K9 Search and Rescue

A Manual for Training the Natural Way

second edition

Resi Gerritsen • Ruud Haak

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K9 SEARCH AND RESCUE

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Dr. Resi Gerritsen
Ruud Haak

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Foreword
(to the first edition)

In the world of search and rescue dogs, Resi Gerritsen and Ruud Haak are very well known as trainers. They undertook a lot of missions for the International Red Cross and have also discovered and worked out a new training method, which I absolutely endorse and recommend. Ruud Haak's books about dogs, in Dutch, are very well known and every dog trainer has, I think, more than one in his or her bookcase.

Ruud Haak is the chief editor of the Dutch dog magazine *Onze Hond* (*Our Dog*) and, as volunteers, Resi Gerritsen and Ruud Haak are instructors for the Austrian Red Cross Search and Rescue Dog units in the neighborhood of Vienna. Resi and Ruud are with the Austrian Red Cross group Wiener Neustadt, which is famous in Europe.

Both Resi Gerritsen and Ruud Haak deserve respect for all the work they have done in the dog world. They took great pains to gather knowledge, training not only their own dogs, but also those of many other handlers. They also deserve a great deal of respect for saving lives after earthquakes and other disasters.

We have at least one thing in common: we're all dog crazy. It is an honor to write the foreword to this book for them. I'm sure this will be a very useful manual for everybody who wants to train search and rescue dogs.

I wish Resi and Ruud a lot of success with this book, success they absolutely deserve!

Lt. Jan Kaldenbach, 1999
Retired from the Zaanstad Police Department
Netherlands

Disclaimer

Introduction

The idea of dogs rescuing people from danger speaks to the imagination. The stories of rescues by Saint Bernards high in the Alps at the borders of Switzerland and Italy are classics. And the famous painting *Saved* shows a Newfoundland dog on a wharf wall with a girl rescued from the sea lying at its feet.

Such stories and paintings are surrounded with the romance of the past. Modern pictures in the news of actual explosions or earthquakes leave less room for romance—they reproduce the chilling

Figure 0.1 Englishman Sir Edwin Henry Landseer (1802–73) painted *Saved* in 1856. It combines the Victorian ideas of the innocence of childhood with the devotion of noble animals to humankind. (From the collection of *Onze Hond*)

reality of completely destroyed buildings and of people, often injured, who have lost all their property.

Buried Deep Under Debris

In these news photos there is another group of people we do not see. They are the victims who are sometimes buried deep under the debris. Many of them died at the moment of violence, but others are still alive. They may be trapped under the rubble, hardly

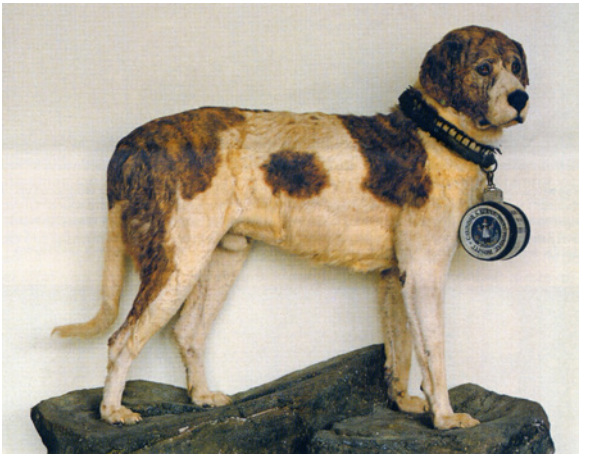

Figure 0.2 Barry, the famous Saint Bernard, saved the lives of forty people. The vessel on his collar is only a romantic fabrication. (From the collection of *Onze Hond*)

Figure 0.3 There is no room for romance on the scene of an actual explosion, earthquake, or other disaster. (Bam, Iran, 2003)

Figure 0.4 In a disaster situation, such as this landslide, time is the worst enemy in trying to save people who are still alive. (Abresc, Brazil, 2012)

able to move, or they may be locked in a cellar with tons of debris blocking the door.

These victims can do only one thing in their perilous position, and that is to wait—and to hope that rescuers are coming. If they can make noise, they hope they can be heard above ground. In truth, however, their knocking and yelling hardly ever penetrate to the outside world. They will not likely be heard by anybody, and before long their hands hurt from knocking and their voices are hoarse. With some rainwater and anything they can find to eat, they try to keep themselves alive as long as possible.

After the first reports of such disasters, money, blankets, food, medicines, and tents are sent in from many foreign countries. These supplies help with the primary needs of the survivors who have lost everything, but victims who are lying under the rubble waiting for their rescue do not need money or blankets. For them it is vital that rescue workers come as soon as possible to dig them out.

But first, rescuers have to find the trapped victims. For all our ingenuity, humans can't find a buried person in an emergency. Only well-trained search and rescue dogs are able to locate people under the rubble. The dog teams must be brought to the disaster area first.

Deployment

Our searches for missing people in hard-to-reach areas, as well as for victims under rubble and avalanches, are our most important

tasks. We're happy to say we're successful in a lot of cases. Many people owe their lives to the well-trained search and rescue dogs of our group. However, success with these dogs was not achieved in one day. Intensive work with a goal-setting training method is the key to the success of our dogs. Regular training in constantly changing circumstances keeps our dogs at that high level of performance.

After an avalanche or earthquake disaster, time is the enemy in trying to save people who are still alive. The better our dogs are trained and the longer they can work, the greater the chance of finding people alive. That means operational search and rescue dogs always have to be in perfect search condition, mental and physical.

All over the world it is said that search dogs can last no longer than fifteen to twenty minutes in an intensive, continuous search. But we have proven repeatedly that the search and rescue dogs of our group can search and locate for hours. For that we thank our directed training method and the fact that our dogs work without pressure. A dog tires more quickly because of the pressure or compulsion a handler puts on it. The mental stress created when the dog has to work because the handler wants it to, or when it has to be corrected or encouraged constantly, is very wearing on the dog.

Of course, search work is mentally and physically hard. But when a dog works because it likes the task, it can work for hours. Our method is oriented toward letting the dog feel happy and encouraging enjoyment in the search. During consecutive training sessions, the dog encounters gradually more difficult exercises to solve. This way, it learns to develop itself further. Because the dog likes its work, it is able to extend its boundaries of knowledge and stamina.

Team Building

Keep in mind that we have to discover the dog's potential and take this potential into account in our training method. We have one

training method for search and rescue dogs, but every breed, or even every dog, requires an individual approach to train it to the highest possible level.

Our training method is directly connected to abilities and drives of dogs that are rooted in their biology. We do not see the dog as a mechanical behavior machine, but rather as a creature with special skills for search and rescue work already present in its genes.

Handlers are expected to have a special understanding of their dog. They have to accept their dog as their partner: the dog searches; the handler supports it and tries to recognize and read the dog's body language and expressions. Handlers don't teach the dog to search on command; instead, handlers stimulate the dog's internal drive to search. The dog always has to be given—both figuratively and literally—the room to conduct its search. The handler and dog have to be a team.

This book is about search and rescue dog teams and a unique new method for training them in a natural way. Here we focus on the realities of search and rescue dog work, which is the most beautiful application of the dog's phenomenal ability to detect scent.

Throughout this book we present several case studies to demonstrate the kinds of difficulties and problems that need to be solved during the deployment of search and rescue dogs. The first case study, which follows, is based on excerpts from our team diary after the earth vibrated for about one minute in southern Italy in November 1980.

CASE STUDY: AVELLINO EARTHQUAKE, ITALY, NOVEMBER 1980

Sunday, November 23, 1980. An earthquake hits the Avellino region in southern Italy at 6:43 p.m. It has a magnitude of 6.8 to 7.0 on the Richter scale and a focal depth of almost twelve and a half miles (20 km). There is death, injury, homelessness, and desperation everywhere. Blankets and medicines have been sent already. Our unit with search and rescue dogs follows on its own initiative.

Wednesday. Finally, we solve all travel problems and arrive in the region. We work in the town of Calabritto in the middle of the earthquake area. Our

Figure 0.5 One of the dogs stands near a naked foot to show the location of a victim. (Calabritto, Italy, 1980)

dogs are searching and locating: first a woman under a staircase and then a five-year-old girl. Both alive! A big digging machine, however, had already been at work where our dogs indicate a victim. Desperately, a father watches the salvage of his lifeless child.

Friday. Inhabitants indicate that they hear knocking in a house. Our dogs search what they can, but do not find anything. In the afternoon, our food tastes like the disinfectant on our hands. The search will continue after a short break. But where do we start? The village is full of dead bodies, often buried yards deep under the rubble. The volunteer fire department leaves the village, saying, *"Molto pericolosa"* (too dangerous).

Saturday. We are crawling through a collapsed porch and see one of our dogs standing near a naked foot. We are lucky. The victim is lying in the upper part of the rubble and a young officer brings rescue workers right away. A bit farther on we find the body of a woman under a door. The usual follows: salvage and disinfect.

Again our dogs indicate a place. But the rescue workers can't get in to move anything more. From our position under the porch we hear them repeat, *"Domani, domani"* (tomorrow). We dig by ourselves with a piece of wood and our hands. We rescue three men from the rubble. We are happy that night.

Monday. A search and rescue dog goes into a house and doesn't come back. He doesn't respond to commands. Damn! Everything is unstable and coming down. Carefully we slide in. We find the dog lying in one of the rooms. He is on what looks like the remains of a metal bed. Is the dog tired? Then we

Figure 0.6 Our dogs indicate the location of another victim. They are finding them one after another now. (Calabritto, Italy, 1980)

see him push his nose on the ground. During the salvage of the victim, I find a picture of a boy of about sixteen in the rubble.

Tuesday. Under the rubble at the big church, our dogs indicate very clearly places where victims can be found. No more *"Domani."* Today they will dig. Under a collapsed wall we discover another victim. And then more all day. It is taking too long and the rescue workers are becoming tired and discouraged. The big machines for clearing out rubble begin to dig again.

Then suddenly there is panic. Two hands are visible in the rubble. I shout and yell, but the disinfectant substance is already spread. When will they learn to see if the victims are still alive first? Rubble is taken away and then we see that there are two bodies. A child lies under the upper one. The mother's hands lie over the young girl's head.

I count the days we tried in vain to get people to dig where our dogs indicated a victim. Many valuable hours were lost. Now everything is over.

Wednesday. After a two-week mission in this earthquake area, we travel back home. We are glad to have saved nine human lives and, where live

rescues were not possible, to have returned bodies to their relatives. We see beside the roads all manner of items to be burned, as well as the blankets that had been sent. Victims under the rubble do not need blankets. They are waiting for rescue. The villages where we worked have died. The machines will leave a big debris pile—a large cemetery without a cross.

1

The History of Search and Rescue Dogs

Dogs have likely been rescuing humans for hundreds of years—countless rescues of sailors lost at sea have been ascribed to Newfoundland and Labrador dogs—but the first organized rescue operations using dogs were described around 1800 by the monks of the hospice at Great Saint Bernard in Switzerland. Their Saint Bernard dogs rescued hundreds of people from the snow over the years.

Barry, the famous Saint Bernard that worked at the hospice from 1800 to 1812, is credited with saving the lives of forty people. In 1812 he was taken to a monastery in Bern, the capital of Switzerland, where he died in 1814. He then was stuffed and still has his place in the Natural Historical Museum of Bern.

Red Cross Dogs

The development of modern search and rescue dogs occurred at the end of the nineteenth century. Before this, soldiers would often return to empty battlefields at night to retrieve wounded comrades left behind during the fighting. After the formation of independent medical aid organizations—the precursors to the Red Cross—that task was taken over by nurses. It soon became

obvious, however, that war dogs, which had been trained to carry messages along enemy lines, could help in the search for wounded.

The Red Cross dog—in German called the *Sanitätshunde*—began to play an important role in searching for battlefield survivors. The German Association for Red Cross Dogs was established in 1890, and the first edition of the *Manual for the Training and Use of the Sanitätshunde*, written by Major A. Berdez of the Swiss army, was published in 1903.

The British Army also used Collies, Airedale Terriers, and Bloodhounds to search for wounded people. Most of these dogs were trained under the instruction of Lieutenant-Colonel E. H. Richardson. Many of his so-called "ambulance dogs" went on missions in Britain and other countries, including a mission with the Russian Red Cross during the war in Manchuria from 1904 to 1905.

Figure 1.1 Lt.-Col. E. H. Richardson deployed his ambulance dogs during the 1911 Riff War in Morocco. (From the collection of *Onze Hond*)

Figure 1.2 The Malinois was a common Red Cross dog in the period before World War I. (From the collection of *Onze Hond*)

PAINTERLY INFLUENCES

The German animal painter and illustrator Jean Bungartz is often credited with the idea of training dogs specifically for use on and around the battlefield. In 1885 he started to select and train the best dogs for his goal. He found the Collie to be the most able and clever of all breeds, but he also wrote that the German Wirehaired Pointer was successful in locating wounded people.

Bringsel Technique

When Red Cross dogs located wounded people on a battlefield, they had to make their find clear to their handlers. At first they were trained to stay by the wounded soldier and bark until the handler arrived. The handlers soon realized that it was almost impossible to find the barking dog in the dark—and it attracted enemy fire. In response, they changed the alert method to have the dogs pick up something in the vicinity of the victim and bring it to the handler. The item could be a helmet, a gun or a shoe—whatever was close to the wounded soldier.

This method worked well in training because the handlers took care that something always lay in the vicinity of the training victim. On World War I battlefields, however, this method sometimes created problems. If the dogs couldn't find anything to pick up near the victim, they took something from the body of the victim. Sometimes it was a bandage the soldier had used to dress his wounds because the bandage was strong with the odor of the wounded person. The dogs ended up doing more harm than good and were soon withdrawn.

It seemed that the use of Red Cross dogs was over, but the well-known German psychologist Oskar Pfungst found an easy solution. He affixed a small leather article—a so-called bringsel—to the dog's collar and trained the dog to take this article in its mouth and bring it to the handler as soon as it found a sitting, squatting, or lying person. Equipped with bringsels, the Red Cross dogs resumed their work on the battlefield.

Figure 1.3 *Les chiens sanitaires* were featured on the cover of the French magazine *Le Petit Journal* in April 1915.

Rescue Dogs in World War II

After the havoc of World War I ended, Red Cross dogs became superfluous. In World War II, the work of the Red Cross dog was taken over by soldiers and Red Cross volunteers, who could, during an agreed ceasefire, pick up the wounded and take care of them.

Fortunately for the Red Cross dogs, they didn't have to be idle after World War I. The training of guide dogs for the blind was beginning in Europe, and initially war dogs were used. Later on,

CLEVER HANS

Oskar Pfungst was famous for discovering what became known as the Clever Hans (*Kluger Hans* in German) effect. The horse Hans, which toured throughout Germany at the start of the twentieth century, was thought to be able to perform arithmetic and many other intellectual tasks. Through a series of experiments, Pfungst demonstrated that the horse was actually using involuntary cues from his human handlers to "solve" the problems he was given. Clever Hans answered questions with hoof taps. As his taps approached the right answer, the posture and facial expression of his questioner would change in ways that indicated an increase in tension. The questioner's tension released when the horse made the final, correct tap, which was a cue for the horse to stop tapping.

special training for the guide dogs was designed and dogs were specially selected or bred for the work.

Search and rescue dogs were first used to search for victims beneath rubble toward the end of World War II in England. During the war, German bombers set many British cities on fire. Often victims were alive trapped beneath the rubble of collapsed houses. One woman discovered by chance that her little dog searched for victims in the often still-smoking and burning rubble piles and then waited, whining, by the scent. This dog of unknown breed became the first modern search and rescue dog.

On the initiative of the woman's friend, Mrs. Margaret Griffin, as many friends and relations as possible were enlisted for this difficult work with their dogs. After a bombardment, these brave handlers and their dogs searched the smoldering ruins for survivors, and the dogs provided excellent support.

It was especially the German Shepherds of Mrs. Griffin's Crumstone Kennel that were the most capable in this work. Many of these dogs, such as Crumstone Irma and Crumstone Psyche, became famous because of their courage and perseverance in searching for victims beneath the rubble.

MRS. GRIFFIN'S NOTES

November 20, 1944. Bombardment at 10 a.m. Arrival of the dogs at 11:15 a.m. The area to be searched consisted of house rubble mixed with big lumps of ground because of bomb craters. But the dogs were on alert! A victim alive and a dead one were salvaged from deep beneath the rubble. Further searching by the dogs delivered an alert on places where three dead bodies were salvaged.

November 21, 1944. Bombardment at 12:26 p.m. Arrival of the dogs at 1:30 p.m. The dogs gave clear alerts. A woman and two children were freed out of the rubble alive!

December 14, 1944. Bombardment at 3:00 a.m. Three-quarters of an hour later I was there with Irma and Psyche. The dogs had often gone into action together. Suddenly the dogs became really excited. After I calmed them down, I heard the voice of a woman buried in an air raid shelter under the rubble. Her sister was with her. After four hours of hard work moving heavy pieces of concrete and bricks, we saved them both.

On an adjacent large rubble area the dogs searched further and gave a clear alert. Rescue workers discovered a man buried there, deep under the rubble. During further searching, the dogs found the bodies of two dead women. After that, the dogs gave another clear alert and we found a man who was severely clenched under heavy rubble; for him, however, rescue came too late, because shortly before being freed by the rescue team, he died. But on searching further, we were luckier, because the dogs located another two people, who fortunately could be salvaged alive.

After a rest, the dogs worked more. Although we believed that all people buried under the rubble had been saved, the dogs went ahead on their own and discovered two more victims. But for them, help came too late; they had died in the bombardment.

IRMA AND PSYCHE

The unprecedented success of Mrs. Griffin and her dogs in London stimulated other people to help search for victims. Irma and

Figure 1.4 Mrs. Griffin with Crumstone Irma and Crumstone Psyche locating bodies in the rubble. Mrs. Griffin said the laid back ears were always a sign that Irma had found a dead victim. With living victims, her dogs always scratched in the rubble. (London, England, 1944) (From the collection of *Onze Hond*)

her half-sister Psyche located 223 victims beneath the rubble during the war. Twenty-one of them were still alive. Both dogs worked off leash on the rubble piles. Because Mrs. Griffin knew her dogs well, she was able to pick up the signals that the dogs had found a victim. She said that laying ears to the neck was a signal that Irma had found a dead person. Upon finding a living person, Irma scratched in the rubble.

Besides Mrs. Griffin's Irma and Psyche, the German Shepherd Rex was well known for his valuable work. Beauty, a Fox Terrier, also had exceptional achievements, and Rip was a mixed-breed dog that saved himself from a bombed house in 1940. Together with E. King, who took care of Rip, he went into action after every air raid alarm to search for victims under the smoldering rubble piles. These dogs were able to save many lives.

Figure 1.5 Rip helps an air raid precautions warden search the rubble and debris following a 1941 air raid in Poplar, London. Rip and his handler, E. King, came into action after every air raid alarm. (From the collection of *Onze Hond*)

MRS. GRIFFIN'S NOTES

March 6, 1945: Both females gave alerts at a location that had already been entered many times by rescue workers. But their alerts were so convincing that a team of rescue workers began to dig as quickly as they could. After a few minutes they heard a weak rustling under the rubble. The men worked madly.

They reached a collapsed floor and got from there a clear answer to their calls. As soon as they broke through the floor, the rescue team found a woman buried between two floors and lying jammed under beams. Fortunately she was lying in such a way that her chest was free. Only her legs were badly wounded, although not broken. The woman had been buried already for sixteen hours under the rubble. She was still conscious, but she would have died soon from shock and cold weather, if the dogs had not found her.

DOGS OF EXCEPTIONAL MERIT

Everyone who saw these search and rescue dogs working was deeply touched and impressed by their work. Their steadfast searching in the debris piles, often while bombs were still falling and the planes of the enemy still flying overhead, led to these brave dogs being

granted the Dickin Medal for animal bravery, the highest British decoration for an animal, granted only for exceptional merit.

Just after this great achievement in World War II, the German Shepherd Jet of Iada went into action after a mine accident in England. At great risk to his own life, the dog saved the lives of a group of mine workers by making clear to his handler where the people were trapped. This story touched the hearts of all dog lovers in England after the war, because, as one writer noted, "the dog, in spite of danger to his life, had gone through mine dampness and fire." The stories about such rescues were often (and are still) much exaggerated. People love stories about heroic dog rescues. In spite of their successes, search and rescue dog work was rare after World War II, and this was not an active area of dog training in Europe.

"Knock and Call" Search Method

In the 1960s in Europe, under influence of the Cold War, governments began to pay more attention to the protection of civilian populations in war or disasters. They built air raid shelters and emergency hospitals, and they trained people for salvage and medical care and equipped them with the necessary machinery. In spite of this, there was little attention paid to the question how one could find buried people. Handlers continued to train using the "knock and call signals" search method. This elaborate and time-consuming method, however, only functions if victims are able to react to the knock signals and the calling.

Fortunately, a few dog lovers continued the training and operation of their search and rescue dogs. Because there was little written of earlier experiences with the use of search and rescue dogs, Urs Ochsenbein in Switzerland started in the early 1970s with experiments in training search and rescue dogs. A few years after that, we began to train our dogs for search and rescue work.

Figure 1.6 The Civil Defense organization in the Netherlands trained the Saarloos Wolfdog, a Dutch breed, for search and rescue work. (1961)

Figure 1.7 In the 1960s, Saarloos Wolfdogs were trained with tape recordings and big speakers to get them used to fighter jets flying over for missions during wartime.

Success in Romania

In the meantime, governments were asking industry to develop technical instruments for searching. After some years it was clear that, in practice, equipment for tracing buried people didn't work. Instruments for listening and electronic detection were available, but they couldn't satisfy the stringent requirements of practice. Certainly they were not able to beat search and rescue dog teams. In May 1976, after a major earthquake in the Friuli region in northeastern Italy (900 people dead), twelve Swiss teams went on mission. When they saved eighteen victims alive and salvaged 125 dead people, their search methods aroused the interest of professionals.

In basic courses, the training methods for search and rescue dog teams spread in Europe. We visited many of these trainings and symposia. During the mid-1970s, there was some fear that search and rescue dogs would be less successful in large cities with modern buildings. In the Friuli region in Italy, the teams

Figure 1.8 After the earthquake in the Romanian capital of Bucharest on March 4, 1977, search and rescue dog teams successfully searched in the partially collapsed reinforced concrete frame and masonry wall offices and apartment buildings.

had encountered mainly traditionally built houses—besides a factory and barracks—with little concrete and steel. This anxiety was set to rest when, after the earthquake in the Romanian capital of Bucharest on March 4, 1977 (about 1,500 dead), the search and rescue dog teams made it possible to salvage ten people alive and ninety-seven dead out of the rubble piles of modern houses.

Saving Lives, Recovering Bodies

That search and rescue dogs can achieve great things was also clear after the catastrophic earthquake in the Avellino region in southern Italy in November 1980, just as it was in Mexico City in September 1985, where more than 200 people were saved out of the rubble. Without our search and rescue dogs, only a few would have survived.

The same happened after the major earthquakes in Armenia (1988), Turkey (1992 and 1999), Japan (1995), Algeria (2003), Iran (2003), Haiti (2010), and, of course, in several smaller disasters

Figure 1.9 After the 1988 earthquake in Armenia, we searched with Cardigan, our Welsh Corgi, in the rubble piles of Spitak and Leninakan.

Figure 1.10 Around the world, careful training of search and rescue dogs is now considered more necessary than ever.

where we and our colleagues saved many human lives. Our dogs also located the bodies of dead people, so that those could also be salvaged. Around the world, the opinion is now that careful training of search and rescue dogs is more necessary than ever. Events have proven that you can count on a search and rescue dog if the dog and its handler are trained with a useful method.

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2

Training the Natural Way

After many years of training our dogs in the Schutzhund program, in the 1970s we decided to start training search and rescue dogs as well. Based on decades of study, we have, together with our Austrian colleagues, developed a new training method for search and rescue dogs, which, of course, can also be used for other dog-training purposes.

When we began our search and rescue training, we asked ourselves why so many handlers had problems with searching and tracking. We quickly realized the dogs didn't enjoy our training model, and we found that it was because we didn't take the dogs' drives into account.

The Origins of Our Method

Let's first have a look at how our new method developed. We have to go back to 1980 following the major earthquake disaster in southern Italy, when our search and rescue dogs located many dead bodies during their search for survivors. At the time we said to each other, "If we can come up with a way to teach dogs to differentiate live people from dead human bodies by special training, that would be the crown on our work with search and rescue dogs." If a search and rescue dog could indicate the difference between

dead and living victims beneath the debris, this would be of decisive importance for the salvage. Otherwise, while handlers can get an indication from their dogs of a human odor emanating from the rubble, they don't know whether the human is still alive. When choosing where to dig first, handlers have to rely on luck to choose locations with live people.

NEW INSIGHTS

For many years dogs have been trained in several different ways for different tasks. Until recently, this training often lacked the support of any theoretical background. In the 1980s, we changed this for search and rescue dogs with the publication of our book *The Search and Rescue Dog: Training and Mission*. But time doesn't stand still, and neither did our research into smell and search tactics. In our continuing studies during actual missions and training sessions, new insights were regularly gathered and, of course, used in training our search and rescue dogs.

At that time, we were already getting from our dogs a reliable indication of whether victims were dead or living. Our mission after the earthquake disaster of 1988 in Armenia provided convincing evidence of that. But our research continued and we sought to bring more precision and perfection to our training method.

MECHANICAL TRAINING

Many handlers still train in a mechanical fashion. For example, when teaching the dog to sit, they lay their left hand on the rear of the dog and pull the dog up high with the leash while giving the command "Sit." For that you don't need any knowledge of dogs, you only have to listen to what the instructor is telling you.

Such training is also possible with search and rescue dogs, but this sort of mechanical approach leads to frustrations for the handler and dog. Mechanical training does not use the dog's curiosity for search work. As soon as the dog has found the victim and doesn't know what to do, we say: "Good boy. You have found him. Speak." If the dog barks, it is praised. But for what? For barking, not for finding!

Figure 2.1 The search and rescue dog, here a Malinois, must give its handler a clear and understandable signal that it has found a victim where the human odor concentration is highest.

These types of exercises seem right from a human perspective. However, such training ignores important behavior patterns that the dog has inherited from its ancestors. Thus, when the dog is trained in a mechanical way, which provides only intermittent moments of searching, one might possibly get a dog that can search and track. But such a dog does not feel happy and will quit working quickly during a real search. Instead of purposefully working with the dog's natural drive stimuli, one reduces it with ritual proceedings and often places an enormous value on peripheral matters. Dogs trained in this way visibly lack the intensity and passion to search and the drive needed to carry out a longer search.

IS BARKING THE OPTIMAL ALERT?

Almost all testing standards for search and rescue dogs, even the IPO-R (International Standards for Rescue Dog Tests), prefer dogs to indicate finding a victim by barking. It is the same with many dog handlers, trainers, and judges. However, we believe that barking alone is not an optimal alert for a search and rescue dog. Barking can work well in tests, but during real missions it can present problems.

In an area search, for instance, a barking dog can scare the missing person, especially a child or person with mental disabilities, and cause a state of shock. And hypothermia and shock together can cause a person's death! A dog with a bringsel alert is much better, because immediately after finding the victim, the dog goes away and then returns with the handler. Many victims are not even aware the dog was there the first time.

From our missions in earthquake areas, we know that after intensive searching for about one day, dogs don't bark anymore. But by their body language they always show us a find. Standing still on a certain place, deep sniffing and scratching in the rubble, or showing a characteristic body position always alerts us to the location of the strongest human odor coming out of the rubble (pin-pointing) and to the circumstances of the victim.

We also object to using the barking alert because dogs are trained with barking exercises in conjunction with displays of aggression. This sometimes leads to aggressive and unpredictable search and rescue dogs. Handlers (and instructors) who see barking as the ideal alert method will make a dog bark by any possible means. We have seen a training victim teasing a dog to get it to bark, with the result that the dog becomes aggressive. These dogs can become unsuitable for work as search and rescue dogs.

We also discovered in training that some dogs avoid the places where helpers lie. Although the dog's body language told us that it could smell the helper, the dog walked away without barking. These were dogs that didn't like to bark. Barking was not a part of their character, so they avoided situations where they had been trained to bark!

Why do so many people want the dog to alert using behavior it doesn't, in fact, like? Because they don't know their dog, don't know much about its behavior during searching, and pay too little

attention to it. Ethological—behavior—research is an area from which a search and rescue dog handler can learn much.

Looking for Solutions

In the mid-1970s, we were satisfied with any alert, and we were happy with every form of our dog's barking, although we didn't train for it. However, our results in finding people hidden beneath debris were worsening all the time.

To correct the problem, we tried to strengthen the goal of searching by using food, but we were lucky to discover quickly that food rewards created problems. You can imagine that a dog trained to search with food is no longer searching for human odor in debris, but instead for the odor of food.

Because our work at the end of the 1970s was strongly influenced by work with avalanche dogs, we also tried to build up the dog's ability to search for human victims by searching for articles with human odor. Again we discovered quickly that this was the wrong approach, because a collapsed house is full of articles with a human odor!

Figure 2.2 The search and rescue dog, here a Golden Retriever, must not allow itself to be distracted, because it has to work in almost every kind of environment under all conditions.

What Is a Search and Rescue Dog?

To find a better training method, we asked ourselves again, what is a search and rescue dog? We decided that a search and rescue dog is a dog that, on the basis of its training and ability to smell, is able to indicate a human odor for its handler simply and clearly—and that is all!

After that, we came to the following conclusion: a search and rescue dog normally has to search intensively for long periods during a mission. To achieve this ability, its training must bring it to the point where searching becomes a passion for the dog.

Very soon we discovered that the most effective and successful training is that based on the natural ability and drive complexes of the dog—when acts of instinct transform into the desire to work until the end. Every departure from that method creates frustration for the dog and makes it unhappy with the work we want it to perform.

But the main question was, of course, how? With which motivator and with which instinctive behavior could we reach our goal? After considering the different possibilities, we realized that hunting was the first task that humankind had used dogs for. Hunting was, and still is, the dog's strongest specialization. And hunting is searching.

The dog's most essential characteristics are similar to those of its ancestor, the wolf. We saw that the wolf's ancient hunting behavior could be useful for training search and rescue dogs. All we wanted was to use the complex of drives that play a role in hunting to induce the dog to work for our goal, the search for human beings.

Looking at the theory, it seemed logical enough to be right, but how would it work out in practice? Should the dogs, in working out the hunting drive complex, perhaps be sent to kill game? Could such dogs ever be trusted to work off leash? We had many questions and were troubled by many doubts. Furthermore, we found that the professional literature always spoke of a quick drive satisfaction. Only the defensive drive stayed always at the same level, the literature said.

Figure 2.3 In search and rescue work, the dog serves humans in its ancient role as hunter.

Using the Hunting Drive

While search and rescue dog groups in Europe were busy with a form of training based on aggressive drives, we took the first steps in another direction. We decided to study the way wild dogs acquire food. We wanted to approach and investigate that subject from all sides to prevent mistakes from the beginning of our training project.

After this phase of investigation, we tried to discover whether our dogs still had the hunting drive complex in a usable form. To our surprise, we found that the hunting drive could be stimulated until the dog was physically exhausted, even in non-hunting dogs. As test subjects we used previously untrained dogs. We succeeded in encouraging the behavior we wanted in these dogs using their hunting drives, without offering pressure or improper support.

By following its own learning method—trial and error—the dog could discover by itself the right way of working. "Dog-like" was our guideline, and we kept it that way. We were thrilled when our test subjects quickly showed a real passion for searching, something that could be attained with other methods only after many years of intensive training, if it could be reached at all.

Sometimes people think that a search and rescue dog searches because it feels a sort of charity or sympathy for victims or missing people. That, of course, is nonsense. The dog is instead serving us in its ancient role of hunter. Usually this idea is rejected with indignation. A dog should never hunt people! But it is a fact.

NO AGGRESSION

When we talk here about hunting for people, we mean the opposite of police dog training. The hunt as a part of food acquisition is not an act motivated by aggression. Dr. Erik Zimen has written about this point: "During hunting, dog-related canines that live in the wild don't show any expression of higher aggression, like bristling (standing hairs on the neck and the back), showing teeth and also no fear or diversion aggression (displacement behaviour) when the animal cannot reach his goal."[1]

In the next chapter, we will discuss the dog's natural hunting drive and how this can be best employed in training.

Figure 2.4 The handler has to understand the dog's search system and not disturb it by acts or commands. Let the dog use its natural instincts to find the best method of searching.

3

The Hunting Drive Complex

Our training method for search and rescue dogs is suitable for searching on rubble and in avalanches, as well as in wilderness and other hard-to-reach areas. This method is based on the hunting drive complex and behavior that results from instinctive acts of the dog. That is to say, we make use of the

- Hunting drive
- Prey drive
- Tracking drive
- Search drive
- Bring drive
- Play drive
- Pack drive
- Motion and occupation drives

Aspects of the Hunting Drive Complex

Trying to match instinctive acts with specific drives can create problems, because often an act will fit more than one drive. That's why we like to speak of a drive complex, because we believe that a separate drive can't have an impact without touching

the total characteristics of the dog. The dog has a whole set of drives that, with its sense organs and temperament, form its "doggy" character.

Professor Konrad Lorenz defined those drives as follows: "All little forms of behaviour are in service to the four big drive complexes. These are breeding/reproduction, food acquisition, escape and aggression. A drive will be stimulated when a certain stimulus from inside or outside reaches a living being. This drive will be the button to release a whole set of reactions, the so-called instinct acts, which are pressing for satisfaction and relaxation."[1]

For a short definition of the different drives, we here employ the work of Eugen Seiferle, a Swiss professor of veterinary anatomy and an authority on canine behavior.

HUNTING DRIVE

By hunting drive we mean the characteristic drive of dogs to scent for game or to chase game on sight. This drive goes back to the

Figure 3.1 A dog that likes to work shows a lot of interest when it sees that you're getting ready to go. It approaches a rubble pile with excitement.

ancestors of our dog—the wolves—and finds its origins in the pressure to find food. The hunting drive is still present in modern dogs in a more or less emphatic form, although the drive has nothing to do with feeling hungry or pressured for food acquisition. Therefore, the hunting drive is not only present in hunting dogs, but also in just about every dog. However, in some house pets the hunting drive has been, for the most part, lost. When this hunting drive still exists, we speak of a passion for hunting.

PREY DRIVE

The prey drive is very similar to the hunting drive. Originally the prey drive grew out of the attempt not only to hunt game but also to catch and kill it to satisfy both the dogs' own hunger and that of their young. This drive is also present in many pet dogs; however, it is now often focused on chasing toys. Chasing game is no longer taught to young dogs (except, of course, in trained hunting dogs), and the prey drive is now expressed most often in chasing, catching, and shaking articles to "death."

TRACKING DRIVE

The tracking drive is expressed in the willingness of the dog to follow a game track or pick up a human track (smelling with the nose on the soil), and in following that track with enthusiasm and perseverance. When the tracking drive, which can be directed to something hidden under the soil or snow, is decidedly present, then we speak of a passion for tracking.

SEARCH DRIVE

By search drive we mean the dog's interest in catching game (or missing people), not only by using its nose but also with the support of its eyes and ears. It follows the found odor enthusiastically by air scenting with a high nose in a determined way.

BRING DRIVE

In canines living in the wild, the bring drive is expressed, under the influence of the pack drive, by the dog picking up the prey or

Figure 3.2 Dogs follow an odor by air scenting with their nose. They exhibit enthusiasm and great determination.

parts of it and bringing the prey to the lair, where the mother and young dogs are waiting.

USING THE BRING DRIVE WITH REPLACEMENT PREY

The hunting, prey, tracking, search, and bring drives form a chain that takes care of getting the necessary food for the dog living in the wild. For our house pet, for which this problem of food acquisition no longer exists, these drives can show up independently of one another. Then we see, for example, that the hunting drive can be present without the prey drive, or that the bring drive has nothing to do with food.

The hunting drive of our dog, as well as the prey and bring drives, can be worked off by replacing prey with a toy, stick, ball, or, for Greyhounds, piece of rabbit skin. Given the prey and bring drives and some focused training, the dog can be trained to pick up and bring replacement prey to the handler, which is usually called retrieving.

PLAY DRIVE

The play drive is naturally present in the dog, particularly so in young dogs, but also in older dogs. This drive has a strong relationship

with the motion and occupation drives. By play-skirmishing with pack mates or by playing with dead objects, the young dog learns to use and control its physical and mental skills and power. That way it can prepare itself without effort for the serious tasks of life. During play the dog learns all important forms of behavior for survival and pack life.

PACK DRIVE

Dogs striving for temporary or long-term group relationships demonstrate the pack drive. For most house pets, humans and human society become their pack. The human family replaces the pack and becomes the dog's familiar social and family circle. In this pack the dog will then orient all its drives and instincts (in a somewhat altered form) toward living communally.

PREY SHARING

Satisfying and releasing, which is the ultimate purpose of every drive, takes place in the hunting drive complex by bringing the replacement prey and sharing it with the handler, just as a wild dog would share prey with the pack.

MOTION AND OCCUPATION DRIVES

These drives originate in the *constitutional* circumstances of the animal (its temperament and muscular strength), in its *conditional* circumstances (the health and the feeding level of the animal), and in its *training*. In canines living in the wild, these drives are satisfied by the struggle of daily existence, food acquisition, skirmishes with pack mates, and avoiding enemies. Because our house pet doesn't have to struggle for existence, the intensity of its pressure to release its stored energy in movement—such as going for a walk—or in some sort of work depends on its age, temperament, and physical circumstances. This pressure to do something is more intense in young dogs and in certain breeds.

Figure 3.3 To be a good search and rescue dog, the animal must stay absolutely calm and show self-confidence, even in totally unfamiliar circumstances.

The Six Phases of the Dog's Search

We divide the dog's searching into the following six phases from the hunting act:

- Phase 1: Searching
- Phase 2: Locating and working out the odor
- Phase 3: Indicating (pointing) as a preliminary to the prey jump
- Phase 4: Prey jump
- Phase 5: Prey kill and drag-off
- Phase 6: Prey sharing

Let's see now what this will reveal in practice, for instance with searching on debris. The "hunt" of a search and rescue dog, of course, always begins with searching (phase 1) and then finding the human scent and working out the place with the highest concentration of human odor beneath the rubble (phase 2). The dog will locate this place, sometimes stand still for a short time, and then will give an alert (phase 3). The alert can be scratching and/or biting in the rubble in an attempt to take the rubble away. When the rubble isn't cleared quickly enough, the dog may bark out of irritation.

The dog's location of the scent clue, where the biggest concentration of human odor comes out from beneath the debris, can always be recognized by some specific body position. However, not every dog alerts the same way. Handlers should observe their dog to learn how it communicates its find.

ALERTS FOR A BURIED PERSON

A dog might be indicating a buried person if it does any of the following:

- Suddenly changes direction, makes a curve, or otherwise deviates from a generally straight line during searching
- Changes its search tempo, becoming slower or faster
- Shows interest in a specific area of the search for somewhat longer
- Stands still somewhere, staring into the rubble or snow, or pointing like a hunting dog, looking down while standing with one leg off the ground
- Begins to scratch or bite at a particular spot to take away pieces of rubble or snow. However, when a dog only paws once or a few times, it hasn't ordinarily found the right place. Keep quiet, because the dog is still orienting itself.
- Tries by intentional movements to bring its handler to the scent clue. Most of the time, the dog will behave very excitedly and make it clear to the handler, by walking there and back, which direction to go.

Figure 3.4 A dog might be indicating a buried person, or at least the wafted odor of a person, if it suddenly changes direction, makes a curve, or otherwise deviates from a generally straight line during searching.

ALERTS WITH BODY LANGUAGE

An alert is how the dog makes it clear to the handler that it has located a missing or buried person during a search. Looking at the dog's alert in the rubble or in an avalanche, we can always see a certain characteristic behavior. That's how the handler can recognize that the dog has found the scent clue.

In practice it has been clearly proven that dogs react with a certain body attitude or expression upon finding a victim. This reaction is different for every dog. In general, a living victim will be indicated by the dog with an active, cheerful, and confident attitude; dead people will usually be indicated passively, and sometimes with a slightly uncertain behavior. In both cases we can see that the dog is clearly under stress at locating a victim. Search and rescue dog handlers must be able to read their dog's body language well. Even after a long search under often stressful circumstances, a dog will still use its characteristic behavior to alert.

To read the dog, it is particularly important that the handler pay attention to all the changes the dog shows in its behavior. For

that, of course, you have to know the dog thoroughly in normal situations, at home as well as during training. This knowledge requires long and close cooperation.

ALERTS WITH BARKING

Barking is the language of the dog. Dogs can produce many different sounds, from deep rolling barking to clear, high-pitched barking and crying. They use their voices to express themselves and change the pitch and volume of the bark to express their emotions and frustrations. Barking doesn't always mean aggression; it more often means "Are we going to play?" or "Nice that you are here again." Such "talking" dogs can easily develop the bark as an alert.

Barking in itself, however, is not enough as an alert. The dog has to indicate where the highest odor concentration is coming out of the rubble more accurately by pawing or alerting with its nose in the rubble.

EASY BARKERS

During a training week we met a handler who was working with a Collie. The dog was showing remarkable behavior, which was making the handler a bit desperate. The moment he went to work with his dog, it began to bark at the rubble and continued to do so the whole time they worked. This was very confusing, because it was not clear to the handler if it was a real alert or if the dog was only barking out of enthusiasm. We taught his dog to scratch as an alert, and that gave the handler more confidence; later he could hear the difference in the dog's bark at an alert.

We had experienced the same with our Welsh Corgi, which often barked out of enthusiasm when she just had begun to work. After a while, you learn as a handler, and also as a colleague, to notice clear differences between the barking when it is an alert and when not. With our Welsh Corgi, an alert was clear in her body posture and in the way she put her nose deeply in the rubble and began to scratch. Then we knew she had located a victim. Her alert barking was also different from her bark of enthusiasm. Handlers must "read" their dogs and correctly interpret their behavior.

BARKING TO THE HANDLER

When the handler is not standing near the location, then the dog can use the bark to call the handler over. We often see dogs walk toward the handler and make eye contact. Then they bark to the handler and go back to the place where they found the victim in the wilderness search or found the spot with the most human odor coming out of the rubble. This sort of barking is seen in dogs who are easy barkers and "talk" to the dog handler. In this way they tell the dog handler they have found a person. You can see this more often in herding dog breeds, such as Border Collies. These dogs are not focused on the victim, but instead on the dog handler to tell him or her about their find.

