and Wat Baray Choan Dek, testified that they were beaten so savagely by guards that their ribs were broken. Given their continuing ill health, the beatings may also have inflicted various internal injuries on these victims. As with so many who experienced the inside of Khmer Rouge prisons, they still bear scars on their legs, from the deep wounds caused by the crude shackles which restrained them, in itself a form of torture. The same story of brutal beatings by guards is told by Mr. Cap Bun of Kampong Thom Province, who relates how guards at Tradet prison also beat him so severely that he coughed up blood. In Siem Reap Province, it was the same. Mr. Aum Soeun of Banteay Srei sub-district describes prisoners who were tied up and tortured at Wat Tbeng.

In Kratie Province, others also tell of severe torture. Mr. Paong Bopha Rith relates how young prisoners at Ro Leak Village prison were “seriously tortured” before being executed. Mr. Heng Be of the same province described prisoners at Prek Kaun Nge prison as having been “severely tortured” before being taken away for execution. At Veal Kchoeng in Kratie Province, Mr. Ty Nhi describes having seen prisoners tortured to extract “answers” from them, adding that the guards beat the victims “like cattle.” At Prek Koun Nge, he said, prisoners “were beaten to [make them] confess.” A second witness, Mr. Poeng Vin, confirmed that at this site prisoners would be “beaten to force a confession.” Another method of torture in this region, according to Mr. Nhi, was to bury prisoners alive up to their necks in the earth. At another location in Kratie, prisoners at the Kanh Chor commune prison were tortured; Mr. Yoen Chhoen describes how he himself was “physically tortured” until his ribs were broken. He also recalls that many prisoners were starved to death.

One peculiar form of torture, which seems to have been inflicted merely for the sake of tormenting the prisoners, is recounted by a woman who was held in a facility at Wat Khnol Roka in Kandal Province. Ms. Pal Ran describes how during her imprisonment, “Sometimes, while the prisoners were sleeping on the bamboo floor, the Khmer Rouge bayoneted them from below, injuring some in the back or in the feet, causing very painful wounds.” Unsurprisingly, she remembers the Khmer Rouge cadres in charge of the prison as being “very cruel.”

As data continues to be collected from sub-districts all around Cambodia, more and more often people are also testifying to rape and other forms of sexual violence inflicted on female prisoners by the Khmer Rouge. For example, in Kampong Chhnang, at a site called Prey Trapeang Ampil, the witness Bin Met asserted that Khmer Rouge cadres routinely raped the women prisoners before killing them. This, too, can only be classified as a type of deliberate torture.

It may be correct, as Chandler asserts, that torture for the purpose of extracting confessions was not used, as systematically in the lower-tier facilities of the Khmer Rouge prison system, as it was at the apex of the system, S-21. It appears that in many cases torture may have been more commonly used at these lower-level prisons simply as a method to inflict suffering upon "enemies," or to bring about their death. And it certainly seems to be true that the methodology of torture was much more highly refined at S-21 than it was in the bush leagues of the Khmer Rouge extermination apparatus. More often than not, torture at the zone-, region-, district-, commune- and village-level prisons was done with the bare hands or with simple wooden or metal implements, beating the prisoners until they were bleeding and senseless, or dead.

Again and again in accounts of life and death in the lower levels of the Khmer Rouge prison system, we hear that guards often shackled certain classes of prisoners, and then left them restrained in custody without food and sometimes without water, until they expired from starvation or dehydration. This appears to have amounted to a very deliberate low-tech and low-impact form of execution. (See, for example, the story of Prey Damrei Srot prison, as told by Mr. Kim Porn of Kampong Chhnang Province; or Mr. Ao Yoeng of Kampong Thom Province, regarding his experience at Tradet prison.) I would maintain that this practice, which seems to have been widespread, constitutes a particularly cruel form of torture, albeit not in the traditional understanding of torture. To be slowly starved to death in a roomful of similarly suffering victims seems to me to be a much more excruciating and horrible way to die than simply being marched off to a mass grave pit and smashed on the back of the head with an iron bar.

Killing

Beyond torture, the principal function of the network of Khmer Rouge security centers seems to have been to physically eliminate perceived enemies of the regime. A fantastic number of people were killed. It is often asked, "Why did the Khmer Rouge kill so many Cambodians?" The mapping reports provide at least a partial answer to this question, though the answer is hardly a satisfying one. The list of reasons why people were killed is shocking in itself.

Simply having been a policeman, soldier or civil servant during a previous regime was adequate to earn the death sentence. Being related by blood or marriage to one of those "class enemies" was also enough to bring a chop from the executioner's ax. As witness Ok Tuon notes of Khmer Rouge activity in Kampong Chhnang's Prey Damrei Srot prison, "none of the relatives of the accused was spared." Also in Kampong Chhnang Province at Prey Ta Kuch, according to Uk Yun, the Khmer Rouge took "families" to be executed. This information conforms to a pattern we have seen in all five years of the mass grave mapping reports.

Besides having been any type of government official, ordinary people of many descriptions also qualified as "enemies." Former students, who were referred to as

"intellectuals," were also very often put at the top of the list of those to be exterminated. Thus the simple act of having attended school and learning to read could get one killed. One witness from Ratanakiri Province in this year's mapping report, Mr. Bun Vantha, believes he was arrested by the Khmer Rouge simply because he had written a letter to them.

Another form of "class enemies" exterminated en masse was "capitalists," which in the Khmer Rouge's primitive taxonomy could include such lowly toilers as a street noodle vendor and a motorcycle taxi driver. "Feudalistic," or those who expressed any form of affection for Cambodia's beloved Prince Sihanouk, could also receive capital punishment.

All of these things -- having been a soldier, a student, a civil servant, a petty bourgeois vendor, an admirer of the monarchy, or having been related to someone with such characteristics -- was called "having a tendency" or a "trend." The Khmer Rouge had a tendency to murder anyone with "tendencies."

With the spread of internal purges inside the Communist Party of Kampuchea, having been a civil servant of a previous regime was no longer required to earn a death sentence; increasingly, "civil servants" or cadre from within Democratic Kampuchea itself were widely rounded up and terminated. And as leadership purges accelerated, so too did the murder of those who had served under the previous cadres in virtually any capacity. The testimony of Mr. Chann Tauch of Mondulakiri Province eloquently describes this process. In 1977, Mr. Tauch recounts, "all the people related to the top two Khmer Rouge leaders -- Ham and Kham Phoun -- were arrested wholesale and sent to Phnom Kraol prison." Eventually, this form of repression became so extreme that merely being an ordinary citizen in a region formerly governed by someone now judged a "traitor" became enough to be added to the list, as was seen in the purges of the Eastern Zone.

