K9 Behavior Basics

A Manual for Proven Success in Operational Service Dog Training

second edition

Resi Gerritsen • Ruud Haak • Simon Prins

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Introduction

The dog has been a loyal companion of humankind for thousands of years. This companionship has not always meant a comfortable and peaceful life for the dog, however. In living together, humans took control. From wolves (the first dogs), humans selected animals with suitable traits and domesticated them.

Our dogs today have a great willingness to adapt to their circumstances and the rules of the pack, which now includes the human family. They are a pleasant animal, able to live close to humans. From the wolf they received qualities such as watchfulness, loyalty, and submissive behavior, which are also the source of their popularity as pets and K9s.

In this book we meet the wolf, the domestic dog's ancestor. We become acquainted with its behavior and see how and why this animal was domesticated. From that foundation, we take a closer look at dog behavior and communication signals. These are fundamental to understanding how dogs play and learn, and it is important for every K9 handler to understand these behaviors. After all, if we understand the behavior of dogs, we can more easily raise and train them.

It is a pleasure to have a K9 as a reliable companion in service. For a successful team, the parties at both ends of the leash must

trust each other. For this trust to develop, it is essential for us to recognize and correctly interpret the dog's expressions, gestures, and signals. In this book we explain them.

We then explain operant conditioning, a successful method of K9 training that can be used for all kinds of special-service dogs, such as search and detection, patrol, remote guided camera, and attack dogs. We first describe the history and development of operant conditioning training with animals and how the training works, and then, of course, we provide practical techniques in how this method can be employed.

As a K9 handler, you are privileged to know what is going on in the dog's mind and to predict its behavior. After reading this book, you will have a better understanding of that special animal: your K9.

—Resi Gerritsen, Ruud Haak, and Simon Prins

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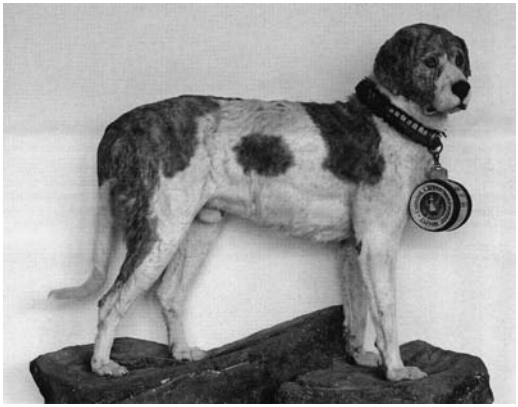


Figure 1.1 Dogs have served many roles for humans. In this picture, the legendary Barry, a short-haired Saint Bernard, saved forty human lives during his work as an avalanche dog at a hospice in the Swiss Alps.

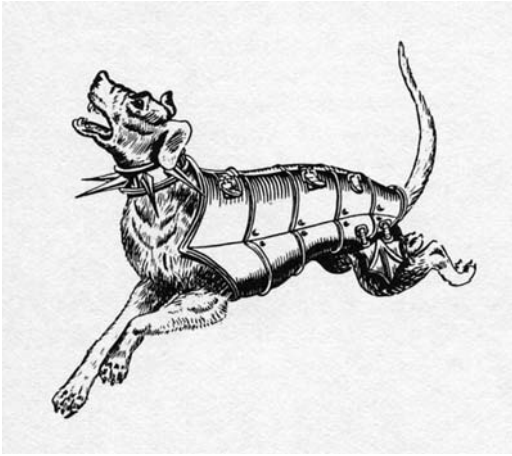


Figure 1.2 Roman dog of war.

1

Operational Service Dogs

Dogs can be found everywhere people live. Through the ages dogs have helped humans as hunters and also as defenders of hearth and home. In some countries, dogs are still used for meat; in the spacious polar snowfields, they give their energy as draft animals; and they provide many other services to humans, from shepherd to laboratory animal. Some people are sensitive about how dogs are used—performing tests on or eating a dog is unthinkable for many people because they consider dogs to be loyal friends, companions, and sometimes even replacements for children.

Loyal Friends and Companions

By close and long association with humans, both in work and in play, the dog has become a symbol of loyalty and friendship. Indeed, it is as a companion that the dog is best known. In that work we find no specialists, no distinctions of color, breed, or training, yet the household pet must, in a sense, work for its living. Put yourself in your dog's place. Would you enjoy the job of being companion to a person of your own temperament? Could you fancy yourself an unassuming nonentity, keeping out from under

foot when your owners are glum, being scolded without apparent cause when they are irritable? Would you always be eager to take a walk to satisfy their whim just at the moment when you had settled down for a good snooze? And could you endure the caress of unliked, strange hands simply because those hands belong to a friend of your handler? Would it please you to obey every word, look, and gesture—yes, even unexpressed thoughts, regardless of your own wishes? It would be hard work at times, wouldn't it?