THE REPLACEMENT PREY

At phase 4, the dog makes contact with its prey (the human victim). This step is a critical moment for dogs starting this training method. A dog can't recognize a human as prey because it is domesticated, and its behavior has changed from that of its wild ancestors.

To solve this problem, training victims must always offer the dog a replacement prey when the dog finds them. The dog can

Figure 3.5 A dog can bark to call its handler after it finds the odor of a victim.

expend its drive energy on this object—for our purposes a ball in a long sock—to act out the last phases of its hunting drive complex: shaking, biting to death, and dragging off the prey (phase 5).

But what would all of this be without sharing the prey? Retrieving is a form of carrying home the prey. Because the dog has had to search intensively, and also to keep it motivated, we must allow it to act out its total hunting behavior. So the dog has to act out the last part at the end of the hunt: the prey sharing. When the dog brings you the replacement prey, it is time to share a food reward (phase 6). This completes the whole hunting complex for the dog in a satisfying way.

An Ideal Way to Use the Drives

With this training method for search and rescue dogs, the instinctive acts from the hunting drive complex are used in an ideal way. We can make use of these instincts in full:

- *Searching* for human odor beneath the rubble means the dog will locate the helper with the sock toy as a replacement prey. The excitement in the dog rises during the search.
- *Locating* the place where the helper is buried stimulates the dog to approach. The excitement in the dog is high.
- *Scratching*, digging out, and, sometimes, barking in annoyance happens when it takes a bit longer for the dog to reach its prey. The excitement in the dog is almost at its highest pitch.
- *Finding* the sock toy as a replacement prey from the helper is the climax of the search action. The dog's excitement is at its peak. By picking up the sock toy, the dog begins to experience satisfaction and release.
- *Carrying*, shaking to death, walking around with, and finally bringing the sock toy to the handler are parts of the independent play stage. When the dog is left to play without pressure from the handler, there are no frustrations in the dog and the heightened excitement will dissipate slowly.

- *Sharing the prey*, by exchanging the replacement prey for some dog biscuits, is the last phase in the satisfaction of the search action. Performing all these phases without frustrating the dog means it will be motivated to do it again.

Search Passion

Because the handler allows the dog to follow its natural inclination, the dog will use all its stored drive energy, which includes satisfaction and release. Because this method connects to the dog's natural abilities and primitive drives, it develops a strong passion for searching.

By using the replacement prey, we remove the risk that a search and rescue dog will search in the rubble for food—potentially a serious problem. The dog never receives food from the helper, so food won't ever be the goal of the dog when searching. The goal of searching will always be the replacement prey (the sock toy) in connection with finding the human. The sock toy will be replaced with dog biscuits once the dog voluntarily brings the replacement prey to the handler. The direct goal of the search always has to be finding the human, and the indirect goal the replacement prey, in which the dog will find its satisfaction.

Conditioning

Of course, we fully understand that in a real disaster situation there would be no replacement prey. To solve that problem we apply the principle of conditioning in full. As an animal of habit, the dog always expects to get its replacement prey during training. As soon as the dog is used to that, we start the process of interruption: at irregular times, it can't reach the victim, which represents a common situation in real searches. To prevent frustration during training, the handler hides the replacement prey in the victim's scent clue once the dog has found it.

The Right Drives

We believe that the training of a living creature can never be enforced by tightening rules. Rather than applying a rigid system, we

have to find out what the animal likes. Training must be flexible but clearly focused on a certain goal. A dog has to search for a human lying on or under the surface and then locate and indicate this place to its handler. The method used to get the dog to that point has to fit the character of the dog. By trial and error, and in particular by working with the right drives, the dog has to learn to search.

FINDING DEAD VICTIMS

For the dogs, the experience of finding dead people is different from finding living victims. The stimuli dogs receive when they locate a living person, because of the enthusiasm of the handler, the rescue teams, and spectators, is no longer there during the salvage of a dead person. Handlers will behave differently during a mission in which they find bodies of dead people (often heavily damaged), because their emotions are different.

A Full Partner

Handlers using our training method look at their dogs in a different way and also handle their dogs differently. They no longer see their dog as an object to train but have learned that their dog is a full partner.

Figure 3.6 A Malinois hunts for people beneath the rubble.

The biggest problem with the training of search and rescue dogs is always the handlers, who, shaped by their environment, first have to understand the difference between sport-dog training and search and rescue dog training, and then switch to a new way of thinking. When this happens, you can call handler and dog a very good team: two colleagues, each with their own specialty.

4

Training in Three Steps

Some handlers spend hours on rubble training dogs to bark. However, sometimes they don't make any progress, or the dog resists or completely refuses to search. Using such a method does not take the dog into account. Why don't people choose the method that fits the dog, instead of trying to adapt the dog to the method?

Training that takes into account the dog's own characteristics is in fact nothing more than a favorable way of making use of the hereditary characteristics of the dog. This has the clear advantage that the dog, in learning to search, locate, and alert for humans, does not experience feelings of unease and thus will always be a happy worker. Searching is learned and worked out with greater reliability. Besides, this way of training is more fun.

Many people ask: "When do we have to start training?" Our answer is, as early as possible, even with an eight-week-old puppy. Starting training early is interesting for the dog as well as for people, and yields good results. Besides, the attention and exercise the dog gets in the first search exercises will contribute to the total development of the dog. Early development in the relatively short life of the dog also ensures that dog and human can enjoy each other, and life, for a longer time.

Young Dog Training

The training of a young dog, however, should never be superficial. It can't be limited to a few acts or games; it has to go more deeply. Proper training should stimulate all good and useful characteristics that lie dormant in the young dog. Our training method begins with the young dog and uses all sorts of search and prey games to make a happy searcher of the dog.

In the first phase of learning, the dog can be introduced to working out its drives on its sock toy. But do not tire the dog out, because a young dog does not always show that it is tired. Don't play too long, and give the dog necessary rest. When you're sure the dog has understood the game, give it a time-out.

It's important that playing with the sock toy never be understood as a game of human making. The young dog has to develop its own way of playing. Don't break up or change the game. Observe and wait until the dog involves you—its handler—in the game. At that moment, you can move the sock toy again. You can also work in the idea of bringing. In doing so you must not take the sock toy away from the dog, but the dog bringing the toy to you can be rewarded with a biscuit.

If a puppy or young dog does not have enough contact with other people or other dogs in its home environment, it must be taken at least once a week to places where there are a lot of people, such as a mall or a busy street where people shop. It is not necessary to do this too much or for too long. The dog has to get used to city traffic, and it has to have the chance to socialize with other well-socialized dogs. Puppy courses and other dog training sessions are ideal. The young dog will be in contact with other people and dogs and will also learn good obedience. Walking over difficult terrain can also be introduced, including, for example, walking over obstacles and going up and down staircases (not too often, of course). It is vital that you never try to teach the dog something against its will. For instance, walking over unpleasant or difficult

terrain has to be done with care; the handler can go first to show the dog the easiest way to go.

GOING WRONG IN TRAINING

An enthusiastic handler brought his eight-month-old dog to a weeklong course for search and rescue dogs. He purchased the dog especially to train him for search and rescue. The dog displayed happy, free behavior, and there seemed to be a good understanding between handler and dog. However, during the course, something went wrong.

The handler saw how the experienced dogs worked on the rubble, and he thought that he could reach that same level in a week's time. Everybody had told him he had a good dog, so during the first two days he was taking his dog on the rubble during the breaks. There he pressured his young dog to go into dark cellars, pulled him over the rubble, and failed to take his young dog's needs into account. After two days, everybody saw that nothing was left of this happy, free dog. Whenever the dog had the chance, he dodged his handler.

Because tactful advice had no effect, the instructors had to speak to this handler more firmly about what he was doing. Fortunately, the handler took the advice and worked the rest of the week to rebuild the bond with his dog and restore the dog's confidence in him as a handler.

This pair has become an excellent team. However, had he continued his original approach, the handler would have lost any chance of using his dog for search and rescue.

Adult Dog Training

When the dog to be trained is already an adult, it is important to see how its play and prey behavior is worked out and how strong a bond the dog has with its handler. If the dog's prey behavior has become connected with a sense of frustration, or if it has not bonded well with its handler, the dog will be a lot more difficult to train than one with the optimal characteristics. In fact, we need only one characteristic: steadfastness. That is what we like most in a dog—no aggression or fear of people and other dogs, good endurance, strong

Figure 4.1 A search and rescue dog is normally required to work intensively for long periods during a mission.

hunting drives, and strong character, as shown by a lack of fear in different environments. In fact, steadfastness is not unusual, because it is a trait of every normal dog. Behavior that deviates from this norm is usually caused by people: breeders, handlers, trainers, and dog owners. We must compensate for everything that deviates the dog from its natural steadfastness through knowledge, smart training, and patience.

As with the young dog, the adult dog follows certain phases of training. Its play and prey drive is, however, already more active, and because of that, the next phase of training can begin after a shorter period.

The Learning Process

In our method, the learning process for search and rescue dogs follows these important steps:

1. Focus the dog on the sock toy.
2. Make a connection between the sock toy and humans.
3. Introduce a search area with human odor.

First we get the dog to focus on the sock toy, and then we offer that toy in connection with a human. The dog then learns that

Figure 4.2 Hunting is the dog's strongest specialization, and hunting is searching.

detecting human odor in the search area means finding its sock toy. The dog likes to have the sock toy, so its alerts become clear. Here we summarize the steps, which are then described in detail in the chapters that follow.

1. STIMULATING INTEREST IN THE SOCK TOY

In the first step of training, we try to engage the interest of the dog in a certain toy. We like to work with an article that the dog can shake like prey, such as a tennis ball in a long sock. A tennis ball without a sock is unsuitable for that purpose, because the dog can only chew on it.

An object in motion stimulates the dog's prey drive, so the dog handler throws the sock toy low over the ground and the dog runs after it to pick it up. The dog may then play with the toy, as this play arises from its natural instincts. With young, inexperienced dogs, you see them shaking the toy, throwing it up high, and carrying it around. They experience the sock toy as prey they have caught while hunting.

When the dog lets the sock toy fall, the handler should immediately get the toy moving again. The most effective way is by throwing the sock toy low over the ground again, by which the hunting drive complex will be again activated. This game is very

important. In this game the handler only has a supporting role and may not decide how the game is played. The handler should avoid giving commands.

When the dog's interest in the game is reduced, the prey sharing will take place, and the handler will exchange the sock toy (prey) for a dog biscuit. Then the handler keeps the sock toy.

If the dog likes to run after the sock toy, the dog handler should throw the sock toy in an area of high grass where the dog can't immediately see it, so that the dog has to use its nose to find the toy. Later on, the handler might tether the dog to a tree and hide the sock toy in an area out of sight. Then the handler should free the dog and send it to find the sock toy. This scenario can be repeated in many different situations and areas. In this stage of training, it is important for the dog to build up its play behavior after finding the sock toy. The dog needs to develop its prey game. Once the dog is really excited about the toy, we take the next step.

2. CONNECTING THE SOCK TOY WITH HUMAN SCENT

In the second step of our training, we only offer the dog its sock toy in connection with a human being. We will first work with a helper hidden in an open hole in rubble or snow; later on, the hiding place will be closed in stages.

Start with the dog handler throwing the sock toy low over the ground toward the helper in the hole, after which the dog can go directly to the hole to pick up the toy from the helper's hand. If the dog is doing well, then the helper can take the sock toy before going into the hole, and the dog has to go pick it up. If the dog momentarily backslides or forgets about the sock toy at this stage of the training (especially when the hiding place is somewhat closed over), then the sock toy should be thrown to a second helper near the hole, who gives it to the helper inside the hole and closes it.

In wilderness searches, the helper walks away with the dog's sock toy in hand and sits or lies down in sight of the dog. The dog will be sent to the helper and will receive the toy immediately. The helper does not pull the sock toy, but rather lets the dog take the

Figure 4.3 The sock toy method can also be used to train dogs for area searches.

toy out of the hand. Then the playing and prey sharing with the dog follows again. If everything goes well, the helper next hides behind bushes with the sock toy extended by hand. The dog will be sent and again receives the toy immediately.

In later training, the helper does not give the sock toy directly to the dog, but throws it about a foot or foot and a half (30–50 cm) away, so the dog learns not to touch or bump the helper to receive its toy. Once the dog thoroughly understands that finding human odor means it gets the sock toy, we move on to the next step.

3. LINKING THE SEARCH FIELD AND HUMAN TO THE SOCK TOY

In the third step we make the following connection for the dog: *Searching a certain kind of area for human odor means getting my sock toy*. Now the dog is brought to a search area, which can be rubble-filled or snowy terrain, or a wooded area or field, where the dog has to search for human odor to get the sock toy. In the first sessions do not use too large an area, so that the dog can be successful in a reasonable time; later on, larger search areas can be offered in stages to the dog. The dog is now hunting for people, so to speak. By building up the connection this way, the dog knows that locating

a human means locating the sock toy. Because this method works with the dog's natural talent, it will search enthusiastically in order to be successful.

INDIVIDUALLY ADAPTED TRAINING

When the dog knows these exercises, we can strengthen these achievements by offering the dog increasingly more difficult circumstances. For instance, have it search longer to get results or do more work in the rubble to find the helper. This will make the drive to get the sock toy stronger. This building-up process has to be adapted to every individual dog. Some dogs have more physical strength and stamina than other dogs. Particularly in rubble, the materials with which the hiding place is closed must be adapted to the strength, stamina, and training level of the dog.

Heavier terrain and more difficult circumstances mean the dog will sense more excitement during search actions. It must go through a larger search area or a heavier covering to reach the helper—it has to do more to get to the sock toy. Or it encounters totally new circumstances that it has to endure to be successful. For instance, the dog might encounter blackberry bushes; ditches; thick, almost impenetrable plant growth; or dark corridors and cellars with all sorts of obstacles.

Figure 4.4 Dogs can dig passionately in avalanche search training in the excitement of finding a buried person.

Never forget to work out the complete ritual of a search action, no matter how short, from the beginning to end. So don't forget the prey sharing: the dog comes to the handler after its independent playing. Play with the dog a bit with the sock toy. The dog should be allowed to keep the toy as long as it wants, so don't fight to take it away. Then, when the dog lets the sock toy fall or wants to give it to you, take it and give the dog its biscuits in connection with the sock toy. Be careful not to take out the biscuits too early, when the dog isn't ready to finish its prey game. Dogs that like food will stop playing and come immediately for the biscuit. It's important to develop the dog's prey game, and if the dog stops playing, try to move the sock toy again with your foot or hand. Often the dog is still interested and moving the sock toy starts it playing again.

In the next three chapters, we will explore each step of training in more detail.

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5

Stimulating Interest in the Sock Toy

Many years have passed since the earthquake disaster in southern Italy in 1980. In the meantime we have had a lot of experience in actual search missions and have refined our training method considerably. The results we have achieved with different training groups and courses in our own country and elsewhere, and our success with our own dogs, suggest that our method of training appeals to almost all dogs.

Things That Move Are Prey

A search and rescue dog can be encouraged to have a real passion for searching with all sorts of prey and search performances. However, to make it clear to the dog that it has to search for its hidden sock toy, we have to work with the dog in the right manner. An article lying without movement will not be a hunting object for the dog; however, a moving object is immediately a living event for the dog. For the dog, with its origins as a hunter, everything that moves quickly will be recognized as prey and activate the hunting drive. When the sock toy disappears in high grass and there is no track to this prey, then the dog's search drive will be activated. The search drive is an instinct the dog inherited from its forebears—a dog doesn't have to learn to search.

Search and Prey Playing

The dog will learn, through this search and prey playing, to use its sense of smell intensively. It can also work in the techniques of using of air turbulence and odor traces, which are important for future work as a search and rescue dog. At the same time, the handler has a great opportunity, while the dog works at searching and locating, to learn to understand the dog's body language and alert behavior. This way of playing can be understood as a prey performance, with the sock toy as prey.

If the dog is now highly interested in the sock toy, we can combine it with different searches, for example, in the house. The toy will at first be hidden in a corner of the room under a little carpet. The dog sees the direction but doesn't know exactly where the sock toy is hidden. Then it will be activated to search. It can locate the toy quite quickly, and the handler, of course, should be very enthusiastic about the find. Play with the dog and the sock toy without any rush to move on, and at last the prey sharing takes place.

These searches should become more difficult, and at some point the dog should no longer know where the toy is hidden because it has to wait in another room while the toy is placed. These searches can, of course, also be done in a garden, woods, or park. Always

Figure 5.1 The dog finds the sock toy in the high grass, plays with it, and then brings it to the handler.

follow up locating the sock toy with comprehensive playing and prey sharing. In this way the dog will become quite adept at searching.

Developing the Search Passion

By making use of its drives, we introduce the dog to the behavior we require. This behavior is not forced on the dog, and we didn't direct it. Both points are important, because the dog learns to search of its own free will. At the same time, it discovers the finer points of search work by trial and error.

Ultimately, it is important that the replacement prey never be the goal of searching. This sock toy should never be hidden under the snow or under rubble without making a connection with human odor. It is only during the first step in training search playing that the dog can be allowed to search without human odor, since these searches are only intended to create a passion for searching in the dog.

Misunderstandings in Training

If we don't pay attention to the drive behavior of the dog, then our attempt to train might lead to the wrong effect. If we hide the sock toy and then expect the untrained dog to search for it, the dog won't know what it has to do. It will probably do everything except search. Likely impatient by now, we will bring the dog to the ball's hiding place and show the dog where the ball is. This action will create a misunderstanding between handler and dog. Maybe in its short life the dog has already heard our grumbling before and it was always accompanied by something unpleasant. To the dog it may look like this: the handler is grumbling because of the ball in the sock. It may conclude that searching for the toy is not allowed!

With that we have, without wanting to, thrown up a barrier between the dog and its prey object—the ball in the sock. It may be possible to overcome this barrier, but somewhere in the dog's mind there will always be an inhibited feeling that may prevent the dog from reaching its highest potential as a search and rescue dog.

Interfering with Play

Assume that you have built up the training correctly: first you openly threw the sock toy away and later you hid it. As soon as the dog has found this toy, it picks it up and carries it around, full of pride. For the dog this is real, living prey. Don't interfere with the sock toy during searching or afterwards, when the dog carries its prey. You can praise the dog and tell it what a great dog it is, but wait patiently until the dog lays the prey in front of your feet.

React quickly, however, if the dog lies down somewhere and begins to destroy the prey. Your loud and clear interference in this situation will indicate to the dog that this destruction (eating the prey) is incorrect and anti-social. However, if the dog begins to chew on the prey while carrying it, then do not react. This behavior comes from wild dogs and hunting dogs of the past, which, if they found the prey, were allowed to press out the blood and body fluids as a reward while carrying it. This behavior is no longer allowed for the modern hunting dog for commercial reasons, but it's fine for our future search and rescue dog. Remember that the replacement prey, in the mind of the dog, is still living. The chewing allows us to gauge how much the dog is enjoying its hunting behavior.

Figure 5.2 Items such as tennis balls or toys are unsuitable as training prey. Although the dog can chew on them, it can't develop its hunting drive as well as it can with a ball in a sock.

Prey Sharing

In an understanding between handler and dog based on real pack behavior, the dog will eventually lay the prey at the handler's feet. Why does it do that? Dogs still have the instincts of their wolf forebears, which also carry the prey back to the pack, allowing the prey to be shared. That is exactly what our dog is doing now. As a pack animal, the dog expects us to share in the prey. In the dog's view, it would be anti-social if we picked up the sock toy and simply put it in our pocket, thereby confiscating the entire prey.

After laying the prey in front of its handler, the dog expects the handler, as a member of the pack, to divide the prey. This prey sharing must not degenerate into an obedience exercise like being offered a biscuit for sitting in front of the handler, because the way the dog works out its hunting behavior is always right.

This behavior is related to old hunting rituals. After a hunting dog found the wild animal a hunter shot, it waited quietly beside the hunter, who took over the carcass. After the belly was opened, the dog got, as a reward, the biggest part of the bowels. We share the prey with our dog the same way. Take the sock toy and lay a dog biscuit on it, held up with thumb and forefinger. Wait briefly to heighten the dog's excitement a bit higher and then allow the dog to get the biscuit. Repeat this action once or twice more with a dog biscuit. Remember that the reward has to be offered on the replacement prey to form a connection with the replacement prey. Then keep the sock toy and put it away until the next training. Never leave the sock toy with the dog.

Introducing a Verbal Command

With all this training, the dog is already passionate about hunting, but for us that is still not enough. The dog must be truly passionate about searching. For this exercise, an unmowed meadow or a fallow, overgrown section of land is ideal. After a short period of playing without searching for the sock toy, have the dog lie down. Walk away through the meadow with the toy in hand, visible or

not, depending on the dog. The dog has to stay. Try to leave behind you a lot of track scent by crossing your own track a few times. While walking, drop the sock toy in a bush or clump of grass without the dog seeing, and continue to walk in a zigzag pattern. After that, go back to the dog. When you see that the dog is already looking at the meadow with interest and is full of hunting fever, let the dog go free for hunting. Just before releasing the dog, while standing or kneeling beside it, make a throwing movement with your arm and, a moment later, in a tempting and cheerful voice, give the dog the command to seek. It is important to do this right from the start of training.

The verbal command will tell the dog it is free to hunt; the arm movement gives the dog an idea of where to search. It is not necessary to teach the dog more than that. If we want a dog to show a certain behavior when no drive is active, as when the dog is required to search for something it has not seen thrown or moving, then we must be able to stimulate the drive with a command.

In the case of a future search and rescue dog, this command absolutely must be connected with a visual command, because we need to be able to show the dog a certain direction to search. That's why we make the connection with the movement of the arm, which we also make when throwing a ball.

That way the dog learns to be stimulated into a drive by a command. In the beginning of training, the sock toy (as prey) stimulated the search drive; later on the command will take over. During search exercises without the toy being thrown, you can see whether the earlier exercises were done well and whether the dog was searching mainly with its nose. If the dog was searching with its eyes until now, then it will have problems searching without seeing the toy being thrown. In spite of that, the handler should not help. The dog learns best by trial and error. After the exercise is over, after prey sharing and putting the sock toy away, eventually you can play with the dog with a normal ball. The sock toy, the substitute prey, comes to have an enormous value to the dog,

Figure 5.3 We like to work with an item the dog can shake to death, as it would prey. A tennis ball in a long sock works well.

because it is used only occasionally, and eventually only for real searches.

If the dog locates the sock toy without problems, then this exercise can be stopped after two or three repetitions. Of course, search playing should be done in different situations. As always, every exercise should end with the last acts of the hunting behavior: the carrying, playing together, and prey sharing.

Introducing Rubble Walks

While we are increasing the dog's enthusiasm for searching, we can normally start teaching the dog to work in debris, that is, to accustom the dog to walking over rubble, entering dark cellars, climbing over damaged staircases, and so on. To minimize risk, the dog always walks and works on rubble off leash and without a collar or choke chain. This will prevent the dog from getting hooked on something by its collar. A dog on leash could also easily be pulled down and injured if the handler stumbles or slips on the rubble. Dogs can, when they have learned to walk over rubble, even walk over broken glass and other sharp materials, but don't put them off-balance with unnecessary commands, by working on leash, or by touching them.

A dog with a good bond to the leader of the pack (the dog handler) will follow the handler through or over rubble. With proper behavior from the handler, who should not show any insecurity, these first walks over rubble will be very interesting for the dog. Any insecurity that is visible in the dog can be changed quickly to security by showing the dog the sock toy. The dog's immediate switch in attitude upon seeing the sock toy is proof that its negative behavior was caused by the handler. Avoid acrobatic balancing acts during the first few walks. The dog has to be prepared for its future task in the right way. At first, lead the dog over the rubble in a route that the dog can manage without any trouble. Later on, the dog has to learn to walk in front of you, as will happen during searching.

BUILDING CONFIDENCE

During training, author Resi Gerrisen took her six-month-old Welsh Corgi Cardigan out to get her used to strange terrain and materials: "To my great fright, I discovered that on the third floor of the house where we were, a big part of the floor had disappeared. Only some floor beams still lay across there at a distance of about one yard from each other. These beams were at their widest only about four inches (10 cm). The gap between the floor beams was so great that my dog, with her short legs, couldn't jump over. I had to control myself not to call her back when she, very happy and free, walked to the opening of the floor. She had walked along the edge and was walking over the first floor beam she encountered to the other side. Even more frightening, there was no wall at the end; you were looking down a depth of about thirty-three feet (10 m). She approached this edge a bit more carefully, and she was going to lie on the edge to have a look down. In my imagination I could already see her falling. But no, she stood up, turned around and came quietly back to me, again over a floor beam. If I had reacted in this situation with fright or panic, then my dog would have become much more inhibited. Even when she got older, she still went very confidently over small beams, as she had before."

LET THE DOG SET THE PACE

In the past we thought it was important to teach the dog to walk slowly over the rubble. Our experiences with actual search

Figure 5.4 The dog decides how it wants to play. The handler's role is to support and motivate.

missions have shown that a dog can work out the right tempo on the rubble for itself and should not to be restricted by us, not even during the first walking exercises on the rubble. We also noticed that dogs trained this way from the beginning search intensively on real rubble, never jump into deep cellars, avoid moving pieces of rubble, walk around dangerous obstacles, and don't take risky jumps. In short, properly trained search and rescue dogs won't injure themselves in the rubble and do their work happily and without frustration.

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6

Connecting the Sock Toy with Human Scent

With the first step of the training, by making the dog crazy for its sock toy, we have made the dog a strong searcher. This kind of playing, however, should not take place on rubble or in woods without a training victim, because then the sock toy, not the human, becomes the object of searching. The second step of training is designed to help the dog make the connection between locating the human (finding a human odor) and getting the sock toy.

Before going to search with the dog, the handler should pack in a backpack a small container of dog biscuits, which are necessary for prey sharing, a canteen with water for the dog, and a little drinking pan. The handler should also take the usual materials needed for work, such as a flashlight, heavy work gloves, a hard hat, and so on. A couple reserve sock toys, a piece of plastic sheeting, and a blanket are sometimes handy, too. The contents of this backpack will play a vital role in dealing with the excited hunting drive.

Wilderness Search

You will need a helper to train your dog for a wilderness search. Starting out next to you and your dog, the helper should pick up

the sock toy and get into position, lying down or sitting in sight of the dog at a distance of about thirty feet (10 m) to your left or right. By beginning with searches to the left or right, the dog will start to learn the grid pattern it has to navigate later. This way the dog learns from the first moment that it has to work out the search always first to the left or to the right, rather than simply heading straight out in front of the handler.

The helper always lies down or sits and never stands. If the helper stands, the dog learns to indicate standing or walking people, which can cause a big problem during operational searches, when many people are walking around at the same time searching for missing people. The dog might then indicate these other rescue workers.

If necessary, the helper tries to get the attention of the dog by moving the sock toy or calling the dog's name. Then the helper lays the sock toy on an outstretched hand. Seeing this, the dog will become excited and should then be sent to the helper with an encouraging "Search left," or "Search right," depending on which direction the helper is lying. When the dog gets there, it may pick up the toy with your loud encouragement and play with the toy as

Figure 6.1 In early stages of area search training, the helper walks away holding the dog's sock toy and sits or lies down in full view of the dog.

Figure 6.2 After getting the sock toy from the helper in the hole, the dog will carry the toy around with pride—it views the sock as living prey.

it walks away. The helper should not pull the sock toy, but must set it loose as soon as the dog takes it. If the dog doesn't want to take the toy, the helper should wave it in front of the dog's nose to stimulate its prey drive.

The dog does not have to immediately give the sock toy back to you. Allow the dog to play independently until you see the dog's drives are becoming weaker. Take care now to be in the vicinity of the backpack and entice the dog to prey share on the sock toy.

If everything goes well, the distance to where the helper is lying or sitting can gradually be increased to up to forty or fifty yards (40–50 m). At first, the helper should always stay in sight and to your left or right. If this step works well, then the helper can move out of sight, first at a short distance of about ten yards from you and your dog, and then gradually increasing the distance again. Don't ever offer two new difficulties at the same time in early training, or you may confuse or overwhelm the dog. For example, either introduce a new helper or another place in the woods, but not both in one training session. Wilderness searching will be covered in more detail in Chapter 8.

Disaster Search

Once the dog can walk over rubble without any problem, you can move your search work to the new surroundings and situations offered by the rubble of houses and other broken-down buildings. In the rubble, build a hiding place that is easy for the dog to reach. The dog shouldn't have to go over rubble that is too difficult. The hiding place has to be big enough for the helper to easily and safely lie down or sit. Make sure that it can't collapse when people and dogs walk on it. The helper is going to hide in that place, which for the moment stays open.

Leave the backpack at the edge of the rubble pile and stand with your dog about ten yards away, straight in front of the helper's hiding place. While squatting beside the dog, put one arm around the dog's neck. With the other arm, throw the sock toy low over the ground into the open hole. As soon the helper has the toy, set the dog loose with a wave of your arm and the command "Seek." The dog is now free to walk independently to the hiding place without further encouragement. When it gets to the hole, the dog will understand that there is not only a human in the hiding place, but also the sock toy. Enthusiastically, it will pick up the toy and, with pride, go back to you, who should be encouraging the dog from the moment it picks up the sock toy. Do not take the toy away from the dog or give any more commands. The dog is allowed to play with its prey; meanwhile, slowly walk to the backpack.

After playing a while with the sock toy, the dog will at last come to the backpack for the prey sharing. By keeping the backpack outside of the work field as much as possible, you will prevent the dog biscuits from falling in the search area and distracting or confusing other search dogs.

The next steps are to give the sock toy to the helper before hiding and to increase the distance to the hiding place. But remember not to offer the dog two new difficulties at one time. The open hiding place will be gradually closed over as training progresses. Make sure the material that covers and closes the hiding place is

Figure 6.3 Never pull on the sock toy. Let the dog play with it in accordance with its hunting instincts.

adapted to the capabilities of the dog. Do not close it with heavy stones or thick pieces of wood the first time. The dog should have the opportunity to successfully complete a search, according to the level of its training and stamina.

Reward at the Right Moment

As you conduct your training, use different hiding places and different helpers. To keep the work interesting for the dog, you should also change the work surroundings. It is also important to set up the dog to search from different sides. If you don't, soon there will be a track to the hiding place and all dogs will simply use the track. The point is to have every dog complete a good search action with every training session, working out its drives from the beginning to the end. Each training session should also have a higher degree of difficulty than the last, depending, of course, on the capabilities of the dog, so that the dog has to expend more effort each time to find the highest odor concentration in the debris.

A big mistake handlers make, maybe the biggest one, is to immediately praise or reward the dog when the dog locates the place where the helper is hidden. Do not reward the dog at this point. Wait for just the right moment. You need to be sensitive, because

the right moment has to be judged to make clear to the dog, with appropriate encouragement, that what it *just* did is what you want from it. Saying too much can be damaging, because as soon as the handler says something, or even coughs, the dog's concentration is broken. Spectators, and even the instructor, can talk to the dog quietly and encourage it, because that will not disturb it. The moment when the dog gets its sock toy from the helper is for the dog the highest point of this search action, and you can *then* praise the dog enthusiastically, but not earlier.

Putting pressure on the dog to complete the search within a given time frame can also seriously damage the dog's training. Therefore, we have to take enough time and let the dog go its own way. When the dog walks away from the area surrounding the hiding place, even when we think that it has smelled the helper, it may only be getting a breath of fresh air and will return to the hiding place, sometimes approaching from a totally different direction. Odor can be blown or turned away sometimes by wind and rubble contours, or it can come to the surface in a different place than we expect. However, the dog's nose will always lead to it, giving the dog the right direction by itself. But we must not disturb the dog while it works out these traces of odor. Keep your distance from the searching dog. Wait each time until the dog makes it clear that it has found the victim, and then, after it has received its sock toy, we may praise the dog.

Avoid Frustrations

Each time the dog locates the training victim, it is important that the handler complete the rituals that follow, as time-consuming as they are. The first elements involve the dog's searching, locating, and giving an alert by scratching, digging, and possibly biting away rubble, and barking as an expression of annoyance because it can't get its sock toy quickly enough. As soon as the dog reaches its sock toy at the victim, it will pick it up and at the same time it will hear praise from the handler. The dog will then bring its prey out of the

search area with pride, walking around with it or trying to kill the prey by shaking it, and eventually carrying it to the backpack at the edge of the rubble pile. The handler follows the dog quietly and works out the playing and prey sharing rituals.

Any influence of the dog handler on this ritual, such as by giving commands, not letting the dog play the way it wants to, or just taking the sock toy from the dog and putting it away without prey sharing, will frustrate the dog and diminish its desire to work. Each frustration lowers the dog's desire to complete the next search action. Several such frustrations can mean that the dog will search, but will leave the location of the hidden victim after a short, fleeting alert. Why? Because the dog is trying to work off its feeling of disappointment through a replacing act (displacement behavior).

Consider this example: A search and rescue dog is searching, whether in training or a real search, for a victim. The dog locates the scent clue and tells its handler, by an alert, where it has found someone. The search and rescue dog has performed a search action on the basis of the hunting drive complex, and it likes to complete the action. The end of the hunting ritual is, of course, catching and carrying the prey and prey sharing.

What would happen, during the prey sharing, if we were to put the sock toy in our pocket and stroke the dog on the head with a "good boy"? Think about it for a moment: the prey, for the dog, is alive. If, during the prey sharing, the handler fails to give the dog some biscuits, the dog might think: "My handler is anti-social. He keeps the whole prey and all I get is a little pat on the head. No, dear boss, I won't go along with that! Next time you have to search yourself."

Of course, a dog doesn't actually think that way. But its next search action is going to be weaker. That's why we always have to pay attention to the goals of the dog, and the drives that go with them. In our case, the prey sharing takes place with dog biscuits. For the dog, that becomes the only right way to share prey, and only in that way will the dog work out its drives without frustration.

Figure 6.4 To share the prey correctly, the handler should place a dog biscuit on the sock toy, holding it between thumb and forefinger.

THE RAVING MAN

That not all handlers have a feel for exactly how a dog must be stimulated is illustrated by a story from an avalanche course we once gave in the Austrian Alps. A dog handler who was available as a helper was asked, before he crawled into the cave in the snow, to show himself to the dogs first and get their attention. Imagine our amazement when we were suddenly confronted by a raving man running across the avalanche field swinging a coat and yelling wildly. Because some of the dogs had also done defense and protection work training, and the man looked suspiciously like an escaping decoy, so you can imagine what happened next. Fortunately the dogs were also obedient, so there were no further problems. It was obvious that this handler didn't have a feel for what we meant by getting a dog's attention: stimulate and entice. To prevent such problems, trainers should give clear, detailed instructions to the people who act as helpers about exactly what is required of them.

Smuggling the Replacement Prey

In the beginning of its training, the dog always reaches the helper, where it gets the sock toy as a replacement prey. Later, once the dog is fully introduced to this process, it will only have full access

to the victim every now and then. Because of the great depths at which victims can be found beneath the rubble, and the extensive work of salvaging, we play a little trick on the dog: after the dog has alerted very clearly on a location during training, its handler will push the dog carefully aside so that the dog can't see what the handler is doing. Now the handler lays the dog's sock toy under a few stones in the place where the dog alerted, without the dog seeing. In this way the handler smuggles the toy into the scent cone of the victim and then gives the dog the opportunity to search again and get to the sock toy.

The handler must always know that the dog's alert is correct before smuggling in the sock toy. Because the handler doesn't know the location, the instructor should confirm the correct alert to the handler, after which the handler can hide the sock toy in the odor trace and let the dog search that spot again.

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7

Linking the Search Field and a Human to the Sock Toy

When step 2 is repeated often, the dog learns that it will always find its sock toy at a victim. The final goal of the training is worked out in the third step: connecting the search field and a human with the dog's sock toy. In this step, the surroundings and the missing or buried people also become decisive stimuli in the hunting drive. This is the result: the view of certain surroundings (rubble, woods, snow) will elicit a strong search passion in the search and rescue dog.

In each training session, the handler has to have a clear idea of every part of the search action and then help the dog progress in accordance with its character. A search action does not start just with removing the dog's collar and a correct heel position; it touches the dog much more deeply.

Let's go back in time: The hunting behavior of the dog is, in principle, still the same as that of its forebears. Only one dog will lead the pack's hunt by following the prey's track. When close to the prey, that dog gives up the lead and releases the pack for hunting.

Leading the Hunt

What can we learn from this pack hunting behavior in terms of searching with our dogs? There is a regular system: leading the

hunt and releasing the dog to hunt. If we practice this system in a search with our dogs, then as handlers we are the leaders of the hunt, and that's why the dog looks to us for the release to hunt. Before starting the hunt, it is important to briefly stimulate the dog's hunting drive. Often it is enough for the dog to see the surroundings (rubble, woods, or snow). If that is not enough, then you can try to put the dog in the right search mood by talking to it about the coming search action. As a last possibility, you can briefly show the dog its sock toy.

Releasing to Hunt

The dog has to stay briefly in this state of tension until, mostly by eye contact, it tries to get the release to hunt. Go with the dog a few paces toward the search field and release the dog with a clear throwing movement of your arm and hand and the command "Seek." After you have released the dog to search, the dog has to start to work with the search pattern it was taught. For the wilderness search, that is a looping grid pattern from left to right; on rubble, the dog must also systematically search the indicated area. Dogs have an excellent ability to smell. They must constantly decide between the human odor we want them to search out beneath the debris and all other background odors, which also contain human odors. After that, they have to point out the scent clue, the place with the highest odor concentration.

Handling

Handlers have to learn to understand the dog's characteristic way of searching and not disturb the dog with unnecessary commands. Handlers also lead by searching with their own eyes and ears, keeping in mind where the dog has searched and where it hasn't. Handlers who want their dog to search a certain place a bit better (a so-called fine search) don't have to use another command—it is mostly enough for them to stay in place and make waving

Figure 7.1 The training process must be adapted to each individual dog.

movements with their arms to show the direction. It works also if the handler sniffs deeply at the spot a few times, as if the handler wants to pick up the odor better. The dog sees its handler as a searching colleague. Its curiosity will be stimulated immediately, and it will search that place more intensively.

Handlers who issue commands and say their dog's name all the time are interrupting the search or, at least, disturbing the harmony of the search. Ideally, handlers should use only one command, "Seek," as they release the dog to hunt. Simple, ordinary talking with the dog, if it is used to that, does not interrupt the search.

Take care in how you follow your dog during the search. The dog, of course, goes in front when searching. If you walk too closely behind the dog, it might think it is no longer released to hunt. The dog will then become passive, which you might misinterpret as not searching or refusing to work. If you then encourage the dog to search with some pressure and step closer, it initiates a vicious circle of negative influences on the search.

The dog often tells us the right distance we should be: each time we are too far away, it will turn its head, look at us, and then search further when we take a step in its direction.

Frustration

In order for a search and rescue dog to hold up under the strain of missions lasting several days, such as after a major earthquake or during a search action in highly inaccessible terrain, the training has to be optimal from the beginning and the dog should experience no frustrations. Frustration arises when the dog is not treated the right way, or when it can't work out its drives—for example, if a searching dog, after it has found the victim, does not have the opportunity to reach the end phase of the hunt.

Of course, sporadic frustrations will do less damage to a more experienced dog than to a dog in training. For learning dogs, frustrations can be disastrous. But even for more experienced dogs, frustrations can lead to a decrease in capabilities and also a change in behavior.

If we really want the dog to reach its full potential, its training must always be oriented toward its own character and peculiarities. A uniform mechanical training method, like the often-used bark on command when the dog finds the helper, can never be optimal

Figure 7.2 Once it has found a victim, a dog will scratch at the debris. If progress is slow, it will get annoyed and start barking.

and causes frustration for handler and dog. However, if we work by stimulating a particular drive, then the dog knows immediately what to do. When it has found the victim, it will always make a furious effort to reach the person. When that becomes difficult, it will try by digging, biting, or scratching to clear the debris. When that doesn't work quickly enough, the dog will become annoyed and might bark because of that.

Direction-Showing Alerts

During an actual search mission, it is absolutely essential to obtain the dog's direction-showing alerts. For work in snow or rubble, it is important that the sense of urgency to reach the victim be optimized. Only when the dog has given a clear alert will we know where the salvage of the victim has to begin. However, the place the dog indicates is only the scent clue and is not necessarily the place where the victim is buried. Because of the planks, beams, and concrete slabs piled on top of the victim, odor can be redirected and can come out of the rubble at some distance from the victim. That's why the search and rescue dog has to stay close by during the salvage to alert rescuers to the direction of the victim more than once in the same scent cone. This requires that the dog feel a powerful sense of urgency to reach the victim.

Importance of Training Helpers

In training and exercises, the hidden person—the so-called victim—is of great importance. The success of training depends on correct behavior from the helper:

- The helper never carries dog biscuits or other food, or a cell phone. The helper may have a radio and headset only if necessary.
- The helper should behave as instructed by the trainer. Anything outside the planned sequence can damage training.
- When in doubt, the victim should lie down quietly without looking at the dog.

- In step 2, the sock toy will be thrown to or in the hiding place.
- In step 3, this sock toy is laid by the victim or is smuggled by the handler into the scent cone of the victim.
- In step 3, the dog will not make contact with a victim in every search. When it does make contact, there should be no talking, no rewarding, no food, and no touching by the helper—only presentation of the sock toy.

Rubble Experience

A dog that is not used to walking over heavy and difficult rubble can't concentrate on searching. Such a dog can't do what's expected of it because it lacks the necessary concentration and makes mistakes. Its handler would make a serious mistake by declaring that the dog has fully completed the search of the debris pile. Even worse is when handlers think they can train search and rescue dogs to search on rubble by working only on an obstacle course, with a person lying down in the woods, or with pieces of clothing. This overconfidence on the part of the handler creates the conditions for a second disaster on top of the original disaster requiring search and rescue work.

TRAIN FOR RUBBLE SEARCHES

In 1980, after a heavy earthquake in Italy, a foreign team of search and rescue dogs and handlers traveled to Italy to offer help. Sadly, they had to stop their work after two days because all their dogs were injured. The injuries were caused by working on the rubble with dogs on leash. Because the handlers themselves had difficulty walking over the rubble piles and often stumbled or fell down, the dogs were often pulled with them. The dogs lost their balance and many were seriously injured.