In addition to being killed for reasons of classification -- that is, membership in an unfavored group such as former students -- large numbers of people were also executed for reasons of having committed or having been alleged to have committed "offenses." The categories of offenses punishable by death were often capricious in the extreme. For example, in Banteay Meanchey Province, witnesses described a series of different kinds of "mistakes" which could cause one to be condemned. "Traveling from one village to another without permission" is mentioned as one reason why someone might be labeled an "enemy" and be put to death.

Unauthorized possession of foraged food was another reason to die. People who were caught with a fish, a crab, a snail or a lizard were sometimes summarily executed for misappropriation of the "people's" resources, as witnesses in Banteay Meanchey's Thmar Puok District testified. This practice was equivalent to a charge of attempting to survive starvation without permission.

Also in Banteay Meanchey, a somewhat novel reason for execution was described; cadres ordered farmers to "walk on the right" side of the plough rig behind the oxen, but instead the unwary peasants followed their traditional practice of walking on the left side. As

a result, "They were accused of being the enemy and killed immediately in front of all the people who plowed there."

Romantic indiscretions were another reason why people were executed; total control over love and sex was demanded by the Khmer Rouge. This, as much as anything else, defines the Khmer Rouge as perhaps the most extreme totalitarian organization in the modern history of repressive regimes. In every sense of the term, they would win the people's hearts and minds, or else the people would die. But not everyone died, even among those who were arrested.

Survivors

Considering the sheer magnitude of the killing at Khmer Rouge security centers all around Cambodia, it is tempting to think that being arrested by the Khmer Rouge was tantamount to a death sentence. Many Cambodians certainly looked at it that way during the Khmer Rouge regime, and still do. But in fact, this was not necessarily the case. As shown by this year's mapping reports and those from the four previous years of mass grave mapping work, some individuals managed to survive incarceration in the Khmer Rouge security system. Hence we have many surviving witnesses to the brutality of those facilities. Fourteen such people were interviewed in the course of the 1999 mapping work.

Long-term psychiatric studies of Cambodian genocide survivors have shown that overt symptoms of serious psychological problems -- such as complaints of recurring nightmares, trouble concentrating or sleeping, and signs of clinical depression -- can endure for years after the traumatic experience has ended.ⁱⁱ Recent studies have suggested that a significant proportion of the Cambodian population still suffer from these problems, which are often diagnosed as Post-Traumatic Stress Syndrome.ⁱⁱⁱ Indeed, many trauma specialists believe that the effects of such severe trauma can last a lifetime:

Prolonged captivity undermines or destroys the ordinary sense of a relatively safe sphere of initiative, in which there is some tolerance for trial and error. To the chronically traumatized person, any action has the potential for dire consequences. There is no room for mistakes. [...] Prolonged captivity also produces profound alterations in the victim's identity. All the psychological structures of the self -- the image of the body, the internalized images of others, and the values and ideals that lend a person a sense of coherence and purpose -- have been invaded and systematically broken down. [...] Even after release from captivity, the victim cannot assume her former identity. Whatever new identity she develops in freedom must include the memory of her enslaved self. Her body image of herself in relation to others must include a body that can be controlled and violated. Her image of herself in relation to others must include a person who can lose and be lost to others. And her moral ideals must coexist with knowledge of the capacity for evil, both within others and within herself.^{iv}

Some survivors of Khmer Rouge prisons suffered extremely long periods of captivity, and the traumatic impact on these individuals is likely to have been far more severe than that experienced by the average Cambodian during the terror of the Khmer Rouge regime. In Ratanakiri Province, Mr. Bun Vantha was held an astonishing thirteen years, from 1966 to 1979 in the Boeng Kanseng Prison. Mr. Vantha believes he was arrested because of a complaint letter he sent to Khmer Rouge leader Nuon Chea in 1963, complaining of disorder and insecurity in areas "liberated" early on by the Khmer Rouge. He does not mention why he was spared, nor does he go into any detail regarding the exact circumstances of his release.

In Mondulakiri Province, Mr. Chann Tauch was arrested in December 1977, and imprisoned at the Phnom Kraol prison. Mr. Tauch says that he was arrested on suspicion of being associated with a group of senior region cadre who were being purged, but in the end, he says that he escaped death and was eventually released because his captors they came to believe that he was an "ordinary person" and did not have any links to the cadres who had been purged.

Likewise, Mr. Men Savet was held from 1977 to 1979 in Phnom Kraol prison, though he gave no indication of reasons for either his arrest or his survival and release. Also in Mondulakiri Province, Mr. Leng Chay was arrested in 1977 and incarcerated at the Koh Nhek security office. Mr. Chay says he was accused of being related to a group of traitors, but he, too, gave no indication of why he thinks he survived, or exactly when he was released. Mr. Sall Ra was arrested in December 1974 and held in a place called Office K-11 at Phnom Kraol prison; Mr. Ra says he was arrested on the accusation that his brother had fled to Vietnam, though he did not explain why or when he was released.

In Phnom Penh, students, diplomats and other Cambodians returning to the country after the Khmer Rouge came to power seem as a general rule to have been taken upon arrival at the airport directly to a place called the "Office of Consciousness and Work Education" in Phnom Penh, where they were held for a sort of observation. Those who were not deemed to have an appropriate level of consciousness were sent on to Tuol Sleng prison for torture and execution. Those who did not attract the attention of the authorities were sentenced to mere labor. Ms. Hem Vanna returned from study in France and was taken to the Office of Consciousness at Boeng Trabek. There, she says, she worked very hard and never talked about anything. "That was how we survived," she recalled. Another inmate at the Office of Consciousness was Mr. Tep Vutha, who was held at Boeng Trabek for three years, until 1979. He says he had returned from his studies in France and Romania to help rebuild the country, but discovered that his role in rebuilding the country would be limited to handicrafts. Mr. Vutha says that he and his fellow inmates learned to survive by just working hard and staying quiet.