LORD BYRON AND BOATSWAIN

Figure 1.3 *Boatswain,* painted in 1808 by Clifton Tomson.

A powerful example of the attachment people can form with their dogs is seen in the relationship between Lord Byron (1788–1824) and his dog, a Newfoundlander called Boatswain. After the death of his dog of rabies in 1808 at Newstead Abbey, the brokenhearted Lord Byron had the dog buried behind the ruins of the old abbey church near the house. It was a special and solemn funeral. After the burial, Lord Byron called his eldest servant and told him that both he and the servant would be buried next to Boatswain. The servant was apparently not so pleased because shortly after this instruction, he resigned from his job. Lord Byron himself died as a freedom fighter in the war of independence of the Greeks from the Turks, so Boatswain was left all alone at the country estate.

Over the grave is a large, ornamental memorial. The epitaph reads as follows.

Near this Spot
are deposited the Remains of one
who possessed Beauty without Vanity,
Strength without Insolence,
Courage without Ferocity,
and all the virtues of Man without his Vices.

This praise, which would be unmeaning Flattery
if inscribed over human Ashes,
is but a just tribute to the Memory of
BOATSWAIN, a DOG,
who was born in Newfoundland May 1803
and died at Newstead Nov. 18, 1808.

When some proud Son of Man returns to Earth,
Unknown by Glory, but upheld by Birth,
The sculptor's art exhausts the pomp of woe,
And storied urns record who rests below.
When all is done, upon the Tomb is seen,
Not what he was, but what he should have been.
But the poor Dog, in life the firmest friend,
The first to welcome, foremost to defend,
Whose honest heart is still his Master's own,
Who labours, fights, lives, breathes for him alone,
Unhonoured falls, unnoticed all his worth,
Denied in heaven the Soul he held on earth—
While man, vain insect! hopes to be forgiven,
And claims himself a sole exclusive heaven.

Oh man! thou feeble tenant of an hour,
Debased by slavery, or corrupt by power—
Who knows thee well must quit thee with disgust,
Degraded mass of animated dust!
Thy love is lust, thy friendship all a cheat,
Thy tongue hypocrisy, thy words deceit!
By nature vile, ennobled but by name,
Each kindred brute might bid thee blush for shame.
Ye, who perchance behold this simple urn,
Pass on—it honors none you wish to mourn.
To mark a friend's remains these stones arise;
I never knew but one—and here he lies.

Types of K9s

Early human communities used the dog's sense of loyalty and responsibility for their own ends. Ancient history gives us many examples of dogs used as defenders, but also dogs used for other tasks. For example, more than eleven hundred years ago, a Chinese trading company developed a dog messenger service. These dogs went out with camel caravans and brought back dispatches from the outposts. The trading company found that the advance information thus obtained was of such value that it credited ten percent of its increased sales to this service and used the money to breed better dogs and otherwise develop the efficiency of the service. A similar service was used in the first half of the twentieth century by armies around the world.

Figure 1.4 Through the ages dogs have played important roles for human societies. This picture from an ancient Greek vase shows the mythological Cerberus, a dog with (in this case) two heads.

Figure 1.5 Hunting with dogs. This stone panel decorated a mud brick wall of the palace of King Ashurbanipal (reigned 669–630 BCE) at Nineveh, northern Iraq. It was originally part of a much longer composition related to the royal sport of lion hunting. The figures leading the hounds are hunt attendants. The use of mastiffs is well represented on the wall reliefs at Nineveh.

Figure 1.6 Early-seventeenth-century woodcut showing night watchmen and dogs.

From their earliest domestication, dogs were used as watchdogs to alert human camps about the approach of animals or humans. The Romans extended the watchdog's activities to include duty with a human sentry. This sentinel dog of ancient times was in some respects a forerunner of the modern police dog. The city archives in Antwerp, Belgium, note that the first night watchman in Antwerp was chartered in 1597, and by 1627 there were thirty-two men on duty. Woodcuts from that time indicate that protection dogs accompanied these men. These early police dogs were apt to bite: one woodcut (Figure 1.6) shows a dog helping its handler by boldly biting the legs of a villain!

Police Service Dogs

One of the oldest known police services using dogs is that of the Belgian city of Leuven (Louvain) in the eighteenth century. In 1786, the night watchmen distributed a "New Year's greeting" flyer to all residents. On it was a woodcut depicting the town soldiers

Figure 1.7 New Year's greetings from the night watchmen.

and their dogs. In 1793, however, the use of police dogs in Belgium was abolished. A "human rights" manifesto banned the use of dogs to attack people. It appears that the police dogs had become too sharp and aggressive for public acceptance.