We discovered the same situation in Armenia, where after the major earthquake disaster of 1988, twenty avalanche dogs had to stop after one day because the dogs were injured. In both cases, the dogs had never trained on rubble!

SPECIALLY BUILT TRAINING CENTERS

What about specially built search and rescue dog training centers? Are these centers an effective place to teach search and rescue dogs? These places mostly look the same: a small, artificial search field, often containing some stones, beams, planks, and sometimes other building-waste. In this field are permanent hiding places, mostly complete with cover. The candidates for tests have trained on it, and dogs walk straight to these hiding places. Each dog locates and alerts for these places very well, of course. But when every dog alerts well, then there is no way to make a distinction between dogs that are actually searching well and dogs that have simply learned the location of the hiding spots. That's why handlers at such training centers often assess unimportant details and, as a last resort, use a stopwatch to time each dog's performance.

Most handlers and trainers recognize that it is bad to search on the same terrain all the time, and they try to correct this by building more hiding places than are necessary. By changing the location of the hiding places, handlers or trainers may think that they can mislead the searching dog. The results say a lot about the capabilities of the dogs, but not much for their handlers.

Figure 7.3 Heavier terrain and more difficult circumstances will engender more excitement in the dog during searches.

DOGS HAVE A GOOD MEMORY

After searching more than once, sometimes even after only one search, dogs show that they can find set hiding places without any problem. We once had to give a second demonstration on the same terrain, one week later. Both times, the same handlers and dogs were used. The dogs had some problems the first time around with locating one of the victims, who was hidden in a closed garbage container. All dogs showed very well that they had picked up the odor of the victim, but it took a bit more time to pinpoint the victim's exact location. This makes sense, because a container designed to keep the stench of the garbage in also keeps the human odor of the victim in. The second time, however, all the dogs walked straight to the different hiding places and also to the garbage container. With this, the dogs showed clearly that they were making good use of their ability to remember.

We have observed the same phenomenon many more times while watching the training of search and rescue dog units with a wonderfully equipped training field of their own. The training field often had different rubble objects, but the hiding places were always in the same spots. After one or a few days, most of the dogs knew where they had to search. They walked straight to those places to see if there was someone in them.

We learn from this that we constantly have to look for new training fields and debris piles to keep the dogs really searching. We also learn that search and rescue dog examinations held in permanent training fields have absolutely no value. Dogs and handlers trained and certified this way will prove during a mission that they are unable to work out their job because a real mission lacks well-known hiding places.

DISASTER VILLAGES

Disaster villages—artificial, often massive villages built out of concrete for training rescue workers—are not suitable for training search and rescue dogs. The problems with the hiding places are the same as those described for dog training centers; in fact, they're sometimes worse. The turbulence in such artificial setups caused by the systems of tubes used to build these places is often confusing and is seldom like real rubble.

In artificial rubble piles, there is also another problem: because of reinforced structures to prevent collapsing walls and stones

falling down, the handler and the dog come to have a confidence and ease they will never have in a real operation. The critical assessment of the status of damaged and collapsed buildings, and the associated judgment of the dangers involved in entering them, can't be experienced and trained for. This poses a great danger if dogs and handlers trained in artificial disasters then attend a real search mission.

FRESH RUBBLE

Anyone who has experienced a search operation after a major earthquake even once will agree that training handlers and search and rescue dogs can't be based on compromises. Demolition sites and condemned buildings have to be available as training terrain, if only to allow the handler and dog to gain the necessary experience in judging the dangers—an experience that can't be lacking during a real mission. We know that it is not easy to find demolition sites, and you can occasionally use a rubble breakery or storage area for training—but only occasionally.

Dogs training for search and rescue have to be trained regularly, twice a week at least, in the different areas (searching, grid pattern, alert, obedience, dexterity). Handlers should not forget to include evening and night training. Furthermore, dogs must be kept in a good search mood with all sorts of tracking and search performances. Besides training the dog, the handler has to be taught the theoretical background of the work, assessment of dangers, life-saving actions, and so on. It is important that every handler, during training, be fully prepared mentally and physically, and also be tested thoroughly. This is the only way a real selection can take place, which could mean the difference between life and death later during a real operation.

Training Essentials

During training, everything has to be done to increase the capabilities of the handler and dog team. They should be trained under a variety of exciting search conditions, such as

- Deeper search actions (the helper is hidden deeper)
- Longer and not immediately successful search actions
- Searching under all sorts of conditions and situations.

Conditions such as smoke, stench, noise, and people are overrated. However, a female dog in heat can form a natural obstacle for working males. And believe us, during an actual mission there often are such females. Because of that, females in heat are included in our training scenarios.

Searching Without Prey

An experienced search and rescue dog and its handler should, unknown to them, occasionally train a search action without a victim in place. The result is that the dog searches without finding—because there is no victim to find. The dog will not be frustrated by this failure, because not having found anyone, it will not expect the full hunting ritual to be carried out. Such a dog doesn't need to be rewarded, praised, or comforted. The absolutely normal lack of success while hunting is something a wild dog experiences daily. Because the search and rescue dog has inherited this tendency, it won't view the experience as negative. Through this failure, the urgency to succeed

Figure 7.4 The result of training should be a search and rescue dog with a strong passion for searching certain areas, such as rubble, woods, or snow.

the next time will increase more quickly and the desire to search will be even stronger. Following this chain of logic, which we have tested, handlers come to recognize that they should not offer a replacement victim after a negative search.

CASE STUDY: GAS EXPLOSION IN THE CITY

I am watching the late news when the alarm is called out: "A multi-storied house has collapsed after a gas explosion: we need three dogs." It is a bit after 11:00 p.m. While I am donning my jumpsuit I remember our last mission. We have just come back and I am still unpacking. And now I am standing in my jumpsuit again, ready to go on the next operation. I fill the can with fresh water for the dogs and we are on our way. I look at my watch: five minutes have gone by since the alarm; I am satisfied. With the phased traffic lights, I am lucky in the always busy traffic of the city. I quickly pick up the last dog handler with his dog. Now we have three dogs in the car; our operational crew is complete. Other handlers are already on standby.

The traffic becomes quieter, and we can take the shortest way. Through a street with one-way traffic, and then we see the fire department vehicles. Calmly the handlers and their dogs leave the car; I am satisfied and have a quiet feeling. A nervous dog handler does not achieve good things. I walk through the outlet, an open part in a row of houses, and then I see in the full light of the floodlights what has happened. The back wing of a house has collapsed. Six floors lie in a pile in front of me. Little concrete, but a lot of bricks, planks, and beams. I try to form a picture for myself. Where might survivors be found? It doesn't look very good. Planks and beams lie on a slant, and only a ten-foot (3 m) piece of a wall from the courtyard is still standing. The fire department commander tells me all the facts known and asks us to search from the courtyard.

My two colleagues start the work with their dogs, each on one side of the debris. How many victims to expect is, as always, a big question mark. A woman on the first floor must have been at home for sure, but there are five floors on top of her: about thirty feet (7 m) of fine rubble closely pressed together. God help her!

The fire department is working on the installation of security measures in the stairwell. A light odor of gas is hanging over the site of the accident, but the fire department commander has ensured gas and electricity are disconnected. I want more information about the possible number of missing people. A crying woman is hardly able to speak: "My grandparents were upstairs on the fourth floor." Upstairs? The fourth floor is lying in front of me. I give this

Figure 7.5 After arrival, I first find a quiet place for my dog to lie down.

less-than-precise information to the fire department commander: "Fourth floor, two elderly people were probably in the house at the moment of the explosion."

Blinded by the floodlights of the newly arrived television team, I head in the direction of the rubble pile. My handlers come back with their dogs from the rubble. They have completed the first hasty search. One of them tells me he got an alert of a dead victim and asks me to search that area again. I tell my dog he can start searching. He walks on the rubble cone and I follow him, mostly on my hands and feet. I see him again; he stands still with a half high nose, he is smelling the surrounding area. He goes to the right and shows interest at a place at the edge of the rubble above. He paws some rubble away, smells once more, looks at me and lightly waves his tail. Then he scratches again a few times without confidence and stays in place with his ears laid back, staring at the rubble. Then he gives me his death alert, sitting down and putting his nose deep in the rubble.

Hours later I know why he was not totally sure. Between him and the dead body lay about nineteen feet (6 m) of fine, tightly packed rubble. One of my colleagues, who was watching me and the dog, nods affirmatively that his dog also indicated there. My colleague tells the commander of the fire department where he can start digging. I reward my dog and ask him to search further. He goes to the left and comes to a piece of the house that is still standing. High above, the washbasins and radiators are hanging loose on the wall. Along the wall some beams come out of the rubble. The dog shows interest, goes left along the woodpile, and smells there for a longer time. Then he gives his death alert and carefully pulls a wet rug out of the wood. What does he want to say to me?

The members of the fire department ask what is happening. "I'm not totally sure," I hear myself say, "let a second dog search the same area." That dog

Figure 7.6 I follow my dog across the rubble, letting him take the lead.

sniffs in a clear, audible, intensive fashion in the same place, scratches some rubble away carefully, and lies there softly crying with his nose between the planks. He has also smelled a dead body! From experience I know that a dog's alert at a dead person is totally different than at a living person. We compare the results of both dogs and determine that both showed a strong interest left of the floor planks near the center of the debris cone. The fire department commander orders digging near the floor planks. I explain to him how such planks can redirect the odor. Because of that, the right location could be situated more to the center.

I tell him about the direction-showing alerts of our dogs, and how we bring them back to the hole being dug in the rubble to show the right direction to dig for the victim. The debris cone to the right of the spot where the dogs alerted has to be worked very carefully, because of the danger of collapsing the adjacent properties. They can't use machines to dig, and members of the fire department are working hard to move the high pile of rubble away with their hands. It will take hours before they reach the dead body.

The dogs lie down now to rest between jerry cans with water and stretchers in the piles of dust in the corridor to the courtyard. Around them are perspiring and panting members of the fire department, sobbing women, busy journalists, and police. Lit by the fierce floodlights of the television crews, the dogs sleep. But time and again we bring them back on the rubble to do their direction-showing work. They know how to conserve their energy, because every time they are back on their place, they roll up and sleep again. It is after midnight when the dogs in the tunnel dug by workers don't alert further in the debris cone, but clearly want to go deeper. After taking away more than

Figure 7.7 The dog sniffs in a clear, audible, intensive fashion on the same place. He scratches some rubble away carefully and lies there, softly crying with his nose between the planks. He smells a dead body!

three feet (1 m) of closely packed rubble, we see the sad result: both missing people from the fourth floor.

The commander makes sure that there is only one still missing: a seventy-five-year-old woman on the first floor, who was at home at the moment of the explosion. We can spare the dogs a bit; the rubble of five floors has to be cleared by hand first. We go into the second back wing of the building and lay the dogs down in a cabinet-maker's shop. Later in the night we feel a shock and see some cracks in the floor; the staircase hall is sloping a bit more. The salvage stops immediately, and a firefighter places an instrument with a piece of glass in a corner and waits. If the glass breaks, we'll know that the walls are sliding. The glass doesn't break, so after half an hour we can work further. By the alerts of our dogs, we expect to find the last victim along the wall against the neighboring property. The work becomes progressively heavier and more dangerous; the staircase is almost coming down.

Dawn is already coming when the fire department commander asks for the dogs again. I search first and my dog walks directly to the right very quickly. He indicates between the surface beams. The second dog does the same. There is nothing left for it but to remove the cramped surface beams and dig further there. In between, the rubble gradually lessens. I become nervous. It looks like all dogs were indicating wrong, giving a false alert. A tired member of the fire department becomes impatient and complains. Then the commander of the fire department surprises me. He believes the dogs and encourages his people to dig further. Suddenly we discover a piece of

furniture covered with cloth. Part of a bed! Quickly we set up a dog, and his alert is very clear. Almost at the same time, a member of the fire department calls: "I see a foot, the dog has located!" I take off my dust mask. Hours of long, hard work are behind us.

It is Sunday. If I turn my back on the rubble, the new day looks so nice it appears nothing has happened.

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8

Wilderness Search

The search for missing people in large wooded areas and other difficult terrain can be done by an individual dog and handler but also with more handlers and their dogs on a search line. In this chapter we first describe search tactics and then discuss types of alert and ranging.

Search Methods

For the wilderness search, also called an area search, there are four different methods of searching:

- Searching along a road
- Corridor searching
- Sector searching
- Searching a slope or mountain

SEARCHING ALONG A ROAD

Searching along a road is a quick search method that can be used when we have information on the possible route the missing person took. With this method, two handlers walk, one on each side of the road, directing their dogs to loop only to one side of the road. The dog does not cross in front of the handler to the other side but instead stays on one side to search from the edge of the road in loops. How deep the dog is sent into the woods depends

Figure 8.1 Road search. When two handlers search along a road, one directs a dog to search to the left side of the road and the other to the right.

on the dog's ability, the density of the area, and the direction of the wind.

This search method can also be used by one handler with a dog. The dog searches first one side of the road and then the other side on its way back. It is advisable under these circumstances to take along an assistant without a dog. No one should go alone on a mission.

With this search tactic we have to teach the dog to range the area only to the left as well as only to the right side of the handler, as appropriate.

CORRIDOR SEARCHING

With corridor searching, more handlers and dogs walk in a straight line through the area at a large distance from each other (about 55 yd. or 50 m). The distance between the handlers depends on the accessibility of the terrain and the ability of the dogs. They should be farther apart in open terrain and closer together in thick shrubs. The line is preferably arranged so that dogs with lower ability, which can search only smaller areas, work beside more experienced or higher-ability dogs, which can search larger areas. With this search method, the dog crosses in front of its handler to search both the left and the right side areas between the handlers.

For the corridor search to function best, there should be at least three and at most five or six handlers. If more handlers and dogs are available, then they can choose to search by sector or form a second corridor search line, which will be placed behind the first one. With this latter approach, the handlers of the second search line should be staggered behind those in the first search line (like rows of seats in a theater). This method is useful when an area has to be searched intensively. The handlers of the first search line can walk a wider distance from one another because the area between them will be searched once more by the second search line. So the dogs don't disturb each other, the distance between the first and the second search line has to be at least one hundred yards (100 m). The second search line works independently of the first search line.

After a search line has been drawn up at the beginning of the area and the command to search has been given, the handlers send their dogs looping in a systematic grid pattern from left to right throughout the area. It is of great importance that every command to stop or continue searching be passed on from every handler to the adjacent colleagues. Working in a corridor search requires much discipline and attentiveness to make the search mission a success.

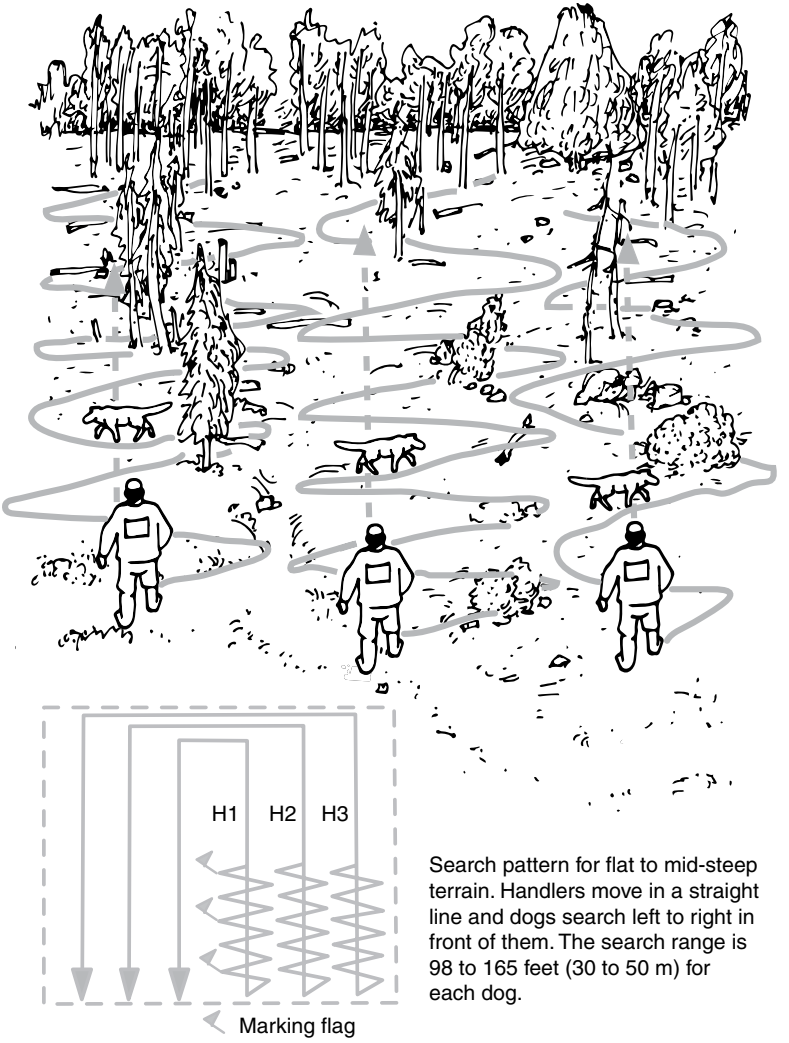

Figure 8.2 Corridor search. In a corridor search, the handlers walk parallel to each other and their dogs range back and forth to search to both sides of their handlers.

At one edge of the search line walks a handler or helper who can orient well in the terrain (using a compass or GPS navigation device) and who keeps an eye on the borders of the search area. The whole search line must be directed by this person. In Figure 8.2, this person would eventually replace the marking flags.

When the line makes a side movement (for instance, when the line is searching its way back along a bordering area) it is important that the person standing on the border on the side the line is moving toward keeps standing there. That person knows the border of the area the line has just completed searching.

LEADERSHIP IS ESSENTIAL

During a course for beginners and advanced search and rescue dog teams, many handlers got irritated with the way the operational leader—the middle person in the line—was giving commands during a night exercise in which they had to search a large area of forest. This person was giving commands loudly, was not willing to discuss the search pattern to be followed, and was leading the whole corridor at a high tempo, which was not easy because of the darkness and the terrain. For the beginners, it was too difficult to follow this experienced search and rescue dog handler, who had already completed many wilderness searches. The beginners were not satisfied with the way he did things, and after everyone returned to the hotel, there was a great deal of discussion about what happened, although the exercise worked out very well.

Some beginning handlers, who doubted the success of the exercise, arranged for a night exercise that they would command the following evening, where they could work it out their own way. It was a disastrous exercise because of the endless discussions about the search pattern to follow, the division of the terrain, and which dogs should search where, all of which took an enormous amount of time. Many handlers were confused about what was to happen next. Each time a part of the line stood still, another part continued. The line had to be constantly reconnected and regrouped.

There is much to be learned from this story. The leader should be aware of the experience of the handlers in the group and adjust the pace and directions to ensure everyone can contribute effectively. On the other hand, handlers in the search group should not interrupt the search to discuss search patterns. During the search, everyone must follow the leader's orders. Especially with corridor searching, discipline is of the utmost importance, because you are working in bigger groups and always walking some distance from one another. If the line falls apart, the whole area has to be searched again or something may be missed. There is time in the debriefing to ask questions and discuss problems.

Figure 8.3 It is important to discuss every exercise thoroughly, but not during an operation, when efficiency and speed are critical.

SECTOR SEARCHING

The total search area can also be divided into several sectors, depending on how many handlers and dogs are available. These sectors, the borders of which have to be clearly marked by roads, ditches, or geographic coordinates in latitude and longitude, will be searched by two or three handlers and their dogs (using a corridor search).

The advantage of working this way is that smaller, more numerous units can work faster. The disadvantage is that the handlers have to orient themselves very well in the terrain so that no areas are missed. That's why this search method has to be coordinated centrally, with all groups equipped with a radio and GPS for control.

SEARCHING A SLOPE OR MOUNTAIN

In searching steep slopes by corridor search, the most effective and safest way to proceed is by searching diagonally on the slope so the dogs can walk up and down. Because slopes are rougher going, the handlers walk about sixty-five to ninety-eight feet (20 to 30 m) from each other. In searching slopes or mountains, there is always the danger that stones will be loosened by handlers or their dogs

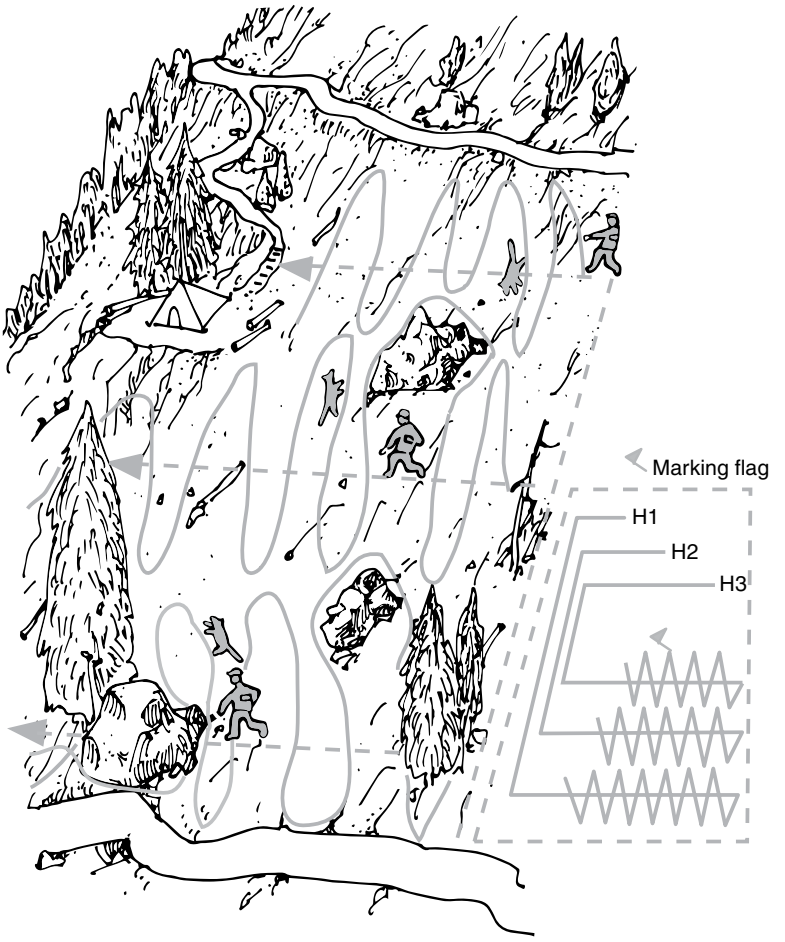

Figure 8.4 Slope search. On steep slopes, the search corridors are narrower (65 to 98 feet/20 to 30 m) to make the difficult terrain more manageable for the dogs, and the handlers are staggered to reduce the chance of dislodged debris falling on down slope teams.

walking higher up. For this reason, handlers should not walk directly under each other, and should be staggered across the slope, with the lower handlers walking farther in front. When stones fall, the handlers and dogs below are not harmed. But because the handlers are not walking beside each other, they have to maintain good visual and calling contact.

Slopes are not always searched on a diagonal, because the steepness of the slope and the wind direction may make another method more useful. With mountain winds, such as winds that blow from the top to the valley, the search line can sometimes search better against the wind, so from the valley to the top. If the handlers and dogs can be transported to the top (by ATVs or helicopter) when there is a valley wind, which blows from the valley to the top, the hill or mountain can then be searched from the top of the slope toward the valley.

Missing Persons

Some search and rescue dog groups train their dogs also to alert to standing or walking people, but in our countries there are always a lot of people searching together with us in the same or the adjacent areas. To avoid alerting to these searchers, our dogs only alert to people who are sitting, lying, or hanging (in training, sitting in trees).

When the missing person is elderly, we discovered that they are usually quite close to their homes. Sometimes they are in the attic of the house or in the cellar. In seniors' housing they sometimes sleep in the wrong room. Alzheimer's patients may go to a place from their childhood. Elderly people who fail to come home from a walk have often fallen down along roads or paths or slipped down from a roadside into the bushes. If the missing person was out picking mushrooms, you have to search deep into the woods, not along roadsides. This is also true for people who want to commit suicide. In this case you have to comb through bushes and thick woods.

Types of Alerts

An alert always has to be chosen to suit the behavior of the dog and to fit the dog's character. For a reliable alert, it is important that the dog have a well-developed drive to find people. The dog

can develop a search drive for people with the help of the hunting drive complex. Common alerts during wilderness searches include the following:

- Barking
- Bringsel
- Recall

BARKING

With a barking alert, the dog stays with the victim and barks repeatedly or continuously, so that the handler hears the direction and can come to the dog and victim. This barking alert is suitable for dogs that bark easily on their own.

The *International Testing Standards for Rescue Dog Tests (IPO-R)* states the following about barking: "Whilst barking the dog clearly hones in on the victim or the location of his/her scent and barks continuously until the handler appears and the alert is over. The dog may not touch the victim. When hiding places are enclosed but accessible to the dog, it should indicate the precise location of the scent source through direction-showing behaviour."[1]

Figure 8.5 The barking alert is suitable for dogs that bark easily by themselves.

BRINGSEL

During a search with a bringsel, the dog has a small, soft, typically leather stick hanging from its collar. This stick is called a "bringsel." When the dog reaches the victim, it picks up the bringsel by itself and carries it to the handler, who takes the bringsel and removes it from the collar. On the question "Where?" or "Show me," the dog leads the handler to the victim.

About bringsels, the *International Testing Standards for Rescue Dog Tests (IPO-R)* states the following: "A special collar, on which a 'bringsel' is fixed, is fitted on the dog if it is doing bringsel work. The collar has to have a releasing mechanism that protects the dog from injuries. When it has found the person the dog takes the bringsel to the handler. There is no need for it to sit during the handover of the bringsel. Once the bringsel has been removed, and at the order of the handler, the dog takes the handler directly and independently to the victim. While doing so, the handler must be in constant contact with his dog. The dog may be taken on a leash of any length for this purpose."[2]

In a wilderness search, a barking dog can be perceived as threatening to a missing person, especially for children or people with mental handicaps, and cause a state of shock. Because

Figure 8.6 Bringsels, which come in different designs and measurements, are attached to the dog's collar.

a hypothermic person who goes into shock can die, we prefer to use a dog with a bringsel alert over a barking alert for wilderness searches. Many victims aren't even aware the dog was there the first time, before it went back to its handler. When the dog comes back to the victim, it will be with the handler, who can reassure and immediately help the victim. The bringsel alert is particularly useful with dogs that like to retrieve.

DENSE SHRUBS

We often get the question of how the dog can manage to get through dense shrubs and brush with the bringsel and collar without getting caught on branches or other obstructions. Practice has shown, however, that dogs find their own solutions. We have, of course, seen a dog get hung up with its collar on a twig. If this happens, it is important that the dog stay quiet and not panic. The first few times the handler may have to teach the dog how to get loose, but later on the dog will free itself.

RECALL

In the recall alert, the dog uses its body position or certain other behaviors to show its handler that it has found a person. For example, the dog might come back and sit in front of or nudge its handler. Some dogs try to entice their handlers by walking to the victim's location and then back to the handler. They are usually very excited, and by walking to and fro between the victim and the handler, they try to lead their handler to the victim.

The *International Testing Standards for Rescue Dog Tests (IPO-R)* says the following about recall: "During recall the dog takes the quickest route back and forth between handler and victim, thereby leading the handler to the victim or the place of alert. In addition, the dog must clearly show the handler the sort of behaviour that can clearly be interpreted as alert behaviour. [In testing,] the dog handler notifies the judge of this type of behaviour before the scent work begins."[3]

Training the Barking Alert

Dogs that bark easily on their own can be trained to bark automatically at an indicated place. Other dogs can often be motivated to bark when the helper shows the dog its sock toy for a moment and then hides it again (see Chapter 2).

During training, the dog should only get its sock toy from the victim. In the beginning the dog gets the sock toy after only one or two barks; then the number of barks has to increase before it gets the sock toy from the victim. Later the dog gets the sock toy only when the handler has also arrived at the victim.

Teaching a dog to bark using pressure tactics should never be attempted because the dog will fail during a real mission.

Training the Bringsel Alert

For many search and rescue dog handlers, the bringsel alert is an unknown method of indicating a victim. What follows is the complete training for the bringsel alert, split up into steps.

STEP 1

In the first training exercises (see Chapter 2), the dog has already been directed to the victim, who has the sock toy, which the dog can pick up immediately upon finding the victim.

STEP 2

Before taking this step in a wilderness environment, the dog should have already learned to retrieve with all sorts of objects on the training field where you do obedience exercises. We never train dogs to retrieve in the training area for the wilderness search (a wooded area) to avoid pressuring the dog or creating any unpleasant connections with the wilderness search. As long as your dog knows how to retrieve, you can continue with step 2 described below.

Based on training in step 1, we can continue by giving the helper two toys. Both should be toys the dog likes, but the second one is the sock toy the dog used for the first exercises. This is how

we will clearly connect the correct performance of the bringsel alert. The second toy, the dog's favorite, has to be hidden well, or else the dog will take it and then refuse to take the first toy.

The first object will be given on a flat hand or held between the thumb and fingers of the stretched arm but never laid down beside or on the helper. From now on, before the beginning of each bringsel exercise, a leather collar on which the bringsel later can be fastened is placed around the dog's neck as part of the search ritual.

Now, as in the early part of training, the dog goes a short distance (33 ft. or 10 m) to a sitting or lying helper, where it picks up the first object and brings it straight to the handler. Encourage this by calling the dog to bring the first toy. As soon as you are holding the first object, the helper calls the dog back and shows it the second toy—the sock toy—which is, for the dog, the best one.

Follow the dog when it goes back to the helper and clearly show pleasure that the dog is picking up the sock toy. However, don't touch or disturb the dog with its playing now. After the dog is done playing on its own, you and the dog can then play together again and share the prey as usual.

(RE)DISCOVERING THE BRINGSEL

With our search and rescue dog teams we have several dogs that work with a bringsel. We started using the bringsel when we discovered that many dogs bark only under pressure. Because we took the position that the search and rescue dog has to do its work happily and enthusiastically to achieve good results, we looked for another alert method. That's how we (re)discovered the bringsel, which proved to be a sure alert method. Unfortunately, there was not much literature about working with the bringsel, so we experimented a lot before we knew how to work with it. Eros, our German Shepherd male, taught us a lot and was often used to figure out how to work correctly with the bringsel. He became an excellent operational area search dog and was fluent in working with the bringsel, just like many of our dogs that came after him. Our team of three bringsel dogs became 1999 world champions in area search in Ljubljana, Slovenia.

STEP 3

If step 2 goes well, you can increase the distance to the victim, but keep the situation and the action the same: the same surroundings, the dog picks up the first object, brings it to you, and then goes back to the helper, where the dog immediately and without pulling gets the sock toy. Then begins the dog's independent playing and finally the prey sharing. To avoid confusing the dog, take a break as soon as the dog is successful. It is better to repeat this after five or ten minutes than it is to immediately begin another exercise.

STEP 4

Continue to work with two toys. If everything is going well, you can now change the circumstances of the work, except for the distance, even hiding the helper behind bushes. However, always send the dog to the right or to the left and not straight ahead. As soon as the dog knows the pattern of this bringsel alert, your help should decrease. At your command, the dog will run to the helper sitting or lying to the left or the right, take the first toy, and bring it directly, without dropping it, to you. The dog will then turn around automatically and run to the helper again to pick up the sock toy. Run to the helper with the dog the second time and praise the dog exuberantly.

STEP 5

Incorporate the bringsel only when, on the obedience-training field, the dog has learned to bring items back to you, including the bringsel. The dog must be able to bring it correctly: directly, without dropping it. Then, using a short distance and familiar circumstances (surroundings and helper), you can introduce the bringsel into the wilderness training. Instead of the first toy, the helper will now give the bringsel with the hand stretched out flat. The helper may have to move it to get the dog's attention. The dog has to take this bringsel directly to you and then return quickly to the helper with you to pick up the sock toy. And then, as usual, the dog plays independently and shares the prey.

STEP 6

Change the distance, surroundings, or helper until the dog performs this task correctly under all circumstances, but always with the helper in sight. The bringsel will still be given by the helper on an outstretched hand or held between the thumb and finger, as will the sock toy.

STEP 7

Now attach the bringsel to the collar of the dog and start again with a short distance (33 ft. or 10 m). The dog will be sent with the command "Left" or "Right" to the empty, outstretched hand of the helper. The helper can help the dog pick up the bringsel by placing the flat hand under the bringsel and lifting it high. Later on, a light touch to the bringsel will be enough to motivate the dog to pick it up. The helper also has the sock toy, which the helper will offer to the dog on a flat hand when it comes to the helper for the second time. The exercise, as always, closes with the dog playing and prey sharing.

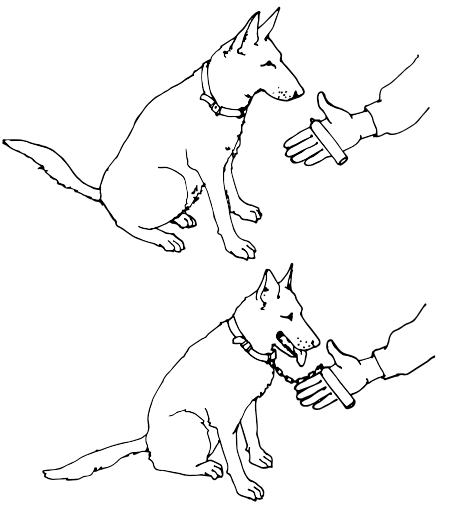

Figure 8.7 When the bringsel is first connected to the collar, the dog will need help from the trainer to pick it up.

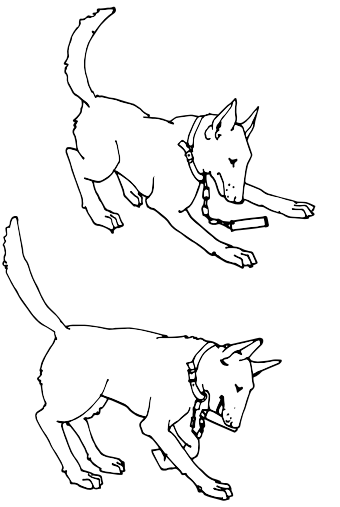

Figure 8.8 Eventually the dog will learn to pick up the bringsel by itself.

Keep the distance and circumstances the same until the dog independently picks up the bringsel on its collar when it reaches the lying or sitting helper, carries the bringsel to the handler, goes back to the helper, and gets its sock toy to play with.

STEP 8

Now attach the bringsel to the collar and walk a bit with the dog through the search area. If the dog picks up the bringsel as it walks, immediately correct it with "No." If possible, send a helper to lie down on the ground nearby shortly afterwards. Send the dog to the helper, where it can pick up the bringsel, followed, of course, by your enthusiastic praise. The ritual ends again with the dog getting the sock toy from the helper, independent play, and then sharing the prey with you.

STEP 9

If everything goes well, then we can change either the distance or the circumstances. Never try to change both at the same time. Build up everything step by step. The helper should still be within the sight of the dog. Make sure you reward your dog well for correct behavior. The most important thing is consistency. If something in a step goes wrong, go back to some of the previous steps until it is clear again for the dog.

STEP 10

Next you can train again with the helper out of sight of the dog but still to your left or right. Keep the distance short. The helper will offer the bringsel and the sock toy each in turn on the outstretched hand or held between the thumb and fingers.

STEP 11

In the next step, keep the same distance, but now affix the bringsel to the dog's collar while the helper moves out of sight with the sock toy. If everything is going well, slowly increase the distance from the starting point to the helper's hiding place. The dog now has to pick up the bringsel on its own and bring it back to you. Remove the bringsel from the collar and the dog returns on its own to the helper.

STEP 12

The dog may sometimes go back to the helper so quickly that the handler can't keep up. In the beginning, do not call your dog back. The dog will normally stay with the helper, and when you also reach the victim, then the dog can receive its sock toy. If the dog wants to leave the helper before you arrive, the helper can give the sock toy immediately to the dog.

Now start putting a leash that is ten plus feet (3+ m) long on the dog before it goes back the second time to the helper to get the sock toy. First only attach the leash on the dog's collar (or an identifying harness) and let the leash drag beside the dog. Once the dog gets used to it, you can hold on to the leash when the dog goes back to the helper the second time.

Figure 8.9 Hovawart Jenny shows how she keeps the bringsel in her mouth.

DROPPING THE BRINGSEL

Because of an unlucky jump over a high bunch of kindling, one dog dropped the bringsel during training. Because they have learned that they can only pick up the bringsel at the site of the victim, dogs are often uncertain when they reach the handler without the bringsel in their mouth. On getting the command "Show me," you often see them become very happy that the handler has understood, and they're already running back to the victim.

Sometimes dogs that have dropped their bringsel go back to the victim, pick up the bringsel again, and bring it to the handler. Either is fine, as long as the dog knows it should only pick up bringsels near victims; otherwise, there is the danger that they'll begin to alert on the odor of any person they find, such as other searchers.

TROUBLESHOOTING BRINGSEL TRAINING

The bringsel is not a toy and only serves as a tool with which the dog shows its find. Don't let the dog play with the bringsel. The dog can work out its drives on the sock toy, which the dog gets when it comes back to the helper. The dog doesn't have to take the toy anywhere and can decide all by itself how it wants to play. The dog can do whatever it wants with its sock toy, except destroy it. The handler should stimulate and support the dog in this play as long as the dog needs it.

Some problem phases can occur while working with the bringsel:

- *The dog picks up the bringsel at any human odor, without finding the helper or victim*. Solution: Immediately correct with "No." Give the bringsel back to the helper for a time.
- *The dog picks up the bringsel near blankets, plastic, or other items on the ground*. Solution: Build these situations into training and, if necessary, correct immediately with "No."
- *The dog picks up the bringsel at a spot where a helper was lying shortly before*. Solution: Bring this situation into training and correct where necessary.
- *The dog picks up the bringsel at a standing or walking person*. Solution: If you don't want the dog to alert to standing or walking people, correct the dog immediately.

Figure 8.10 The dog comes back to its handler carrying the bringsel.

If there are more problems with the bringsel training, start the training again from step 2. Proceed through all the steps as they can be completed without problems. Do not teach ranging in the same exercise as the bringsel alert. When a dog is learning ranging, it is often under pressure and will try to please its handler (incorrectly) by picking up the bringsel!

Training the Recall Alert

With the recall alert, the dog will travel on its own between the handler and the helper to lead the handler to the helper. Ordinarily there is no need to teach this. When the handler also reaches the helper, then the dog receives the sock toy.

Important in the recall is that the dog shows a very clear behavior, so that the handler knows the dog has found a victim. Clear behavior patterns are barking to the dog handler, jumping up at the dog handler, or sitting in front of the dog handler. Taking a slip of the jacket or picking an article from the belt of the dog handler is also clear. Going back to the victim can be done on or off leash.

The beginning of recall alert training is the same as bringsel training, but here you can also use biscuits if the dog does not like toys. The training victim has two toys, one of which is the sock

toy. The first toy is picked up from the helper and the dog brings it to you. If you like a special behavior, such as sitting in front, tell the dog to sit, take the toy from the dog, and give it a biscuit. Then the victim calls the dog. The dog runs back to the victim and gets the sock toy to play with. As soon as the dog understands this training at a distance of about ten yards (10 m), you can change the circumstances, helpers, or distances.

If the dog does not like toys, the victim can give the dog some biscuits when it first reaches him or her. Then you call the dog, which then runs back, sits in front of you, and again gets some biscuits. After that, encourage the dog to run a second time to the victim by running with it toward the victim. Once there, the dog again gets some biscuits and after that the sock toy if he likes it. Now the dog is allowed to play however it wants with the sock toy, and in the end the normal ritual of prey sharing will happen.

Dog handlers have to observe the behavior possibilities their dog shows. Many Border Collies and Australian Shepherds like to bark close to the dog handler if they are excited about finding a person. They don't like to stay with the victim, but instead like to go to their handler to show they have a find. This behavior can be stimulated and strengthened by rewarding the dog with biscuits or a toy.

As soon as the dog understands that it has to turn and run to the dog handler after finding a victim, show the handler its special behavior pattern, and then run back with the dog handler to the victim, the next steps in training can be made. You can follow steps 9 to 12 in Training the Bringsel Alert.

Training Ranging

Along with alerts, we teach search and rescue dogs to carefully search an area under the direction of the handler. The goal of this training is to develop an independent search pattern to use during operations. Training for ranging can begin when the dog's alerts

for a sitting or lying victim are consistent. This means the dog is barking continuously and staying with the helper, is bringing the bringsel correctly to the handler and correctly going back to the helper, or in the case of the recall alert, shows an easily recognizable behavior pattern near the handler after finding a victim and commutes well between handler and helper.

The *International Testing Standards for Rescue Dog Tests (IPO-R)* explains ranging as follows: "On the instructions of the handler the dog must comb both sides of the search area."[4] This means that the dog has to search the area alternately left and right in deep lateral run-outs on command of the handler.

Figure 8.11 The dog has to develop good speed in ranging the area.

Figure 8.12 The dog has to search an area systematically even during high or low temperatures.

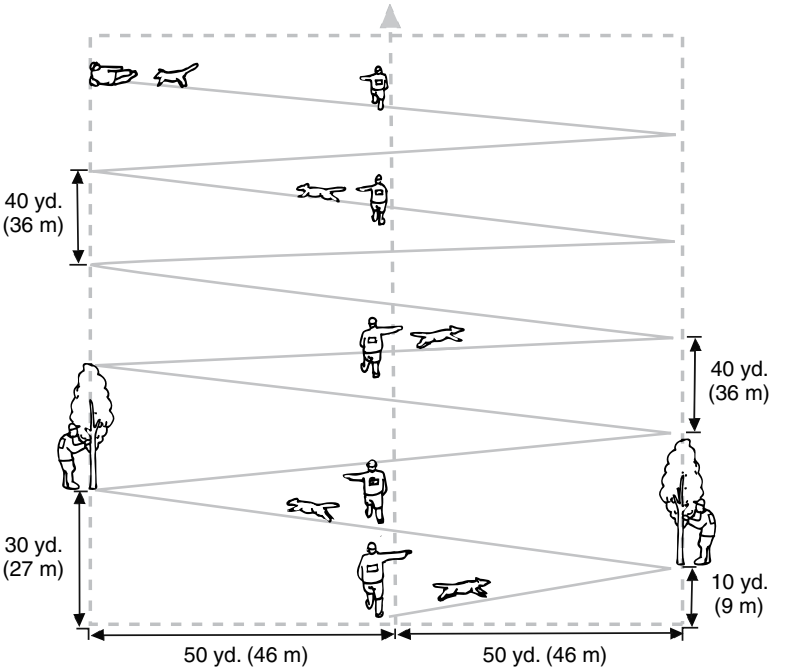

Figure 8.13 In this ranging pattern, used by the Schutzhund program, the dog always moves forward. The standing helpers entice the dog to teach the ranging pattern, but the dog should not alert at them.