In Kratie Province, Mr. Yoen Chhoeun was imprisoned for six months and ten days at the Kanh Chor sub-district security center, on the accusation of associating with Vietnamese. During the times when his jailers did not provide adequate water to the prisoners, he says he survived by drinking his own urine. He also attributes his survival to a successful deception he foisted on the Khmer Rouge; he changed his name, thus confusing the cadre in charge of

the prison about his identity. Among eight hundred prisoners at this security center, Mr. Chhoen says, only three survived.

Also in Kratie Province, Ms. Pal Ran was detained for more than three years at Wat Khnol Roka, in a prison known as Koh Barong. She says that after her husband was executed, she was accused of planning to throw grenades at Khmer Rouge cadres. But she gave Documentation Center interviewers no indication of precisely how or why she believes she may have survived.

In Kampong Chhnang Province, Mr. Kim Porn was arrested in April 1977 and held until October 1978 at a security facility known as Prey Damrei Srot prison. His offense was having had his staff cook rice for the "17 April" people, an act of kindness considered criminal according to the Khmer Rouge worldview. Mr. Porn gave no indication of why he was eventually released, but did say that he had been classified as a "light offense prisoner."

Documentation Center researchers located and interviewed four Khmer Rouge prison survivors in Kampong Thom Province in 1999. Mr. Men Le was charged with having "connections" to the Sihanouk and Lon Nol regimes; Mr. Ao Yoeng said the reason for his arrest was that he had been accused of involvement in political affairs, in that he was a Buddhist movement facilitator; Mr. Chapp Bun was accused of having been a chief of Baray District; Mr. He Hai did not indicate what he believed was the reason for his arrest. All except Chapp Bun were held first at Tradet Prison, then transferred to Wat Baray Choan Dek, and were prisoners from 1976 to 1979. Mr. Bun says that he believes he stayed alive because he was a productive worker, making many ox carts for the Khmer Rouge, but there was no real indication from the other three how or why they survived.

It is fascinating to note that the majority of these former prisoners of the Khmer Rouge did not volunteer any information to Documentation Center researchers about why they think they survived their experience in the security centers of Democratic Kampuchea. This is a particularly intriguing question in those cases where the informants claim that they were among only a few out of hundreds or even thousands of prisoners to have survived incarceration in a particular facility, such as Mr. Yoen Chhoen of Kratie Province. It is possible that in some of these cases, the prisoners had to do things to survive which they would prefer not to recall today, certainly not to an interviewer with a tape recorder and a mandate to identify criminals from the "Pol Pot time." To survive terrible times, some of them may have had to do terrible things. As Judith Herman has noted regarding victims of political terror, "If, under duress, she has betrayed her own principles or has sacrificed other people, she now has to live with the image of herself as an accomplice of the perpetrator, a 'broken' person. The result, for most victims, is a contaminated identity."^v

On the other hand, it may be that so radical was the break between their lives before and after being thrust into Khmer Rouge security centers, that these survivors simply have no vocabulary in which to articulate what happened to them there.^{vi} But broken or not, voiceless or not, these victims did survive, in a time when many, many Cambodians did not survive. Exactly how many Cambodians did not survive the Khmer Rouge regime is a question to which we will now turn.

A Look at Five Years of Cumulative Data

Many Cambodians believe, almost as an article of faith, that the Khmer Rouge killed more than three million people during the Democratic Kampuchea regime. When this estimate of the Khmer Rouge death toll was first publicized in the early 1980s, commentators in the West almost universally dismissed it as a product of "Vietnamese propaganda," an invented figure designed strictly for political purposes. In later years, more sober analysts examining this three million figure also discounted it, basing their much lower estimates of the death toll on interview data, demographic analyses and other statistical methodologies.

Yet, the three million figure was not a complete invention. In the early 1980s, the authorities of the People's Republic of Kampuchea carried out what amounted to a national household survey, aiming to interview every head of household in the entire country about what had happened to their families during the Pol Pot regime.^{vii} On July 25, 1983, the "Research Committee on Pol Pot's Genocidal Regime" issued its final report, including detailed province by province data. Among other things, their data showed that 3,314,768 people lost their lives in the "Pol Pot time."^{viii} But that report was quickly forgotten inside Cambodia, and it never became known outside of Cambodia -- until 1995.

More than a decade after the PRK report was published, researchers at the Documentation Center of Cambodia discovered many of the records from this remarkable research project. Those records allowed DC-Cam researchers to reconstruct the methodology employed by the PRK Research Committee, and some flaws were detected in the research design, flaws, which would tend to lead to an overestimation of the total casualty figure. The Research Committee interviewers of the early 1980's had gone from house to house, and from village to village, collecting information regarding death during the Khmer Rouge regime. It appears, however, that they did not adequately account for the fact that extended families are usually spread out across more than one household or village, and therefore double counting of some victims could occur based on reports from different households belonging to the same extended family.

There were other flaws in the research design, as well. For example, in addition to the household survey, Research Committee investigators also devoted a significant amount of effort to examining mass graves from the Khmer Rouge era. In many cases, the committee sponsored the exhumation of mass graves, which had been discovered in various locations, providing a hard count of bodies interred in those pits and other types of graves. These numbers were added to the count derived from the interviews to yield the 3.3 million numbers. However, it would have been difficult, if not impossible, to identify all of those cases where an individual reported as having been killed by family members was the same individual whose body was tallied from the mass grave exhumations.

The Documentation Center subsequently concluded that the 3.3 million figure reported by the PRK Research Committee might have been overestimated by a factor of perhaps fifty- percent, putting the actual death toll somewhere nearer to two million. Despite

apparent flaws in their methodology, however, the work carried out by these earlier researchers provided many helpful leads to later investigators. For example, the interviews carried out by the Research Committee during their surveys garnered many details regarding specific events in various parts of the country, as well as identities for some lower-level officers in the Khmer Rouge command structure.

A New Approach

Since 1995, researchers at the Documentation Center of Cambodia have continued to quietly and systematically study this elusive question of "The Number." This effort has employed a new methodological approach: mass grave survey research. The Documentation Center is in the process of attempting to locate and map each and every mass grave in Cambodia. The methodology employed in the mass grave mapping project is a combination of high technology -- global satellite position mapping -- and old fashioned human fieldwork -- investigators trudging across the Cambodian countryside, village to village, searching for the killing fields. With the help of local informants, Documentation Center mapping teams have located mass gravesites in virtually every district visited yet by the field researchers.