After the abolition of police dogs in Belgium, more than a century passed before public administration resumed the use of dogs in police service. Around 1880, dog enthusiasts near Malines, Belgium, began to systematically train their Malinois, the shorthaired Belgian shepherd dog, for protection and tracking work. But it was not until 1886 that dogs were specifically trained for police service. At that time, the little hamlet of Hildesheim, Germany, was a hotbed of disorder and a source of embarrassment and chagrin to the frustrated police. Captain Schoenherr, later head of the Prussian Government Breeding and Instruction School of Service Dogs at Grünheide, near Berlin, studied the possibility of using dogs to combat criminals. A few specially trained animals were tested. The dogs performed successfully and problems in Hildesheim were cleared up, largely through their efforts. The Hildesheim dogs

Figure 1.8 During the World War I, Dutch police dogs were also trained as liaison or communication dogs.

became celebrities, and other German communities were inspired to use dogs in police service.

In Gent, Belgium, Superintendent Van Wezemael introduced three police dogs in March 1899. At the end of the same year, there were ten dogs in service, and by 1910 there were more than thirty. All these dogs were Belgian shepherd dogs, and most of them were of the Groenendael (black long-haired Belgian shepherd) and Malinois variety. As the dogs proved their usefulness in police work, they were trained in special fields of service, and today there are many branches of police dog work.

POLICE DOGS TODAY

Today's police dog is the natural development of the herding dog of yesterday. Aptitudes that enable a dog to succeed in one of these services are equally valuable in the other:

- The animal's urge to guard and protect, so essential to the preservation of a flock of sheep, is just as valuable in the police service. A patrol dog's first duty is to protect its police handler against assault.
- The dog's tracking ability, through which a herder will find a lost lamb, is valuable to the police dog for it must frequently seek lost objects, missing people, and hidden suspects.

Figure 1.9 Strange as it may seem, the police dog of today is the natural development of the herding dog of yesterday.

Figure 1.10 A patrol dog's first duty is to protect its officer against assault.

- The transportation of a criminal or suspect is quite like the driving of a herd and depends on similar capacities. For example, the ability of a herding dog to bite and hold but not injure or tear is also useful for police dogs. Especially in subduing older and heavier sheep and rams, the dog must be able to employ a forceful grip, which nevertheless should not seriously injure the animal. Today a police dog will usually overpower a suspect using a strong, firm grip, and only rarely must it resort to a dangerous, tearing bite.

What does the police dog do? The answer depends on the branch of the service it is in. Most police dogs are used for patrol duty. Each patrol dog is assigned to one handler and remains with this officer as protection. The dog's ears and nose are more acute than those of its handler, so the dog is often the first to detect danger. In case of emergency, the dog is frequently a more dependable weapon than a revolver.

Penitentiary Service Dogs

The training for penitentiary service is similar to patrol dog training. The main difference is that the penitentiary dog is taught to

serve with two or more guards who wear identical uniforms. The dog learns to obey their voices and no others. In prison service, dogs are more frequently called on to search for hidden people than in patrol service.

In the instruction of a penitentiary dog, the skill of searching for a lost object is combined with attacking. The dog learns to range an indicated territory much as a bird dog in search of game ranges an area, and when it finds a person, it barks to call its handler. The dog does not attack unless the individual attacks or tries to run away. In other words, the penitentiary dog's behavior from the time it finds a person until the arrival of the handler is like that of a dog placed on guard except the penitentiary dog barks to announce its find. A dog hunts with more success than its handler because the dog's nose can detect a person even if the individual is hidden from view.

The presence of dogs in a penitentiary has a pronounced psychological effect on the inmates. Dogs seem not to be resented as much as machine guns, yet, as a rule, an inmate is hesitant to start trouble with a dog. Most prison guards are unarmed because of the risk that weapons might be taken from them and used against them. The dog is a protector whose services cannot be stolen or bought. A dog may be killed, but it cannot be turned against its handler. A canine ally is therefore a great comfort to a guard. In several cases, a prisoner who attempted to make trouble was thereafter "marked" by the dog. The animal seemed able to recognize the prisoner not only by scent but also by the sound of the individual's steps. Records suggest that once a person has caused trouble, a guard might forget, but the dog will not.