STEP 1

The best way to teach ranging is to start on a path in front of a reasonably open wooded area. Two helpers, visible to the dog, should stand about twenty-seven yards (25 m) away, one to the left of the dog and the other to the right. These helpers define the edges of the search area. Now have one of the helpers sit or lie down in sight of the dog and then send the dog to the sitting or lying helper with the command "Left" or "Right." The rest of the exercise will be worked out as usual.

With barking, the dog must repeatedly or continuously bark until the handler arrives, and then it gets its sock toy from the helper. With the bringsel alert, both helpers have to take a bringsel and a sock toy with them. With the recall alert, the dog gets its sock toy from the helper only once the handler reaches the helper with the dog.

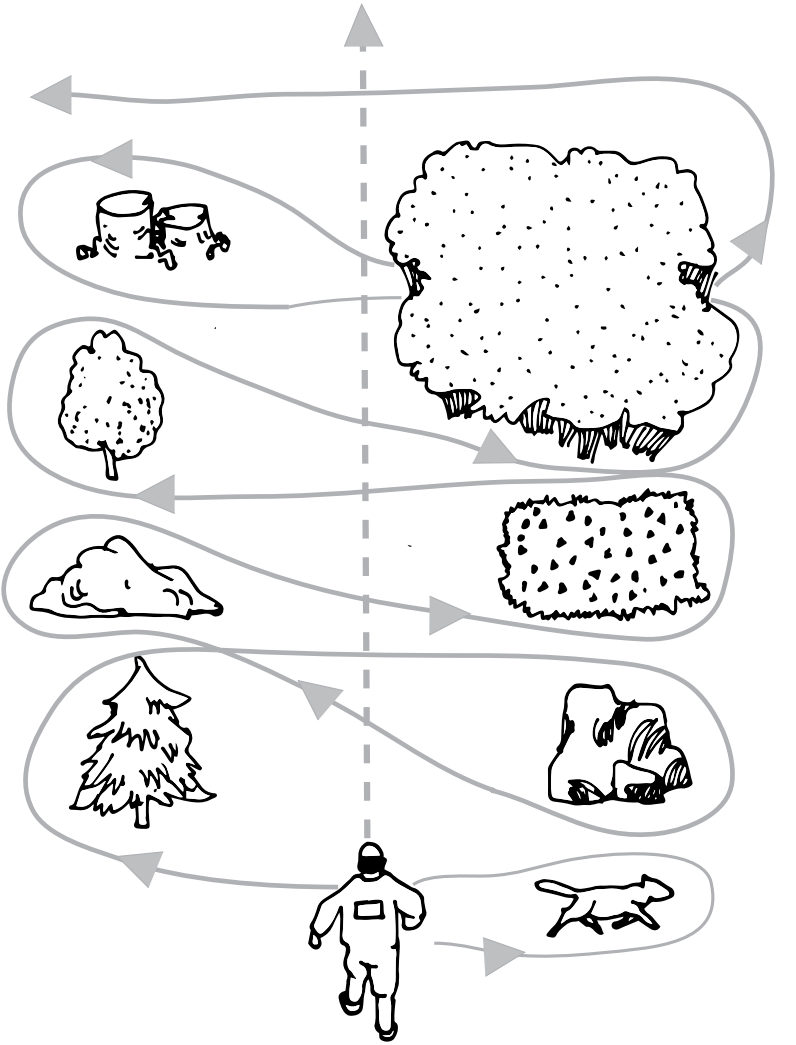

Figure 8.14 This grid pattern for ranging allows the dog to search backwards around bushes, trees, and other features.

The play after the first alert will now be kept a bit shorter. After the prey sharing, send the dog with the command "Right" or "Left" to the other side, where the second helper is sitting or lying.

STEP 2

Next, both helpers, one on either side of you, walk a few steps forward into the woods, and you should also go a few steps in (the woods should not be too overgrown). The places at the sides that the helpers walk into should ideally be a little more overgrown, and this time the helpers should stand.

Send the dog again in one direction: to the right, for example. If necessary, the dog can be called by the helper to make it enthusiastic about walking in that direction. Remember that the dog may not alert at the standing helper. Barking or another attempt at an alert must be immediately stopped with a firm "No" from the helper. It is not important if the dog occasionally passes the standing helper. Never restrict the distance the dog goes by itself (unless the dog is doing something else, such as chasing rabbits).

STEP 3

As soon as the dog is at (or passing) the standing helper at the right, call it back with "Here," "Back," or "Turn." Before the dog reaches you and stops, send it immediately to the left. The dog should run past you in the new direction in a smooth tempo. The helper standing on the left can entice the dog by calling it. You might also run a few steps to the left along with the dog to motivate it.

If the dog does not go far enough to the left, then there's usually no sense in forcing it by command to walk farther. It is better to call the dog back and send it running again directly to the right. After it arrives at the standing helper there, call the dog back and send it more enthusiastically to the left. If necessary, the helper on the left can lie down in sight of the dog, giving the animal a clue as to what is expected.

STEP 4

After at most three turns, one of the helpers has to lie down on the ground again, so that the dog is successful. Handlers often let their dogs search too long without locating a "victim" during training. Ranging has to be built up slowly and carefully. Take care that

the dog is enthusiastic and in condition to run back and forth. If the dog starts to lose interest or gets tired, then a training helper should lie down as a victim. If this happens, finish the exercise and repeat it again after an hour.

Take care that the dog doesn't walk too far ahead of the handler. Dogs have a strong inclination to walk ahead into an area. This inclination will sometimes be strengthened by handlers (and also the helpers on the edges) walking forward too slowly. The dog then is forced to search an area it has already covered, so it goes forward on its own. The helpers on the edges have to take care that they are not ahead of the handler, because that also encourages the dog to walk ahead.

STEP 5

The ultimate goal is to teach the dog to travel in loops and range in a figure-eight pattern rather than running out and back along the same path. The helpers on the outer edges can encourage the dog to make bigger curves by walking outward farther and enticing it. If this works well, then they can hide standing behind bushes or bigger trees, so that the dog can't see from a distance whether the helper is standing or lying down.

Helpers also can try to entice the dog from another place at the sideline (before or behind) and then let it go back.

STEP 6

If step 5 is successful, then we can let the dog search once again with the bringsel fixed on its collar. If problems occur, immediately go back to working the dog without the bringsel on its collar for a time. Have the dog receive the bringsel from the sitting or lying helper.

STEP 7

Continue to work the dog in the well-known wooded area, and begin again with the left to right exercise from the path. Now both helpers in the woods should be out of sight and standing. They are allowed to entice the dog by calling it. Every now and then one of the helpers should sit or lie down, so that the dog can alert

correctly. Depending on how well the dog learns this stage, it can work with a bringsel on its collar next.

STEP 8

The next step is to have a helper on one side only. The dog must then first alert to a helper and, after a short sock toy playing and prey sharing session, then make an empty circuit in the other direction. On the third curve (as you and the helper continue walking farther into the search area) the helper lies down again. If this step is successful, then you can extend the exercise to include more empty curves (with the helper on one side standing up).

STEP 9

Next, one helper can walk at the side and on the other side a helper can be hidden farther into the search area (and can be found only after several empty loops). As much as possible, have the dog work with a tail wind, so that from the start it can't smell the victim; otherwise it will immediately run ahead in the area, which will ruin this exercise. As much as possible, teach the dog to range the area correctly in nice, wide curves. You don't want your dog to learn that going straight forward is successful. But if the dog gets the victim's odor too soon, then let it go and wait for its alert. Take care that this doesn't happen too often.

STEP 10

The last step in training is to range in a grid pattern without helpers on the sides. It is important that the dog first be able to make nice curves in the area and doesn't directly break out of the pattern to alert for victims. If that happens, then have the helpers first stand in the area where later they are to lie down. The dog is not allowed to alert on these standing helpers. As soon as the dog searches properly and comes near, the helper can sit or lie down.

Build your dog's skills step by step. Never introduce two new steps at once, whether it be new circumstances (new search area, new helpers), increasing distances, or the next step in training. If

something is not going well, then go back to the beginning and repeat steps until the dog can progress.

CASE STUDY: RESCUE WORKERS ON FOUR LEGS

The Austrian journalist Monika Rittberger published the following article in an Austrian dog magazine and the Dutch dog magazine *Onze Hond* (*Our Dog*). We reproduce it here with permission.

A passenger car has just crashed in the dark night. The car shows serious damage. Traces of blood are found in and around the car, but there is no trace of the driver, a good reason for the Austrian Police to immediately call out the search and rescue dogs of the Austrian Red Cross. If the driver has not fled the accident scene, it is possible that he walked away and lies wounded in the surrounding area, in shock after the accident. In that case, he has to be found quickly. At this time of the year, it gets quite cold at night, and hypothermia and shock are life threatening.

INTENSIVE

In a quarter of an hour, seven handlers and their dogs from the Red Cross are on the scene. The first handlers immediately try to find a track in various directions, but they are not successful. Too many people have walked over the area, as has happened on many other occasions. The handlers decide to perform a corridor search over the area with their search and rescue dogs.

Thorn shrubs, slivers, stones, and barbed wire are no obstacles for the teams. Two kilometers from the accident scene, one of the dogs is successful. By bringing the bringsel on his collar to his handler, the dog tells him that he has found the wounded driver. The handlers immediately give the confused man first aid, which is, of course, another skill of the Red Cross dog teams.

Searching for lost people, missing hikers and climbers in the Alps, and avalanche and other disaster victims are the most important tasks of the Austrian Red Cross's search and rescue dog handlers. Fortunately, they are usually successful. But success with search and rescue dogs does not happen by itself; it must be trained for. Each year every handler of the Red Cross volunteers about 550 hours (more than ten hours a week) to train his or her search and rescue dog.

WORK WITHOUT STRESS

"Intensive training, but particularly purposeful training methods, are the key to the success of our dogs and their handlers," says the chief of the Red Cross

Figure 8.15 At examinations and trials, a dog must correctly retrieve the bringsel for its handler to be judged fit for operations.

Dog Teams in Wiener Neustadt. "We have to train regularly in varying circumstances to keep our dogs at the same high level. In an avalanche or earthquake mission, time is the most serious enemy of rescuing people alive. The better the dogs are trained and the longer they can work, the better the chance for survivors. That means that our dogs always have to be in very good search condition, physically and mentally. Everywhere they say that dogs can search intensively for only fifteen to twenty minutes, but we have several times proven, for instance during big practices with INSARAG, the International Search and Rescue Advisory Group of the United Nations, that our dogs can search on the rubble intensively and consecutively for more than three hours," he says with justifiable pride.

When I ask him the secret of their success, he says, "Ask the two Dutch there." I look at him a bit incredulously, but he is already pushing me in their

Figure 8.16 Dr. Resi Gerritsen (pictured) and Ruud Haak have regularly won the World Championship for Rescue Dogs and they have been Hungarian and Austrian champions several times.

direction. In front of me stand Dr. Resi Gerritsen and Ruud Haak, who have been training search and rescue dogs for about thirty years. Many years ago they were, because of their experience, asked by the Austrian Red Cross to train and assess their operational search and rescue dogs. Their methods and results had become known during their cooperation with the Austrian Army at the Armenian earthquake disaster in 1988. ... In the beginning the Austrians were a bit skeptical, but that soon disappeared when they saw that these Dutch people were fully experienced in wilderness searches, as well as disaster searches and avalanche searches. And what was perhaps most important, they could teach their Austrian colleagues what they knew very well.

Going back to the question about the secret of the success of the Austrian Red Cross dogs, I get this answer from them: "Yes, it's thanks to our purposeful training method and the fact that our dogs are working without pressure. A dog gets the most tired when he works under pressure. When he has to work because it's what the handler wants or when he is constantly encouraged and corrected, that's asking for the dog to get tired. Of course, search work is very intensive for a dog, but when the dog may work for his pleasure, or even better, when he, so to speak, asks to work himself, he can work for hours. Our method is designed to allow the dog to develop his enjoyment in searching, without any pressure. He has to work everything out himself, step by step, each time a bit more difficult, without realizing it. That way, he learns to develop himself further and because he enjoys it, he is able to extend his limits, including his stamina."

BEST RESULTS

They know what they are talking about. For many years this Dutch couple has been giving seminars for training search and rescue dogs, not only in the Netherlands and Austria, but also all over Europe and the United States. In that time, they have had many different breeds and mixed breeds in their seminars. "Every different breed, yes, every different dog requires a different approach to bring him to the best results."

These best results have been reached by Gerritsen and Haak regularly in the past with their own dogs: In tough competitions they won the top spot at the World Championship for Rescue Dogs, and have several times been Hungarian and Austrian champions. Their colleagues in the Austrian Red Cross have also won places on the stage of honor. "But that can't be the most important thing," they quickly say to me, when I write that down. "Our dogs have to prove themselves on actual search missions. That is the most important, and only that counts!"

The search and rescue dogs of the Austrian Red Cross are among the best in the world. They have proven that during operations in their own and foreign countries, where they saved the lives of countless people or gave families their relatives back. In international competitions for search and rescue dogs, the Red Cross dog handlers have reached the top in the face of serious competition!

To show something of the training method, Speedy, their fourteen-month-old Malinois female, goes to work. Passionate and with the characteristics of a wonderfully relaxed young working dog, she shows why they gave her that name. She is working with a so-called bringsel that hangs on her collar, and she is allowed to pick it up when she finds a hidden person. On indication from her handler, she runs from the right to the left through the brushy wooded area. She works out the indications very attentively, and without delay she ranges nicely through the extensive area.

Then suddenly she gets a whiff of the hidden person. Very quickly, she runs to that person. There, she immediately takes the bringsel in her mouth and brings it to her handler, who takes it from her. And once again Speedy runs away, back to the hidden person. After a comprehensive reward, the search continues and, with unflagging zeal, the same performance takes place. At the end of this search action, when she has found all three hidden people, Speedy still has enough energy left to play. I am convinced!

Figure 8.17 We have to train regularly in varying circumstances to keep our dogs at the same high level of performance.

THEIR SECRET

In the meantime, the chief joins us. "Isn't that good?" he says. "So good, she is also working in avalanches and on rubble." As if she wants to thank him for his nice words, Speedy comes to him and challenges him to play with her. She likes him, you can see that immediately. And she is right, because the ball in the sock is already flying through the air.

"In spite of her young age, she is already working at the level required of an operational dog," he assures me. "We don't want to make the mistake of going too fast. An actual mission would mentally be too far for Speedy, and that would be fatal for her training. She must enjoy her youth in full. We keep all our dogs young and playful as long as possible. This stimulates their willingness to search and work."

Aside from Speedy, there are, of course, more young dogs in training. The Golden Retriever Bazil and two young Malinois, Karma and Igor, also demonstrate their work. They all show good work and they show too that they enjoy it. Karma also works with a bringsel, but when Igor reaches a victim, he begins to bark. My reaction to this shows on my amazed face. "Dogs that bark on their own are, of course, allowed to 'speak' at a hidden person." Oh yes, that's true. That is their secret: adjusting the method to the dog!

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9

Rubble Search

Technology has tried to copy the excellent nose of the dog, and all sorts of equipment has been developed to try to trace people beneath rubble or dirt. However, this sensitive equipment is useless in the rubble of a major earthquake. Because of the inevitable dust, vibrations, noise, and electromagnetic fields that surround excavating machines, this detection equipment is easily disrupted. To search with this equipment, all rescue work has to stop in the surrounding area. This interruption is unacceptably impractical.

The dog's nose is irreplaceable. A correctly trained search and rescue dog is not distracted by the surrounding activity, not even by spectators or other crews working in the disaster area. The training of search and rescue dogs is more necessary now than ever. Many victims, particularly after major earthquakes, owe their lives to the work of search and rescue dogs and handlers.

Trapped People

Earthquakes are not the only problem requiring search and rescue dogs. People can go missing in difficult or inaccessible terrain all over the world. A correctly trained search and rescue dog can be ready to track down a human in many emergency circumstances,

Figure 9.1 It is important that dogs learn to work independently and at a distance from their handlers.

such as an airplane or train disaster, where people may lie between the pieces of wreckage, or a collapsed building after a gas explosion. No country should neglect training search and rescue dogs. Where the government does not take care of it, private initiatives should step in to train reliable dogs and handlers.

Search and rescue dogs have to search very intensively for the odor of people who are trapped beneath rubble or covered by a variety of materials. The dogs can't be diverted by anything or anyone—they have to work in almost every terrain and under almost all circumstances. A search and rescue dog has to communicate to its handler that it has found a victim by indicating the place where the highest odor concentration—the scent clue—comes out of the rubble. The handler must recognize, by the way the dog behaves and gives its alert, whether the victim is still alive or already dead.

Types of Alert

For a reliable alert, it is important that the dog has a well-developed drive to find people. As shown in earlier chapters, the dog can develop a search drive for people with training that uses the hunting drive complex.

An alert always has to be chosen to suit the behavior of the dog and has to fit the dog's character. The most important alerts used by search and rescue dogs working in rubble include the following:

- Barking
- Bringsel
- Recall
- Pawing
- Behavior and postures

BARKING

Dogs that bark easy on their own may begin to bark at a scent clue. This barking often happens because the dog is irritated when it can't penetrate to the victim quickly enough. Training the barking alert is described in Chapter 8, "Wilderness Search."

Barking by itself is not enough as an alert for a real mission; the dog has to indicate the place of highest human odor concentration coming out of the rubble by pawing, scratching, or putting its nose in the rubble.

BRINGSEL

The bringsel alert, typically used in area searches, can cause problems if it is also used on rubble with the same dog. Trained to use a bringsel in a wilderness search, a dog should only pick up its bringsel when it makes contact with a victim. In rubble, that contact doesn't often happen. Upon finding the scent clue for a person covered by rubble, the dog must give an alert without contact with the victim. If the dog then learns in a rubble search to alert at human odor without contact, there is a danger that it will begin alerting at the odor of other searchers during a wilderness search. In short, if you use the bringsel alert in the wilderness search, you cannot use the same alert in a rubble search.

The bringsel alert is very useful with dogs that like to retrieve, but as with barking, the bringsel alert by itself is not enough as an alert for a real mission—the dog has to indicate exactly where the

highest human odor concentration is coming out of the rubble by pawing, scratching, or putting its nose in the rubble.

RECALL

With the recall alert, the dog walks back and forth quickly and directly between the handler and the scent clue spot of a victim, thereby leading the handler to that spot. The dog uses a special behavior towards its handler to show that it has found the odor of a victim beneath the rubble. Training the recall alert is described in Chapter 8, "Wilderness Search."

As with barking and the bringsel alert, for a real mission the recall alert must be accompanied by the dog's pawing, scratching, or putting its nose in the rubble to indicate exactly where the highest human odor concentration is coming out of the rubble.

PAWING

A dog will scratch in an attempt to penetrate the rubble in the spot where the highest concentration of odor is emanating. In conjunction with this, we sometimes see the dog biting stones, wood, or metal to pull it out of the rubble. This pawing should not be confused with the so-called "orientational scratching," by which the dog, to further convince itself of the odor, scratches away at some rubble with its front paw. The dog does this to open "odor canals" in the rubble. Pawing can also appear in combination with barking.

Some people are afraid dogs will injure themselves by scratching in the rubble, but our experience is that this rarely happens. Dogs can judge how strongly they can use their paws. This behavior is especially important on missions where dogs work many days in a row and become tired—sometimes the only alert you see in the end is the scratching at the scent clue.

BEHAVIOR AND POSTURES

The most important behavior is the dog being strongly interested in a certain place in the rubble and refusing to leave the spot. Even if it then walks away, it is often just going to get a breath of fresh air outside the area—even sometimes also outside the rubble area.

Then the dog returns on its own, searching for and alerting at the spot with the highest odor concentration.

It is also easy to see from the dog's body expressions that it has found something. We can see it in the dog's walk, body posture, ear stance, tail wag, and so on. The dog may also sit or lie down at the location of a strong human odor. By itself this alert is not enough. The dog has to be driven to indicate the scent clue spot of a victim more clearly by pawing or scratching in the rubble or putting its nose in the rubble.

NATURAL INSTINCTS

For safety reasons, it is essential that a search and rescue dog stay in place when it is commanded to lie down. But the following example clearly shows that we have to stay aware of our dog's communication at all times during a mission.

After the 1980 earthquake in Italy, a search and rescue dog handler brought his dog to one of the houses still standing. The house was investigated and was shown to be safe. It was very cold, it was raining, and the dog had searched for a long time. To give his dog some shelter and rest, the handler laid him down in the house and went off with some rescue workers.

However, after a few minutes the dog came to his handler, although this experienced search and rescue dog normally wouldn't have moved from his place. At first the handler was irritated, but then he realized that something exceptional must have happened. He went back to the place where he had laid down his dog. On the spot where the dog had been lying, there was a big crack in the floor. There had probably been a tremor, which had gone unnoticed by the people, but the dog felt it, and as a result, left his position in the now unstable building.

Value your dog's instincts.

Training Rubble Search

Dogs don't search for people buried in rubble out of humanitarian motives—dogs don't know charity in that sense. While searching, they are using natural drives we have channeled in a direction that

is useful to us. For the dog, finding the human is necessary only to get its sock toy. Because we involve ourselves as handlers in the whole event, and are offering the toy to the dog so that it can work out its drives, teamwork between the handler and dog develops, something that is necessary during lengthy search missions.

STEP 1

First build the connection between the dog and its toy—for our purpose always the tennis ball in the long sock—to get a dog with a strong drive. We also teach the dog to walk over the rubble, so its full concentration can be directed to the alerts and, in later steps, to searching.

STEP 2

Now start connecting the sock toy to human odor by teaching the dog that in the rubble it always gets the sock toy from a human. To train this connection, let the dog see a helper disappearing into an easy-to-reach hiding place. Place your backpack at the edge of the rubble area and stand with the dog about ten yards (10 m) from the hiding place. It is best to hold the dog with one arm around its neck and then with the other hand throw the sock toy over the ground to the helper in the hiding place. As soon as the helper gets the sock toy, stimulate your dog to go get it. The helper should immediately give the dog its toy. Let the dog play however it wants. Don't take over the sock toy or interrupt the dog's play with its prey. Only when the dog voluntarily involves you in the game should you play together with the dog and the sock toy and slowly walk toward the backpack.

By the time the dog is done carrying and playing, you should be near the backpack. Now take the sock toy and give the dog some biscuits in return. You can now put the toy in a pocket or in your backpack. This ritual is repeated in the same way every time after the dog has searched. Be sure to take extra sock toys with you in the backpack, because some of them may get lost. And the dog biscuits, of course, are always stored in a closed container in the backpack.

Figure 9.2 The success of training is highly dependent on the helper playing the correct role.

STEP 3

If everything goes well, we don't throw the sock toy to the hiding place anymore. Instead, the sock toy is already at the helper before the exercise starts. The distance to the hiding place is still about ten yards (10 m), and the hiding place is still open. This training is not a search exercise, because we first have to build up the dog's alert. On the way from the car to the rubble, talk to your dog and tell it what is going to happen. By the time you arrive, the dog will be excited to begin. Then, in front of the hiding place, keep the dog for a while to build up its excitement. If the dog doesn't pay attention to the hiding place, the helper can call it or briefly show the sock toy to raise the dog's excitement. Motivate the dog by voice and a throwing gesture of the arm to go to the helper to pick up the sock toy.

STEP 4

Some cautious dogs don't fully approach the helper in the hiding place. Sometimes the helper can try to entice the dog in, but it works better when you overcome this caution as a separate exercise. For this, the helper goes into the hiding place and entices the dog to come in. With cautious dogs, it is better when the helper doesn't move or look at the dog and offers the sock toy on

an outstretched hand, so that the dog can pick it up quietly. The helper should take care to not make unexpected movements. It is more important that the dog get the sock toy at the hiding place than to pay too much attention to how it gets there.

STEP 5

Now partially close the entrance to the hiding place using light materials adapted to the power and capacity of the dog. Close the hiding place with thin wood or small stones—absolutely no heavy stones and beams. First close about one quarter of the gap, so that the dog can easily go inside to pick up its sock toy. Keep in mind that the dog doesn't have to search in this exercise, because these are still alert exercises. Don't make the distance to the hole too large. If the dog hesitates, then you can first try throwing the toy into the hiding place.

STEP 6

Still working at the same hiding place, with the same helper and with the same ten-yard (10 m) distance, now close the hiding place halfway. If this change goes well, then close the hiding place by three-quarters. Continue to use light materials and keep the dog in the right mood on its way to the starting point. Release the dog to hunt with the throwing movement of your arm. Reward the dog only at the moment it picks up its toy in the hiding place. If you reward the dog too early, it may think it is being rewarded for pawing rubble, which can cause problems later. During longer search missions, the dog might start scratching somewhere without finding human odor, only because it wants to be praised.

STEP 7

Once you can almost close the hiding place, you can also increase the distance and let the dog approach the hiding place from various directions. The dog now has to use its nose more to achieve a result. Observe how your dog tries to get into the hiding place. Some dogs are pushers rather than scratchers. The hiding place has to be closed differently for each type of dog. For dogs that

scratch, you can continue with the light materials used in earlier steps to close the hiding place. For dogs that try to push debris away with their head and body, you should close the hiding place with heavier materials, to force the dog to scratch.

STEP 8

Once the dog works well at step 7, start working at another hiding place that you first close by three-quarters and then more. Remember not to offer two changes for the dog at the same time. Start at a short distance and then vary the distance or the direction the dog will be sent. If necessary, throw the sock toy again to motivate the dog. As always, end with the carrying of the sock toy, playing, and prey sharing.

STEP 9

Now change the helpers and make more combinations of factors (terrain, hiding places, covering, etc.). Slowly build in heavier covering, so that the dog has to do more to find the odor. Also get the dog to track the odor of the same victim in one search repeatedly and frequently, with intervals in which the handler clears away some debris, and have the dog alert again on the same odor trace. This is how we work in the direction-showing alert of the dog. If this clearing away of rubble by the handler makes the dog lazy, then don't clear it away, but just add some more pieces or shuffle it around.

STEP 10

With this training method we slowly build the dog's connection between rubble and the activity of searching beneath it for human odor to reach the sock toy. Eventually you reach a point where the dog doesn't know where the helper is in a rubble area. When it has smelled the odor of a helper, it has to dig through the rubble to reach the person and get the sock toy. This training method makes the dog use its nose intensively to locate people under the rubble. If you have taught this association, the dog knows what it has to do if it is shown a rubble pile. We can now make the circumstances more difficult and heavier, which will stimulate the dog more and more.

STEP 11

After the dog is able to locate one victim, it will be taught to continue searching for more victims. That means it may get to play a bit less after getting its first sock toy before it is set to searching again.

STEP 12

Because of the greater depths to which helpers now can be found beneath the rubble, and the extensive work of salvaging, we use a smuggling trick to give the sock toy to the dog. After the dog has alerted on a spot, its handler will push the dog aside carefully, so that the dog can't see what the handler is doing. The handler will lay the dog's sock toy under a few small stones in the spot where the dog has alerted. In that way the handler "smuggles" the sock toy into the scent cone of the victim, and after that gives the dog the opportunity to search again to get to its sock toy.

STEP 13

It is also important that the dog learn to search the rubble area systematically under the direction of the handler. Don't allow it to run from the left to the right over the rubble, but press it to search a certain area first and after that go to the next bordering area. That way the dog learns how to search with direction from the handler.

Figure 9.3 Besides the helper in the hiding place, good helpers on the surface are also important in training search and rescue dogs. The helpers need to close the hiding place appropriately for each dog, depending on whether it is a "pusher" or a "scratcher."

Behavioristic Approach

Why does the dog learn with this method? The natural talents of the dog allow us to activate the hunting drive complex and the play drive. So we see, for instance, that an unmoving sock toy is uninteresting for some dogs; other dogs bring it to the handler to play, and others shake it to death or try to bury it. All this behavior is inspired by revived drives. The sock toy, presented to the dog as living prey, is the motivation the dog is working for. The hunting behavior is a motivational source present in every dog.

That's why it is important that the handler, after the dog gets the toy, keeps in contact with the dog and stays involved until the prey sharing. For the dog the biscuits are not that important, but the prey sharing ritual is.

This way dogs stay enthusiastic about searching and can do this for hours. They want to work. We have tested our method extensively and have achieved great results in practice exercises, in search and rescue dog sports, and in the hard reality of actual missions. We have proven that this method stimulates and activates dogs, even during extreme operations, where sometimes searches go on for many days.

Nowadays the behavioristic approach in training is popular. Many trainers use operant and classical conditioning to train search and rescue dogs, but our vision is that you still have to start from the instincts and drives of the dog, and you need to use all the dog's skills, capabilities, and intelligences.

Intelligence

In dogs we distinguish between three forms of intelligence: the instinctive, the practical, and the adaptive.

By **instinctive intelligence**, we mean all hereditary skills and behavior. A prime example is the hunting drive: every puppy runs after a moving object.

By **practical intelligence**, we mean the speed with which, and the degree to which, the dog conforms to the desires of the handler—roughly said, how quickly and how correctly the dog learns the different exercises. This is the intelligence used in the behavioristic approach: in training through classical and operant conditioning.

Adaptive intelligence can be divided into two abilities: *learning proficiency*, which means how quickly the dog develops adequate behavior in a new situation, and *problem solving ability*. This last is the dog's skill in choosing the correct behavior to solve a problem it encounters. This is the intelligence we need in dogs searching in real missions. In our method the dog has the potential to develop and use its adaptive intelligence.

Although many search and rescue dogs are still trained in a mechanical way, years ago we moved our training successfully in another direction. We are convinced that only happy dogs, unspoiled by faulty training, are able to work out all the complex and challenging tasks necessary during real missions.

Figure 9.4 Why not adapt the method to the dog, rather than trying to adapt the dog to the method?

CASE STUDY: SPITAK EARTHQUAKE, ARMENIA, DECEMBER 1988

Around noon on Wednesday, December 7, 1988, Armenia is hit by a huge earthquake. People run in panic to the street. Men, women, and children are trapped in the rubble of their own houses, factories, and schools—desperate people in a world full of chaos. The Search and Rescue Dog Organization of Holland (RHH) travels to the area at its own risk and costs. A diary of this ten-day mission offers clear evidence that it is absolutely necessary to bring well-trained search and rescue dogs and their handlers to a disaster area as soon as possible. Only then is there a reasonable chance of survival for buried victims.

Thursday: The reality is brought home to the world. Estimates on the number of dead have climbed to 50,000 and later even 100,000. The number of injured is ten times more. I call the Soviet Embassy in The Hague and offer the services of our search and rescue dogs. They promise me to send a message to Moscow and I wait for their answer.

Friday: Starting early in the morning, I try to find a way to set up a mission for our search and rescue dog teams using my foreign contacts and via the Soviet Embassy, which has to organize the visa to Armenia for us. I call the Ministry of Foreign Affairs in The Hague, but they say we have to wait until the USSR asks for our help. To me, that is as if someone has been in an accident and lies hurt on the street, and the bystanders have to wait until the victim asks for an ambulance!

Monday: Valuable days have been lost and there is still no progress. We start to think it is hopeless. Suddenly, we get the news that the Soviet Embassy has asked for our help. I can't believe my ears. For a short time we consult with each other, but because we rescued a living victim out of the rubble after fourteen days in Italy in 1980, we don't doubt for long and we decide: we go!

Tuesday: On our way to Amsterdam's Schiphol Airport, I hear somebody on the radio say that yesterday in Armenia people were dug out of the rubble alive. Then I know: our mission with seven search and rescue dog teams and one physician is meaningful. We leave at 5:30 p.m. on a cargo plane via Moscow to Yerevan. With us is a cargo of thirty-two tons of blankets and medicines.

Wednesday: The disastrous earthquake was exactly a week ago. So much time has been lost. At the Yerevan airport, a Bulgarian interpreter tells us that a rescue team waited here yesterday for ten hours for further transport. We take action, and one and a half hours later we leave in an old bus with our luggage

and two interpreters, watched with amazement by the authorities, who didn't expect so many surprises from the Dutch. Okay, they probably thought, the rowdies are gone now. Around noon, we reach Spitak. When we climb near a damaged monument to see the surrounding area, we are convinced: Spitak does not exist anymore! The city is one big rubble pile and everything big has been cleared away. About 20,000 people died under the falling rubble. The commander of the local government says that he has no need for search and rescue dogs in his town anymore. A little bit further we find a general who gives us permission to help in the villages outside the city. We drive our bus to Shirakamut, a village about six miles (10 km) from Spitak. This is where the epicenter of the earthquake was.

I am dismayed when we approach the village. There's not a structure standing anywhere. The people in the village are perplexed about our offered help. In all that time (a week), nobody has shown up to help the inhabitants. With their bare hands and some other simple equipment, they have searched in the rubble piles for their family members and neighbors. Almost everyone has been salvaged, including more than 200 bodies of children in the school building, formerly the pride of the area.

As is customary with the Armenians, we get a warm welcome and are invited to take a place at the table set up near their campfire. Of course, we have to taste vodka they've made themselves and they share their scarce bread, bacon, and cheese with us. We cannot refuse, because they are so grateful that we have thought of their village. But they also tell us that we have to go to Leninakan (now called Gyumri), where the people need us urgently.

On our way to Leninakan, we pass a large cemetery brimming with people. To our dismay we see dozens of people in old cars and on open trucks on their way to bring their nearest and dearest to their final resting place. In a passing station wagon with an open tailboard, a woman is hanging over a coffin, crying. I grab my camera, but I can't take a picture. I can't record the sadness, misery, and poverty around me. The cemetery is crowded. Everywhere people are digging or standing around a grave. It looks like a ghastly film, but it is the reality of Armenia.

In the afternoon, when we enter Leninakan, I immediately discover that here, there is work for us! On the rubble piles people are searching desperately for victims. Also, here they have to work with their bare hands, because they do not have the right equipment. We immediately go to look for the commander of Leninakan. But when I meet him, he is sitting bowed over a map of the town, crying. I discover that the largest part of the map is shaded red. For me, it is clear: Leninakan, a town of almost 300,000 inhabitants, has been

Figure 9.5 Families sometimes have to transport their deceased to the cemetery on the roof rack of passenger cars. (Leninakan, Armenia, 1988)

about four-fifths destroyed. In answer to my question of where we can work with our dogs, the man draws up his shoulders and looks sadly at us with a tear-stained face. I understand. He doesn't know anymore where to begin. The disaster is beyond imagining.

It is time for us to take the initiative. A friendly woman from the local government advises us to have a look at the shoe factory. Five hundred laborers were buried under the rubble, but the leader of the salvage team has no hope. The factory became a mass grave for almost the whole staff. Of the hundred dead bodies already salvaged, about twenty are lying beside the road on stretchers covered with plastic or other materials from the rubble.

Large numbers of people are standing by the gate and waiting until family members are salvaged out of the rubble. Heartrending crying makes it clear that again somebody has recognized one of his dearest. Also, for him or her, rescue came too late. Bystanders help the family lay the dead person in a coffin. Family members have to transport their deceased to the cemetery on old trucks or even on a roof rack of a passenger car. I watch as helping hands come out the window of a passenger car to keep the coffin on the roof of the car—they couldn't even find a rope to fasten the coffin with.

Later I even see dead bodies transported without coffins. Others can't find nails to fasten the lid of the coffin. The tragedy is so large it can hardly be described. Of course, we are all deeply affected by the sadness that prevails here. But we do not allow ourselves to become paralyzed; we have to do the job!

On the rubble of what once had been nice five-storey apartments opposite the shoe factory, I see people digging in the rubble. In the rubble pile to my

right, neighbors are searching for a composer and his wife. On the left, a little old man with a sad face is digging for his daughter. We let our dogs search, and very quickly, we know where the composer is lying. His wife is more difficult to locate, because she is lying thirteen feet (4 m) deeper, beneath fine rubble. After that the missing daughter is found under concrete slabs. All three are dead, crushed under the enormous mass of rubble. Locating dead people isn't a good experience for the dog either, but the reward and satisfaction of the handler makes them happier.

In the middle of a public garden, our handlers set up on a spot that we later call the public garden bivouac. There the handlers and their dogs can keep themselves warm at a fire made of wood picked out of the rubble. My shoes are covered in mud—because of the damaged water works and sewers, the streets in Leninakan have a surface of mud at least two inches (5 cm) thick. The rain and snow have only added to the mess.

Leninakan is at an elevation of almost a mile (1,500 m). During the day the temperature is reasonable, but at night it goes down to minus 4°F (-20°C). The clothes, materials, and experience we picked up during avalanche courses in Austria are to our advantage now. Dogs and people sleep that cold night in their tents, close to each other on the ground.

Thursday: Jorge, our interpreter, comes back from reconnoitering and tells us that our help is needed at a few collapsed apartments. We search carefully in the heavy, dangerous rubble. At four points the dogs alert to dead people. We know that because the dogs always give a passive alert at dead bodies; the happiness they show when people are alive is then absent. As soon as a victim is salvaged, the search and rescue dog is once again set up on the same place, because victims are often found lying very close to each other beneath the rubble, which also happened this time.

Two other handlers are searching with their dogs on a gigantic rubble cone beside the apartments. Here once stood seven-storey apartment buildings, of which nothing is left. According to our interpreters, we are now standing on the fourth floor, and the dogs are searching very well. Three dead people in a corner of what was a stairwell, then a baby in the bedroom, crushed in his cradle; and at the neighbors' apartment, an older man is still half sitting in his chair. The dogs are all doing good work, and there we only find dead people. We also find a seven-year-old girl in a corner of a classroom. Survivors seem out of the question.

KNOCK SIGNALS

There is suddenly a change when a police car pulls up with flashing lights and stops beside us. Speaking quickly, the police officers tell us we have to come

with them. On a rubble pile in town they have heard knock signals and urgently need the dogs to locate the victim. A few handlers jump into the little bus and we keep our dogs on our laps while the car drives away at high speed. We drive quickly through downtown Leninakan. My heart almost stops when I see what kinds of dangerous things the driver does to get through the busy traffic. We reach the site. From the top of an enormous rubble pile, people show us the direction to come on, and helping hands bring us to the right place.

The rubble pile swarms with people. I try to make it clear that we need room for the dogs to search, and slowly people give us space. Too slowly, in my opinion. A moment later I discover that curiosity is winning out over common sense, because they are coming closer again. I know we can't lose any more time. From the commander I have heard that the signals were indistinct but were absolutely coming out of this area. The rubble was once an apartment building with shops on the ground level. He estimates we are standing now on the second or third floor.

The first dog begins to search the area. The crowd falls silent when they see the dog working. Breathlessly they follow, as we do, every movement of the dog. On two places the dog indicates dead bodies very clearly. We mark these places for a later search, but we want to find the source of the knocking first. The dog is working well, but it looks like there are dead bodies everywhere, something that's understandable, with such a stench coming out of the rubble. I push my mask a bit more firmly on my face and follow with excitement the movements of the dog.

Suddenly, I see his body become tense and his attention go to the right. With his ears pricked up he walks to a spot in the rubble. There he stands to sniff and then walks farther. I know almost for sure now. The dog is orienting himself to localize the exact place where the human odor is emerging the strongest. That's why he has to smell and test every place.

Still, the moment I've been waiting for so long comes as a surprise: the dog raises his tail, stretches his whole body, and smells in the rubble, even sniffing in a clearly audible way. He turns his hind end and keeps his nose deep in the rubble. He is beginning to scratch in the rubble enthusiastically and is even trying to bite the rubble away. That is the signal: he has found the scent clue of somebody who is still alive!

We watch as the dog tries to get deeper under the rubble. I see that the dog is looking at me for a moment. And the dog knows that I understand him. This is vital in a search and rescue dog team: namely, that a handler understands the dog and also that the dog understands its handler. But there

Figure 9.6 Suddenly the dog walks quickly to a spot in the rubble, puts his nose deep into the pile, and then starts to scratch the rubble away. (Leninakan, Armenia, 1988)

is no time for daydreaming. There is work to be done. I discover that the rubble contains a lot of loose material that may be lying deep on a concrete slab of the next floor. Many square yards of rubble have to be removed with hard work.

I reward my dog and take him to the edge of the rubble. Now a second handler and his dog have to search the area of the alert to see if the second dog will alert on the same spot. We need this confirmation, which only takes two minutes, before the serious work of salvage can start. We are happy to see that this dog is also scratching enthusiastically on the same place in the rubble. That's where we have to dig. And we are lucky; there is a rescue team doing the salvage. The commander orders his people to clear the rubble.

When there is a hole dug about one or two yards deep, the dogs are brought back in the hole to show the right direction for digging, because the scent clue does not always emanate from the spot right over the victim. Pieces of rubble often cause the odor to be redirected.

Figure 9.7 We immediately reward the second dog for his good work. (Leninakan, Armenia, 1988)

In the meantime, we search with our dogs where they earlier indicated dead bodies. But the dogs are less motivated; they're more enthusiastic about helping to dig for the living victim. But there, we would only disturb. I'm asking my dog to locate the places of the first two alerts more accurately, and I see that he understands. He walks over the rubble, sniffing and indicating the places again. The second dog we use as a confirmation of the alerts is also telling us about a strong odor of dead bodies on those places. Skilful hands go to work. A bit later I see that in one place four dead bodies are dug out of the rubble and three in another place: a woman with a child beside her, both lying on their backs, and a man lying over them, protecting them with his arms.

TRAPPED FOR NINE DAYS

The commander asks us to come to him, and we see that after digging another yard and a half in the rubble, they have reached two concrete slabs. At a crack in the middle, the dogs are scratching enthusiastically again. Someone is lying right beneath them. But we lack the heavy equipment to lift the concrete slabs. The only possibility is to try to dig alongside the slabs and from there make a shaft inside. It is a difficult job, but it has to be done. The salvage team is working again, and from above an Armenian is trying to contact the buried person, but he is not successful. Suddenly, luck is with us. After digging on the side of the rubble and pulling away a big piece of concrete, the rescue team enters a large hollow room and, through a small opening, into a shop under the apartments.