At most sites, the mapping teams have identified and interviewed local eyewitnesses who claimed to remember the types of victims in each mass grave. Once the researchers reach the location of a Khmer Rouge prison or mass gravesite, they employed Global Positioning System (GPS)^{ix} technology to identify the location of the site. The GPS equipment utilized by the Documentation Center, when differentially corrected for magnetic distortion, locates specific places to an accuracy of within a few meters. This information is then fed into a computerized Geographic Information System (GIS), allowing very precise maps of the killing fields to be generated.

Although this work is not yet complete, the results to date are quite startling. So far, 20,492 mass graves dating from the Khmer Rouge regime, spread all across Cambodia, have been precisely surveyed. According to the data, these mass graves contain the remains of 1,112,829 victims of execution. (See Table 1, next page, for provincial breakdown.)

Let's look a little more closely at these numbers. Between 1995 and the end of 1999, Documentation Center mass grave mapping teams had visited twenty out of Cambodia's twenty-one provinces. Of Cambodia's 170 districts, the teams had made at least one visit to 150 of the districts. In the process, they have managed to survey somewhat more than two-thirds of Cambodia's sub-districts. Many sub-districts in the northern and northwestern regions of the country have not yet been carefully surveyed, due to obvious security considerations. Preah Vihear province has not been surveyed at all, as yet. Some Khmer Rouge remained in armed opposition to the government in these regions until the beginning of 1999, and though the armed insurgency has since ceased, these same people still live there, and they remain heavily armed. (See Table 1: Summary Statistics)

Because anecdotal evidence leads to the suspicion that northwestern provinces such as Battambang and Banteay Meanchey had very high rates of execution during the Khmer

Rouge regime, it is expected that the estimated number of victims in the mass graves will rise significantly when the mapping surveys are finally completed. Therefore, the total number of victims identified in mass graves could eventually reach substantially higher, perhaps as high as 1.5 million.

The more than twenty thousand mass graves mapped so far are virtually all located at, or near, Khmer Rouge security centers. Eyewitnesses at most of these mass grave sites have testified that the graves contain victims brought there by Khmer Rouge security forces, and that the victims were murdered either in the adjacent prisons or at the mass grave sites themselves. Thus one may conclude that virtually all of the mass graves contain victims whose cause of death was execution by the Khmer Rouge.

Table 1 shows that the mapping teams have examined a total of 432 different "genocide sites," as the locations of prisons, mass graves and memorials are known to Documentation Center team members. There are many types and sizes of mass graves at these sites. These include the most common type of mass grave, the simple earthen pit, as well as more unusual types, such as wells, caves, kilns and open paddy land. Table 2 shows that there is an average of one hundred sixty-nine victims per mass grave, though if we remove the anomalous province of Kratie from the calculation, this figure would be reduced to an average of about fifty-seven. But even that statistic is still misleading, because it appears that there were several different "modes" of mass grave creation. There are very large numbers of small mass graves, each containing perhaps five victims or so, in many cases apparently members of the same nuclear family, husband, wife and a few children. Mapping teams have also found a large number of medium-sized mass graves, containing perhaps from one hundred to several hundred victims. Witness testimony suggests that this type of mass grave was most often created when the inmate population of a particular security center was flushed out to make room for a new batch of prisoners. Then, there are the big ones: mass graves containing thousands of victims. These seem to be more common in certain provinces such as Kampong Chhnang, Kampong Thom and Kampong Cham, though they do occur in various places across the country. It appears that this largest type of mass grave is associated with large-scale, indiscriminate population purges, such as when it was determined that the population of an entire district was to be liquidated. The largest mass grave located to date is believed to have contained the remains of some 7,000 victims. (See Table2: Descriptive statistics)

Table 1: Summary Statistics on Mass Grave Surveys, 1995-1999*
Documentation Center of Cambodia

Province	Total # of Sites	Estimated # of Pits	Wells/Other Used as Graves	Prison Sites	Memorial Sites	Estimated # of Victims	**Estimated # of Complaints
Banteay Meanchey	17	567	0	4	3	40,782	***
Battambang	22	1,070	0	8	6	37,195	429,480
Kampong Cham	61	3,035	11	13	9	176,423	79,450
Kampong Chhnang	30	3,143	1	6	3	253,154	44,865
Kampong Speu	20	1,549	1	4	2	24,332	50,808
Kampong Thom	18	1,427	5	6	5	123,808	119,578
Kampot	22	2,761	0	7	3	55,625	25,632
Kandal	43	504	4	13	9	102,804	68,680
Koh Kong	1	0	0	1	0	17,349	5,670
Kratie	9	7	1	1	4	13,339	--
Mondulkiri	2	1	0	1	0	0	--
Phnom Penh	7	0	0	3	2	0	--
Preah Vihear	Not Yet Surveyed		--	--	--	--	--
Prey Veng	43	1,804	12	8	3	89,406	68,351
Pursat	21	2,167	10	13	3	53,050	38,576
Ratanakiri	4	33	0	1	0	2,300	--
Siem Reap	29	715	5	9	2	77,873	3,952
Krong Preah Sihanouk	15	570	0	6	0	2,600	--
Stung Treng	8	61	0	4	1	4,000	8,053
Svay Rieng	35	166	0	9	11	5,107	34,737
Takeo	25	862	0	8	5	33,682	72,244
Totals	432	20,442	50	125	71	1,112,829	1,050,076

* The data is drawn from the 1997, 1998 and 1999 Mass Grave Mapping Reports, Documentation Center of Cambodia; 1995 and 1996 data is summarized in the 1997 report.

** Estimated number of complaints from Report of Research Committee on Genocide Crime, July 25, 1983.

*** Included in data for Siem Reap.

Table 2: Descriptive Statistics on Mass Grave Surveys, 1995-1999
Documentation Center of Cambodia