In the 1970s in a Czechoslovakian prison where four dogs were at work, the inmates started a riot in the dining hall. Guards were stationed in machine-gun nests in the walls. Threats of bullets and tear gas failed to quiet the prisoners, but when the warden announced through the loudspeaker, "Quiet at once, or I turn the dogs loose," the mood of the throng changed. In five minutes there

was absolute quiet, the doors were opened, and the prisoners quietly filed to their cells.

Customs Service Dogs

Patrol dogs in any branch of protective service work by day and by night. In darkness they have the added duty of announcing the presence of strangers. Whenever a person approaches the dog (or vice versa) the animal gives a low growl the moment it becomes aware of the stranger's presence. Usually this announcement is given before the handler detects the stranger. This service is exceedingly helpful to customs guards patrolling international boundary lines. When being taught this exercise, the dog at first makes the announcement with a full bark, but this is gradually subdued to a growl and then to a simple internal rumble that cannot be heard, but can be felt by the handler's hand. In customs work, officers know where smugglers are likely to try to cross the border. They take a strategic post and wait quietly with their dog. During the vigil, the handler's hand rests gently on the dog to detect any warning rumble.

In this way a dog and handler waited one night on the Franco–Swiss border in the 1980s. It was a good night for scent, for the air was heavy with an afternoon's rain and there was a light breeze. The dog rumbled and led its handler to a road several hundred yards distant. It was a false alarm—only a farmer going home. Back to their post dog and handler went. The long wait was occasionally broken by rumbles, but each time it was only an innocent passerby who had been detected. At about two in the morning, they accosted a passerby who, instead of obeying the command to halt, dashed into the woods and disappeared. The dog was sent in pursuit and finally captured the man and the goods he was attempting to smuggle.

Taking a lesson from police and customs officers, at the end of the twentieth century smugglers also employed dogs, which were taught to run between two points on opposite sides of a

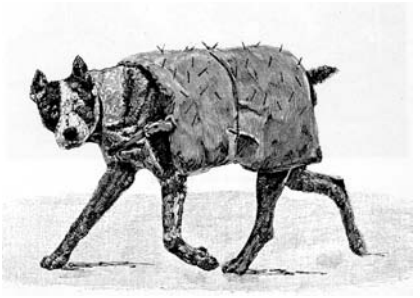


Figure 1.11 Smugglers along French, Belgian, and Dutch borders clad their dogs in false skins with protective pins; concealed beneath were laces and other expensive contraband. The famous contraband-carrying dog Le Diable—sometimes black, sometimes dyed brown, gray, or white—smuggled more than fifty thousand francs' worth of lace across the border before a customs official's bullet ended the canine smuggler's unwitting criminal career.

Figure 1.12 This photograph from 1904 shows a canine smuggler with contraband tied around his body and neck.

Figure 1.13 French customs officers with their dogs at the beginning of the twentieth century.

border. Smugglers used the dogs to carry contraband in one or both directions. Between Belgium and France, dogs were used extensively in the smuggling of tobacco and lace. Uniformed men whipped the dogs to teach them to give customs agents a wide berth. To combat night running of this nature, patrol dogs had to be trained to overtake and destroy the smugglers' dogs. This was no small task, since the smuggler's animals were selected for both speed and fighting ability, and many of them wore protective collars and chest pads. Smugglers were not the first to devise protective wear for dogs; an old Roman fresco shows a dog wearing armor and a spiked collar much like those worn by canine smugglers.

Military Service Dogs

In Britain, Lieutenant Colonel E.H. Richardson introduced dogs into military service at the start of the twentieth century. The Germans also used dogs during both world wars. German patrol dogs supplemented guards at listening posts; draft dogs gave valuable service to the German (and, to a lesser degree, Allied) armies, especially in the rapid transportation of machine guns; and liaison dogs were widely employed to maintain communication between units under fire. In general, whenever a dangerous task could be accomplished efficiently by a dog, a dog was used instead of a person. At the close of World War I, approximately 48,000 dogs were in the employ of the German armies.

The liaison or communication dog was taught to run between two soldier handlers. The message was carried in an aluminum capsule attached to the collar. The dogs used their noses to find the way when necessary, but most of the time they were able to run rapidly, depending on sight and sense of direction for guidance. Dogs with a suspicious nature were selected for the work and this trait was encouraged. It was difficult for anyone but one of their handlers to catch them, and rarely did they allow messages to fall into the wrong hands. There was, however, always the possibility

Figure 1.14 One of Lieutenant Colonel Richardson's Airedales was trained to lay a signal wire in dangerous zones, thus saving human lives and time (1918).