An approximately forty-year-old man is rescued. His eyes squint in the daylight when he is brought outside. For nine days he has kept himself alive with

some vegetables and dripping rainwater. Immediately, nurses carry the man on a stretcher to the ambulance. He will survive!

Before we know what has happened, the ambulance is out of sight and the people around us take our hands and pat us on the shoulders. The Armenian people are grateful to us and the salvage team, and that feeling is intense. Even though they are not relatives, friends, or neighbors of the victim, they still thank us profusely for our help.

AUSTRIAN ARMY

As we walk back to where the police car was once parked, I suddenly see at a distance a man in a red jumpsuit. I think I am really dazed now and I have to pinch myself in my arm to be sure. For sure, there in the distance stand our Austrian colleagues. I yell over the rubble and our Austrian friends turn around, amazed to see us. When they recognize me their hands go up in the air and we walk in each other's direction. The greeting is so exuberant that bystanders are looking at us in amazement. I find out that they are on a mission with their search and rescue dogs together with the Austrian Army. The Austrian Army has a tent camp on the grounds of the Polytechnic School in Leninakan. The commanding officer of the army, who is standing nearby, invites us to cooperate and to live in their camp. Then we can use their facilities and they can use our dogs. A very good deal! That same night we move to the Austrian camp with our whole group.

Friday: I hear that the Austrian Army has set up a coordination point in the center of Leninakan, where all requests for assistance are coming in. These requests will be sent by field telephone to our camp. We agree to work in three groups of search and rescue dogs: the Austrians with one group and us in two more groups. Coupled with every group are a complete army team of salvage workers with all the equipment, such as compressors and other salvage machines, a support group with equipment to catch sounds under the rubble, nurses, a physician, and a group-commander, who carries the walkie-talkie and maintains communication with the base camp. We're transported in trucks and buses. This is efficient. As the groups are leaving, another group of soldiers is taking care of the toilets and the food. Later on we'll be grateful for their preparation, because we will be working day and night!

Our first action together takes us to the partly collapsed telephone exchange of Leninakan. One person is still missing there. Our dogs do their work again, and they alert at two places. In one spot the body of the missing man is found, and in another spot the body of another employee is salvaged. She had not been mentioned as a missing person! On our way back we pass makeshift

Figure 9.8 Rescue came too late. When will authorities learn to send in well-trained search and rescue dog teams immediately? (Leninakan, Armenia, 1988)

huts and shelters built by the roadside. People stay close to the rubble where their families and property still remain buried.

Around noon we go to a varnish factory, where our dogs search and locate. As a follow-up, we search a block of houses. An old man approaches us, showing us the picture of his daughter. In a corner both dogs give a passive alert. There they dig for her. In the meantime our dogs are already searching another house. There they also indicate the location of a buried victim and a block of houses a little farther on is a big place full of odor in a staircase. We also smell clearly the stench of dead bodies. The army commander tells me that the daughter has already been found in the corner the dogs were indicating and the same happened in the house next door. For the woman next door, the salvage also came too late.

When we come back a little later, we are informed that they've already salvaged seven victims from staircase with the strong odor. And our dogs are

Figure 9.9 Salvage also came too late for the woman in this coffin. (Leninakan, Armenia, 1988)

indicating more. People often try to escape their houses but end up trapped in the stairwells. Some die immediately, but others may have lived for a long time, waiting to be saved. Rescue came too late this time. When will authorities finally learn that they have to bring in well-trained search and rescue dog teams quickly to a disaster? How many victims have to die before governments and emergency authorities understand the enormous value of carefully trained search and rescue dogs and their handlers? I blame the bureaucracy and the people who sit in their warm offices, far away from this harrowing grief, who decide who and what is going first to disaster areas. Yes, send a lot of blankets and medicine. However, I have seen airplanes full of these materials sitting at airports, because nobody takes the initiative to transport them further.

Victims who are waiting for rescue under the rubble do not need blankets. They are waiting for their salvage, and for that, only correctly trained search and rescue dogs are of value. They have to be given the first priority in reaching the disaster.

MATERNITY CLINIC

Silent, we drive back to the camp, where a new task awaits us. In the very cold weather, the open truck we use now brings us to what was once the maternity clinic of Leninakan. The place of new life is a big cemetery now, where dead bodies lie on the sidewalks for identification and further transport to their last place to rest. We are used to a lot of things, but these little coffins make us swallow hard. Damn, what a misery. It looks like the dogs understand our emotions, because they search very well through the high rubble piles. The alerts are coming quickly and clearly, but under this rubble no one is alive anymore.

While the rescue workers are doing their work, an Armenian asks us to search for his wife. It is already dark when our dogs again bring a sad message. But in spite of his sadness, the man shakes our hands to thank us for our help.

When we come back at eight o'clock in the evening, our food tastes like disinfectant. For just moments, we can have some rest, but two hours later we are awakened. Alarm! Just two minutes later we are in the truck again. We are on our way to the former KGB building of Leninakan. Knock signals were heard at ten o'clock and once again in the evening at six. The rescue workers on that rubble dug first, and when they didn't find anything, they called us. In answer to my question about why they didn't call us earlier, the commander shrugs his shoulders. But we can't lose any time; while rescue workers descend the pile to give us room, the first dog is already searching.

The wife of one of the missing people is yelling hysterically. It is taking too long for her. She loses control and careful hands take her to the side. But she wants to follow the search and stands nearby, just like all others who have missing people under the rubble, already for so many days.

On his way to the top, the first dog locates three places with dead bodies. The handler and commander keep this in mind, while the dog is encouraged to search further. Suddenly the dog walks quickly to a place beside the elevator shaft, puts his nose deep in the rubble for a long time and then begins to scratch the rubble away. The dog looks over his shoulder to check if his handler has seen it. Well, the handler has seen it! The dog is rewarded and the handler takes the dog down to the street.

The second dog goes into action. He gets excited as he begins to search from the other side and first passes the place where the first dog alerted. But then this dog also turns around and walks a few steps back. The human odor coming out of the rubble is blown aside a bit by the wind and that's why the dogs can only smell it from one side. We feel a great relief when this dog also gives an alert of a living person in the same place.

Immediately, we go into action. We order the dog to inspect the shaft of the elevator, but the odor doesn't come from there. It is in the enormous rubble pile beside the shaft that the dogs indicate a living person. While we deliberate about the salvage, the military and the interpreter are trying to contact the victim. He is, however, not reacting anymore to knocking and calling. We have no time! Probably the victim is already unconscious.

The commander who was already digging here wants to manage the salvage himself and won't accept the Austrians taking over his task. There follows a radio call to the coordination center, but the commander is implacable. In the meantime, his people have started digging again where we indicated. It

is far from a light job to remove all these heavy pieces with this light-duty salvage equipment. We ask for a heavier crane, but where can you get such a thing in the middle of the night? The light crane they have here has problems with the enormous pieces, and the work is barely progressing. While we help to clear the rubble, we encourage the rescue people to go as far as they can, but it is heavy work. They have already been digging many days in the mass of rubble.

Through the radio we hear that our help is needed a few blocks farther on. Our dogs search again and indicate dead bodies. When a policeman tells me that there are still hundreds of people under the rubble in town, I look at him. I correct him and tell him that I think that there will be thousands of people at least. I ask him when we can expect further Russian help and then it is his turn to look amazed.

After the salvage we quickly go back to the place where they're trying to dig out the living victim. On our way I see the light of a new day. When we approach the rubble pile, I hear a tumult. Quickly I go to the top of the rubble and I hear what happened. After taking away the rubble, they reached a concrete stairwell. As they were taking it away, one of the heavy pieces of the staircase fell back out of the crane and now this enormous chunk is deep-wedged between other staircase parts. The much-too-light crane can't get it out. We warn everybody to back away before the cable breaks off. One and a half hours later they succeed in taking the rubble away, so that one of them can get deeper in the rubble. In the shaft they discover, beside the dead body of a woman, the body of a man, tightly wedged between staircase pieces. His lifeless body is still warm when it passes us some time later.

This is something I picture for a long time afterwards. After so many days, almost rescued! But he was one of the many victims of unprofessional assistance, defective or poor salvage equipment and, more importantly, the late call for the help of the search and rescue dogs!

Saturday: That morning, we only have a few hours' rest, because our help is needed on the rubble. Again there is a gigantic mass of fine rubble in front of us. This mass was once six large apartment buildings. We are looking with amazement at what once were seemingly solid connections between the outside walls and support beams: simple wire with bolts instead of solid steel connections. Later news stories about the poorly built apartments do not surprise us—and this in an area where earthquakes are common. We see this for ourselves because of the many aftershocks. You get the feeling of being drunk or that your legs are moving, while you are standing still. That feeling has warned us that there are still tremors taking place. Before we start working, we always work out escape routes

in case another big tremor occurs. We're happy that we've never needed to use them.

Searching the fine rubble is tiring work for the handlers and their dogs. After four hours, the groups have to be changed. Only dead people will be found and salvaged at the many passive alerts of the dogs. The group coming to take over the search will find more. Those two children in the back of a room, the old woman in the kitchen, the two people beside the stove and, under a slab of concrete, a whole family with four children. Too many to list.

The dogs are impressed, too. One dog went through a hole in a neighboring house and lay on the carpet, looking sad. The dog was called back and once again encouraged to search. Again, he went inside and lay down on the carpet, with the message "I can't help it" in his eyes. Is the dog too tired to search? The handler also went through the hole. Under the carpet between the rubble, he found the dead and badly mutilated body of a twelve-year-old boy.

The shopping center of Leninakan has also been destroyed. It is a modern building with an aluminum front. At the entrance to the stairwell, about twenty-six feet (8 m) above the ground, the dogs stand stock-still and won't walk further. We also smell the strong odor of dead bodies coming out of the rubble. This place later proved to be a mass grave for shoppers who were not able to reach the exit in time.

That night we go on a mission again to search in a dangerously leaning apartment building. We hear that there are still two people missing. In the cellar, however, we locate four dead bodies in one place. That same night we once again have an operation. Rescue people have seen moisture coming up out of the rubble and they think that somebody might be alive there. Our dogs search what they can, but they don't identify anything but four places where dead people will be dug out. The dog that lay down on the carpet in the afternoon now indicates a dead person by lying down on a mattress.

The next days: In a collapsed hotel, the dogs, to our joy, locate a missing mother alive. The same happens with two people trapped in the cellar of an apartment building. But under an enormous block of houses, eleven dead bodies have been found and salvaged; in the textile factory our dogs locate victims in four places.

In the meantime, it is snowing heavily. In a few hours there are sixteen inches (40 cm) of snow. The rubble becomes dangerous to walk on. The dogs can locate odors under the snow, but in the rubble all holes and obstacles are covered with a blanket of snow now. The dogs make missteps frequently, as we all do, and we can continue our work only very slowly.

After consulting with the Austrian commander, we decide to search only in cases where people have heard knock signals and think that people may still be alive under the rubble. It is sad, but we can't do otherwise. Besides, we know that with extreme cold, down to minus 13°F (–25°C), and now more than two weeks after the fatal earthquake, only a miracle can bring survivors. We are realistic enough. We go on a few more missions, but after that we're finished. We can't do more for the Armenians.

MOTHER TERESA

On the flight back from Yerevan to Moscow, and later to Amsterdam, we use a normally scheduled Aeroflot flight. Our dogs sit in the passenger cabin with us, guests of honor in their own right, and a chair is reserved for them even when they lie on the ground. Mother Teresa sits beside us and she is full of admiration for our dogs. When I pass her, she takes my hand and thanks us for our good work. I get a lump in my throat when I talk with her. She, who is doing so much good for the poorest people on earth, is thanking us? She doesn't want to know anything of thanks for her own work. We have, with our dogs, offered unpaid help to the victims of the earthquake and for that she thanks us once again. We all become very quiet at that. And perhaps now we realize what we have done.

10

Disaster Deployment Tactics

Working in rubble areas is, of course, dangerous. Every search and rescue dog handler has to take precautions for himself or herself, for the dog, and for others. Wearing a highly visible jumpsuit, working shoes with steel toes, heavy work gloves, a security helmet, and a dust mask is required on and near rubble areas during deployment and training.

Dangers and Security

Before a rubble area is approached, all risks must first be carefully assessed. The wind speed and direction and the direct or indirect danger of collapsing floors, walls, and loose rubble parts are important in these assessments, as are the strength of the floors and beams, the damages in staircases, loose hanging building materials, and so on. A search and rescue dog handler should know the functions of different sorts of walls, such as fire walls, supporting walls, dividing walls, and other important building constructions.

Handlers should be alert for any situations that might endanger them or their dogs. In earthquake areas, aftershocks may follow the initial tremor, and in the rubble piles left by explosions, there can be other explosions. Handlers should be aware of any

Figure 10.1 It is vital to know the nature of the mission beforehand. (Leninakan, Armenia, 1988)

escape routes and hiding places inside as well as outside buildings. Furthermore, gas and electricity must be switched off before the handler and dog enter a damaged building. Handlers should also be aware of the danger of radioactive materials and should find out if there are chemicals, such as oil or acid (battery acid) in the rubble or basements.

Signs of a Collapse

Assessing the chance of a building collapse is not simple, but search and rescue dog handlers will often have to evaluate the risks on their own. To make such assessments, operational search and rescue dog handlers require both theoretical knowledge and practical experience gained by training in demolition sites and condemned buildings. Some signs that indicate an impending collapse include the following:

Measurable: To check whether walls are shifting, place a piece of glass supported by plaster in a corner of a building between two walls. If the glass breaks, you'll know the walls are shifting. There are, of course, also instruments to measure and warn for this shifting of walls.

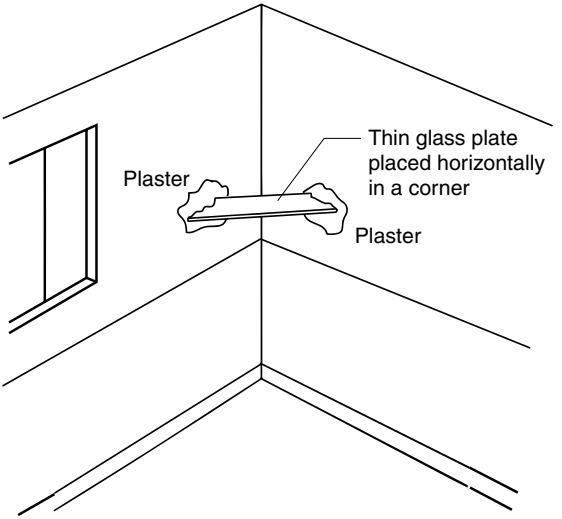


Figure 10.2 A thin glass plate and plaster in the corner will demonstrate clearly whether walls are shifting.

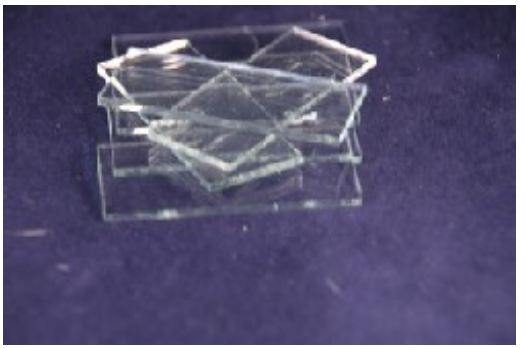


Figure 10.3 Glass plates.

Figure 10.4 This corner crack monitor can be fixed to the surface with screws or adhesive.

Audible: Before a collapse you can usually hear rustling or rumbling. You can also observe your dog, which will usually show that it has heard the sounds by tilting its head to one side.

Visible: Doors and windows that can't be closed anymore indicate that walls are shifting and sagging.

Imperceptible: Some buildings or rooms give experienced handlers a bad feeling as they go in. Listen to your instincts. Sometimes an experienced search and rescue dog will absolutely refuse to enter a building or room. In almost all cases, the dog is right!

Call Out

In the case of explosion or earthquake, it is vital to locate and free people from beneath the rubble as soon as possible. Often they are hurt, lying in tight quarters or fully trapped by a debris mass. The limits of the possibilities for rescue are decided by the number of available experts, their physical condition, the elapsed time since the disaster, and especially the extent of the destruction. But above all, the chance of rescue is determined by how quickly officials call out and transport operational search and rescue dog teams to the disaster area.

Every search and rescue unit needs an up-to-date, accurate call-out plan. The operational teams have to learn to prepare quickly to go on a mission. When a call out is received, it is vital to know what kind of mission is to be expected (rubble or area search),

Figure 10.5 A pickup truck transports this search and rescue group in an earthquake area. (Bam, Iran, 2003)

whether it is in a foreign country or in one's own country, and how transport will be organized (car, helicopter, or airplane).

The Packed Backpack

To lose as little time as possible, every search and rescue dog handler has a packed backpack at home, ready to go. This backpack can contain the following equipment:

For the Handler:

- A pocket flashlight and a headlamp with extra batteries
- A piece of plastic measuring about 6.5 × 6.5 feet (2 × 2 m)
- Heavy work gloves
- Dust masks
- Rain gear
- Bivouac sack
- Swiss-army knife
- Leatherman tool set
- Chocolate bars
- Biscuits for humans
- Balaclava
- Sling
- Candles and matches
- Collapsible cup and plate
- Disinfectant soap
- Marking pins
- Folding shovel
- Spare laces and shoe cream
- Watertight sack with spare underwear
- Sunglasses
- Materials to write with
- Camera

- Cell phone or satellite phone
- Water disinfecting tablets or water filter
- Toilet paper
- First aid items
- Disinfectant
- Activated charcoal
- Maps
- Compass or GPS navigation device
- List with important addresses and telephone numbers
- Sleeping bag and insulation mat
- Hardhat or helmet

For the Dog:

- Collar with leash
- 33 foot (10 m) tracker leash
- Airlift harness
- Identifying SAR harness
- Bringsel with collar (when necessary)
- Insulation mat
- Dog bivouac sack or blanket
- Biscuits for reward
- Canteen filled with water and a bowl
- Isotonic or hypotonic electrolyte mixture
- A portion of dog food

For Deployment Abroad:

- Valid passport and visa
- Vaccination papers for the handler
- Valid rabies vaccination and health certificate for the dog (dog passport)
- Money (traveler's checks/credit card)
- Airplane tickets

- Travel insurance
- Foreign language dictionary
- Freeze-dried human food
- Teabags and instant soup
- Instant coffee
- Collapsible water carrier
- Camping stove
- Cooking equipment
- Dog food and bowl

Transporting the equipment has to be easy, so a tent, sleeping bag, and other articles can be put away in a duffel bag. Many personal items are not mentioned on the list, such as toilet articles, warm clothes, and so on. More than a portion of dog food is also not carried for deployment in one's own country. Whether it is necessary to take it with you depends on the nature of the mission and under what circumstances you will have to work. During every mission you will always work in a highly visible jumpsuit and good shoes. The helmet is necessary for a rubble search and sometimes also during an area search.

Figure 10.6 A resting dog can guard the equipment while other dogs work. (Bam, Iran, 2003)

LUGGAGE CAN MEAN SURVIVAL

Whatever happens, dog handlers should never be parted from their luggage and backpack, which can be vital in the disaster area. It has happened more than once in foreign countries that the team was transported in small vehicles or helicopters. There was room for the handlers and their dogs but not for the luggage. The luggage was supposed to be transported later on, but in most cases it never came.

Figure 10.7 Take precautions to ensure you are never parted from your luggage.

Preparing for a Mission Abroad

Before undertaking trips abroad, you may need to be vaccinated against such diseases as typhoid, diphtheria, and hepatitis A/B. Vaccinations are also recommended against cholera, tuberculosis, and rabies. Proof of vaccination against yellow fever may also be required, as may a course of anti-malaria tablets.

Just like humans, dogs traveling abroad need several vaccinations. Every country has its own rules governing the entry of dogs for long or short stays. Most of them require a proof of rabies vaccination and a certificate of good health issued by a certified veterinarian. Every search and rescue dog should have a passport giving information on booster vaccinations against distemper, hepatitis, parvovirus, leptospirosis, and, where applicable, bordetella and parainfluenza (kennel cough), as well as antihelminthic treatment to expel parasitic digestive worms. The dog should have an ISO standard electronic chip with corresponding identification number stated on all veterinary certificates.

Figure 10.8 Besides the usual risks a foreign mission involves, such as contagious diseases, there may be additional threats, such as political unrest.

Figure 10.9 Good hygiene can be a challenge on foreign missions but is vital to your and your dog's well-being and ability to work.

Figure 10.10 Contact with the dead and the badly injured is a major stress factor for handlers, who need to be mentally strong.

PARASITES

Some parasites can cause serious problems for dogs on a mission in a foreign country. Leishmaniasis is a group of chronic relapsing diseases caused by a protozoan parasite transmitted by the bite of a sand fly. The disease is endemic in over a hundred countries, including Portugal, southern Spain, southern France, islands in the Mediterranean, Turkey, most of the Balkan countries, Morocco, Tunisia, the countries between the eastern Mediterranean and China, southern Asia, and South America. The long-term outlook for infected animals is generally poor. Effective measures for prevention include special nets, fly screens, and insect repellants used at the times of day (dawn and dusk) when sand flies are most active.

Mosquitoes play an important role in the occurrence of canine filariasis, a disease caused by threadlike worms that invade the right ventricle and adjacent tissues of the heart. The species dirofilaria immitis, heartworm, is common on the Atlantic seaboard, in the deep south of the USA, and in the Caribbean Islands. It also takes a huge toll on dogs in Japan and other parts of Asia. Dogs that enter infested areas can be given preventive treatment. To prevent infestation, dogs should be kept in screened areas during the hours when mosquitoes are feeding: late afternoon, night, and early morning.

The brown dog tick *(Rhipicephalus sanguineus)* is, together with the American dog tick *(Demacentor variabilis)*, the vector of *Babesia canis*, also called canine piroplasmosis, a disease that causes jaundice and orange-colored urine. It occurs in France, Africa, and the southern United States. Symptoms include an increased pulse rate, several degrees of fever, loss of appetite, and increased thirst. The common brown tick can also carry ehrlichiosis, a canine disease characterized by fever, loss of appetite, nasal and ocular discharges, and anemia. There is an effective medication against both diseases.

Individual ticks should be removed with tweezers. If there is a heavy infestation of ticks, a bath with a suitable additive is necessary. A special tick collar can protect the dog from ticks.

DEHYDRATION IN HEAT AND COLD

Dehydration in heat can be a serious problem for dogs on a mission. Most cases of dehydration are the result of stress and insufficient drinking (dogs need two to three times the normal amount of water during extended effort). When environmental temperatures reach 77–86°F (25–30°C), dogs lose tremendous amount of fluids and electrolytes through panting, so dogs working in such conditions should have enough water to drink. They should also regularly drink an isotonic or hypotonic electrolyte mixture.

Dehydration can also occur in cold temperatures. Dogs that become tired or stressed often refuse to eat and drink. In cold temperatures a dog can become dehydrated in less than twelve hours, so the water intake of the dog has to be increased at the earliest sign of dehydration. A simple dehydration test entails pulling the dog's skin up a little at the back of the neck or, even better, the fold of skin at the side of the chest. The skin should return to its original position as soon as you let go. If it doesn't, the dog is dehydrated and you need to see a vet immediately.

Figure 10.11 At low temperatures a dog can dehydrate within twelve hours.

CLEANING YOUR DOG'S COAT

Spots of dirt (such as clay, mud, or soil) in the dog's coat can be brushed off when they are dry. If this doesn't work, use water or any dry dog coat conditioner. Never use benzene, turpentine, paint thinner, white spirit, or other such products to remove diesel oil, tar, asphalt, dye, or similar substances from the dog's coat or other parts of the body. Such solvents dissolve the target substance into very small particles that can be absorbed by the skin of the dog. They can subsequently enter the bloodstream and cause severe damage, even death.

It is far better to use butter, olive oil, or salad oil applied to a rag, newspaper, or paper towel to remove as much of the substance as possible. Use shampoo to finish the job, rinsing with plain water.

Ten Basic Rules

1. The safety of the handler and dog is critical. Without a handler, the dog can't work, and without a dog, the handler is not useful. Never put your own safety or that of others in danger by being a daredevil. Always be careful in, on, and near debris areas.
2. Searching with dogs has priority over all other search methods.

Figure 10.12 Always take good care of yourself and your dog. This might seem obvious now, but in the pressure of a mission, you may easily forget to drink water or give your dog a drink.

3. Without management, energy is wasted. The operational dog team leader coordinates the search and the salvage in cooperation with the present command: Local Emergency Management Authority (LEMA), On Site Operations Coordination Centre (OSOCC), or United Nations Disaster Assessment and Coordination (UNDAC) team. If there is nothing yet organized, or if there is no leader from rescue services taking command, the person with the most experience should organize any search initiatives.
4. The sooner searching and salvage starts, the better the chances for the rescue of survivors. First assess the extent of the destruction and then work systematically. However, never work alone or begin a deployment without contact and cooperation with Urban Search and Rescue (USAR) teams from the affected country or from the international community that respond to carry out search and rescue activities in collapsed structures.
5. Before beginning to search, first determine the escape routes. Never enter a building without the knowledge of a colleague waiting outside that building.
6. Searching in dusty debris piles is tough on dogs, and their nostrils can become full of dust. Wipe the dog's nose with a wet cloth from time to time.

7. Locating and salvaging survivors is, of course, the number one priority. As much as possible, rescue workers should be brought in for the salvage of survivors to reduce time.
8. If there is no contact with a victim, the dog should stay nearby during digging. Periodically, the digging should stop to give the dog the opportunity to indicate where rescue workers have to dig. Big concrete slabs and other obstacles, as with temperature and wind influences, sometimes redirect odor in the rubble. That's why the search and rescue dog has to periodically indicate direction for the hole being dug.
9. Wounded people have to be immediately taken care of with life-saving treatments, made ready for transport, and brought to a hospital or field hospital. Deceased people should be covered with sheets and brought to a special place set aside for them. To simplify Disaster Victim Identification (DVI) procedures, all information about the place the person is found, together with a possible name and the name of the rescue team, should be written on a card and attached to the person—usually a foot or arm.
10. After the salvage of a body, the search and rescue dog should again search the same place, because it's possible there may be more victims in or around that spot.

Figure 10.13 Only handlers and dogs that have prepared thoroughly can leave on a foreign mission.

The Five Phases Method

While searching for missing people beneath rubble and during salvage, dog handlers should use a systematic way of working. This system is often known as the five phases method for search and rescue dogs:

- Phase 1: Survey
- Phase 2: Hasty search
- Phase 3: Comb out
- Phase 4: Alerts
- Phase 5: Salvage and search again

PHASE 1: SURVEY

Immediately upon arriving in the disaster area, the operational leader of the dog team should indicate to the command center the presence of the search and rescue dogs. The first phase of a mission is for the operational leader and some of the handlers to survey the damage area. A single person shouldn't do the survey, especially since you should never enter partly damaged or destroyed buildings without someone waiting outside to back you up.

Elements of the Survey

- Determine the characteristics and extent of the damage, fires, smoke developments, and destroyed installations, such as gas and electricity. Find out whether the gas and electricity are switched off. It is also important to find out about any radiation released by damage to offices, laboratories, clinics, and hospitals.
- Assess whether the damaged area is passable. At the same time, look for building damage typologies and damage elements, which are described in the next chapter.
- Get information from witnesses to the destruction about the exact damage, the number of missing people, and where they were at the moment of the disaster. You will need to know the time of day the damage occurred and where most of the people would normally be at that time. For example,

Figure 10.14 The first phase is to survey the damaged area.

during the night they would be in the bedrooms; in the early morning they might be in the kitchen. Also, you have to know if the people were surprised by the explosion or earthquake or if there were warning tremors, which might have given them a chance to escape or attempt to escape.

- Assess the dangers and damage in relation to the work of the search and rescue dogs and their handlers.
- Determine the number of available rescue workers and salvage services.

INFORMATION FOR DEPLOYMENT

Once you have a complete assessment of the damage, how many dogs and rescue workers you have, and how much equipment is available, the operational leader can plan and organize the operation. Every person involved in the searching and salvage receives the following information:

- Location of the command center
- The general division of the area into categories
- Specific dangers, such as electricity, gas, radioactivity, chemicals, poisons laid down against vermin, or leaking fluids
- Survey results, such as the expected number of victims and missing people, the presence of hiding places and basements, and so on

- Where to transport wounded people
- Where to transport dead bodies
- Workplace assignments and primary search areas
- The grouping of helpers and other rescue workers—a search and rescue expert can be assisted by more helpers

Divide the search teams into groups of three dog teams each and divide tasks between working and resting dogs. One team searches and a second dog handler observes the working dog from the opposite side. Meanwhile the third handler and dog stay with the dog of the second handler in a bivouac at a safe and shady place watching all the equipment and backpacks. The resting dog team can be used to double check on alerts before reporting them.

Figure 10.15 Gather information on fires, smoke developments, and destroyed installations. (Izmit, Turkey, 1999)

Figure 10.16 Assess the threats to the search and rescue dogs and their handlers. (Izmit, Turkey, 1999)

PHASE 2: HASTY SEARCH

The teams grouped by the operational leader begin by systematically searching the rubble areas assigned to them for victims close to the surface. Because of the mortar and rubble dust blown down, it is usually impossible for people to see victims even close to the surface. However, dogs smell them very quickly.

For search and rescue dogs, this is the phase for hasty search work, meaning they have to go through the area quickly to search for victims. The search starts from the fringes of the rubble area and moves toward the center of the rubble.

Survivors and wounded people have to be salvaged, given any life-saving treatment necessary, and, if the medical center has been set up, handed over to staff there. Wounded people should be given a so-called wounded card. On it should be written the victim's last name and first name(s), age, sex, the nature of the wounds, and location where the person was found.

Dead people are laid down in an out-of-the-way location chosen by the operational leader and covered with sheets or blankets. As far as it is possible to determine their identity, they can also be provided with a card.

Figure 10.17 The second phase is the hasty search.

Figure 10.18 The handler should walk on the rubble as little as possible. The dog is much lighter and better suited to this search. (Bam, Iran, 2003)

Figure 10.19 The team should always start on the fringes of the disaster site so that salvage work can begin quickly. (Düzce, Turkey, 1999)

Figure 10.20 In phase 2, the dog has to go through the area quickly looking for victims. (Algeria, 2003)

PHASE 3: COMB OUT

The comb out occurs first in those damaged areas with the highest chance of survivors. These areas include

- Air-raid shelters
- Basement rooms
- Partially collapsed rooms, especially hollow rooms near still-standing walls and chimneys
- Passable floors, halls, staircases, and attics

The search and rescue dog handlers determine the working area of their groups, such as basements and floors. If there is no rescue expert in the group, they together have to determine security measures, such as the use of dust masks, linking searchers with rope, propping and securing entrances, and the method of salvage.

For the search and rescue dog, this phase includes the fine search.

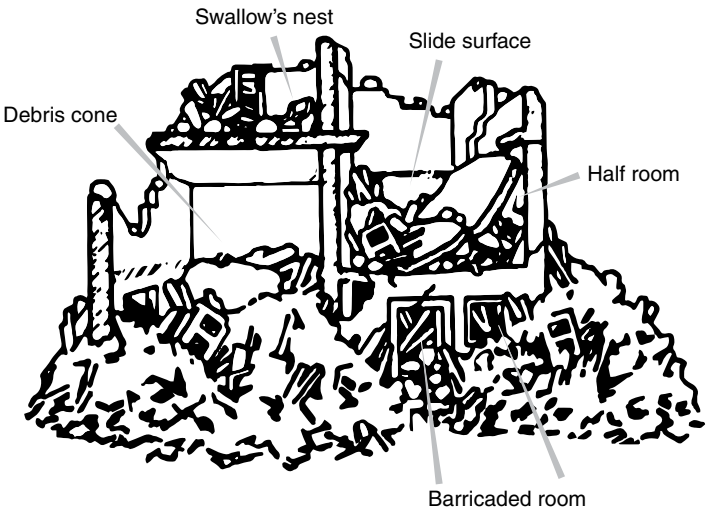


Figure 10.21 Phase 3 includes searching inside or near damaged buildings. This drawing shows some of the most common types of damage in which you might find survivors. You will learn more about searching in each damage type in the next chapter.

Figure 10.22 Handlers in an earthquake aftermath must be aware of their own escape routes and hiding places—both inside and outside the buildings—at all times because of the risk of aftershocks. (Spitak, Armenia, 1988)

Figure 10.23 For the dog, phase 3 includes the fine search. (Leninakan, Armenia, 1988)

PHASE 4: ALERTS

The most important phase in the search for victims is, of course, the alert. We have found that some dogs that alert very well during training may alert less well on an actual mission. One reason is that the handler is working under a lot more pressure, which will undoubtedly affect the dog. Second, all usable dogs will be

searching longer, more frequently, and sometimes under unfavorable circumstances. Temperature, precipitation, and wind will influence the search and alerts. Excessive dust may also play an important role. That's why we regularly clean the nose of the dog with a wet cloth.

ALERTS FOR DEAD PEOPLE

But also there are so many other unknown odors in a rubble pile. Dead people smell different from living people, and being introduced to this odor for the first time can cause confusion for the dog. Without being trained to do so, many dogs alert to a dead person completely differently than to a living person. Thus we see interested dogs smelling with their ears tucked back on their neck, standing rigid, but also lying down or sitting. We see them hesitantly approach and sniff these particular locations again. It is possible to train the dogs for such situations with parts of a dead human body or with an artificial dead corpse scent and teach them a passive alert, such as sitting or lying down. This behavior always must be combined with pinpointing, such as pressing the nose on the scent clue.

DOUBLE-CHECKING ALERTS

A dog that gives an alert on a certain spot in the rubble has to be rewarded, and then the handler should take the dog away from that place. Immediately you have to try to contact the trapped victim. If you are not successful, a second dog has to search the same area to confirm the location indicated by the first dog before rescue workers start digging. The handler of the second dog shouldn't know where the first dog has given an alert to avoid influencing the second dog. The second handler should start the search at least thirty to sixty feet (10 to 20 m) away from the clue. If the second dog alerts on the same spot, then the digging can start immediately.

Figure 10.24 Be careful not to trigger an alert by putting pressure on your dog to find something. (Leninakan, Armenia, 1988)

Double-checking an alert is of great importance. In the past, rescuers often would start digging immediately upon the first dog's alert, wasting time and energy in a location where there was no victim. The dog had given an alert there simply to satisfy its handler. Maybe the dog was searching a long time without success, and maybe the handler was putting some pressure on the dog without realizing it. That's why one must always, if possible, check an alert with a second dog before reporting it to the rescue workers (if there has been no response from a victim).

The time for a second check is counterbalanced against the wasted time digging for nothing. In addition, if rescue workers dig where they find nothing, then they may lose confidence in the dogs. They may work their own way somewhere else and leave the search and rescue dog handlers on their own. This response is justified given the amount of work salvage takes. Believe us, the decision of a search and rescue dog handler to have rescue workers dig after the dog's alert is a difficult one.

Figure 10.25 In phase 4, the dog alerts the handler to the presence of a victim.

Figure 10.26 The dog indicates the place among the rubble with the highest odor concentration.

Figure 10.27 Dead people give off a particular odor that may confuse dogs the first time they encounter it. (Leninakan, Armenia, 1988)

Figure 10.28 The handler carefully monitors the dog for changes in its search behavior. (Bam, Iran, 2003)

THE DEAD DONKEY

During a mission in Yemen after the earthquake of December 13, 1982, a search and rescue dog handler had a serious problem. His dog gave an alert that a dead person was lying in a certain place under the rubble. After a second dog had confirmed this location, a rescue team started to dig. What was salvaged was a dead donkey. You can imagine how the handler felt at that moment.

At the urging of the operational leader, however, his dog was once again brought near the same place and again the dog gave an alert. They dug further and soon the dead body of a woman was salvaged. So, the dog's alert on that place was correct.

PHASE 5: SALVAGE AND SEARCH AGAIN

When certain about the location of a victim, rescuers can start digging. Locating and rescuing survivors is, of course, the number one priority. As much as possible, rescue workers should be brought in for the salvage of survivors to reduce time. Before any action is taken, you should first try to determine the best way to reach the victim. Rescue operations for different types of damage are given in the next chapter. Depending on the situation, consider the following options:

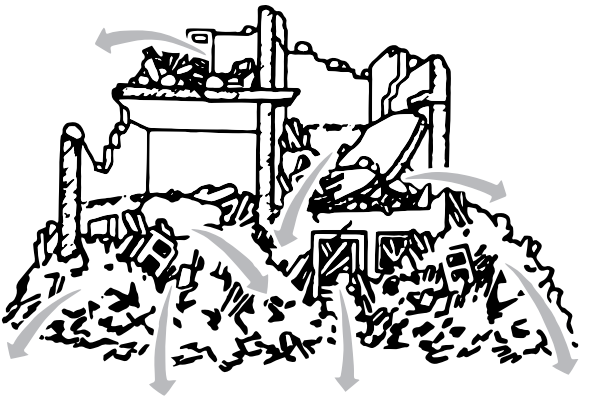


Figure 10.29 Phase 5 is about recovering victims.

- Clear loose rubble to approach the victim from above.
- Clear an entrance through adjoining buildings or rooms by breaking through a wall.
- Clear a passage to the victim through the rubble (shafts, trenches, horizontal tunnels, etc.). Sometimes entering from the side can be better in order not to stand on the victim.

Any cleared rubble must be removed to a remote area where it can't obstruct or endanger workers on the disaster site. Search and rescue dogs should first search the place where the rubble will be dumped.

DANGERS AND SAFETY SIGNALING

One must always remember that a rubble pile can slide away. That's why unstable rubble and construction materials have to be propped; hollow spaces can be used to penetrate deeper into the rubble pile. Unnecessary moving of rubble has to be avoided because dust, mortar, beams, or concrete blocks can come down. Such falling debris can suffocate buried people.

Helpers that go into a pile of rubble can be secured to a line attached to their chest belt and secured outside. Rescue work is physically demanding, so rescuers should rest regularly.

Effective emergency signaling is essential for safe operation at a disaster site. All team members working on collapsed structures should be briefed regarding emergency signals. All rescuers are required to immediately respond to all emergency signals. These signals must be clear and concise, so air horns or other hailing devices should be used to sound the appropriate signals, as follows:

- *Evacuate:* three short signals (one second each), repeated until the site is cleared
- *Cease Operations/Quiet:* one long signal (three seconds)
- *Resume Operations:* one long signal (three seconds) plus one short signal (one second)

In the case where there is no contact with a victim after a double-checked alert, the search and rescue dog should stay in the vicinity to show the direction where the victim is lying. Always take the wind direction into account and make use of the dog's ability to follow the scent cone to the victim.

Figure 10.30 Always try to get medical assistance on the site as soon as possible. (Bam, Iran, 2003).

LIFE-SAVING TREATMENTS

If a living person is found, then the head and chest have to be freed as soon as possible, and dirt in and around the respiratory tracts has to be cleaned out. If the heart and breathing have stopped, cardiopulmonary resuscitation (CPR) should take place immediately on location. Don't wait to first dig the victim out entirely, but directly start CPR. Wounded people have to be immediately taken care of with life-saving treatments.

As soon as the body is dug out, do everything necessary to safely transport the victim from the rubble. After that the victim is taken to the hospital or field hospital. Always keep in mind that one of the biggest hazards is combined shock and hypothermia. Many people die if these two conditions occur together. Therefore, treat victims immediately with inside and outside warmth (warm drinks, blankets, etc.)—without making them too hot—rest, and all the reassurance you can. Get medical assistance on the rubble as soon as possible.

Once contact with buried survivors has been made, it should not be broken off until the victims have been brought to safety. Wounded people may not be able to give a loud call. Rescuers should then try to get knocking signals from the victim as an answer, which is important in determining the proportion and speed of the rescue work. For instance: "How many people are with you—knock once for each."

The urge for self-preservation and the will of a victim to survive are responsible for a so-called emergency-adaptation reaction. The human body is oriented, with all its reserves, toward surviving. This extreme stress can last until the victim is rescued, at which time the victim may die, the so-called salvage death, due to overwhelming relief. The happiness of being saved can quickly deplete the body's will to survive. That's why you should never tell a victim during or after the salvage that he or she is safe now. The victim still has to work for survival and rescuers have to keep telling this to the victim until he or she is under full medical control.

Figure 10.31 After rescuing a victim, it is important that the dog be brought back into the sector to check for other victims. (Avellino, Italy, 1980)

SEARCH AGAIN

After salvage, the search and rescue dog must once again search the same area, because it's possible there may be more victims in or around the same place.

Marking Box

After finishing a search operation, the collapsed structure has to be marked by the operational leader with brightly colored dyestuff or spray in a clearly visible place. This is to avoid having other rescue workers searching the structure again. The mark can also warn unauthorized people, residents, or neighbors away from the dangers of the damaged area. These prescribed markings give, besides dangers, information about the number of salvaged survivors and dead, the unit that was operating, and the date and time of the salvage.

Structural marking should be applied on collapsed structures assessed by Urban Search and Rescue (USAR) teams. The marking should be placed near the point of entry on the exterior of the collapsed structure that offers the best visibility. All assessment results are to be reported to the command centre immediately.

The structural marking prescribed in the guidelines of the International Search and Rescue Advisory Group (INSARAG) is a one-meter square figure with, at the edges, hazard information at the top, the number of live victims removed on the left, the number of dead victims removed on the right, and the number of people unaccounted for and the location of other victims at the bottom. The name of the search and rescue team plus the mission start and finish date and time are written in the center. Inside the figure at the top, Go (G) is written if it is deemed safe to enter, or No Go (NG) if it is deemed unsafe to enter the collapsed structure.

When the USAR team has completed work on the structure, a circle is drawn around the entire marking. After all the work on the structure has been completed and it is confirmed there are no more victims, a horizontal line is to be drawn through the entire marking.

The operational leader always has to detail the results of the search and rescue at the command center and sign out when moving on to another mission or going home.