Province	Graves per Site	Graves per District	Graves per Prison	Prisons per District	Victims per Grave	Victims per Site	Victims per District	Victims per Prison
Banteay Meanchey	33	71	142	0.50	72	2,399	5,098	10,196
Battambang	49	134	134	1.00	35	1,691	4,649	4,649
Kampong Cham	50	190	234	0.81	58	2,892	11,026	13,571
Kampong Chhnang	105	393	524	0.75	81	8,438	31,644	42,192
Kampong Speu	78	194	388	0.50	16	1,217	3,042	6,083
Kampong Thom	80	179	239	0.75	87	6,878	15,476	20,635
Kampot	126	345	394	0.88	20	2,528	6,953	7,946
Kandal	12	46	39	1.18	204	2,391	9,346	7,908
Koh Kong	0	0	0	0.14	--	17,349	2,478	17,349
Kratie	1	2	8	0.20	1906	1,482	2,668	13,339
Mondulkiri	1	0	1	0.20	0	0	0	0
Phnom Penh	0	0	0	0.43	0	0	0	0
Preah Vihear	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prey Veng	42	151	227	0.67	50	2,079	7,451	11,176
Pursat	104	435	167	2.60	24	2,526	10,610	4,081
Ratanakiri	8	4	33	0.11	70	575	256	2,300
Siem Reap	25	51	80	0.64	109	2,685	5,562	8,653
Krong Preah Sihanouk	38	190	95	2.00	5	173	867	433
Stung Treng	8	12	15	0.80	66	500	800	1,000
Svay Rieng	5	28	18	1.50	31	146	851	567
Takeo	34	86	108	0.80	39	1,347	3,368	4,210
Averages	42	132	150	0.87	169	3,016	6,429	9,278
Average number of victims/mass grave omitting anomalous Kratie ----->								
Note: N/A = data currently unavailable								

In many districts visited by Documentation Center mapping teams, additional genocide sites are believed to exist, some of which are reputed to be very large, but could not be surveyed by the team due to a variety of unfavorable conditions ranging from security concerns, inclement environmental conditions, or scheduling problems. Thus, there exist many more additional sites in districts already visited than are currently reflected in the raw data. Moreover, in many cases for sites actually surveyed, for a variety of reasons, the team made no attempt to estimate the actual number of mass grave pits, and therefore those sites are recorded as containing zero mass grave pits and zero victims. (We will return to this question below, under the topic of limitations of the data.) Thus, the raw count of more than twenty-thousand mass graves remains a conservative estimate, even for the 150 districts at least partially mapped to date.

Breaking down the Data

Tables 1 and 2 show that mass grave mapping teams have located 125 Khmer Rouge prison facilities to date, a total of nearly one per district, which is quite a high number for a country whose officials denied the existence of any prisons at all. The data suggest that on average, each of these prisons “processed” nearly ten thousand persons each, with fatal results for all persons so processed. However, as Table 2 demonstrates, this average varies considerably from province to province. In some provinces -- Preah Sihanouk and Svay Rieng -- the average is much lower, in the vicinity of five hundred victims per prison, while in others -- especially Kampong Chhnang and Kampong Thom -- the average is significantly higher, up to more than forty thousand victims per prison in one case. An average of one hundred and fifty mass graves are associated with each prison, though again, this provincial averages range widely, from a low of one mass grave per prison in Ratanakiri^x and eight in Kratie, to a high of 524 mass graves per prison in Kampong Chhnang. Table 2 shows an average of 42 mass graves and approximately three thousands victims per site, which in turn reflects the findings that there were typically from three to four mass grave sites associated with each prison.

Table 3 (following page) presents the data in the light of population distributions in Cambodia. Using demographic estimates of the provincial populations as of June 1975, after the first major round of population relocations carried out by the Khmer Rouge, we see that there are great regional population variations, from the sparsely populated mountainous northeast where provinces such as Ratanakiri, Mondulkiri and Stung Treng each boast less than one percent of Cambodia’s total population, to the densely populated lowland provinces such as Battambang, Kampong Cham, Kampong Chhnang and Kampong Thom, which together account for more than half of Cambodia’s entire population. (See Table 3: Analytical Statistics)

Table 3: Analytical Statistics on Mass Grave Surveys, 1995-1999
Documentation Center of Cambodia

Province	Population at June 75*	% Total Population	Victims per Province	% Total Victims	Victims/ Population	Brutality Index
Banteay Meanchey**	--	--	--	--	--	--
Battambang	962	13.31%	77,977	7.01%	8.11%	0.53
Kampong Cham	1,226	16.96%	176,423	15.85%	14.39%	0.93
Kampong Chhnang	287	3.97%	253,154	22.75%	88.21%	5.73
Kampong Speu	299	4.14%	24,332	2.19%	8.14%	0.53
Kampong Thom	580	8.02%	123,808	11.13%	21.35%	1.39
Kampot	435	6.02%	55,625	5.00%	12.79%	0.83
Kandal	618	8.55%	102,804	9.24%	16.63%	1.08
Koh Kong	42	0.58%	17,349	1.56%	41.31%	2.68
Kratie	317	4.38%	13,339	1.20%	4.21%	0.27
Mondulkiri	16	0.22%	0	0.00%	0.00%	0.00
Phnom Penh	142	1.96%	0	0.00%	0.00%	0.00
Preah Vihear	39	0.54%	--	--	--	--
Prey Veng	571	7.90%	89,406	8.03%	15.66%	1.02
Pursat	444	6.14%	53,050	4.77%	11.95%	0.78
Ratanakiri	48	0.66%	2,300	0.21%	4.79%	0.31
Siem Reap***	377	5.21%	77,873	7.00%	20.66%	1.34
Krong Preah Sihanouk	0	0.00%	2,600	0.23%	0.00%	--
Stung Treng	46	0.64%	4,000	0.36%	8.70%	0.56
Svay Rieng	190	2.63%	5,107	0.46%	2.69%	0.17
Takeo	591	8.17%	33,682	3.03%	5.70%	0.37
totals	7,230	100.00	1,112,829	100.00		
averages					16.30%	

* Population in 1000's by province as of June 1975 from Sliwinski (1995) Table 1, Page 26.