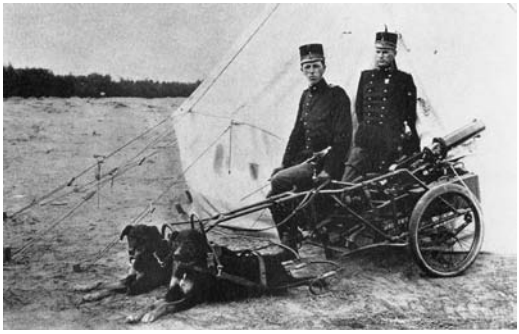


Figure 1.15 Draft dogs gave valuable service to the armies, here the Dutch army, in World War I, especially in the transportation of machine guns.

Figure 1.16 A dog platoon pulling machine guns in the field.

Figure 1.17 A dog and its master similarly protected from poison gas at the battlefront (1917).

Figure 1.18 A remarkable picture of one of the liaison couriers trained and used by the French for emergencies when the telephone system in the front-line trenches was put out of commission by enemy artillery (1917).

that a false delivery might be made or that the dog might be shot and the message captured by the enemy. Dr. G.H. Brückner writes about the officer in charge of communication dog replacements for the German armies during World War II who was asked if this were not a grave risk. Major A. Berkun answered "Nein" so promptly that an explanation was requested. He said that "a dog's message was intercepted no more frequently than one carried by a man, and furthermore, if a human messenger is captured he can be forced to amplify the information he carries, whereas no one has yet learned how to make a dog talk."

The infantry and the artillery had separate sets of liaison dogs, because the infantry dogs ran back and forth from the front lines while those of the artillery ran parallel to the fighting line. It was found that if a dog regularly ran in a given direction, there was less chance of it changing its course when crossing other lines of canine communication. All animals were taught to run wearing gas masks because they frequently had to cross gassed areas.

Liaison dogs were also frequently called on to do pack work. Their usual burden was a side bag containing carrier pigeons. The birds could bear a message from the front line back to the home

Figure 1.19 Liaison or communication dogs played critical roles in maintaining lines of communication when other forms failed.

Figure 1.20 Liaison dogs transported pigeons to the front lines in side bags.

Figure 1.21 Swiss Army dogs in the Alps during World War II.

base in less time than a dog could run the same course, but they could not fly in the reverse direction and so had to be carried out by the dogs.

Another task for liaison dogs was that of laying field-telephone wire over shelled territory. One end of a long coil or cable reel was fastened to the animal, which was then sent to its handler, who waited at the other terminus of the projected telephone line. Such dogs could regularly lay 0.6 miles (one kilometer) of wire in five

minutes and ten seconds. This was only slightly over twice the time it took an unburdened dog to run the same distance.

Another chore dogs could do was carrying food rations, munitions, and medical supplies to men stranded beyond the sources of supply. Red Cross dogs in World War I served the wounded regardless of uniform. These dogs were taught to quarter battlefields and report wounded soldiers.

The number of animals in use and the variety of work they accomplished increased tremendously during World War I. Despite this, there was no systematic attempt to breed military dogs, although there have been hundreds of efforts to breed dogs of greater beauty.

TODAY'S MILITARY DOGS

Today, military service dogs are trained for other tasks relating to law enforcement and physical-security operations. Their roles include the following:

- **Patrol dogs** are the most versatile military service dogs. Composed and under control at all times, they can work around people safely, either on or off leash, without loss of effectiveness. Despite their well-socialized nature, they are capable of detecting and detaining offenders in both

Figure 1.22 Patrol dogs are trained to detect and locate unauthorized people in buildings as well as in open areas.

physical-security operations and law-enforcement situations. Because of their stable temperament, they will attack only with the handler's command and can be recalled from an attack if necessary. They are trained to detect unauthorized people in buildings and open areas, and can track suspects from crime scenes by following scent trails. Some patrol dogs are also trained to detect certain types of narcotics and explosives.

- **Sentry dogs** are aggressive animals whose principal function is to safeguard remote facilities such as missile sites, ammunition supply depots, and warehouses. Their temperament prevents their use in areas where distractions would hamper their operational effectiveness, such as heavily populated urban sites. Although sentry dogs are most effective when working with a handler, in some circumstances they may work alone, such as in warehouses, lanes between fences, and open storage areas.

Other Operational Service Dogs

Some specialized operational service dogs are used by many organizations, including the police, penitentiary, customs, and military.

- Narcotic detector dogs are highly specialized animals whose primary mission is to detect the presence of marijuana, heroin, and other drugs.
- Explosive detector dogs are specially selected patrol dogs with a particularly acute sense of smell and specialized training to discriminate the scent of explosives.
- Detector dogs can be trained to find human remains, arson-related substances, tobacco, money, DVDs, food or other specific substances.
- Other dogs specialize in tracking, human trailing, search and rescue, scent identification lineups, and so on.