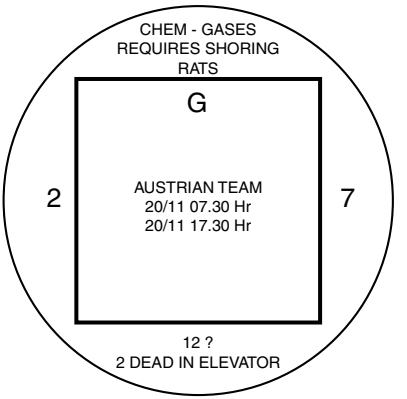


Figure 10.32 The marking box is prescribed in the INSARAG guidelines. It is a one-meter square with hazard information at the top, the number of live victims removed on the left, the number of dead victims removed on the right, and the number of people unaccounted for and the location of other victims at the bottom. Write the name of the search and rescue team plus the mission start and finish date and time in the center. Draw a circle around the marking box when the mission is finished.

CASE STUDY: IZMIT EARTHQUAKE, TURKEY, AUGUST 1999

That night in the Turkish city of Izmit, the dogs were restless. They barked a lot, didn't want to stay in the house, and could find no rest. Like the dogs, other animals were also restless. In the countryside, farmers noticed that the chickens didn't go into their coops and that mice and rats appeared out of their holes. Several hours later, it became clear why.

At 3:00 a.m. on Tuesday, August 17, 1999, the earth in Turkey trembled for a full minute. The soil seemed not to find peace. Even in the megacity of Istanbul, about sixty miles (90 km) away, the catastrophic earthquake was noticeable for forty-five seconds and created havoc.

PANIC AND CHAOS

The epicenter of the earthquake—the point on the earth's surface from which the quake waves spread—lay in the densely populated industrial city of Izmit. The earthquake, with a magnitude of 7.8 on the Richter scale, surprised the people in their sleep. One survivor said the tremors were so intense that he had fallen out of his bed. Tens of thousands of people tried to escape unsuccessfully through the stairwells of their eight- to ten-storey flats. Hundreds of people jumped in panic from their balconies and countless others were buried under the rubble of collapsed houses and buildings. Panic and chaos reigned in the darkness of night as the power went out, phone lines were destroyed, and the streets were littered with debris. Everywhere in the dark people screamed and wailed.

Figure 10.33 In a panic, people jumped from balconies, and others were trapped under thick concrete layers in the rubble.

Tremendous fires broke out in thirteen large tanks at a major oil refinery near Izmit. For days there was a high explosion risk from the fires and their proximity to chemical plants. The damage in the earthquake area was so extensive because the depth of the earthquake was only about eighteen miles (30 km) below the surface.

PRACTICED AND PREPARED

That morning we listen at 7:00 a.m. to the news and hear the first reports of what happened in Turkey. In the next news bulletins, the dimensions of the disaster become clearer as the number of victims increases dramatically. At 8:00 a.m., a message tells the search and rescue dog group of the Austrian Red Cross to prepare for a possible deployment to Turkey.

Routinely, we perform a rapid check of our always-ready backpacks and other supplies, filling the water jugs and food barrels for our dogs. Our dogs look on curiously. For both our Malinois Speedy and our German Shepherd Tessa, these are not unusual events, because they've been on many missions before.

Somewhat later the beeper gives the final message for deployment of our Emergency Response Unit—Search and Rescue (ERU–SAR) of the Red Cross. While our group of fifteen dogs and handlers, along with the care team, are driven to the airport, our thoughts go back to our previous earthquake deployment. Will we meet the same sort of situation? Thanks to the new ERU–SAR setup, we can now respond quickly enough to reach the disaster area in about four hours. Our special reserved plane is ready to go. Our dogs travel with us in the cabin, and each dog even has its own reserved seat. The seats, however, are used for our backpacks, and the dogs settle themselves comfortably on the floor of the plane.

IN THE SEARCH AREA

Three hours later, our plane lands at Istanbul airport, where we are welcomed by a representative of the Turkish Red Cross, the Red Crescent. That man has a bus and truck arranged for transport to the disaster area about sixty miles (90 km) away, as well as some interpreters, so we don't lose much time. Our search area is Izmit, the epicenter of the earthquake, and our assigned district, Derince, includes the most damaged areas of the town.

In the bus we divide our handlers into groups of three dogs so we can start searching immediately upon arrival. Our first rubble objects lie on the main avenue of Izmit, where multiple six- to eight-storey flats are completely in ruins. The heavy concrete slabs of the floors lie almost against each other, with only small cavities here and there where we might be able to find survivors. With

Figure 10.34 Our dogs went straight to work and within minutes found the first survivors under the rubble.

their bare hands relatives are digging in the heavy debris. But where should they search?

Immediately our dogs start to work there, balancing on the difficult rubble, and within minutes we have the first alerts of living people, endorsed by a second dog. At the places where the dogs have alerted, people start screaming into the rubble, but no answer comes back. Are our dogs wrong? Perhaps they are tired from the hectic trip.

Then people begin to take away the heavy debris barriers and we search on at the adjacent rubble cone. Suddenly we hear the work stop and diggers talk excitedly to one another. One has heard voices under the rubble, but in which direction? Our dogs search in the dug-out hollow and, with the same cheerfulness as before, they scratch and bite in the wood and stones in an attempt to remove the rubble. In this way they indicate the direction of further excavation. At one location, this is to the right or left of heavy concrete slabs, but elsewhere the dogs indicate that the workers first have to dig even deeper down.

So we and our dogs toil in the scorching heat of the ruins. The daytime temperature rises to over 95°F (35°C), and where we work in the sunshine is really hot.

SHOWING DIRECTIONS

While the diggers continue to work, we search with our dogs at other objects—rubble piles or locations—in the vicinity, returning again and again so that the dogs can indicate the direction to dig toward the victim if there is no contact. Our method of direction-showing alerts with the dogs works

well. Within a short time, the first victims are freed. On one object we find four people; on the next, three; then again four victims, and so on. Just a few hours after starting, we have salvaged sixteen people alive from the rubble, and it goes on.

FAMILY TRAGEDY

Where we have rescued a man and his wife alive from the rubble, two children are still missing. As usual after the victims have been removed from the rubble, we again search that area with a dog. The dog that works there goes to the hole from which both people have been rescued, barks shortly, and immediately dives under the rubble. With our flashlights, we follow him tensely and discover that he stands with laid-back ears, whining softly, gently scratching in one spot. He looks back at us, as if he wants to convince himself that we have seen him. For us it is a clear indication that this is a dead person. One of the missing children?

The dog comes back, jumps out of the hole and goes to another place in the rubble, where we discover cracks in the concrete. The dog searches all the cracks and stops at a spot. Here he starts wagging and enthusiastically scratching. Because his paws are not very successful, he barks in annoyance. Another living person found, that's for sure!

The handler walks on the rubble, and while he presses his dog a bit to the side, he smuggles the dog's sock toy into the rubble. The dog starts pawing again, sticks his nose under the debris and finds his reward for the search right in the path of the victim's odor. Playing with his sock toy, the dog walks away from the debris, followed by his handler. People call into the rubble but get no answer.

Before the heavy digging work can start, another dog searches the area. The second dog starts searching from the other side and first runs over the spot of the first dog's alert—until he gets the windblown scent and with a jerk turns to the place of his predecessor's alert and gives a powerful alert of his own. Relieved, we take a breath and immediately careful digging begins. After our dogs show the right direction for excavation several times, a four-year-old boy is freed alive from his void under the rubble. Help came too late for his seven-year-old sister, found later at a place under the rubble. She was crushed in her bed. The sight of her mutilated corpse will long remain in my memory.

FANTASTIC RESULTS

We take a short break to consult with our other groups and give the dogs some rest. We hear that on the other ruins, lots of victims were also located by

alerts from our dogs and have been removed alive from the rubble, so that we have almost doubled our numbers of victims found alive.

Such great results surpass our most optimistic expectations and motivate us to continue. Our intensive training and our arrival at the disaster area within twelve hours are rewarded. We are more than satisfied!

However, there is no time to think, because news of the results of our dogs spreads through the town like wildfire, and from all directions people ask for our dogs' help.

THE SOLID WALL

We now reach a huge rubble pile of three five-storey apartment buildings that collapsed completely. The debris is so close together that we hardly dare to think of survivors. At least forty people are missing here, our interpreter tells us, pointing to the right side of the rubble pile. In the middle and on the left side, people dig with their bare hands to find their trapped relatives.

We begin with two dogs that scour from the left and right edge of the rubble pile to the center. In several places we see their alerts of dead people, and while the handlers mark these places with bright-colored spray, the dogs search on. At those marked spots our dogs will later show the direction to the victims.

The left dog is first in the center of the rubble pile, and it dives under a raised concrete slab. We see how he is air-scenting for odor and then attempts to penetrate. But the heavy debris impedes his passage. About twenty inches (50 cm) above his head, he gets a smell and jumps, barking against a solid wall. We look at each other. One of the interpreters comes forward and asks if someone is alive behind the wall. We shake our heads and indicate precisely the opposite direction. Our interpreter does not understand it, but that's not important. We decide to use another dog to search that area, and that dog shows the same curious alert in the corner of the solid wall.

We investigate the upright debris in the opposite direction, and one of the dogs now tries to get odor from the top. The many bars that lie in a tangle over that place don't make it easy for the dog to get up there. From down below the handler gives his dog left and right directions to search, and the ability to direct his dog from a distance turns out to be very useful training. "Directability at a distance" is part of the IPO-R examination program.

While the dog climbs up, he searches the area and we see how he suddenly shows interest in an adjacent elevation in the rubble with two gigantic slabs at an angle of about forty-five degrees to each other upwards. We let the dog come down, and he goes straight to the foot of the smooth concrete

Figure 10.35 The damage in the earthquake area was huge.

floors. He searches intensively but gives no clue, and we decide that he has to go upstairs. But the dog doesn't stand a chance on the smooth and too-steep concrete. Therefore we ask the bystanders to bring us doors and other wood to cover the smooth concrete so the dog can climb. There he smells intensively at an opening and immediately starts pawing. This place is at least three yards (3 m) away from the place where the dog caught the first scent on the wall.

The dog is now rewarded with his sock toy. The handler yells into the rubble, but there is no answer. Therefore we give a second dog the slanting floor with the wood on it as its designated search area. The dog climbs nimbly up and after a short left and right smell also gives us a powerful alert.

People start talking to us and our interpreter asks if we know how many people are below. We shrug our shoulders. Our dogs indicate that human scent comes out of the rubble, and from the behavior of our dogs we can conclude whether it is an alive or dead alert. But how many people the dog smells, we can't ask them.

We're in luck, because just then a group of Turkish soldiers arrives to assist in the rescue work. We tell the commander our findings, and he immediately gives his men the necessary instructions.

A CHILD'S FOOT

While the soldiers are at work, we go to a collapsed house around the corner where people ask for our help searching for two missing children. When we arrive, the dead mother is just being taken out of the rubble. Two young children are still missing, and we decide first to search on the gaps in the rubble where the bedroom of the children could have been. There we get from the dog a remarkable alert. First we see how he carefully sniffs at a hole in the rubble,

withdraws his tail, and hesitantly walks around the hole. Then suddenly his behavior changes completely, and we see how he gets excited and intensively scratches with his paw in the hole. After our interpreter calls into the hole but gets no answer, we decide to take away some debris from the hole and then send another dog to search, to get a better overview. After we remove about twelve inches (30 cm) of debris, I suddenly encounter something moveable with my glove. I look inside with my flashlight, and it appears to be a child's foot. The color of the foot, and the huge mass of debris around it, do not augur well.

We ask the military commander to undertake the salvage of the child clamped under the rubble quickly but carefully, because we suspect that the other child might be beneath it and possibly still alive, given the dog's behavior. Two hours later, our suspicion proves correct, and the father can take his only surviving child in his arms.

NEW OPENING

We soon need a break and walk back to the previous rubble pile, where we see the salvage team gesturing to us. The interpreter tells us that they have an opening in the concrete and below it are more concrete layers. They are hearing beat signals, and he asks if we want to search with the dogs. However, it is dangerous for the dogs to go under the heavy rubble because of the numerous aftershocks we still feel. We decide to rely on the feeling that earthquake-experienced dogs have for such situations and take an experienced dog to search the area below the large concrete layer. This dog reaches the hole and

Figure 10.36 The concrete layers are so close together that we hardly dare to think of survivors.

jumps on the underlying concrete slab. With his nose in the air, he goes to the right under the rubble, remains at a crack in the slab, and begins a pawing alert.

We advise the commander of the salvage team to continue working from above and make a new entrance over the place the dog alerted to penetrate the underlying layers. He agrees and puts his people back to work. Later that night, with loud applause from the bystanders, they remove a whole family of three adults and two children alive out of the rubble.

OVER THE LIMITS

When we meet the dog handlers of our other groups again, we all seem to have lost count of how many people our dogs have found under the rubble. Only our team leaders know exactly how many we've found, but they are always busy. We dog handlers have no time for recordkeeping. We only know that in the first forty-eight hours since we arrived in the catastrophic area, we have slept only five hours. And the next days won't differ.

The rubble of what once was a twelve-storey apartment is now a sixteen-foot- (5 m) high debris pile in front of us. At least seventy people are missing, and as skillfully as our dogs search, they find only a few who can be saved alive.

In a house, a woman on the second floor is missing. The accumulation of concrete floors makes it almost impossible for the dogs to search. The building is collapsed like a house of cards. When I climb up to view the bedroom, I see there is blood on the collapsed ceiling. In the underlying rubble the dogs alert for the dead woman.

In another pile, a salvage team indicates to us where they made a hole in a giant concrete slab above a bedroom. The dog would have to indicate there the direction of further digging, but the dog smells nothing. However, in what once must have been the staircase, we get a clear alive alert, and then again from the second dog. Reluctantly the salvage team removes the debris from the stairwell, each time shaking heads and pointing to the bedroom. When they have dug out a hole about one yard (1 m) deep, we bring back a dog. Intensively the dog scratches in the rubble around two plastic tubes and bites the tubes in an attempt to remove them. Rapidly the workers dig further and then encounter a thick layer of concrete. Suddenly the rescuers hear calling and make contact with a man and woman trapped in a twenty-inch (50 cm) space between two slanting, almost upright layers. Now the rescuers believe our dogs!

HEAVILY MUTILATED BODIES

All the successful rescues we have with our dogs in Izmit do not remain unnoticed. Other foreign salvage services in the area ask for our help. An English

Figure 10.37 Increasingly, more foreign rescue teams rely on our dogs in searching the rubble.

salvage team is so impressed that they follow our dog groups on their quests along the rubble, and an American salvage group asks many times for our dogs.

On the pile where the husband and wife are freed from their perilous position between the concrete layers, two people are still missing. There is now about three yards (3 m) of debris cleared, representing at least five floors. On the first floor, both missing people, a pregnant woman and her husband, must be located, and that means two concrete layers below us. On our advice the rescue workers make small holes in the concrete at various places and in one of them our dogs clearly indicate a deceased victim. After a difficult salvage, the heavily mutilated bodies of the two missing people are found.

GRANDMA AND CHILD

In the rubble of a building along the main road, two people are missing, a young boy and his grandmother. In the excavated bowl where rescuers suspect the victims are, our dogs alert nothing. But more to the right, on the rubble, a dog gives a powerful live alert. The second dog is also sure, and because clearing the rubble there goes quickly, we decide to wait, although others already want to take us to the other side of town. A confused and crying boy is carefully removed from the rubble. For a few days he spoke with his grandmother under the rubble, until she didn't answer anymore.

OUR SEARCH WINDS DOWN

After five days, the alerts of people alive become scarcer and the stench that hangs over the rubble makes it clear that only death reigns here. In the time

we have worked here, all our dogs and their handlers have far exceeded the limits of their performance. The dogs get tired faster and sleep deeply during the short rest periods. We now save their energy as much as possible and go only to those ruins where knock signals or human voices are heard. And as the residents or relatives discover this, of course, everywhere in town they hear knock signals or human voices in the rubble—even in places our dogs have already searched. Although we realize that finding the dead for the families is important, we want to save our dogs as much as possible for the few people we may be able to save alive from the rubble.

On the way home, handlers and dogs step tired and sleepy into the aircraft cabin. The many days our dogs have searched in the heavy rubble of Izmit are clearly visible in Ayko, Bazil, Karma, Igor, Daisy, Tessa, Speedy, and the others. Only thanks to their formidable noses and our special training methods were we able to accomplish what we did. We showed that they were not only world champions in competition one month earlier, but also during an actual deployment.

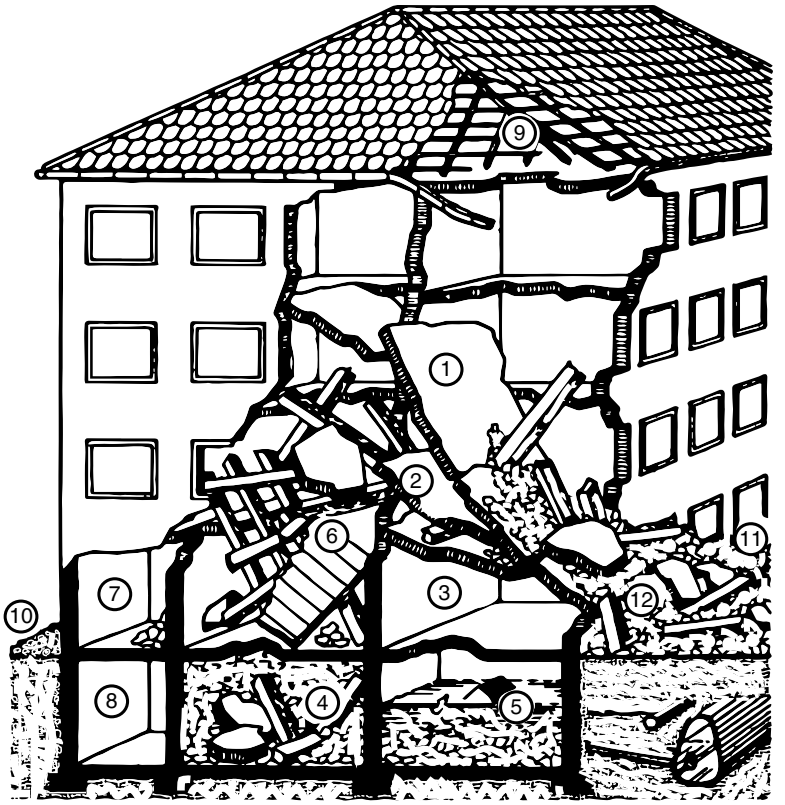
11

Building Damage Typology

After the air attacks on residential areas during World War II, it was discovered that the same characteristic damages always occurred to buildings. Because of that, in 1942 a German engineer named Maak Hamburg developed a system of twelve signs by which one could assess the kind of damage a building had sustained. Whether by earthquake or explosion, the same types of damage always occur. Three additional characteristic areas of damage (the tooth gap, the damage crater, and the doll's house), were later added to the original twelve.

Elements of Damage

This section describes the fifteen types of damage that can be found in buildings. Inset on each illustration is the symbol for that damage type. Use these symbols on cards during exercises to give an overview of the damage and discuss the best approach for the search and rescue dog teams to search for survivors. In most cases, more than one type of damage will be found in a house or building. Knowledge of these types of damage will help in assessing dangers, choosing places to enter, and identifying where survivors are most likely to be found. You'll also know where you can work with search and rescue dogs and where there is no point in searching.



1. Slide surface
2. Layers
3. Half room
4. Spilled room
5. Mud-filled room
6. “With layers pressed” room
7. Chipped room
8. Barricaded room
9. Swallow’s nest
10. Fringe debris A
11. Fringe debris B
12. Debris cone

Figure 11.1 The twelve damage types. Three other damage elements not illustrated here are tooth gap, damage crater, and doll’s house.

The fifteen building damage types can be grouped according to whether they describe areas, rooms, or building elements.

1. Damage types describing areas
    - Tooth gap
    - Damage crater
    - Doll's house
2. Damage types describing rooms
    - Swallow's nest
    - Half room
    - Spilled room
    - Mud-filled room
    - "With layers pressed" room
    - Chipped room
    - Barricaded room
3. Damage types describing building elements
    - Slide surface
    - Layers
    - Debris cone
    - Fringe debris A
    - Fringe debris B

TOOTH GAP

The tooth gap is what we call part of a building that has been blown away, usually by explosion, between a connected series of buildings. Be careful of beams hanging off the sides and other hazards. Victims may be buried in the debris cone outside the building.

Search: Because of the great danger of further collapsing the rubble and suffocating the victims, don't walk on the rubble yourself. The much lighter weight of the dogs makes them better for this task. See the "Debris Cone" section on page 210 for more information.

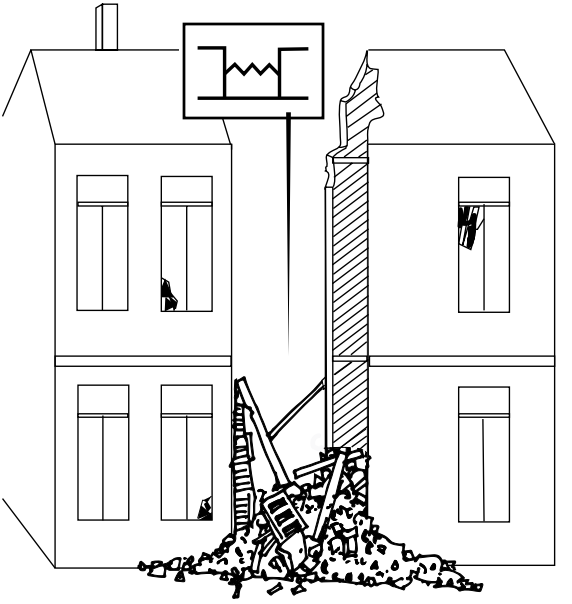


Figure 11.2 Tooth gap.

Rescue: Usually approach from above or from the sides. Where there are big concrete slabs on the debris cone, preventing salvage from that direction, you can sometimes reach victims by breaking through walls via neighboring houses.

DAMAGE CRATER

A damage crater is a building in which the lower part is destroyed and the upper part is blown away, forming a crater. This damage has significant danger from falling rubble. Victims can be buried in the debris cone at the foot of the building.

Search: Because of the danger of suffocating victims by collapsing more rubble, don't walk on the rubble yourself—send the dogs. See the "Debris Cone" section on page 210 for more information.

Rescue: Approach from above or from the side. Where there are big concrete slabs on the debris cone, preventing salvage from that direction, you can sometimes reach victims by breaking through walls via neighboring houses.

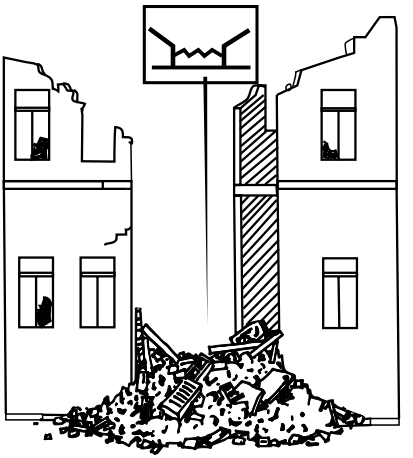


Figure 11.3 Damage crater.

Figure 11.4 Damage crater. (Algeria, 2003)

DOLL'S HOUSE

Because of a gas explosion or earthquake, the exterior walls have been blown off the building. Without these supporting walls, the building is very unstable, so there is a great danger of it coming down.

Search: Each room of the house can be described as a swallow's nest (page 194). At the foot of the doll's house there is fringe debris, which should be searched thoroughly by dogs.

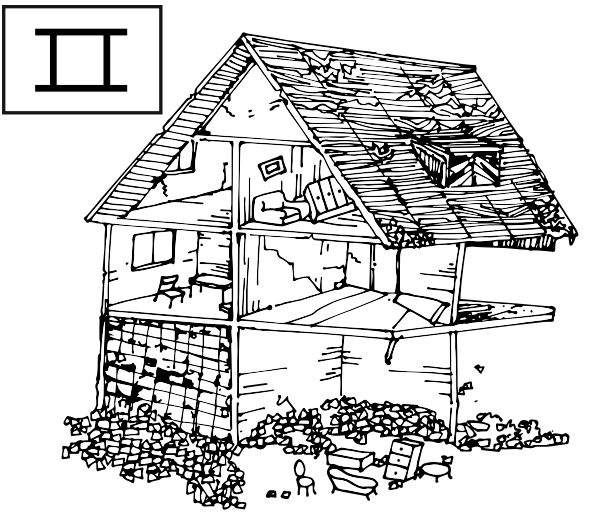


Figure 11.5 Doll's house.

Figure 11.6 Doll's house. (Leninakan, Armenia, 1988)

Rescue: Use the same approach as for a swallow's nest (below) or fringe debris A or B (page 213).

SWALLOW'S NEST

A swallow's nest is a partially collapsed room on a floor that can't be reached by a staircase. Because of damage to supporting walls or ceilings, these rooms are often quite unstable.

Search: Because of the danger of collapse, you have to assess whether entering by way of ladders on the outside wall is safe. Survivors can be found in the swallow's nest. It is impossible for search and rescue dogs to reach this room on their own. Sometimes it is possible to bring a dog to a swallow's nest in an airlift harness. Carefully consider whether the entrance is safe.

Rescue: The salvage of victims from a swallow's nest is very difficult and will mostly be done by specialists. When a crane or a tower wagon is available, it can make the work a lot easier.

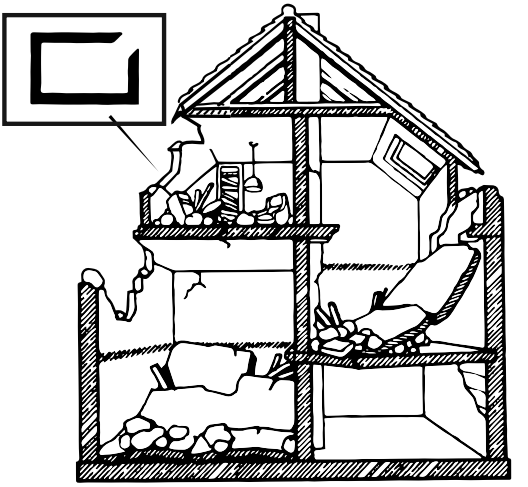


Figure 11.7 Swallow's nest.

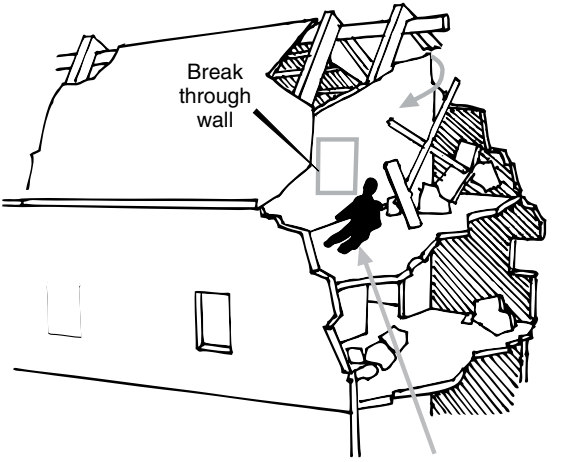


Figure 11.8 Salvage from a swallow's nest is difficult and requires specialists with a crane or who can break through the wall. It may be possible to bring a dog to a swallow's nest up a ladder on an outside wall with an airlift harness.

Figure 11.9 Swallow's nest. (Vienna, Austria, 2006)

HALF ROOM

A half room happens under slide surfaces and pile-ups when some or all of the walls and floor of the original room are still intact, leaving pockets of space. The half room can also occur when walls, doors, or other debris are propped against one another.

Search: Many victims may be buried in half rooms. There is also a good chance to find survivors in half rooms. Search and rescue dogs should thoroughly search the outside edges of half rooms. In particular, all broken edges, cracks, and other openings from which a scent cone could issue have to be searched carefully. Because of how various debris may lie, remember that the odor will not always come up via the top of the half rooms, although this is mostly the case.

Rescue: Half rooms can also be used to penetrate farther into the rubble. Rescuers can try to penetrate via the sides or from the back through window or door openings. If that isn't possible, then entrance can be gained by breaking through the slide surface. The

slide surface should not be weakened because of the breakthrough, as this can cause a full collapse. Breaking through the wall that supports the slide surface has to be avoided because of the danger of collapse. If this is the only way to get into the half room, then the wall has to be propped against sideways pressure. Care should be taken when using machinery that causes vibrations.

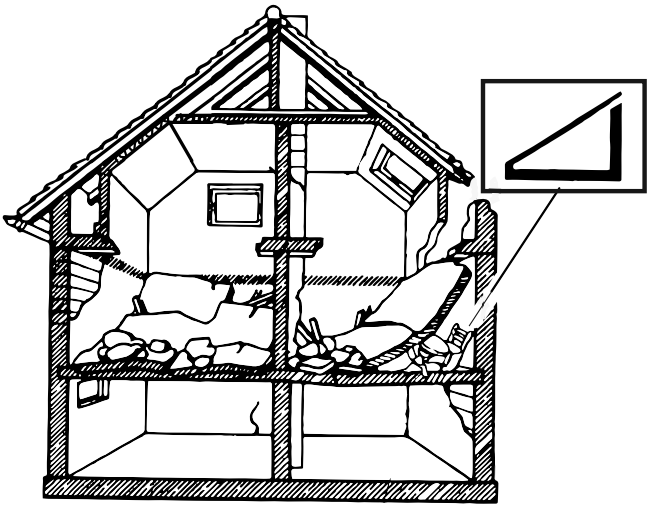


Figure 11.10 Half room.

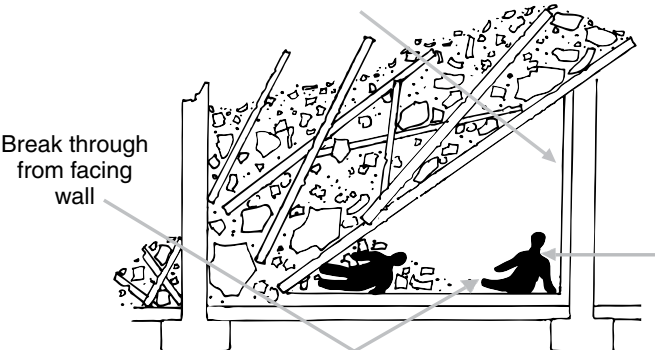


Figure 11.11 Dogs should carefully search broken edges, cracks and openings. Rescuers can try to penetrate the half room from the sides or back through window or door openings. An entry may also be created by breaking through the slide surface.

Figure 11.12 Half room. (Leninakan, Armenia, 1988)

SPILLED ROOM

The spilled room occurs when floors collapse into rooms below while the walls are still standing (usually in basements). The room is filled up with rubble, and hollow spaces of various sizes are left in between.

Search: Search and rescue dogs are the only hope of locating victims in spilled rooms with any great certainty. Survivors could be found in the hollow spaces, although victims can die from the pressure of the rubble. Walk as little as possible on the rubble yourself and let the dog do its work. Shifting the rubble or raising dust can cause the death of buried people.

Rescue: Breaking through the wall from the rooms next to the spilled room is often the best opportunity to get under the rubble in the spilled room. When the victim is lying in a favorable place, salvage by a wall breakthrough is possible. Otherwise the rubble has to be cleared from above. This clearing has to be done very carefully to avoid moving rubble and disturbing dust.

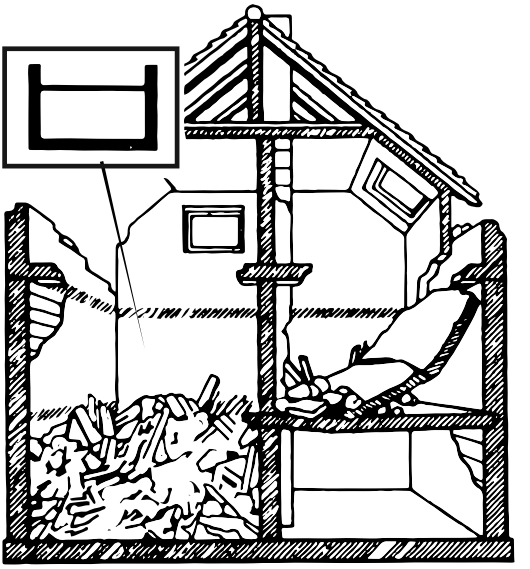


Figure 11.13 Spilled room.

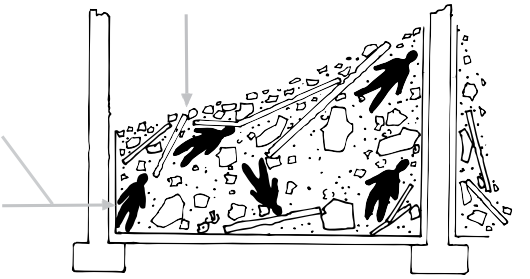


Figure 11.14 Walk as little as possible on the rubble yourself; dogs can locate victims here with great certainty. To salvage, carefully clear rubble from above or by breaking through a wall.

Figure 11.15 Spilled room. (Izmit, Turkey, 1999)

MUD-FILLED ROOM

The mud-filled room occurs when a mix of water, soil, and rubble penetrates a room with intact walls and floor. The cause of this can be damaged waterworks, the water sprayed by the fire department, but also a landslide, the collapse of a dam, overflowing rivers, and so on. Often the mud becomes an almost solid mass.

Search: You shouldn't count on rescuing anyone alive from a mud-filled room because they will probably have suffocated or drowned. Search and rescue dogs specially trained for search work in water or landslides are able to locate victims in mud-filled rooms.

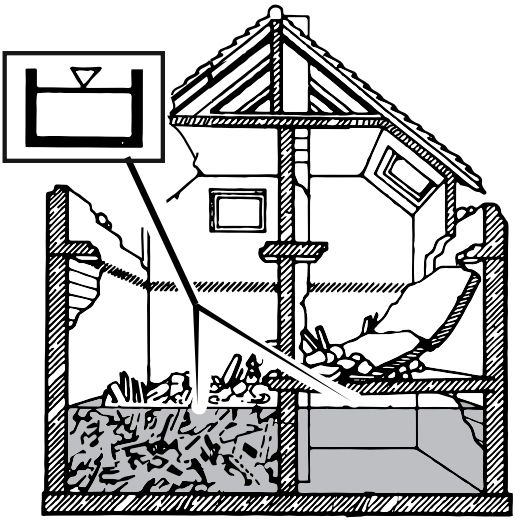


Figure 11.16 Mud-filled room.

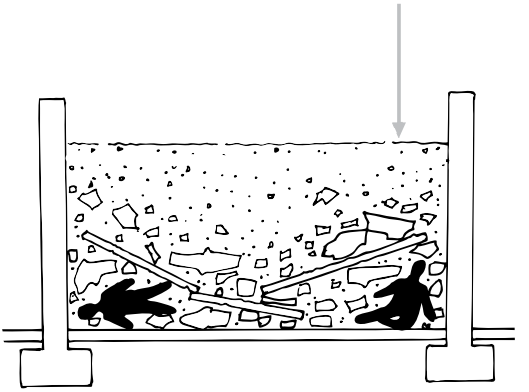


Figure 11.17 Mud often becomes an almost solid mass, which makes search and rescue very difficult. Don't count on rescuing survivors from a mud-filled room.

Figure 11.18 A mud-filled basement. (Vienna, Austria, 2006)

DEADLY MUD

On a 1985 mission after a major dam break in northern Italy, search and rescue dogs found few survivors in the collapsed houses because of mud-filled rooms. The whole area was full of mud, water, and silt. We often find the same sort of situation in the cellars of buildings we have to search after a fire.

WITH LAYERS PRESSED ROOM

A "with layers pressed" room occurs when several slide surfaces come down into a room, the walls of which are still standing. The slide surfaces stack up in a steep incline against a wall.

Search: Dogs may be able to locate and alert to people beneath the rubble in hollow spaces. The best place for the search can be the upper side of the rubble, but wind blowing onto the pile means a dog on top may not be able to smell a victim underneath. The dog may need to smell from the sides of the pile or from within the room in which the layers have fallen.

Rescue: To get into the layers, one has to try to find a breakthrough in the transverse walls to the layers. Don't break through supporting walls. You may have to prop the walls. In some cases you may be able to come in through the top.

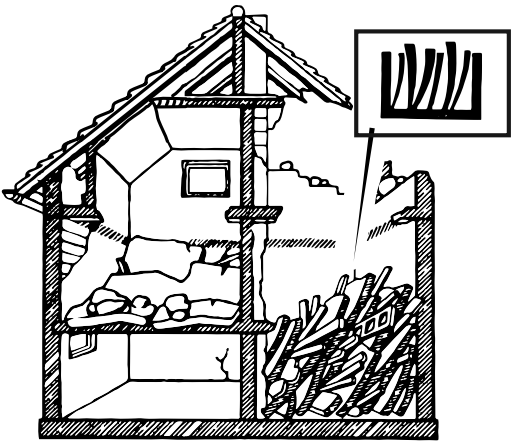


Figure 11.19 "With layers pressed" room.

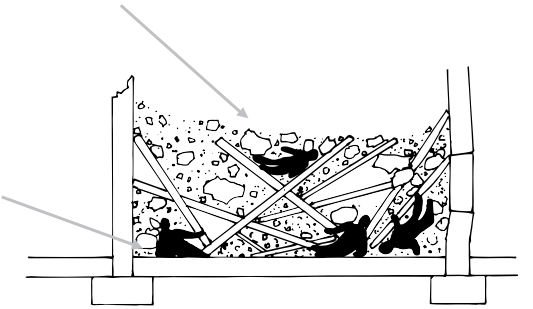


Figure 11.20 From the upper side of the rubble, dogs are able to locate survivors in hollow spaces. For salvage, you may be able to come in through the top or by breaking through the wall that is transverse to the layers.

Figure 11.21 "With layers pressed" room. (Haiti, 2010)

CHIPPED ROOM

A chipped room occurs when an explosion or strong vibrations leave the walls of a room standing, but less solid because of damage to important supporting points. The damaged room can contain rubble from the roof and walls.

Search: Be careful going into these rooms, because there is a significant danger of collapse, often without this danger being visible from the outside. In addition, burning rubble piles can cause an accumulation of toxic gases, including carbon monoxide. Going inside can be very dangerous. Because there is usually less rubble in these rooms than in other damaged rooms, the chipped room can often be searched effectively by looking and calling without going in. Let the dog try to catch human odor from the entrance of the chipped room through a door opening or a hole in a wall.

Rescue: Because of the danger of collapse, you should exercise extreme caution when entering, and this can better be left to specialists. This room has to be propped up well before starting the salvage. When you can't enter these rooms the normal way (via staircases and doors), you can try to organize the salvage with a ladder through a window.

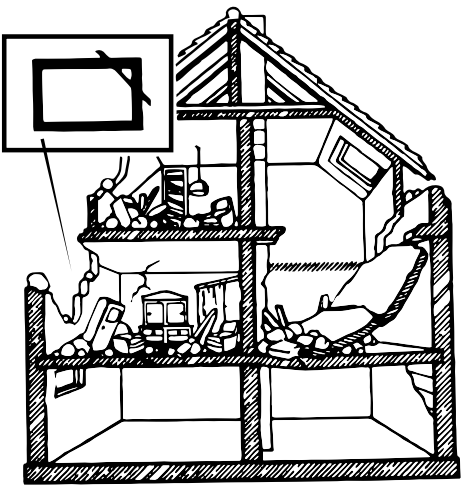


Figure 11.22 Chipped room.

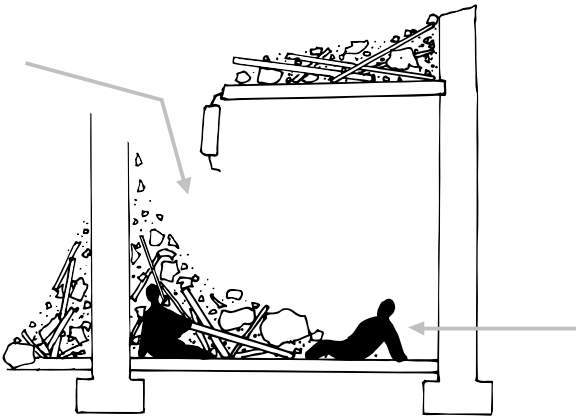


Figure 11.23 Chipped rooms pose a great danger of collapse. Let the dog try to catch human odor from the door opening or a hole in the wall first. The room has to be propped very well before you start the salvage. If entering the room through a door is impossible, try to organize salvage with a ladder or by breaking through the wall.

Figure 11.24 Chipped rooms. (Algeria, 2003)

BARRICADED ROOM

Often occurring in basements, the barricaded room is closed off with rubble preventing the trapped people from getting out. The room is relatively stable, but there is a possibility of suffocation if the room is surrounded by a big mass of rubble.

Search: There can be survivors in rooms that are only barricaded; basements are particularly well known for harboring survivors. Search and rescue dogs can easily locate victims in these rooms. If there are people missing, it is often handy to ask the people who live there or their neighbors if there are rooms like basements, halls, staircases, and so on.

Rescue: If freeing up the entrance is too time-consuming, try to reach the barricaded room via bordering rooms. Make a fresh air vent for survivors as soon as possible. These rooms can eventually function, after clearing them of rubble and checking them, as a sort of emergency department.

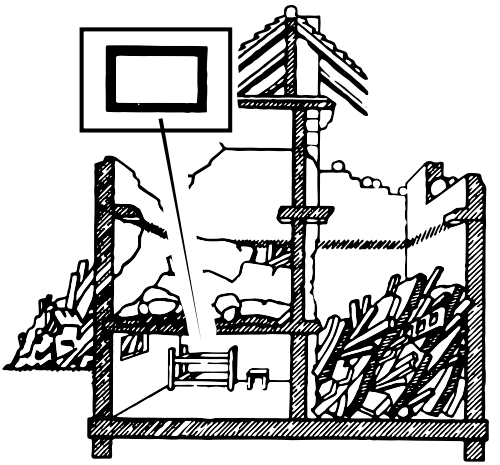


Figure 11.25 Barricaded room.

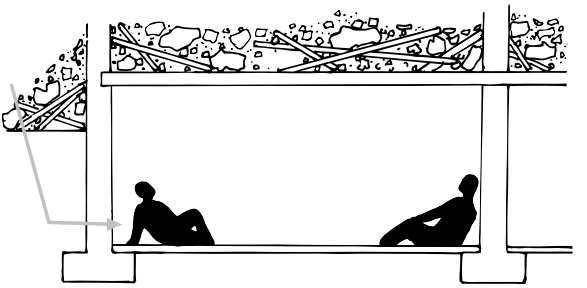


Figure 11.26 Barricaded basement rooms often have survivors. First make a fresh air vent for survivors. Then, if freeing up an entrance is too time consuming, try to get in through bordering rooms.