** Banteay Meanchey was incorporated into Battambang in 1975.

*** Siem Reap data includes population numbers for Oddar Meanchey.

Comparing the number of victims found in mass graves for each province to the population of that province helps us get a better feel for the patterns of violence in the Khmer Rouge regime. Kampong Chhnang is an anomaly, with only four percent of the total population, but more than twenty percent of the total victims. This may be accounted for due to the fact that very large numbers of people were transferred to Kampong Chhnang for execution from the Eastern Zone of Democratic Kampuchea during the so-called "Eastern Zone Massacres" in the first half of 1978. Another factor which may account for the disproportionate execution rate in Kampong Chhnang is the fact that the Khmer Rouge, with Chinese technical assistance, were building a very large military airport complex in Kampong Chhnang using slave labor, and according to some accounts, the slave labor brigades employed in the massive construction project were routinely executed en masse when they became too weak to perform efficiently. As a result, Kampong Chhnang earns the highest score on the "Brutality Index," which is derived by dividing the percentage of total victims into the percentage of total population for each province.^{xi}

In general, provincial scores on the Brutality Index cluster around 1.0, with most provinces ranging from 0.5 to 1.5, indicating a general uniformity in execution rates across all parts of Cambodia. On the other end of the range from Kampong Chhnang, Svay Rieng is another anomaly with a Brutality Index score of 0.17. This may be because many victims from Svay Rieng -- which is surrounded on three sides by Vietnam -- were reportedly transferred to execution sites in adjacent, more secure provinces for execution. Another set of exceptions again is found in the provinces of the Northeast, where Kratie scores 0.27 and Ratanakiri scores 0.31. This result is consistent with the known fact that Khmer Rouge leader Pol Pot developed a somewhat bizarre anthropological theory that the tribal minorities populating the Northeast in some sense represented pure "original" Cambodians, largely uncontaminated by Buddhism and other Khmer traditions, or by urban "diseases" such as commerce. Consequently, demands from the Party Center for purges of this population cohort were muted in comparison with the bulk of the lowland population. Finally, it should be noted that the data on Battambang, in particular, remains incomplete, with few sub-districts fully surveyed to date. Therefore it is likely that the Brutality Index for that province will rise substantially as more data is collected.

Estimating the Total Death Toll

Besides execution, what about other causes of death during the Khmer Rouge regime, such as starvation, disease and overwork? Anecdotal evidence from survivors strongly suggests that the death toll from these other causes of death was also very high. How high? According to historian Ben Kiernan, data collected by Milton Osborne suggested that executions amounted to only 31% of all deaths during the Khmer Rouge regime.^{xii} The demographer Marek Sliwinski estimates that about 40% of the death toll resulted from execution, 36% from starvation, 13% from disease, and the remainder from either combat or natural causes.^{xiii} Other work carried out by a political scientist, Steve Heder, suggested that different proportions of the total death toll could be attributed to execution for urban versus rural dwellers, about 33% among "new people" and 50% among "base people."^{xiv} Thus the

various estimates of the proportion of deaths resulting from execution range from a low of about 30% for the overall population to a high of 50% among base people.

The implications of these figures are enormous. If these calculations of the proportion of deaths due to causes other than execution are accurate, then we begin to approach an astonishing conclusion. It begins to look possible that the original Cambodian estimate of 3.3 million deaths during the Khmer Rouge regime might be very nearly correct.

If as little as 31% of the death toll was the result of executions, then a total of 3.3 million deaths would imply slightly more than one million executions, and the Documentation Center data suggest they have already found more victims of execution than that. If we apply Heder's top estimate of 50% for base people to the entire population, and find upon the completion of the mass grave surveys that the number of suspected victims of execution is around 1.5 million, then we again end up with a figure in the vicinity of three million total dead in the Pol Pot time. In either case, we would be driven to the conclusion that not one million, not two million, but rather three million Cambodians died untimely deaths during the Khmer Rouge regime.

Problems and Limitations of the Data

It is important to note that these figures all represent preliminary findings. More data needs to be collected. There are numerous uncertainties in the existing mass grave data set. Resolving those uncertainties in the data will require further research. That research continues at the Documentation Center. Meanwhile, the five-year mark of this research project offers an opportunity to make an assessment of strengths and weaknesses of the existing data, and to note some problems and limitations in the methodology, which can be addressed in future efforts.

Scholar Michael Vickery has criticized the use of mass grave data to construct estimates of the death toll during the Khmer Rouge regime. Although his criticism predates the Documentation Center's mass grave mapping project, some of his points may nonetheless apply. Referring to overall estimates of the Khmer Rouge death toll current as of 1984, Vickery argued,

Given the lack of precision inherent in all the data and estimates, it is impossible to reach more accurate final totals, or to more precisely apportion the decrease [in the Cambodian population] among executions, deaths from illness and hunger, or failure to reproduce due to changed living circumstances. Some of the burial pits discovered provide the evidence that mass executions occurred, but there is as yet no way to count the number of executions separately from death due to other causes. Yathay pointed out that in Pursat in 1976-77 mass graves were for those who died of hunger and illness, while executions took place in isolation in the forest. Moreover, some of the 500,000 war victims are buried in mass graves, and without forensic tests it is probably impossible to determine whether death occurred before or after 1975. A

decline of 400,000 does, I would say, indicate failure of the DK system, but some of the more extreme estimates of death from execution and hunger must be relegated to the realm of black propaganda. It is simply impossible to take the generally accepted population figure for April 1975, the population alive today, demographically acceptable birth rates, and project an extermination figure of 1-2,000,000.^{xv}

There are a number of points in Vickery's arguments, which the Documentation Center data must address. First of all, Vickery's argument that it is demographically impossible for the death toll to have been as high as 2,000,000 is not supported by the analyses of actual demographers. Marek Sliwinski's demographic analysis estimates that between 1974-75 and 1979, the total population of Cambodia declined by somewhere between 1.9 million and 2.5 million, with his most likely estimate 2.16 million.^{xvi} Demographers Judith Banister and Paige Johnson argue that the decline in population between 1975 and the end of 1978 was 1.8 million.^{xvii}

Vickery further argues that it is impossible to distinguish between mass graves containing victims of starvation or war, as opposed to those containing victims of execution. Documentation Center mapping teams have located a number of sites over the years where the local informants say that the mass graves were in fact not from Khmer Rouge executions, but rather from the bombing, the 1970-1975 war, from victims of mass starvation and even one or two associated with the Vietnamese invasion of 1979. As Vickery suggests, however, this is difficult to prove absent forensic analysis. Moreover, in some cases, starvation appears to have been a Khmer Rouge method to execute large numbers of people easily and cheaply, but all the same, those instances are not recorded in the mass grave data as executions *per se*, since the mapping project is an effort to find out about executions of people in custody.

On two occasions only, if memory serves, have Documentation Center mapping teams discovered mass graves, which were attributed to the victims of bombing during the 1970-1975 war. It appears that the vast majority of the victims of the bombing were simply vaporized, which is not surprising if one considers what happens in a B-52 "footprint." Those bombing fatalities who were not shredded to tiny bits, it would appear, tended to get the benefit of traditional Cambodian cremations; the U.S. strategic bombing of Cambodia ended in August 1973, and it was just around that time that the Khmer Rouge began to institute their draconian policies in the liberated zones which henceforth prohibited traditional religious and funeral practices, including cremation.