The Basis of Successful Training

Obedience training is the first step in operational service dog training. Realizing that police dogs are capable of ferocious attacks, many people think of them as savage beasts and a menace to every

passerby. Nothing could be further from the truth. The public is safer in the presence of properly trained police dogs than in the presence of most other dogs. This is because of the extraordinary obedience demanded of them and engendered in them by their training. The discipline of K9 courses is akin to military training for humans. The result is that police dogs can be depended on even in moments of excitement. Unless ordered to do so, trained police dogs will harm no one who does not threaten their handler, the handler's property, or themselves.

Patrol dogs and dogs that enter other branches of operational service require basic skills such as the following:

- In early obedience exercises, dogs are taught on leash; later on they learn that obedience is expected even without a leash restraining them.
- Dogs learn that they must never allow anything to come between them and their handler's knee unless they receive specific instructions. Thus patrol dogs are always to be found at their handler's side, unobtrusive, but ever on duty and ready for action. When the handler walks, the dog keeps up, never running ahead nor lagging behind; when the handler stops, the dog sits without command and remains seated until the handler moves on.
- Dogs learn to sit, stand, and lie down on command and to remain at a chosen place in any of these three positions while the handler moves off, perhaps out of sight. At first the dog is thus stationed for only short intervals, but gradually the time requirements are lengthened.
- Dogs must be able to scale objects at least six feet (1.8 meters) high and must be able to jump obstructions up to about ten feet (three meters) wide.
- Dogs learn to fetch and carry objects, even if this task involves jumping and swimming.
- If the dog is to work near a waterfront, it can also be trained in the technique of rescuing drowning people. This is taught as an extension of a fetching exercise.

Why is it necessary that the dogs learn the lesson of obedience at all times, even in the absence of the trainer? This is because every operational dog, both in its advanced training and in service, encounters situations of great danger to itself and to others. Prompt and unfailing obedience to all commands minimizes these dangers. Certain situations require immediate attack, while others require an equally immediate cessation of attack. Such work is inevitably dangerous, but the danger would be many times enhanced were the animal not under absolute control. A dog should not graduate unless its obedience work is perfect.

Perfect discipline is necessary when dogs are working under the guidance of a handler, but it is even more important when it works on its own initiative. Frequently a dog is called on to act without specific command, either because a command does not complete a given task or because subsequent to the command the situation changes and a different course of action is required. Such situations may arise when the dog's duty takes it away from the handler, or when the latter is incapacitated. Therefore the dog's discipline must not falter, no matter what the circumstances.

When dogs qualify in obedience exercises, they are given advanced work that fits them best. This advanced work is generally one of two varieties: often called "nose work" and "bite work."

NOSE WORK

Training in nose work is usually built on a key obedience exercise: fetching. When a dog sees an object thrown, it is usually quite willing to execute the command to fetch it. The dog is then taught to fetch an object thrown in its absence. In response to the familiar verbal and gesture command "Fetch," the dog automatically sets out and is well under way before it realizes that it has seen no object thrown. When the dog hesitates, the handler gives a command of insistence and the dog will use its nose to find the object. This is less difficult than it sounds, for when searching, the dog uses its nose as naturally as we use our eyes.

Once the dog gets used to the idea of using its nose to find an object, it usually takes the work as a game and appears to enjoy it. The game is gradually made more difficult, with more than one object thrown at a time. Little by little, the distance the object is thrown is increased so that an extended search is required. Then a longer time is allowed to elapse between throwing the objects and the search, so that the odor traces are not so fresh. Finally, the object to be fetched is not handled or thrown by the handler, but by a stranger. Thus, step by step, the animal is taught to use its nose as it must be used when it is put into service.

In some countries, people frequently come to the police asking that a police dog be used to find a lost purse, watch, letters, and so on. Astonishingly, the dog's remarkable nose frequently enables it to locate the lost object. Hundreds of examples like the following could be culled from the case reports of the police in any country that uses dogs.

A farmer had withdrawn a considerable sum of money from the bank to buy a cow from a neighbor. The seller was to deliver the animal, and as the farmer went to his morning's work of plowing, he put his wallet, with the money, in his pocket. After he had been plowing for some time, the neighbor arrived, and the new cow was put in the stable. When the farmer reached for his wallet, it was gone, and a search of the field for the lost wallet was unsuccessful. As a last resort, a local police officer and his dog were asked to help out, and carefully and systematically the dog searched back and forth across the newly plowed soil. Suddenly it stopped, began to dig, and in another moment had reached down and picked up the wallet in its teeth. The wallet had been plowed under four or five inches (ten to thirteen centimeters) of soil.