Figure 11.27 Barricaded basement. (Kaynasli, Turkey, 1999)

SALVAGED AFTER TWO WEEKS

After the earthquake of 1980 in southern Italy, we salvaged a woman from a cellar who was alive after fourteen days in a barricaded room. She was there when the earthquake took place and got blocked in. With the help of food such as sweet peppers and dripping water, she kept herself alive. When, after many days hard work, we reached the distant farm, our dogs alerted to her presence in the barricaded cellar. The odor came strongly to the outside, although the cellar was covered with a thirteen-foot-high (4 m high) debris pile.

SLIDE SURFACE

A slide surface happens when the supporting walls of an upper floor are destroyed and the ceiling or floor then collapses at a slant. The slide surface can hang free or be compacted down in rubble piles; it can also hang almost perpendicular or be cracked in a V-shape. With a slide surface, rubble and furniture slide down from the floor above.

Search: In this accumulation of rubble, victims can be found who, at the time of collapse, were either on the upper floor or in the collapsed room. Search and rescue dogs are easily able to work out the location. Ask the dogs to search every edge and crack

in the slide surface to pick up the odor of possible victims lying underneath.

Rescue: The salvage work has to be based on the situation of the slide surface.

1. When the slide surface is still attached to another part of the structure (usually reinforced concrete attached to the structure above or to a side wall), then the bottom will hang somewhere. The rubble that slid down lies at the foot of the slide surface. In this case, the bottom should be carefully raised and firmly propped. The slide surface has to be secured when there is a threat that the upper connection could break away. After that the rescue workers can go under the slide surface to salvage victims.
2. If the slide surface is no longer connected to the upper floor, then the bottom sticks in the rubble pile at the bottom. After this rubble is searched thoroughly for victims, rescuers must work around the slide surface (via the sides) to salvage victims lying underneath. When this is not possible, the bottom of the slide surface must

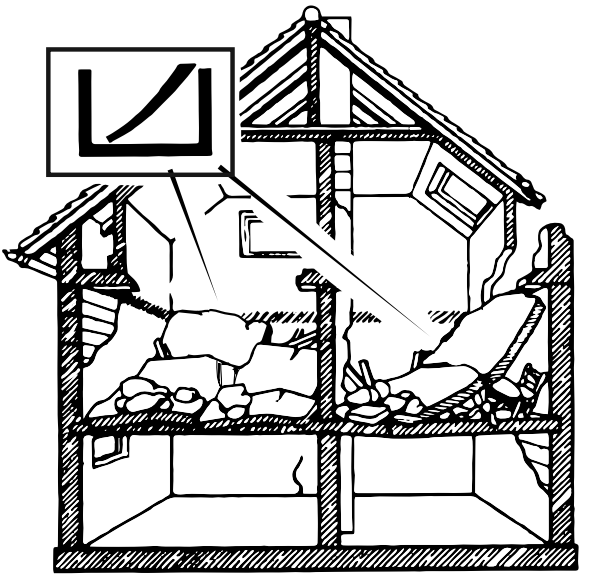


Figure 11.28 Slide surface.

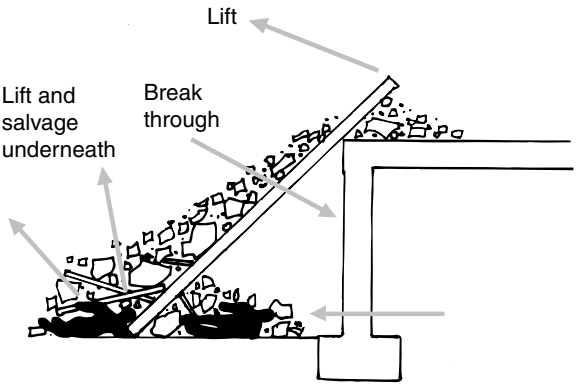


Figure 11.29 Have rescue dogs search every crack and edge for survivors at the foot or below the slide surface. Salvage by overturning the slide surface to access places underneath or by a passage half way through the slide surface or through the wall.

Figure 11.30 Slide surface. (Beaumerde, Algeria, 2003)

be secured to prevent it sliding further. After that, a passage of two feet by two feet (60 x 60 cm) can be created in the middle of the slide surface. If this has to be done with machines, it should be done very carefully, because vibrations can cause more rubble to come down.

Overturning the slide surface to access places underneath is only possible with mechanical power and lies outside the work of search and rescue dog handlers.

LAYERS

Layers occur in the collapse of multilevel buildings when several floors come down and lie more or less slanting on each other. Depending on the slant of the layers, the spaces between the layers may be filled up with rubble. The more slanted the piles, the less they are filled with rubble.

Search: Every surface of the pile can be seen as a slide surface. Victims can be trapped in the spaces. Survivors can be found in hollow places in even the lower layers. Search and rescue dogs have to search the edges and cracks closely; the upper edge has priority. Because of a greater depth and covering, you have to give the dog more time and opportunity to search the whole pile.

Rescue: When there is no entrance on the side, rescue workers must handle each layer like a slide surface. As rubble is taken away, every slide surface has to be secured against further sliding and breaking off. Work from the outside layers to the inside layers,

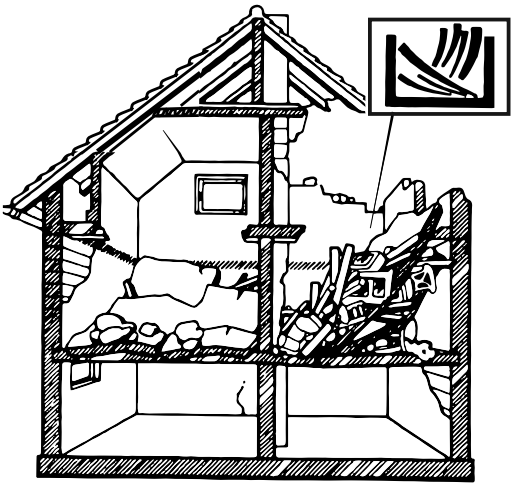


Figure 11.31 Layers.

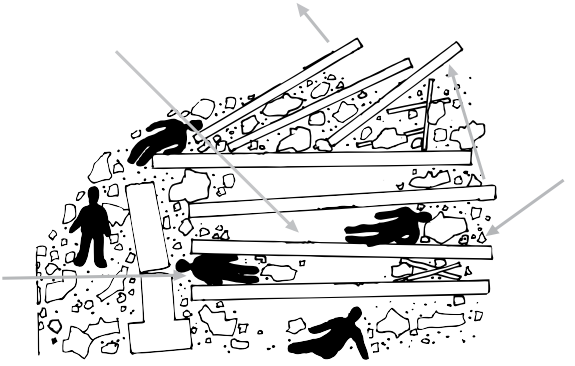


Figure 11.32 When rubble between layers is taken away, every slide surface has to be secured. Because of depth and covering, you need to give the dog more time and opportunity to search the whole pile of layers.

Figure 11.33 Horizontal layers. (Beaumerde, Algeria, 2003)

like peeling an onion. After securing the outside slide surfaces, in particular the bottom, you can penetrate further.

DEBRIS CONE

A debris cone occurs when a building collapses completely. There is total destruction and a mixture of building materials lying amid the rubble. Basement rooms can be found undamaged under the debris cone.

Search: There can be survivors under the debris cone. Because of the danger of suffocation, hasty and careful work is an absolute must. That's also why you shouldn't go on the rubble yourself, because there is a danger of causing further collapse, with victims suffocating or becoming more trapped. Search and rescue dogs can do good work on a debris cone. Let them search by themselves. Use the five phases method (see the chapter "Disaster Deployment Tactics") for search and rescue dogs. And after an alert without contact with the victim, use the direction-showing alerts of the dog in which, after digging out some rubble by rescuers, the dog follows the scent cone to the victim, each time showing us the right direction for salvage. Let the dogs always work from the outlying areas towards the middle of the cone, so that rescuers know what areas can safely be walked on without harming survivors. The search and rescue dogs will usually detect the location of the victims from the top. However, remember that wind direction on the rubble could cause the dog to be unable to smell the victims from the top. Searching from the fringe and the sides will, in that case, be more successful.

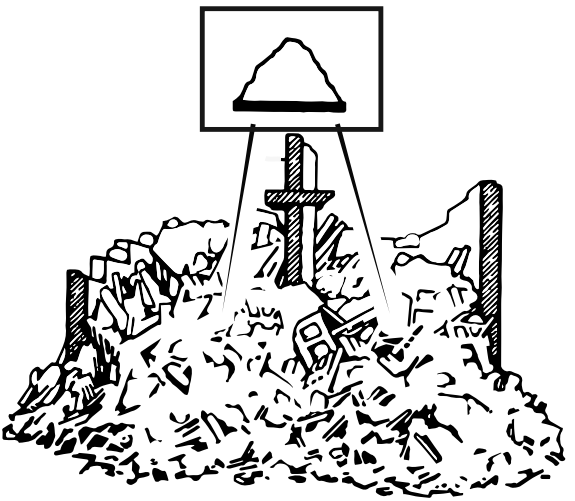


Figure 11.34 Debris cone.

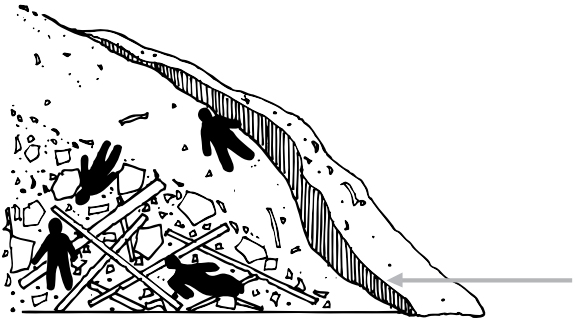


Figure 11.35 Don't go on the debris cone yourself because you might suffocate survivors below the surface. Dogs can do very good work on a debris cone. Salvage from a debris cone is often difficult and time consuming because of the need to dig a shaft through the rubble mass.

Figure 11.36 Debris cone. (Izmit, Turkey, 1999)

Rescue: The work of salvage in a debris cone is extremely difficult and time-consuming. Normally the salvage can take place from the sides or the top, but sometimes it is possible to salvage through bordering basement rooms under the ground. In digging a shaft through the rubble mass, the walls have to be secured on all sides.

SALVAGED ALIVE

In Mexico, after the major earthquake of 1985, a woman was salvaged alive after seven days from beneath the rubble of a collapsed multi-storey house. Several search and rescue dogs had given an alert, indicating that under the enormous rubble mass someone was still alive. With great difficulty, a shaft was dug, the sides of which were in danger of collapse. With the support of experienced mining engineers, it was possible to make a reasonably safe corridor, in which the dogs continued to show the direction to dig, until the woman, from more than thirty feet (7 m) under the rubble, could be salvaged alive. Above her there was a gigantic debris cone, and because of that her calls and knockings for help were not heard. Sounds don't come easily out of the rubble to the outside world, but under the rubble one hears everything, including the words of rescue team members who are passing and remarking that "in this area nobody is alive anymore."

The dogs always have to search a debris cone carefully and intensively, and preferably not too quickly, because when the victims are deep beneath the rubble cone, the dogs need to make a lot of effort to catch the odor of the victim. They often have to smell through many yards of rubble. That is only possible when they can concentrate on their work without distractions or extra pressure.

FRINGE DEBRIS A

Fringe debris A occurs when rubble from a building piles directly against an outside wall. This debris pile is full of heavy building materials and furniture. Fringe debris often contains unstable hollow spaces.

Search: Because furniture comes down in the debris pile, people can be found in fringe debris A. Before using heavy salvage machinery, this fringe rubble has to be searched carefully. Search and rescue dogs can show the way to victims buried beneath the rubble. The work of the search and rescue dogs is of particular value here and is often very successful.

Rescue: The salvage of victims can be done here in the same way as at a debris cone.

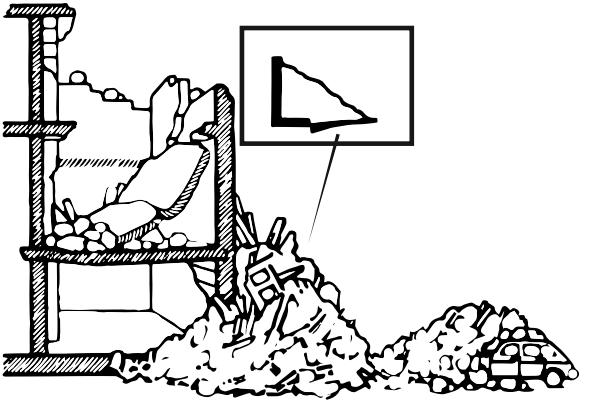


Figure 11.37 Fringe debris A.

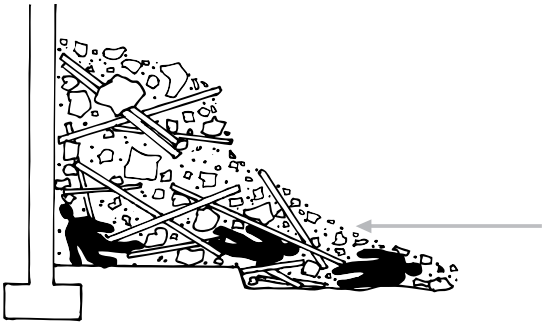


Figure 11.38 Because furniture comes down in the debris pile, people can be found in fringe debris A. Salvage in the same manner as the debris cone.

Figure 11.39 Fringe debris A. (Bam, Iran, 2003)

FRINGE DEBRIS B

Fringe debris B is formed by rubble flung outside over fringe debris A. This debris often forms an extension to the middle of the street. The rubble of fringe debris B usually lies more loosely than in fringe debris A. Besides rubble, fringe debris B may contain trees, streetlights, cars, and other articles and people present on the street at the time of the explosion.

Search: Victims can be found under fringe debris B if people were on the street or thrown out of buildings at the time of the disaster. Mostly they are so covered with dust that they can hardly be distinguished from the surrounding rubble. That's why the search has to be done very carefully. The use of search and rescue dogs is recommended here again. In fact, this is the first area that has to be searched, so that the way is made clear for further rescue work.

Rescue: The salvage of the victims can take place in the same way as with a debris cone. Until fringe debris B is searched, people or vehicles may not go over this rubble pile.

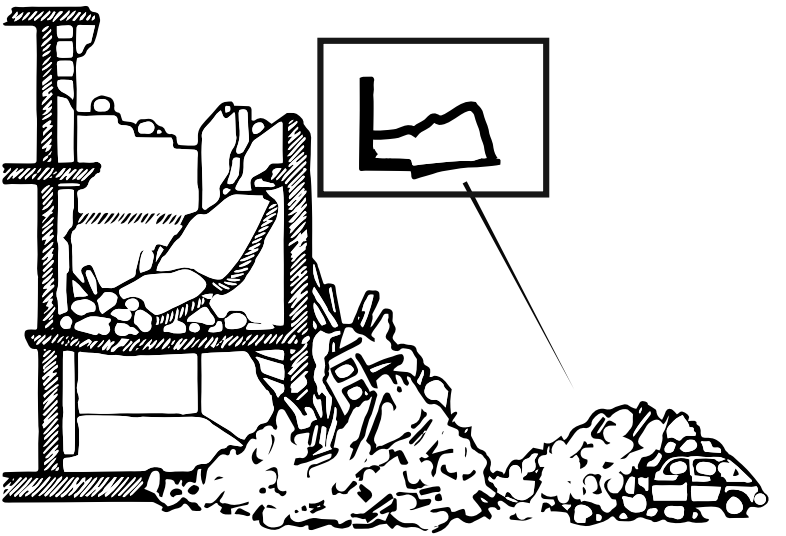


Figure 11.40 Fringe debris B.

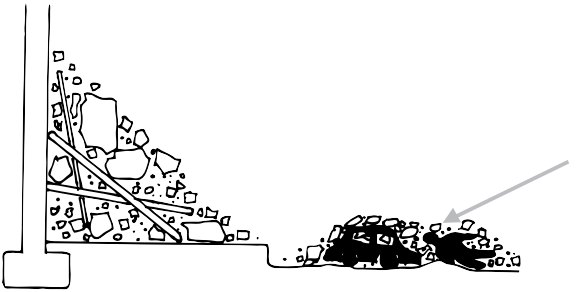


Figure 11.41 This is the first area that has to be searched so the way is clear for further rescue work. If people were on the street or thrown from buildings at the time of the disaster, they can often be found in fringe debris B.

Figure 11.42 Fringe debris B. (Izmit, Turkey, 1999)

CASE STUDY: BAM EARTHQUAKE, IRAN, DECEMBER 2003

It's Boxing Day 2003. While sitting at the breakfast table, I hear on the radio the news that a severe earthquake has hit Iran. The thirteen-second quake had a magnitude of 6.5 on the Richter scale. Because the epicenter of the quake was fairly close to the surface, the effects were catastrophic. The ancient city of Bam was razed. The quake occurred at 5:28 a.m. local time, and tens of thousands of victims were surprised in their sleep.

While I hear further news, the phone rings. Pre-alarm for the handlers and dogs of the Austrian Red Cross for a deployment in Iran: our signal to pack up the backpack and duffel bag and get ready for departure. All is ready. The

Figure 11.43 Two rescue groups make their way to the next search area.

reports follow each other in quick succession. More than 6,000 people have been killed and there are about 30,000 wounded. Many victims are still buried under the rubble. I wonder if the offered assistance to the Iranian Red Crescent has been accepted, because until now, Iran has always rejected the use of search and rescue dogs because it views dogs as unclean. In the afternoon comes the message that Iran requests international assistance, even search and rescue dogs!

ON OUR WAY

At the airport we meet our colleagues. Both the handlers and dogs know each other well from training and deployments. An Airbus A320 is available for our group of twenty-one dogs and handlers plus four logisticians. The plane can carry 150 passengers, so it has more than enough space. During the more than five-hour flight, Speedy lies asleep at my feet in the cabin. She is well practiced and knows to rest now, because there soon will be plenty of work and little time to sleep. We fly directly to the city of Kerman, about 125 miles (200 km) from Bam. There we are welcomed by a member of our sister organization, the Iranian Red Crescent, who has arranged our onward journey.

ALERTS

After arriving we are able to start working immediately. The On Site Operations Coordination Centre (OSOCC) sends our group of three dogs to a district in the hard-hit old city. Here three-quarters of the buildings are in ruins, an overwhelming sight of destruction. I see how Speedy goes on search diligently. She seeks what she can and works her way through the masses of debris.

Figure 11.44 Three-quarters of the buildings are in ruins. Almost nothing is left of the 2,000-year-old citadel of Bam.

Figure 11.45 After a woman was excavated, Speedy found her baby here.

In the middle of the rubble she stops, smells intensively, and scratches some debris away with a paw. Then she sniffs again in the rubble and begins to scratch more intensively and stops and looks at me to see if I notice her work. When she sees that this is the case, she lies down and pushes her nose on a spot in the rubble: her way to alert dead people! I tell it to Mehdi, our interpreter, and he informs the Iranian salvage group where they should start digging. We will now look farther on and come back later.

I ask Speedy to continue searching and see her stop at another spot, smelling human odor coming out of the rubble. Again I see that she's not showing

the enthusiasm she has when finding people alive. In front of the door of the neighboring house she alerts for more dead people.

Meanwhile Mehdi tells me that in the first place where Speedy alerted, a man was excavated, and on the spot in the middle of the debris a child of about ten years was found. Unfortunately, both were deceased. We do not let this put us off and search on diligently. Like my colleagues in our group, I still get only get death-alerts. For a short break, we walk back along the rubble, and I get confirmations of Speedy's other alerts: a man, a baby, two brothers, a mother and child, a woman, two men, and a child under the stairs are found at the different places she indicated.

MOURNING PROCESS

The search here is in stark contrast to the many people we found alive in the rubble of the Turkish city of Izmit in 1999. There many people survived in the hollow spaces under concrete slabs that stood against walls. The building construction here in Bam is the cause of the large number of deaths. The walls consisted largely of stones interspersed with clay, and the ceilings were made of straw and clay. With the collapse of the small houses, people were crushed or suffocated under a mass of stones, grit, and dust.

After a short pause we continue searching, and we work until late in the evening. Still we find no survivors, and, as we later hear, our colleagues also have no successes to report. We know, however, that locating the countless dead is still much appreciated. We get a round of thanks from salvage teams for showing them where to dig, and from the families for giving them back their dead relatives, so that the grieving process can begin.

Figure 11.46 In our short breaks, we see how tired the dogs are after long hours of searching.

When we drive the next day along the historic citadel of the city, we see that almost nothing is left. Two thousand years this citadel stood, but now the impressive walls have collapsed.

In the city there is chaos; vehicles filled with people and their meager belongings try to leave, blocking the roads for helpers who want enter the city.

During the following days we systematically search the rubble, always with the same result. Our dogs find only dead people and it seems no one under the rubble is still alive. The alerts of the dogs follow each other in rapid succession, and the endurance of our dogs is great to see.

MASS GRAVES

People thank us with tears in their eyes and with a hand on their heart. Their folded hands and sad eyes speak volumes. That evening a reporter shows us photos he took at a place where a cemetery was arranged. We see images of mass graves where thousands are laid side by side. An Islamic clergyman walks along the bodies wrapped in white sheets and offers a prayer to all.

Neither he nor our dogs could do anything more for Bam. A city that was slated to be placed on the World Heritage list of cultural-historical monuments no longer exists.

OLD AND NEW

At the airport in Bam, our interpreter Mehdi, with tears in his eyes, says goodbye to us and thanks us profusely for our help. He also hugs our dogs—he has seen their value for the detection of people under the rubble.

Figure 11.47 Unfortunately, there was nothing more we and our dogs could do for the people of Bam.

Other groups fly back with us, and so it happens that in the cabin of the Boeing 757–200, with seats for 220 passengers, 56 dogs and 115 people fill the plane. This time Speedy lies stretched beside me on two seats. She is tired and soon falls into a deep sleep. We reach our home in time for the New Year. We hope the New Year will see less suffering.

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12

Avalanche Search

Dogs can be trained specifically to search for people in snow, but avalanche search training is also the key to the education of search and rescue dogs in rubble search, as they will thereby learn to find people buried under the ground. The dog has to learn to respond whether in an avalanche or a collapsed building situation.

The simplest alert for the dog to learn is to scratch in the snow. The training method used for collapsed building searches is 100 per cent suited to use in avalanche dog training. The ball in a sock is again used as the prey. In a snow-covered landscape, it is best to use a multicolored sock.

Dangers

The instructions of the safety supervisor or the instructor must be followed at all times during exercises and in an actual mission. All people who are off-piste (backcountry) should wear under their clothes a transmitting avalanche transceiver or avalanche beacon. No snow slope or mountain is completely without danger. Even inclines of less than thirty degrees can be dangerous in some situations. That's why you should always walk back the same way, without taking shortcuts. Stay together as a group as much as possible. Even a laughably little slope with a thin snow surface is enough

to bury someone. The amount of snow that falls from a roof can crush a person. A small sheet of snow measuring about sixty feet by eighty feet (20 m x 25 m) and only eight inches (20 cm) deep contains well over one hundred cubic yards (100 m^3) of snow, which weighs twenty to thirty tons, which is about twenty truckloads. In other words, a risk of avalanche is a risk of death.

During training or missions, when someone calls, "Avalanche!" or "Alarm!" look for cover immediately or try to grab onto a tree. If possible, get out of the area. Leave all tools, such as shovels and so on, and run. Don't worry about your dog, because it is usually already on its way to a safe place. Alarm and avalanche always mean great danger, and it's absolutely forbidden to yell these words as a joke. Expulsion from training would be the result. Furthermore, you should never play dead for fun, but only on the orders of the instructor as part of a training exercise.

During training exercises, searchers should walk single file through the snow to the top of the mountain or to the area where they're going to work. As they walk, the dogs have to walk behind their handlers and not at heel. Forcing the dogs to follow prevents them from arriving at the work field tired. To accomplish this, you

Figure 12.1 As a rule, the team should move to the work area in single file.

Figure 12.2 The dog should walk in the track of its handler, rather than at the side.

have to use the command "Behind" or "Back." At first, keep your dog on leash. Put the leash between your legs and keep the dog in its place behind you whenever it tries to walk beside you. The dog has to learn to walk behind you on command.

Dog Bivouac

On arriving at the work field for training, you should dig a bivouac for the dog. That means digging a cave until you reach the ground, because the temperature is highest there (generally close to freezing). This cave has to be big enough for the dog to lie in comfortably, but small enough to protect the dog against snow and wind. On the floor of the bivouac you should lay an insulation mat and a blanket on which the dog can sit or lie down. The dog has to stay in its bivouac and is not allowed to walk through the surrounding area. If possible, you should dig the bivouac near a tree so the dog can be fastened with the leash. If it gets very cold, and the dog has to stay for a longer time in the bivouac, you should walk the dog regularly to keep it warm and wrap it in a blanket or a dog bivouac sack against cold and wind. Handlers have to take care of their own dogs.

Figure 12.3 If the temperature is very low, it may be necessary to wrap the dog in a blanket or sleeping bag.

The Training Hole

Before digging a snow cave to hide in for training, first check the spot you plan to dig with an avalanche probe (a long, thin, metal stick). Then you know the thickness of the surface of snow on that spot. Take care to find a layer of snow at least two yards (2 m)

Figure 12.4 The hole should be dug where the snow is at least two yards (2 m) thick and where there are no large rocks inside the snow.

Figure 12.5 Make a twenty by thirty-six inch (50 cm x 100 cm) cylindrical entrance. Then dig an arched cavity measuring about thirty-six inches (1 m) in diameter and thirty inches (75 cm) high.

thick in which to dig a hole. Start by digging vertically to clear the part of the snow in front of the future entrance all the way down to the ground. This will make it easier to dispose of the snow from the hole. Dig the entrance as straight as possible: around twenty inches (50 cm) in diameter and a yard (1 m) in length. Now it's time to start digging the hole proper. To ensure it is solid enough, clear the snow by working in an arc. The ideal hole is shaped like an igloo on the inside.

The hole should have a lot of headroom—enough for a helper to sit up, because lying down will lower the body temperature. The helper should feel comfortable. The dog must also be able to enter and turn around in the hole. The helper sits on one or more insulation mats. No part of the helper's body should be in direct contact with the snow wall. If there's enough room in the cave, you can also make a little niche for a candle. This gives the helper a bit of light and warmth.

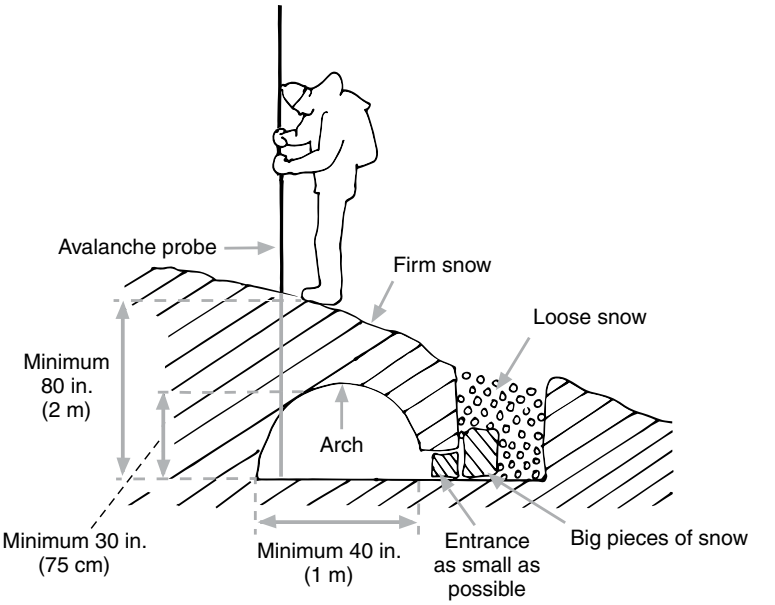


Figure 12.6 The snow from the entrance and hole should be cleared in an arc to ensure the hiding place is solid enough.

SAFETY IN THE HOLE

Take good care of your helpers. People with a phobia or illness should never serve as a helper in the hole. A panic attack can be dangerous, not only for them, but also for everyone present. There should always be two people with shovels on the surface ready to clear the entrance to the hole immediately in emergencies.

Outside the hole there is also a person with a working avalanche beacon that controls the probe put in the hole, by which a helper inside the cave can give signals to the outside. In the cave the helper has a transmitting avalanche beacon under his or her clothes, a walkie-talkie, and the sock toys of the different dogs.

It is remarkable that someone in a snow cave, just as in the rubble, can hear everything from outside, but someone outside can barely hear a helper calling. Therefore, after each searching dog or

Figure 12.7 Always maintain contact with the helper at the entrance of the hole, listening carefully to his or her responses.

its handler has opened the hole, go to the entrance of the hole and ask how the helper is doing.

GETTING ENOUGH OXYGEN

People taking part in avalanche dog training for the first time are often frightened about getting into the hole. They have an idea it could easily collapse, suffocating them. These concerns are completely unfounded. First and foremost, the snow layer where the hole is dug must always be two yards (2 m) thick. Second, the roof of the hole should be arched. Before it is put into use, test the hole by walking on top of it.

There will always be enough oxygen in the hole. The snow walls release a lot of oxygen. After a while, a layer of ice might form on the inside wall of the hole from the helper breathing or because of the candle; if this happens, prick some holes in the wall to be sure there is enough oxygen available. Helpers can sit in such a hole for a few hours without any problem.

Dog Training

For the first exercise with our dogs in avalanche training, we leave the cave open, just as in the rubble. That is to say, the entrance will

not be closed with snow. The dog can now reach the helper easily to pick up its prey, the ball in the sock. The next time, the entrance will be about a quarter covered with snow; the amount of snow can be increased a bit more every time. The longer a helper, or victim, is buried under the snow, the more the human odor is absorbed by the snow and brought to the surface.

After a while the helper's odor will permeate the snow in and around the hole, which will make it easier for the dog to locate it. When someone sits in a hole for a longer time, the inside will form a layer of ice, and because of that less odor will be passed on, although there will still be enough places to let odor through, especially through the entrance. Closing the entrance of the cave step by step makes it more and more difficult for the dogs, especially for the first dogs to search. You should regularly change holes or dig new ones to give the dogs some variety and challenge.

While somebody is working with his or her dog, there should be other people waiting to close the cave again. This should not be done by the handler, who has to praise the dog, play, and after that take the dog back to the bivouac for prey sharing. Fellowship and helping each other are important in working in the snow.

Figure 12.8 The more snow used to cover the entrance, the harder the dog's task.

Figure 12.9 Here, the entrance is sealed with blocks of snow to leave an opening about one-third the original size.

Figure 12.10 The entrance should be sealed off gradually from one exercise to the other.

Figure 12.11 Having opened the hole, the dog can reach the helper to receive its sock toy.

Figure 12.12 The opening should be tailored precisely to each dog's experience and progression in training.

Avalanche Probe

In addition to working with the dog, the handler has to learn to work with other devices. The first is the avalanche probe, which is a thin metal stick about three yards (3 m) long that is usually split into four lengths of thirty-one inches (80 cm). These sticks always have to be put together carefully, without forcing or damaging the threads of the screw cap. One piece has a handle, two pieces form the middle, and the final piece forms the end. When working with the probe, the training leader decides how many sections of the probe to use.

There are now folding probes, with a strong metal wire inside, that can be easily put together, but these aluminum probes are thicker than the traditional metal probes and can be harder to push through the snow. Sometimes the aluminum probes are also stickier in the snow.

Once the probe is put together, it is very long. When you're walking with it, just hold the handle and let the rest drag behind. The people with probes, called the probe crew, form a straight row, shoulder to shoulder, and step forward on command. They then prick with their probe in the snow until there is resistance. Stone or rock bottoms feel hard, and when one feels something soft or

Figure 12.13 The probe crew form a straight row, shoulder to shoulder with each other, and step forward on command.

elastic, that can be a human body. Bushes and other growth can also feel soft.

USE OF THE PROBE

In using the probe, we perform both a hasty search and a fine search. The speed on a hasty search is five times greater than on a fine search, although the latter is more precise.

- During the **hasty search**, one pricks the probe into the snow in front of the legs, and then takes a full step forward (about 27 in. or 70 cm).
- During the **fine search** one pricks the probe every half step (about 12 in. or 30 cm) three times in the ground, in front of each shoe and in between. One begins by pricking in the middle between the feet, then in front of the left shoe, and at last in front of the right shoe, followed by a half step and then middle, left and right again.

Ordinarily such a row of people working with the probe consists of ten to twenty searchers, who always work shoulder to shoulder. As soon as someone nudges something soft, the person should not push through, because it is easy to perforate a body with a probe. That's why it is necessary to always use the probe with the right

Figure 12.14 Hasty search with probe.
(Adapted from Albert Gayl, Lawinen, Österreichischen Bergrettungsdienst, 1981)

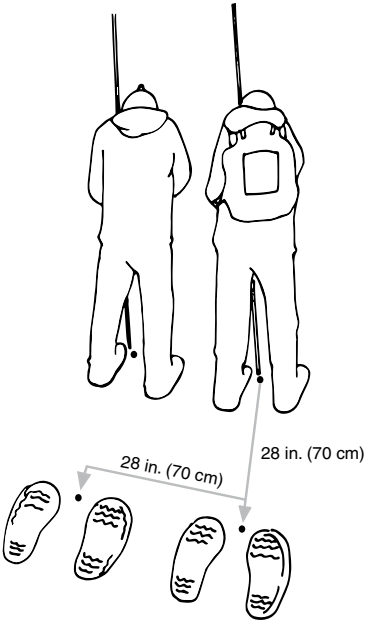
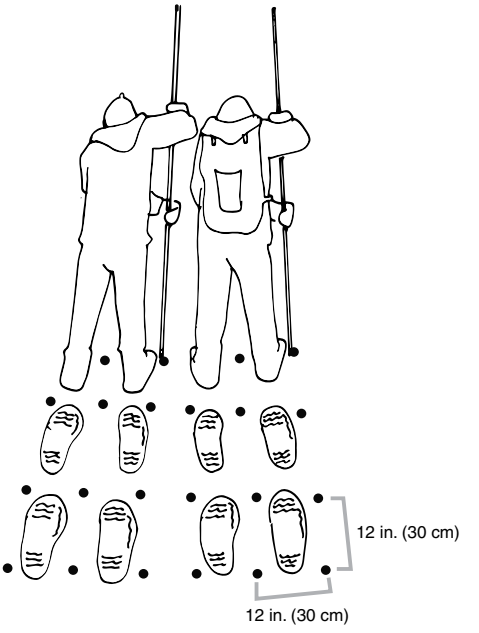


Figure 12.15 Fine search with probe. (Adapted from Albert Gayl, Lawinen, Österreichischen Bergrettungsdienst, 1981)



feeling. If you find a spot where you think you've felt something, leave the probe standing in the snow and begin to dig as soon as possible, very carefully.

Avalanche Transceiver

All mountain sport enthusiasts should wear a working avalanche transceiver, also called avalanche beacon, under their clothes. This tool is a transmitter and receiving device that, when switched on, transmits tones. It works for about 200 hours on batteries. An avalanche beacon operates at 457 kHz and is specialized for the purpose of finding people buried under snow. The transceiver has to be switched on for transmitting before you go out. Always do a pre-trip check to ensure all transceivers in the group are transmitting. Following an avalanche, and if the holder of the transceiver wasn't caught by the avalanche, he or she may switch the transceiver from transmit into receive mode, which will then search for signals coming from transmitter beacons of other skiers who may be trapped.

The original avalanche beacon was an analog single-antenna beacon that transmitted a pulsed signal as an audible tone to the user. As you approached a buried victim, the beeper tones became louder. There are also devices that emit a different signal as soon as you get close to the victim, or ones that use different sorts of LED lights. Most beacons currently being sold are digital, because of their enhanced ease of use and higher recovery rates.

Digital transceivers indicate the direction to the victim's beacon as an arrow on the display and provide audio cues such as varying pitch or frequency. Some have a digital compass and free-flowing arrow to facilitate more exact direction finding. Other beacons can point to victims in all directions, including behind the user if the user is moving in the wrong direction. Some digital beacons are also equipped with a secondary, supplementary frequency, referred to as W-Link, that broadcasts additional details to other transceivers capable of receiving the W-Link signal. They have the ability

Figure 12.16 The dog handler must be able to use technical equipment, such as an avalanche beacon.

to resolve multiple, complex burial situations by better differentiating individual transceivers and even to transmit and receive additional data, such as the wearer's vital signs or identification.

Remember that an avalanche transceiver is not an "amulet for avalanches"—don't consider it a preventive measure against avalanche burial—it is only a way to reduce the amount of time buried.

TRANSCEIVER SEARCH METHODS

Speed matters, so it's vital that you understand your avalanche beacon and know how to use it. Each manufacturer provides detailed instructions on how to search quickly and efficiently using its technology—so practice using it regularly! There are two phases of the beacon search: the hasty search to obtain a signal and follow it to the location where the victim is buried, and then the fine search to get as close to the victim as possible.

HASTY SEARCH

The search techniques in hasty search vary depending on the number of antennas in your beacon. The *multiple-antenna beacons*

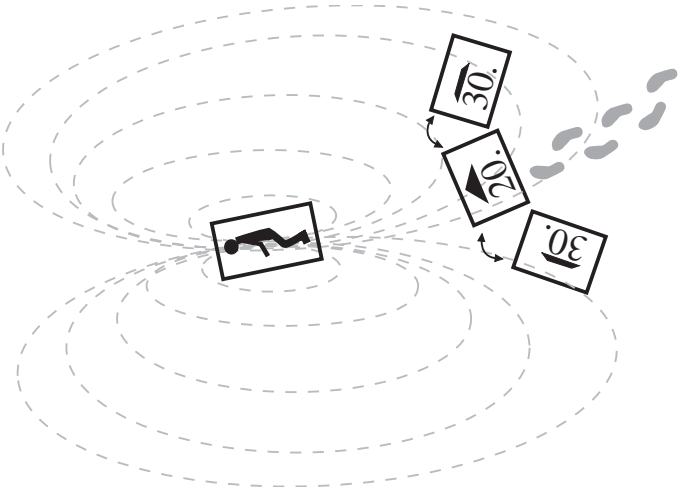


Figure 12.17 Hasty search with a multiple-antennae beacon along flux lines.

display a direction indicator (i.e., an arrow or lights and/or distance numbers) that points the way to the victim. If the distance numbers increase, turn around and follow the direction indicator in the opposite direction. The direction indicator can point in either direction on the flux lines. It is important to understand that you will not walk in a straight line to the victim; rather, you will move in an arc along the flux line. The direction indicator will follow these flux lines as it guides you to the victim. Move relatively quickly while the distance is more than ten yards, but when getting close, slow down and pause for a few beeps each time the direction indicator changes direction. Once you are about three yards from the victim, begin the fine search.

With *single-antenna beacons,* you have to locate the victim by manually searching for the strongest signal. With the transceiver switched on full receiving strength, begin to search the avalanche field. First of all, slowly rotate your beacon in all orientations (rotate your wrist 360 degrees) to increase the likelihood that your antenna will align with the victim's. Then walk over the field and as soon as you hear the first tones of the transceiver under the snow, lower the volume of your transceiver in order to hear which

direction the tones become stronger. Keep your volume low until you discover the area where the victim is buried. Then start fine searching.

FINE SEARCH

Do this fine search by walking in the shape of a ninety-degree cross with your beacon down next to the snow as you listen. With the transceiver set to low strength, walk first from the top to the bottom of the cross. Determine where the tones become loudest (or is the lowest number) and mark that spot with a glove or other item. Over this point, search with the transceiver from the left to the right. Remember that your beacon must always point in the same direction. Where you hear the loudest tones, first begin to dig by hand. In most (but not all) circumstances, the buried beacon

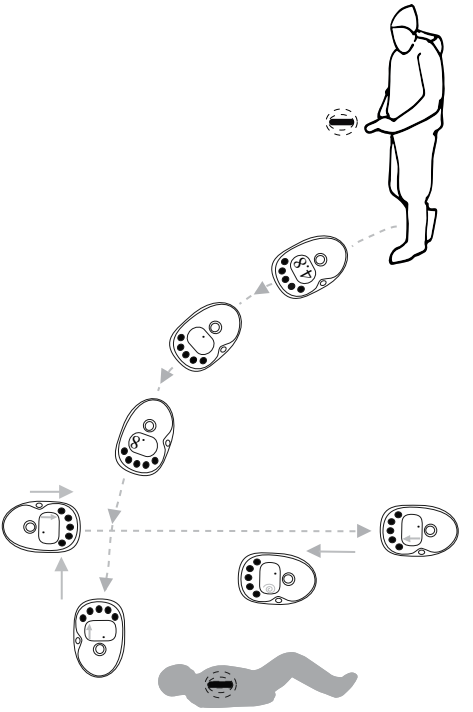


Figure 12.18 Fine search using a cross pattern.

will be located directly beneath the strongest signal. Do not begin to dig with a shovel immediately or use a shovel to mark the spot instead of the glove. If somebody is lying a few inches under the surface, the shovel might injure the victim. Carefully use the avalanche probe to find out how deep and in what position the body is buried beneath the snow, although you have to learn to work quickly.

Avalanche Deployment Tactics

There are two decisive factors impacting survival in an avalanche: the length of time the victim is buried and access to air. In a real avalanche situation, every second counts. On average, almost half of all avalanche victims are completely buried. In three-quarters of these cases, the victims' airways are obstructed by a dense, weighty mass of snow, which means that they have great difficulty breathing.

- If they are found within fifteen minutes, their survival chances are high (in this survival phase, around 8 per cent of victims succumb to their injuries, but 92 per cent survive).
- After twenty minutes, the mortality curve drops rapidly; the probability of survival goes down to 50 per cent.
- After thirty-five minutes under the snow, the probability of survival is down to 30 per cent. This is the asphyxia phase, when two in every three victims die.
- Only around 25 per cent of victims live past thirty-five minutes, thanks in those cases to access to a pocket of air in front of the face.

Victims having access to a pocket of air can live thirty minutes to two hours. After that, they usually die due to hypothermia and the gradual exhaustion of the oxygen because of icing at the walls of the air pocket. Mind you, this is only people who are buried at a depth of two yards or less. Victims with a large pocket of air or

air from the surface via a shaft of an arm or leg can survive for over two hours. This situation accounts for about 3 per cent of victims.