Interviewers on the Documentation Center mass grave mapping teams have accumulated a great deal of experience in this peculiar line of work, and have learned how to dig down beneath the surface claims and extract information which permits them assess the reliability of their informants. Thus, to call into question the information collected in sub-districts across the whole length and breadth of Cambodia, where local witnesses testify to the existence of Khmer Rouge execution centers and the location of the mass graves in which the victims' remains were discarded, presumes a nationwide conspiracy of unlikely proportions. Although it appears possible that certain socially acceptable and collectively-shaped myths may influence the precise contours of the narratives collected by mass grave

mapping teams, it seems highly improbable that these social pressures would extend so far as to the fabrication of ruins of former prison facilities, or the placing of physical evidence such as shackles in those ruins.

In any event, while interviews with eyewitnesses are an important part of the data collection procedure, that is far from the whole procedure. Actually, the first step in the mass grave mapping process is to locate the site of former Khmer Rouge security centers; the country is littered with the ruins of these prisons, which were often destroyed by irate locals in the aftermath of the Khmer Rouge regime. In some cases, however -- quite tastelessly, one has to say -- Khmer Rouge prison facilities were salvaged and now function as the local CPP headquarters. The next step in the mapping process, after finding a former Khmer Rouge prison facility, is to locate people who survived incarceration there during the Khmer Rouge regime, or who were "employed" at the security centers. This tends to be much more common than one might think. In many instances, it has been possible to find actual perpetrators -- employees of the *Santebal* security organization -- who worked at a particular security center. Sometimes, these people give what amount to confessions of what they and their colleagues did during the Khmer Rouge regime. From there, the mapping teams work outward to determine where inmates from a particular security center who did not survive the experience were buried. Thus, the mass grave mapping process does simply rely on interviews with locals who happen to be randomly encountered. The process involved in these mapping expeditions is actually quite structured.

It bears repeating that the virtually all of these mass graves sites are located at, or quite near -- usually within a kilometer or so -- of the Khmer Rouge security centers. It turns out that local informants, in most cases, recall the names of the cadre who were in charge of these Khmer Rouge prisons or killing centers. As often as not, it is subsequently possible to locate this former Khmer Rouge security cadre for follow-up interviews. Moreover, the Documentation Center has a huge archive of internal documents from the Khmer Rouge secret police, and it sometimes transpires that researchers can take the names associated with a particular killing place as provided by local informants, and then verify that information by reference to the Khmer Rouge's own internal documents. Sometimes, on the other hand, this process works the other way around; names are garnered from *Santebal* documents in the Documentation Center archive, and then Documentation Center investigators go out, locate those individuals, and in the course of interviewing them, obtain new information about various Khmer Rouge security centers.

A key question in assessing the overall validity of the mass grave mapping data set is the reliability of estimates of the numbers of mass graves and victims. There is no doubt that the quality of the reporting by different mass grave mapping teams over the years has varied considerably. For this reason, some of the quantitative estimates at particular sites, and some witness testimony gathered in various locales -- particularly from some of the missions carried out in the earlier years of work -- may deserve revisiting. Still, the skill and experience of these teams has grown year by year, mapping trip by mapping trip, and the teams have become quite professional at their task. The estimates of numbers of victims in particular mass grave pits is generally not based on passer-by guestimates or the lore

provided by local CPP officials. In some cases, information about victim counts at particular sites comes from people who participated in mass grave exhumations at those sites. Often these verbally reported numbers can subsequently be verified by hard skull-counts in adjacent memorials, as well as by local records kept of the exhumations. In some cases, documents have been identified which recorded the actual executions themselves, compiled by the perpetrators. In other cases, experienced investigators who have seen hundreds or thousands of mass grave pits make the estimates themselves based on the number, type and size of the mass graves. In yet other cases, as previously mentioned, the victim counts are based on actual perpetrator testimony, and the perpetrators certainly do not have a motive to inflate the numbers.

In a surprising number of cases, the mapping team investigators decide that they can not under the prevailing circumstances make a reasonable estimate of the number of victims in a particular location where large numbers of mass graves are located, so they record the number of victims for that site as zero. This particular technique tends to create a strong overall conservative bias in the method. Several examples will illustrate this conservative bias in the data collection methodology.

On one mapping trip this author accompanied for auditing purposes in 1996, in Sa-Ang District of Kandal Province, the team was taken to the site of a large Khmer Rouge prison, and then shown the "killing field" mass grave site by the district chief, who authoritatively declared that some highly unlikely number of people had been exhumed from the pits there, most still bearing blindfolds and wired wrists. The chief's verbal report on the number of victims was a dubiously accurate-sounding and improbably huge number, something like 121,317. The mapping team investigators did not contest this suspect assertion, but asked to see the adjacent memorial. There the team made a count of approximately 250 skulls. It seemed likely that a large number of skulls had been lost in the intervening years, since the number and size of the excavated mass graves appeared that they could have contained far more bodies than 250, though also far fewer than the district chief's number. Consequently, due to this discrepancy and the inability of the team to construct a confident estimate, the site was recorded as containing zero victims.

For another example, refer to Table 1 (above), and note that in the tabulated data, the number of victims recorded for Phnom Penh is zero. This is the case, despite the fact that the Documentation Center has perpetrator testimony from the guards who actually executed and buried perhaps a couple of thousand people in the formerly vacant lot adjacent to the Tuol Sleng Prison, to the west. However, because that site has long since been built over by squatters, and because the perpetrator-informants did not seem to be very good with numbers and hence could not provide a count of either mass graves or victims on that site, consequently it is recorded in the mass grave data as zero.

Finally, a third example of this inherent conservatism in the mass grave mapping methodology comes from the 1999 data on Banteay Meanchey. There, local officials insisted that the total number of victims associated with a particular prison site, and two adjacent mass gravesites, was 8,000. However, the evidence showed only 700 recovered sets of

remains, and so the number of victims recorded for these sites was 700, despite the fact that the mass graves appeared capable of holding a higher number of victims. Thus the DC-Cam mass grave mapping teams tend to be quite circumspect. They are more aware than anyone else in the world of the tendency of some local informants to exaggerate the numbers, and their techniques take this factor well into account.