Another farmer was moving some cattle from the local market to his farm. On the road the animals became frightened and ran off, and it took an hour of running and shouting through pastures and woods before the farmer had the cattle once more rounded up and back on the road. When the farmer reached for his watch, it

was gone. The man marked the place where he had left the woods, and after taking his cattle home, returned to hunt for his watch. After an unsuccessful search, once more a police officer and dog were called. As the man had marked the spot where he had left the woods, the dog was put on the track there to backtrack, but to no avail as the man had crossed and recrossed his first track many times. Then a systematic search began, back and forth, progressing forward slowly with each crossing. After nearly an hour of work, the dog checked, picked up something, and came back to the handler with the watch in its mouth.

The dog's willingness to look for lost objects is the stepping stone to tracking people. First the dog is taught to track its handler short distances and to fetch objects. When the dog has learned to retrace the handler's track accurately over a considerable distance, it learns to do the same with the track of a stranger. In this way the dog learns to follow the track of captured suspects who may have thrown away something that might be used as evidence against them.

BITE WORK

Some dogs are taught bite work, or "aggression control," which is especially important in the education of the patrol dog. This field includes anything that the dog can do to assist in the subduing and control of a suspect. Generally it is this part of the course that is the most difficult for a dog of a herding breed. Shepherd dogs have worked with people for so many generations that it is hard for many of them to believe that their handlers are really serious when commanded to seize or bite a person. The dog is first taught in play, or by teasing, to grab a rolled burlap sack or tug. Then it is tempted with a puppy sleeve on the arm of a person, and finally it is taught to seize the arm of a moving person wearing a normal hard sleeve.

When this objective is reached, the handler begins the task of teaching the dog to attack only on command. The dog must also learn commands to cease attack and must prove its ability to obey them promptly. Furthermore, the dog is taught that there are more than just verbal commands. An assault on its master, for instance,

is in itself a command to attack the aggressor. When, as is usually the case, the dog subdues the assailant, it must learn to release the person the moment the struggle ceases. This corresponds to the sheep-herding dog's readiness to release an obdurate ram as soon as it submits and turns back toward the flock.

The chief value of the patrol dog's capacity to attack is in providing protection to the handler against surprise assault. Sometimes, despite the presence of a dog, an officer is injured or even killed. Even in these situations, the dog frequently captures the criminal, serving as a warning to others who may be tempted to waylay a police dog handler. In the 1990s, a German police officer encountered a man after dark whom he believed to be a well-known and dangerous Belgian criminal. With his dog sitting quietly by his side, the officer stopped and questioned the man. Without warning, the criminal whipped out a revolver and shot. The officer fell dead before he could utter a word to his dog, but the animal, accepting the assault as a command, immediately attacked. The criminal emptied his revolver at the animal, one shot while the dog was in the air and the others after the dog had gripped his arm, making it almost impossible for him to aim. Three bullets entered the dog's body, but they did not incapacitate it. When other police arrived, they found the criminal entirely subdued and unable to make use of the knives and other weapons in his pockets. The criminal was sent to jail for life, and the dog recovered and successfully worked for many more years.

A dog must learn to cease attack the moment its target stops struggling, whether that cessation is immediate or only after a long fight. For example, the handler of a police dog was on night patrol when a man on a bicycle with no light passed by. Since having no light is contrary to Dutch law, the officer called out, "Halt!" Instead of stopping, the rider sped up, and because the officer could not overtake the bike on foot, he sent his dog in pursuit. The dog drew alongside the cyclist, growling, but when the man did not stop, the animal jumped to the attack and the

man was thrown off his bicycle and stunned. Seeing that the man made no move against him, the dog waited quietly, on guard. The officer arrived just as the man recovered consciousness, and after giving his dog the command "Sit-rest," the officer helped the man to his feet and started to question him. Since satisfactory replies were not being given, the man's identification was demanded. While the officer examined the document by flashlight, the man jumped over a low hedge and vanished into the woods bordering the road. Again the dog was sent in pursuit, and again he caught and held the man, who was wise enough not to struggle. This time the officer escorted the man to headquarters, where it was found that he was a convict who had escaped from prison with a stolen identification card.

When taking someone to jail or when transporting a prisoner from one point to another, the dog should walk between the prisoner and handler. The dog is thus in position to defend the handler, and only a desperate or foolish individual will attempt to attack or to flee with a trained K9 walking in this position. When two prisoners must be escorted, the officer and dog follow behind them. Attempts at escape have been made by two prisoners running in opposite directions, but they are generally unsuccessful. The dog catches and subdues the nearest escapee, who is then guarded by the officer while the dog overtakes and captures the other. The dog's superior speed is therefore of frequent use.