It is much easier to search for a single skier than for a group. In the Austrian Alps, we often see groups being buried in an avalanche. Often they were skiing off-piste during the higher ranks on the avalanche danger scale: three (considerable), four (high), or even five (extreme)! If there happens to be a survivor in the group, this person has to start searching and digging for buried victims on his or her own.

The golden rule for off-piste skiing or snowboarding, in particular on steep, open, wind-loaded slopes, is *one at a time*. Should an avalanche occur, the rest of the group can search, alert rescue services, and help dig.

In operation tactics, it's important to know that statistically you only have about fifteen minutes to recover a buried victim alive. This means you don't have time to go for help. We therefore distinguish between comrade help and an organized rescue operation.

COMRADE HELP

In using the golden rule for off-piste skiing or snowboarding—one person at a time—the other members of the group should wait in safer areas: on mounds, behind rock outcrops, and definitely not in the path of a potential avalanche. Exposed traverses should be test-skied by a single group member while the others watch, and when traversing or climbing together in danger areas, keep a large, even gap between the members of the group.

If you follow this easy rule, then only one person should get caught in an avalanche. Remember the last place you saw the victim before he or she disappeared under the snow. The victim will be buried downhill from that point. Mark the point where the victim disappeared with a ski pole, ski, or bag pack. Depending on the conditions, someone can act as a spotter to alert for secondary avalanches, and this person can also telephone rescue services with the precise location of the accident.

Immediately start a beacon search. It is important to set all avalanche transceivers to search mode. In the meantime look for visual clues (e.g., gloves, helmets, or skis). If you see a glove or ski, check to see if it is connected to a victim. Are there fingers in the glove? Is the ski attached to a boot? In some searches we've been on, gear on the snow surface was still connected to the victim. But the strength of the avalanche can also tear a hat or backpack from a person. If a person used an airbag pack, it would make him or her bigger, which helps keep the person on the surface, but airbag packs are not designed to provide protection from trauma.

DIGGING AND LOCATING THE VICTIM

Once you've located, pinpointed, and probed for the victim, begin digging downhill of the location so you have somewhere to throw the snow. The idea is to trench towards victims rather than standing on top of them while you dig. Digging directly above the victim can also destroy a lifesaving air pocket. Once you reach the victim, perform first aid if necessary. Check the victim's airway, breathing, and pulse. Check for other injuries and provide appropriate treatment. Most importantly, shield the victim from outside cold and wind with space blankets or your own body, and cold from the snow walls with insulation mats. Complete a thorough evaluation of the victim's injuries before you call for help or send someone for help.

ORGANIZED RESCUE OPERATION

In an organized rescue operation, searching with avalanche dogs has priority over other search methods, including search equipment, and should be started immediately. Searching an avalanche with dogs has much in common with searching with dogs in rubble areas. The dog's initial search will be superficial—a hasty search. The first avalanche dog can search the whole area at a high tempo for lightly buried victims. Wherever a dog hesitates, that place has to be marked and later searched by another dog or in a fine search by the same dog. At a very clear alert, and after assessment of the

Figure 12.19 Use of avalanche dogs is preferred over all other search methods.

body position with an avalanche probe, dig the victim out quickly but carefully.

After a hasty search, the dog can switch to the fine search, where the handler systematically lets the dog go more slowly and intensively over the different areas of the avalanche. The whole avalanche area (slab and run out, or deposition zone) has to be kept clear of people to at least ten yards past the edge of the avalanche, because that will be the dog's search area. The dog may pick up traces of someone who was thrown outside the path. As soon as the dogs continue on past areas already searched, other rescue teams can do their work with other equipment.

Because of an ice slab, an odor can be redirected many yards away from the victim. That's why the avalanche dog should stay in the vicinity of an alert, as the search and rescue dog does on the rubble, to give its direction-showing alerts for further digging. Besides, the dog gets a second reward for finding the victim—the rescue workers' and the handler's relief at finding the victim is also noticeable to the dog.

BASE CAMP SAFETY

Make sure the base camp and places for searching are safe. It is important that rescuers are not exposed to additional avalanche

hazards. The actual avalanche path is usually safe if there isn't significant "hang fire" remaining above the slide. After a slab avalanche, *hang fire* is the portion of the slope at the crown or flanks that does not release and may still be unstable.

The base camp with the dog bivouacs has to be located far enough away from the search field that the dogs have no problems with the odor of the camp. This place has to be investigated for avalanche danger also.

ORGANIZATION

The operational leader has a megaphone or a walkie-talkie connecting him or her with other searches. Any information the operational leader wants should be provided immediately. The leader investigates what happened directly and creates a simple plan of the area on which searched areas can be crossed off. Trees and other landmarks are marked on the plan. The operational leader organizes an avalanche spotter, who watches the area from high on the slope and warns of any more avalanches so that the helpers can leave the work area in time to find a safe place. The leader orders the avalanche area marked on all sides with flags (by day) and with flares (at night), so that the area of the accident is clearly marked. If a heavy snowfall occurs, the whole area could be covered within twenty minutes and all traces of the avalanche hidden.

PRIMARY SEARCH AREA

The primary search area in an avalanche starts at the point where a person saw someone being taken by the avalanche (if anyone witnessed it), over the point where the victim was seen disappearing into the snow and up to the run out of the avalanche, in the so-called debris toe or deposition zone. Other primary areas to search are the stauchwall: places where the avalanche was held up, such as on rock points, trees, side-streets, roads, small paths, walls of old avalanches, and up slopes. Anywhere the avalanche changed direction is also a primary search area. Furthermore, any area where dogs search intensively but don't directly give an alert can become

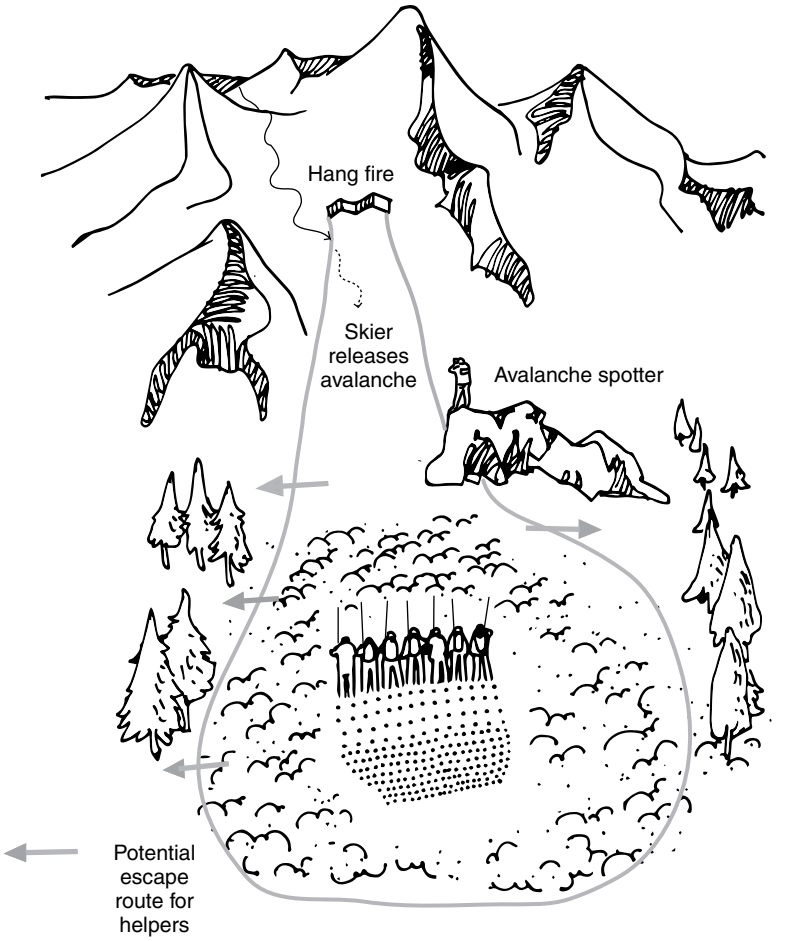


Figure 12.20 Organized rescue operation. In the debris toe, the best search method with the probe row is the fine search with grids of about a foot square (30 x 30 cm). With a fine search, you cannot miss a human body unless it is more than ten feet (3 m) deep. At other places, you can better do the hasty search using grids of two feet by two feet (70 x 70 cm), but then there is a chance you will miss a body. (Adapted from Albert Gayl, Lawinen, Österreichischen Bergrettungsdienst, 1981)

a primary search area for a subsequent avalanche dog. Such places could be marked.

An avalanche behaves like a river running down a slope: it is slower at the flanks and where it comes into direct contact with the ground. This behavior impacts the search area and locations where victims may be found. Someone carried along the central

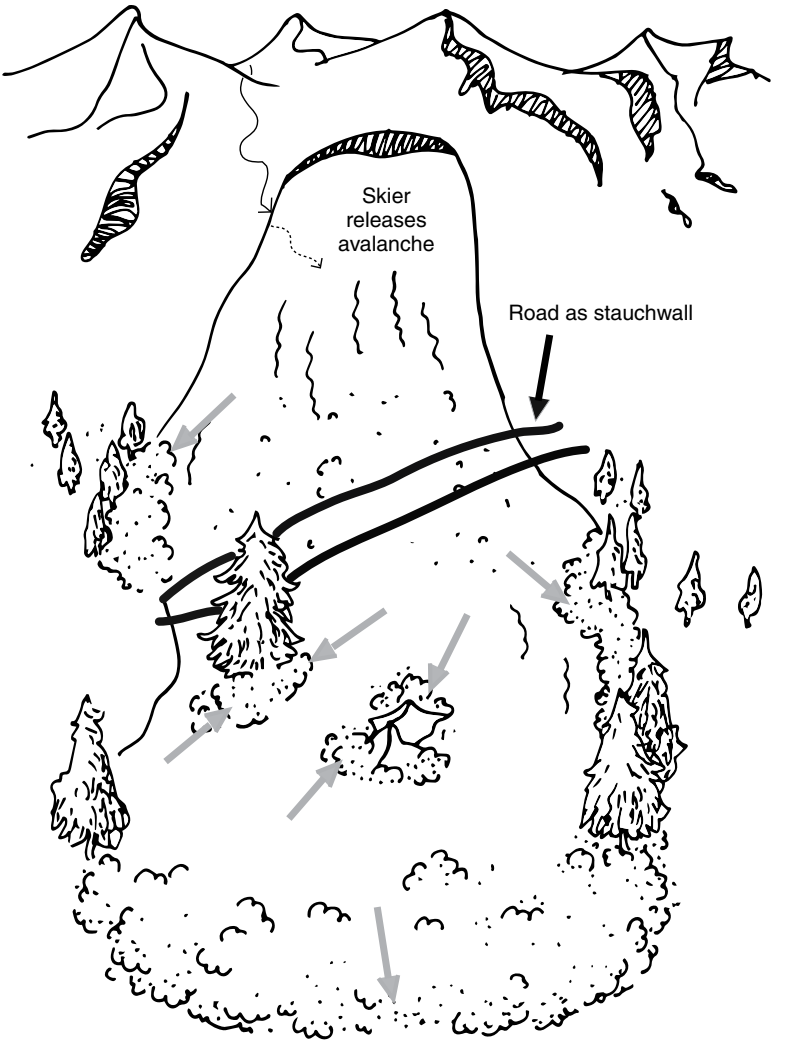


Figure 12.21 Primary search areas. (Adapted from Albert Gayl, Lawinen, Österreichischen Bergrettungsdienst, 1981)

axis will generally be found in the debris toe. Otherwise, victims could be anywhere, especially if the track of the avalanche is curved. The snow on the flanks of the avalanche moves a little more slowly, so someone caught up in this mass will be found higher in the debris toe.

Figure 12.22 Given enough time, a dog will happily dig through a deep layer of snow.

Figure 12.23 An odor may be detoured by the layers of ice in the snow, emerging several yards from where the victim is buried.

Figure 12.24 After giving an alert, the avalanche dog should remain near the search area to indicate the direction of the scent trail during digging if necessary.

CASE STUDY: AVALANCHE DOGS IN ACTION

The regulars around the table at our Alpine hotel agree:

"A lot of skiers believe they know and can do everything, just because they can go down a slope without any problem!"

"Some tourists think an avalanche is romantic and exciting."

FRESHLY FALLEN SNOW

It had been pretty busy that afternoon in February at our Berggasthof, the hotel that we had rented for three seasons located at 5,900 feet (1,800 m) in the Austrian Alps. Not surprising, because it was ideal weather for skiers: wonderful freshly fallen snow and terrific sunshine. What more could you want? Around the regulars' table, a few people were still sitting, talking about (what else?) skiing. Our dogs were lying under the table, just back from a walk.

Our conversation turns to our search and rescue and avalanche dogs. During our stay here, they had become used to the noise and clatter in the taproom. We tell our table companions about the groups of dog handlers who are coming this year to our avalanche dog training courses at the hotel. Our Berggasthof is the emergency center for accidents in the mountains, and for that we had a special wire installation. With that equipment we could connect with the pilots of the rescue helicopters.

The talk turns to the reckless way some tourists put themselves in danger. "You have to risk your life for such daredevils," someone grumbles. He is right, because many people overlook the threat of an avalanche. Everywhere in the mountains, the danger of being buried under tons of snow lurks. In spite of warning signs about closed areas, some people still ski outside the ski runs in search of fantastic snow. The snow is always whiter on the other side of the fence, isn't it? These people often have no awareness that they're putting more than their own lives at risk.

HELICOPTER

Suddenly our wire installation comes on. An emergency! In a mountain area nearby, an avalanche has taken place and maybe two skiers are now under the snow. The helicopter is already on its way and will arrive here in about five minutes. I know what to do. My clothes hang ready and my backpack is packed. It will be very cold: temperatures of 5°F to -4°F (-15°C to -20°C) are normal at this altitude.

The helicopter can't land on the steep mountain slope where the avalanche came down, so I will have to hang with my dog on a cable under the helicopter to get us into the area. I strap on my rescue belt securely.

Figure 12.25 A view of the avalanche from above can help you make a plan to handle the operation. (JayL/Shutterstock.com)

The dogs already know what is going to happen, because they are looking at me, wide awake. Meanwhile, Eva is put in her airlift harness and we are just ready when we hear the noise of the approaching helicopter. I know the pilot, a reliable flyer who knows the area. Beside him is a physician who specializes in avalanche accidents. He gives us the thumbs up when he observes that we are ready to go. The pilot comes down with his helicopter, and I suspend Eva and myself with special knots on the cable. Then I quickly check the knots, screw the climbing carbines again and give the signal that we can go. It is very cold as we fly to the location of the avalanche, but the flight goes quickly, and we are lucky: there isn't much wind. Below me I see the site of the avalanche and I make a plan for myself to handle the operation. The helicopter is going down and I feel ground under my feet again. Quickly I get Eva and myself loose. While I help her out of the harness, I see the helicopter taking the physician a short distance from the area. He will reach us on skis. The helicopter is flying back to the valley to pick up other members of the rescue team.

THE BULLDOZER

I switch my avalanche beacon from transmitting to receiving, but I hear nothing. Probably the skiers had no avalanche beacons. For my own safety, I switch my beacon back to transmitting during the search operation, but every now and then I try again to receive a signal. Meanwhile Eva is running over the snow area. She is an experienced avalanche dog, who, like our German Shepherd, Bor, has done many previous missions. She knows exactly what is required of her. The big chunks of snow are not making it easy to follow my dog, but on her own Eva is beginning with the hasty search of the avalanche surface. With that search method we can find any lightly buried victims quickly. And we are lucky, because 160 feet (50 m) from me she is already digging frantically. The snow is being thrown up high by her digging and Eva proves the aptness of her nickname, The Bulldozer, once again. When she thinks I am not coming fast enough, she barks at me and then digs some more.

I give the physician a signal, but he has seen it already and is coming in our direction. The small part of the arm visible in the snow makes it clear that Eva was right again; for that matter, I didn't expect anything else. "Good girl, well done," I say and push her aside a bit to dig carefully with my avalanche shovel somewhat downhill from the location of the arm. Eva knows that she can't disturb me now and watches me from a short distance. I notice she is restless, as if she knows that there is another victim buried under the snow. She is obviously relieved to run over the snow again, after my "Good girl, search further." I observe her as best as I can while digging. The physician assists me with

Figure 12.26 Excited, I follow Eva during her search over the immense surface of snow.

digging, and shortly after that we free the head of a young man about twenty years old. He is still alive! While the physician takes care of him, I dig his legs free of snow. I observe that these are lying in a strange position and show the physician. Broken, that is clear, but at least he is alive. How often we've found skiers in other circumstances.

I follow Eva again, but in that gigantic snow mass, I can't move quickly. I see that she sniffs a bit longer on one spot and I hope for an alert. But she walks away and searches further. On the spot she was sniffing, I prick with the avalanche probe into the snow. Could she have smelled someone here, yes or no? Or was it something else, such as the boy's backpack? I touch something soft with the probe: a body? I bring the probe back up and prick half a yard further away again into the snow. Now I discover that I can go deeper with the probe into the snow, so I am beside the obstacle beneath the snow now. When I can go deeper on all sides, I know this can't be a human body. With a red stick out of my backpack, I mark the place for later searching.

TEN FEET DEEP

In the meantime, the rest of the rescue team has arrived, and the boy is transported to the helicopter. Hypothermia and broken limbs, that is for sure, but alive. There is, however, no time for congratulations, because the physician yells to us that the boy was on a ski tour with his father. Where can the father be?

Eva has covered almost the whole area of the deposition zone. Suddenly she stands still and then looks directly to the right and speeds up her pace. I know she has something in her nose. It's never fast enough for me when she is interested in a certain place. She sniffs the odor deep in her nose, scratches the top of the snow and smells again very intensively. Seconds come to seem like hours before she gives a sort of primitive cry and begins to scratch furiously. This is the signal we were waiting for! Quick digging starts, while two members of the rescue team check the spot with their avalanche probes. We discover that the victim is buried almost ten feet (3 m) under heavy snow. A bad indication for survival chances!

Meanwhile, there are enough colleagues from the mountain rescue team digging, so I can concentrate on my dog. She is not as cheerful as usual, as if she understands the seriousness of the situation, but she is excited. Whether searching in buildings collapsed by gas explosions or earthquakes or in an avalanche, there isn't much difference. Every time, the dogs prove that only they are able to locate buried people quickly. While I play with her, I think of all those missions I have had with her and my other dogs. I count the number of

Figure 12.27 Despite the quick work of an avalanche dog, help often comes too late.

people who have survived because of my dogs and that makes me feel proud. But the dead people they have found are also still on my mind. The call of the operational leader breaks off my meditations, and I see how he has divided his crew into more groups for digging. The digging goes slowly because of the heavy snow and ice layers, and the snow has to be dug from the sides to make room for the salvage. By having them work in groups, he gives his people the chance to rest now and then.

THE BACKPACK

With Eva I walk to the place where we think the backpack is under the snow, and I start to dig there. It is not easy to scoop the packed and frozen snow away, but after the necessary exertion I indeed find a backpack. I shake off the snow and open it up. It is the father's backpack, because in one of the sections I find his driver's license. He is a forty-two-year-old man from Germany. I bring the backpack to the operational leader. He gives me a nod of approval. They have almost reached the body, I see, because they are digging very quickly, but also carefully. As soon as the head of the man is free, the physician bows over him while the others dig further. The physician orders haste, because the unconscious man is still alive. His body temperature, however, is down to a minimum and he is in danger of dying. Shortly the man is on his way by helicopter to a special clinic for victims of avalanches. Unfortunately, he didn't survive.

Figure 12.28 Ruud and Eva. The handler and dog form a team in which each member has specific skills.

We thought that might be the case as we left the avalanche area. Despite the quick work of an avalanche dog, help often comes too late. Almost every avalanche is fatal, and the number of dead that we find under the snow each year is, unfortunately, greater than number of people whose lives we save. There is a great danger of suffocation because snow sticks in the airways and the extreme cold causes hypothermia in the buried person. After half an hour under the snow, the chance of surviving is only about 30 per cent. Claims that avalanche dogs can be sent from lowland countries to help people in the Alps are nonsense. They would arrive much too late. Only avalanche dogs stationed in the vicinity can save human lives.

13

A Serious Task

Natural disasters in recent years have proven beyond any doubt that only search and rescue dogs can locate victims under rubble quickly and effectively. To achieve that end, dogs and handlers require serious, professional training. The training and missions of search and rescue dog teams often demand great sacrifices and efforts from handlers and dogs. But the results make everything worthwhile.

With Faultless Precision

This work is usually unpaid, because search and rescue dog work usually happens on a voluntary basis. For each search and rescue dog handler, the handshake of a person found or the gratitude of next of kin means much more than compensation for expenses.

Salvaging people alive is a tremendous stimulus for the handler, as well for the dog, to go on with this work. Search and rescue dogs can also locate dead people with faultless precision, so that they can be salvaged, too. This salvage means a lot to the next of kin, because it ends the uncertainty in a period of restless hoping and waiting, without being able to do anything. Both searches require close teamwork between search and rescue dogs and handlers.

Around the world, we have found more than once that the professional and responsible training of search and rescue dog

UNPLEASANT EXPERIENCES

More than once we have seen firsthand where pressing a dog to perform can lead. As an example, we once had a foreign handler training with us from a unit where the dogs were pressed to bark when they found a victim. Because his dog didn't bark easily, he tried to get the dog to bark with all sorts of tricks. The result was that the moment the dog detected human odor beneath the rubble, he was inclined to walk away from the spot! Clearly he'd had an unpleasant experience at the location of a helper and wanted to avoid more of the same.

That handler had to first take several steps back in his training to make his dog enthusiastic again for finding victims. Fortunately, he gradually backed away from the idea that dogs have to bark when they find a victim. The further development of the natural behavior the dog shows at locating a victim generates, in the hard reality of this work, a much more accurate alert.

teams—both dog and handler—is vital. Such a team must undergo serious and intensive training to prepare for their future tasks. Sadly, we have found that search and rescue dog work also attracts people who abuse this work with dogs for their own honor and glory, or who use their certificates to impress people or increase the value of their puppies.

Mutual Confidence

Optimal training of search and rescue dogs requires that you use the natural characteristics of the dog. The dog's potential determines to a great degree whether it should be trained for this work, and how. It is the handler's task to try to get everything possible out of the dog, which is often more than one thinks. The dog's potential will really be determined by the handler's limitations.

To use all a dog's potential, there has to be a tremendous bond between dog and handler. They have to know each other very well, which means that both the handler and the dog in every situation and at every moment know that they support each other. The

handler has to trust the dog in full, just as the dog has to know it can trust its handler.

Search and rescue dogs can only reach their potential if they take great pleasure in their work. They have to pursue their work with enthusiasm. That has a great deal to do with both the training method and the temperament and mentality of the handler. How well the dog works depends on it.

This work cannot be founded on pressure tactics. There has to be cooperation between the handler and the dog based on confidence from both sides.

Which Dogs Can Become SAR Dogs?

To know which dogs can become SAR dogs, it is useful to review the tasks of the search and rescue dog once again. A search and rescue dog must search intensively and with perseverance for the odor of people who are trapped beneath the rubble or snow, or people who are lost in wilderness areas. The search and rescue dog must not allow itself to be distracted, because it has to work in almost every kind of area and under almost all circumstances.

The search and rescue dog has to be able to communicate clearly to the handler that it has found a victim in the place where the human odor concentration is the highest. It is not important how a dog locates a victim, or how it tells the handler, but it is important that it be a clear and reliable alert, even after hours and days of intensive searching.

BEST BREEDS

From all this we can conclude that the best working dogs are also the best search and rescue dogs. Of course, dogs without pedigree, just like dogs that don't belong to an official working dog breed, are in principle useable as search and rescue dogs. In addition to hunting dogs, we have seen handlers get excellent results in search and rescue dog work with mixed breed or unofficial working dog breeds. The breed and the size of the dog do not much influence

Figure 13.1 Search and rescue dogs must not allow themselves to be distracted because they have to work in almost every kind of area and under almost all circumstances. (Calabritto, Italy, 1980)

Figure 13.2 It is not so important how a dog locates a victim, or how it tells its handler about the find; it is important that the dog gives a clear and reliable alert.

the suitability of the animal for the search and rescue dog work. Small as well as medium-sized dogs can be trained for special tasks.

Using a hunting dog to search in the wilderness for missing people is going to cause some problems and is sometimes even impossible. On the other hand, hunting dogs can do excellent work on rubble. We have seen a German Shorthaired Pointer working on the rubble, and we were very impressed with the dog's fast and effective way of working. Golden and Labrador Retrievers are also used very successfully for search and rescue dog work. The smaller breeds, like our Welsh Corgi, have also had remarkable achievements as operational search and rescue dogs.

REQUIREMENTS

No matter what pedigree it has, a search and rescue dog must have good behavior, courage, perseverance, and hardness, in addition to

having sufficient search and tracking capabilities and good social behavior with people and with other animals. The dog has to be, of course, obedient. Dogs with a Schutzhund certificate (Sch.H. or IPO), a police dog certificate of the KNPV, and certainly dogs that have a tracking dog certificate, are preferred.

Who Can Become a Handler?

With search and rescue dog work, a lot will be required of the handler, both mentally and physically. Dog handlers must have knowledge, or obtain it during training, of modern dog training methods, and must have the necessary background in canine studies. The ability to work in teams and to absolutely accept direction are requirements for all search and rescue dog handlers who go on deployment. To crown it all, working as a search and rescue dog handler requires both real and financial sacrifices too. How many weekends will be spent on stinking debris piles or in dirty, wet woods and fields? How much money will be spent on long trips to the less accessible training fields? Training search and rescue dogs is a specialty within the dog-training world. You should carefully weigh whether you have the ability and resources for this heavy and difficult work.

Figure 13.3 With search and rescue dog work, a lot will be required of the handler, both mentally and physically.

And Who Not?

It is a pity that sometimes people who do poorly at other dog sports turn to search and rescue dog training. Reasons for failing at other dog sports may be that the handler is not a good trainer or that the dog may have character weaknesses or is frightened by the decoy. Search and rescue dog work then looks like a good possibility to continue training with the dog. But poor handlers will not succeed in search and rescue dog work, and dogs with weak characters will also fail in the intensive training.

Another group of handlers who are unable to do the search and rescue deployment are those who are too tenderhearted. The well-meaning intention to help people in danger does not in itself make a search and rescue dog handler. These people have little understanding of dogs and often refuse to administer correction or punishment, which is sometimes necessary in training. These people often think that the dog helps missing people out of a noble sympathy, instead of its natural search drive.

The third group unsuitable for search and rescue work are those who are immature and those who are attracted by the semi-military system of operations, command over people and dogs, equipment, and alarm exercises. They get excited over a new jumpsuit with practical zippers or other tools of the trade. They can carry out a plan of operation in which everything is arranged to the finest detail, but are absolutely helpless in a real mission, because they can't improvise. Disasters and emergency situations don't let people arrange everything in advance.

Teamwork

The people who come from one of the aforementioned groups should not be allowed to take part in training for search and rescue dog handlers. For them, working with the dog is only of secondary importance. Search and rescue deployment is too serious a task to equate with other dog training. Trainers who are ambitious and only want to add a particular certificate to their dog's record, or

who like to collect points for a pin, have no place in search and rescue dog work. There's also no room for breeders who want to sell more puppies, or who want to increase the value of a pup or mature dog because the father or mother once obtained a search and rescue dog certificate and after that was only used for breeding.

Search and rescue dog work requires people with perseverance and willpower. Through physical as well as mental training, the handler has to become a well-balanced and confident dog expert with the right mentality. It is not one handler or one special dog, but rather the whole search and rescue dog unit that succeeds during a mission.

READING THE DOG

It makes no sense to teach the bringsel alert to a dog that doesn't like to retrieve. It also makes no sense to expect a dog to bark at the scent of a victim if the dog doesn't like to bark. Every dog has a natural tendency to let the handler, to whom it has a strong connection, know one way or another that it has found a victim or that

Figure 13.4 Training is often hard, but things can become really tough during a real mission: on the spirit, on perseverance, on showing courage without carelessness, on social behavior, and in particular on relationships.

it wants the handler to return with it to the "prey." Each dog has a different means of communicating with its handler. It is fundamental in our training program that each handler and dog team has the elbow room to develop their capacities and skills in an individual way. Or to put it in another way: handlers have to recognize how their dog naturally indicates a place where it has found something. By incorporating this natural behavior into training, handlers allow their dog to develop and attain its goals.

To extend the principle, only the handler, as the person who can most accurately recognize the dog's alerts, can tell the instructor or the operational leader the location of an alert. The searching dog has different ways of indicating during a mission, depending on the time span and the degree of difficulty of the search action, not to mention different indications for alive and dead people. Handlers have a great responsibility during the search action to identify where there is a dead person versus where there is a living person. A yes or no decision can lay a heavy burden on the handler's shoulders.

Mission Readiness Test

Depending on the dimension and character of the mission, the one who leads the search and rescue work, the operational leader, if possible in deliberation with the instructor(s), has to decide about the usefulness of the available teams. More important than certificates is the practical ability of handler and dog at the moment of the call-out. Successfully taking part in the Mission Readiness Test (MRT) for search and rescue dogs, during which the team is tested on how they hold up under pressure and how well they can make the right decisions under stress, is absolutely necessary before a team can be brought into action. The next chapter describes some of these tests.

Hard Work

Training is often hard, but real missions are even harder: on the spirit, on perseverance, on showing courage without carelessness,

Figure 13.5 It is not just one handler or one special dog, but instead the whole search and rescue dog unit, that succeeds during a mission.

on social behavior, and in particular on relationships. Then everything learned in theory and practice is put to test under the highest stress and living in the dirtiest possible conditions. Please, don't picture working with a search and rescue dog as a romantic jaunt in nature, just yourself and the dog. After days long walks in the rain through inaccessible woods or living in a somber tent with poor facilities in the stinking surroundings of an area damaged through an earthquake or explosion, you won't be fantasizing for long.

There is no pleasure in the odor of a debris pile or a disinfectant substance. There are moments you will ask yourself why you are doing this. But the next time your dog alerts on a victim, you'll be inspired again to work even harder.

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14

International Rescue Dog Tests

With the introduction of the International Testing Standards for Rescue Dog Tests (IPO-R) in 1993, we now have official and internationally recognized examinations for search and rescue dogs.

IPO-R

It took a long time, with a lot of discussion, but all countries connected to the Fédération Cynologique Internationale (FCI), the international canine federation, along with all members of the International Rescue Dog Organization (IRO), agreed to the International Testing Standards for Rescue Dog Tests of the FCI and the IRO. The name chosen was IPO-R, which is from the German *Internationale Prüfungs Ordnung für Rettungshunde*.

With IPO-R, handlers from all over the world work together in the same examination programs. We can thus compare the training of different countries, and we also have the opportunity to bring the training of search and rescue dogs to the highest possible level internationally.

Figure 14.1 International IPO-R testing event in Craiova, Romania, in 2008.

Figure 14.2 IPO-R water work in Craiova, Romania, in 2008.

More Than Sports

Although these international examinations for search and rescue dogs are sport-examinations, the final goal is to prepare handlers and dogs for deployment. The general goals of the IPO-R test are as follows:

> The rescue dog tests are designed to qualify each dog for its area of use. Successful completion of a test is proof of proper

rescue dog training in that particular discipline. This is one of the basic requirements for determining mission readiness in participating organizations. Mission readiness is determined and awarded by home organizations, which can stipulate further requirements such as additional dog handler skills, electronic communication skills, alpine rescue experience or training, age limits for dog and handler, physical fitness, personal equipment preparedness, first aid courses, periodic retesting, and so on. Dogs may take part in the rescue dog tests regardless of size, breed or pedigree certificate.[1]

Testing Structure

The International Testing Standards for Rescue Dogs (IPO-R) include the following categories and levels:

- Rescue Dog Suitability Test—**Tracking** (RH-F E)
  - Rescue Dog Tracking Test A (RH-F A)
  - Rescue Dog Tracking Test B (RH-F B)
- Rescue Dog Suitability Test—**Area** (RH-FL E)
  - Rescue Dog Area Search Test A (RH-FL A)
  - Rescue Dog Area Search Test B (RH-FL B)
- Rescue Dog Suitability Test—**Rubble** (RH-T E)
  - Rescue Dog Rubble Search Test A (RH-T A)
  - Rescue Dog Rubble Search Test B (RH-T B)
- Rescue Dog Suitability Test—**Avalanche** (RH-L E)
  - Rescue Dog Avalanche Test A (RH-L A)
  - Rescue Dog Avalanche Test B (RH-L B)
- Rescue Dog Suitability Test—**Water** (RH-W E)
  - Rescue Dog Water Test A (RH-W A)
  - Rescue Dog Water Test B (RH-W B)

Dog handlers may start in any category, with either the Rescue Dog Suitability Test or any other test of their choice, at level A. Participation in a level B test is conditional upon the dog rescue team having passed the level A test in the relevant category.

The minimum age for a dog to take part in a Rescue Dog Suitability Test is fourteen months; for a level A test it is eighteen months, and for a level B test it is twenty months. In each test, except the water test, the dog has to show its skills in scent work, obedience, and dexterity. More information and the testing regulations are available at the website of the Fédération Cynologique Internationale (www.fci.be) or the International Rescue Dog Organization (www.iro-dogs.org).

Mission Readiness Test—Rubble

The Mission Readiness Test (MRT) is based on the work of a search dog team at an international Urban Search and Rescue (USAR) mission following the International Search and Rescue Advisory Group (INSARAG) guidelines. INSARAG (www.insarag.org) is a global network of more than eighty countries and organizations under the United Nations umbrella. INSARAG deals with USAR–related issues, aiming to establish minimum international standards for USAR teams and methodology for international coordination in earthquake response based on the INSARAG guidelines.

Participants must have passed the RH-T B test, and the dog must not be older than eight years of age at its first MRT participation. The Mission Ready certification is valid for two years. Once a mission-ready search dog reaches its tenth birthday, the team must undergo recertification every year.

The scenario for the MRT is generally a recent strong earthquake resulting in a lot of destroyed buildings. During a MRT, the performance of the dog and dog handler as well as the whole team performance will be assessed during a minimum of seven searches of twenty minutes in at least three different search areas over a period of two days, including day searches and night searches. The number of victims to be found will not be disclosed.

The search work requires a certain level of physical ability to accomplish the assigned tasks in challenging terrain, for both the

search dog and the dog handler. Suitable PE (Personal Equipment) and PPE (Personal Protective Equipment: helmet, mission jacket, mission pants, safety boots, gloves, lighting) are required.

The MRT begins with the arrival and registration of the participants at the Reception and Departure Centre (RDC), where an equipment check and the dog's health check by a veterinarian will be carried out. All formalities completed, the participants will be transported to the Base of Operation (BoO) with local transport vehicles. With the exception of the mandatory four-hour resting period, all participants will remain operational at all times and must be ready within fifteen minutes from the time they receive their work notification.

At each work site, the dog handler receives a written general tactical situation before the beginning of the search work. This can also be in the form of a drawing or through an INSARAG Marking Box (see page 177). After this, the dog handler must share his or her plan with the classifiers and then execute the mission plan. During the search, distractions should occur, such as noise, people lingering in the search area alone or in groups, and close—but for the dog unreachable—food or various types of garbage.

Figure 14.3 At a voice command or hand signal, this Chocolate Labrador climbs up the access plank to a ladder. (IPO-R test, Xanxere, Brazil, 2012)

Figure 14.4 The dog must be attentive to the handler's voice command "Heel" and obey willingly and directly. Its shoulder should be no farther forward than the handler's knee.

Mission Readiness Test—Area

Participants must have passed the RH-FL B test according to IPO-R. The Mission Readiness Test—Area is carried out in a realistic area. The participant has to complete mission tasks to find a missing person, including a minimum of three searches. All participants are allowed on the same search area for each task. During the test, the number of hiding people has to be the same for all participants. The hiding places can be changed after each team's search. The following searches have to be completed by a participating team within one day:

Two area searches of a maximum one hour per search within twenty-four hours: Each search terrain is different, and the search areas are at most 89,000 square yards (75,000 m^2) per search in a field, forest, meadow, or mixed area without artificial hiding places. There can be one to four hiding people per search, sitting or lying on the ground or at maximum height of six-and-a-half feet (2 m) in a tree or similar place. The number of hiding people is not announced. One search can be done in complete darkness.

Search for a maximum of two hours and 6,500 yards (6,000 m) along a path that goes through various types of terrain (field, forest, meadow, and farm paths): There can be changes of walking

Figure 14.5 At the end of the ladder, the handler lifts the dog down.

Figure 14.6 As with nose work, the obedience and dexterity section of IPO-R is completed when the dog handler signs out and the judge announces the marks. (IPO-R test, Xanxere, Brazil, 2012)

direction adapted to the search area and no marking of assigned paths. Crossing roads is allowed, and the search can be done in complete darkness if no area search is planned for darkness. The route to be searched has to be assembled in such a way that the dog handler is only able to orient by map, compass, or GPS. There may be no artificial hiding places, and there can be one or two hidden people per search. The number is not announced, and they can be

Figure 14.7 Ruud Haak was a classifier during the Mission Readiness Test (MRT) in Zatec, Czech Republic, in 2009.

sitting or lying on the ground or at a maximum height of six-and-a-half feet (2 m) in a tree or similar place and within sixteen feet (5 m) to the right or left of the middle of the path.

The main point of the evaluation during the Mission Readiness Test—Area is the teamwork between handler and dog, as well as the success rate for the three search tasks. The dog handler is free to decide which strategy or search model to choose with the dog. The handler can subdivide the assigned search area or search it all at once. Search breaks can be taken (including giving water to the dog) upon the decision of the handler. Breaks are included in the search time. During the search, the dog's "willingness to find" is of utmost importance. Between the first two searches, a rest period of at least one hour has to be scheduled. The timetable also has to include a four-hour regeneration period (off-time in a rest area) per dog after the second search. The final evaluation will be announced as "passed with success" or "not passed."

Notes

2 Training the Natural Way

1 Zimen, E. *Der Wolf*, 205.

3 The Hunting Drive Complex

1 Lorenz, K. *Vergleichende Verhaltensforschung*, 31.

8 Wilderness Search

1 International Canine Federation. *International Testing Standards for Rescue Dog Tests*, 11.
2 International Canine Federation. *International Testing Standards for Rescue Dog Tests,* 12.
3 International Canine Federation. *International Testing Standards for Rescue Dog Tests,* 12.
4 International Canine Federation. *International Testing Standards for Rescue Dog Tests,* 50.

14 International Rescue Dog Tests

1 International Canine Federation. *International Testing Standards for Rescue Dog Tests,* 11.

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About the Authors

Ruud Haak was born 1947 in Amsterdam, the Netherlands. At the age of thirteen, he was training police dogs at his uncle's security dog training center, and when he was fifteen, he worked after school with his patrol dog (which he trained himself) in the harbor of Amsterdam. Later on he started training his dogs in

Figure 15.1 Ruud Haak with Tessa v. Sulieseraad (a German Shepherd Dog) and Halusetha's Be Speedy (a Malinois).

Schutzhund and I.P.O., and successfully bred and showed German Shepherds and Saint Bernards.

He worked as a social therapist in a government clinic for criminal psychopaths, and from his studies in psychology, developed an interest in dog behavior and training methods for nose-work, especially for the tracking dog (Fährtenhund) and the search and rescue dog.

In the 1970s, Ruud and his wife **Dr. Resi Gerritsen**, a psychologist and jurist, attended many courses and symposia for Schutzhund, tracking dog and SAR dog training with their German Shepherds in Switzerland, Germany, and Austria. In 1979, they started the Dutch Rescue Dog Organization (RHH) in the Netherlands. With that unit, they attended many operations after earthquakes, gas explosions, and, of course, searching for lost people in large wooded or wilderness areas.

In 1990, Ruud and Resi moved to Austria, where they were asked by the Austrian Red Cross to select and train operational

Figure 15.2 Dr. Resi Gerritsen with Google van het Eldenseveld (a Malinois).

rescue and avalanche dogs. They lived for three years at a height of 5,900 feet (1,800 m) in the Alps and worked with their dogs in many avalanche search missions.

With their Austrian colleagues, Ruud and Resi developed a new method for training search and rescue dogs. This way of training had good results after the earthquake in Armenia (1988), the two major earthquakes in Turkey (1999), and the big earthquakes in Algeria and Iran (2003).

Now Ruud and Resi live in the vicinity of Vienna, Austria. They are training directors and international judges for the International Red Cross Federation, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the International Rescue Dog Organisation (IRO) and the Fédération Cynologique Internationale (FCI).

Ruud and Resi also demonstrated that their unique training methods were successful at the Austrian, Czech, Hungarian and world championships for search and rescue dogs, where both were several times the leading champions. At the world championship in Ljubljana, Slovenia, the authors and their team became the 1999 world champions.

Resi and Ruud hold symposia and master classes on their training methods all over the world. In addition, they have written seven books describing their methods:

- *K9 Professional Tracking: A Complete Manual for Theory and Training*
- *K9 Schutzhund Training: A Manual for Tracking, Obedience and Protection*
- *K9 Personal Protection: A Manual for Training Reliable Protection Dogs*
- *K9 Complete Care: A Manual for Physically and Mentally Healthy Working Dogs*
- *K9 Working Breeds: Characteristics and Capabilities*

- *K9 Behavior Basics: A Manual for Proven Success in Operational Service Dog Training* (with co-author Simon Prins)
- *K9 Fraud! Fraudulent Handling of Police Search Dogs*

and Ruud Haak also wrote

- *K9 Suspect Discrimination: Training and Practicing Scent Identification Line-Ups* (with co-author Dr. Adee Schoon)

All eight books are available from Brush Education (www.brusheducation.ca).

Ruud Haak is the author of at least thirty dog books in Dutch and German, and since 1979 he has been the editor-in-chief of the biggest Dutch dog magazine, *Onze Hond (Our Dog)*. More recently, he trained drug and explosive detector dogs for the Dutch police and the Royal Dutch Air Force. He is also a visiting lecturer at the Dutch, German, and Austrian police dog schools.

At the moment Ruud and Resi are still successfully training their dogs for search and rescue, tracking, Schutzhund, and protection work.

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