A key element of the Documentation Center's mapping project is re-plicability, which, of course, is one of the bases of the scientific method. Each and every site is precisely located with a GPS unit, and those coordinates are then entered into the data set. This means that investigators who come along later can actually verify the original sources of the data, in person, by finding each site and checking it out themselves. This is something new, and rather more scientific, than in previous efforts to get a handle on the Khmer Rouge death toll question. In the Documentation Center data, everything is recorded, and everything -- including the names and addresses of all witnesses -- is published annually in reports just like the present one. The GPS data collected on the mapping trips is fed into a Geographical Information System, which subsequently allows the creation computer-generated very precise, computer-generated maps of all the locations where the data was gathered. Maps exhibiting the data are available on the Cambodian Genocide Program websites at <http://www.yale.edu/cgp> or through <http://welcome.to/dccam>.

A large number of these mass graves have been exhumed over the years by Cambodian government authorities, who tended to be very careful in their work, albeit they did not have access to contemporary forensic sciences. A large number of the mass graves have also been opened by local grave robbers, who tended to exercise not much care at all; the 1999 mapping reports actually include an interview with one such grave robber. Both types of mass grave exhumations have been useful in assisting the DC-Cam investigators to establish bench marks for understanding which kinds of mass graves contain what quantity of bodies, and thus improving the reliability of their analysis when they venture to make an estimate.

Vickery argues that forensic analysis is necessary to confirm the time -- and one should add, the cause -- of death for victims in mass graves. This would add a very important element of certainty to the mass grave mapping data. In fact, the Documentation Center has been searching since 1996 for funding to do a formal forensic archeology project on a sample set of the mass graves. This has been discussed at some length by Documentation Center officials with the employees at the U.S. military's Central Identification Lab (CIL) in Honolulu, Hawaii, which is the world's foremost authority on exhuming bodies in Southeast Asia.^{xviii} CIL officials believe that even though the acidic content of the soil in Cambodia is generally high (consequently, bones tend to dissolve relatively quickly), nonetheless a skilled team can determine time and cause of death, and in some cases even the actual identity of particular victims, even after all these years.

The Documentation Center still hopes to sponsor such a forensic project in the future, assuming that funding eventually becomes available. If and when such a formal, full-scale forensic project can be carried out, it will add a forth leg to the three-legged stool of evidence

compiled so far, based on eyewitness (victims and perpetrators) testimony, Khmer Rouge secret police documents which reference security centers and sometimes even execution logs in various locations, and the hard physical evidence which the DC-Cam investigators have touched and counted for themselves.

Besides the lack of forensic confirmation of the mass grave mapping work to date, there are other shortcomings in the DC-Cam's mass grave data set, some of which echo the criticisms made by Michael Vickery more than fifteen years ago. There remain cases where, as Vickery argued, it seems impossible to precisely apportion the number of deaths from execution versus those from illness and starvation. This difficulty continues to challenge Documentation Center mapping teams, and they do not always manage such difficulties in scientifically defensible ways. For example, in the 1999 mapping data for Banteay Meanchey, several mass graves in the vicinity of the Thmar Puok District Office were said by local witnesses to be filled with victims from co-located Khmer Rouge security centers. However, witnesses also described a nearby Khmer Rouge hospital facility, which was very poorly managed. "Most patients who came to the hospital died," according to one witness who had worked in that hospital. Given that large numbers of bodies were apparently being produced both by a Khmer Rouge hospital and two Khmer Rouge security centers at the same location, it is not at all clear how one can be certain of the origin of the bodies in any mass grave in that general area. This type of uncertainty -- even though it is the exception rather than the rule in the overall data set -- can raise questions about the overall validity of the data. Documentation Center researchers need to exercise more caution in filtering such "noise" from their data.

All in all, however, notwithstanding the obvious limitations of the data and the failure of the Documentation Center to date to secure funding for forensic work, it is apparent that the mass grave mapping data set is the most carefully collected set of information yet assembled in the history of attempts to address the question of the death toll under the Khmer Rouge regime. It is by far the most comprehensive data that has been produced so far on executions by the Khmer Rouge. This data does not consist of statistical extrapolation from non-random interviews in one or a few locations, as has been the case in most previous attempts to estimate the Khmer Rouge death toll. The Documentation Center mass grave data set is completely empirical, site-specific, nation-wide, reproducible, and publicly available. There is nothing else like it.

Refuting the Denial of Genocide

A great deal of work remains to be done before the mapping of Cambodia's Killing Fields is complete. To begin with, Preah Vihear Province has not been examined at all as yet. Mass grave mapping work in Mondulkiri and Ratanakiri Provinces has only just begun, and much work remains in provinces such as Battambang and Banteay Meanchey. In all, twenty districts in various parts of the country have not yet even been initially surveyed. And in many districts, which have already been at least partially surveyed, there remain sub-districts, which have not been mapped. In many of those sub-districts, the Documentation Center

already has preliminary information about possible mass gravesites, some of which are reported to be quite large. Many of these unsurveyed areas are in the most remote and inaccessible locations in all of Cambodia, which is a country known for difficulty of access. Some of these areas are also quite dangerous, due to a variety of hazards including malarial jungles, unmarked minefields, bandits and armed "former" Khmer Rouge who sometimes appear unenthusiastic about this type of research. The last miles to be traversed by the mass grave mapping teams will be especially difficult.

Moreover, once all the mapping data has finally been compiled, then the Documentation Center will face the final and perhaps most difficult phase of the work, forensic examination of a selected sample of the mass grave sites. This will be necessary to add additional scientific confirmation concerning the identity and causes of death of the victims in these graves, in order to augment the evidence already collected through physical inspection of the sites by the mapping teams, the testimony of local witnesses, and the wealth of information discovered in the archives of the Khmer Rouge secret police, the *Santebal*.

The dedicated personnel who have contributed to the Documentation Center's mass grave mapping project have helped to ensure that the truth about the magnitude of Khmer Rouge evil can be known to Cambodians and to the world. They have also helped to ensure that those who attempt to deny the truth about the Khmer Rouge genocide will not prevail in civilized debate. We are moving from the day when the Cambodian people feared the Khmer Rouge, to a new time when the Khmer Rouge have excellent reason to fear that if they are ever brought to justice for these gigantic crimes, the evidence to secure their convictions will be plentiful. For all who would deny that the Khmer Rouge ruthlessly killed innocent Cambodians on a massive scale, the evidence unearthed by the Documentation Center of Cambodia through their digging in the Killing Fields provides a devastating and incontrovertible rebuttal.