In learning to attack, dogs are taught that sticks and guns may hurt. But their training is such that instead of fearing a weapon, they go for the hand that holds it. Usually the offender is promptly subdued without serious injury. But if for some reason the dog cannot disarm the individual and is therefore injured, it will not give up so long as its strength and consciousness endure.

Some years ago in Germany, a police dog handler received a telephone warning that two young men about twenty years of age had escaped from a reform institution. Their records showed them to be dangerous and desperate men, so the officer at once set out

Figure 1.23 When transporting a prisoner from one point to another, the dog always walks between prisoner and officer. The dog is thus in position to defend its handler.

Figure 1.24 When two prisoners must be escorted, officer and dog follow behind them.

in pursuit. It seemed probable that they had headed for the forest-covered mountains above the city, and soon a track was picked up leading in that direction. The officer sent his dog on ahead while he ran behind, making the best time he could. Soon he heard scuffling and blows, and drawing nearer, he heard the dog yip through closed teeth as it was struck. The criminals succeeded in momentarily beating the dog off. When the officer overtook his dog in an open field beyond the woods, he found it barking and looking up at a tall haystack. Realizing that escape was impossible, the men descended and submitted meekly to handcuffs. The officer was surprised to find that one of the men was severely bitten—all good police dogs are taught merely to seize firmly. In answer to his inquiry, the injured man said that the dog had originally gripped his arm to throw him and not until his companion had started to beat the animal with a club did it bite. He added that he was only sorry that they had not succeeded in killing the animal. As the dog could not simultaneously disarm both men, it had attempted to disable them. Severe wounds had been opened on the dog's head

and side by the blows, but it recovered, and the dog continued to serve effectively for a long time, not intimidated by the experience.

OTHER ESSENTIAL TRAINING

In the Netherlands, all patrol dogs are taught object guarding, but this skill is not often useful and is sometimes misapplied by the dog. Object guarding requires that the animal warns by growling, barking, and even biting anyone attempting to touch the article to be guarded. In one case, a dog on the way home from work in Belgium was left outside a shop while the handler went in to make some purchases. The dog was left at "Down-rest," and the officer had not noticed that he had seated his animal beside a bicycle. The dog, however, apparently supposed that it was to guard the bicycle, for when the bike's owner emerged from the shop and tried to take it, the dog seized and held him until the officer came to release the frightened, but uninjured, owner.

Many police dogs are taught to refuse food from strangers. They learn to growl at a hand stretched out toward them and, if it comes too near, to seize it. This is an important part of their

Figure 1.25 Object guarding is a skill that can be misapplied. One dog was left at "Down-rest" and the handler had not noticed that he had seated his animal beside a bicycle that leaned against a shop. The dog, however, apparently supposed that he was to guard the bicycle and would not let the bicycle's owner take it home.

Figure 1.26 The combination of intelligence, loyalty, and sociability has made the dog an ideal companion.

training because attempts have been made to poison police dogs, sometimes successfully.

A patrol dog is taught to work with one individual. The dog is courteous to everyone, if not affectionate, but its life centers around its handler, and it takes commands only from the handler. If the handler dies while the dog is still young enough to continue in service, the dog must be retrained to take commands from a new handler. This usually requires about half the time of the original training.

Work with, Not against, Your Dog's Instincts

Over the centuries the dog has proven itself capable of performing a wide variety of tasks. But to be successful in training dogs for these tasks, the handler must have thorough knowledge of the dog's natural behavior. It is possible to teach dogs complex tasks only by using exercises and techniques that fit the dog's instincts. With the same understanding, it is possible to break habits thought to be ingrained.

The limits of teaching a dog are mostly caused by not understanding dogs, as well as by ineffective exercises or not completing parts of a training program. In the next chapter, we will outline some of the essential knowledge about dog instincts and behavior that trainers need to know.

2

Ancestor Wolf

Domestic dogs are descended from wolves, *Canis lupus*. A wild animal such as the wolf is one with its environment, bound by thousands of years of natural selection. It is adapted to the food that can be found in that habitat and the climate that is normal for that area. Therefore, to fully understand the behavior of the dog, we must first study the habitat of this ancestor.

The wolf is the largest wild canid; it also has the largest area of distribution and is the most adaptable to climate, soil conditions, and food sources. At the height of its world populations, it could be found throughout the northern hemisphere. Only deserts and tropical rainforests stopped its spread to the southern hemisphere.

Figure 2.1 The wolf, ancestor to all dogs.

Figure 2.2 Breeding dogs and wolves creates fertile offspring. In the 1920s, crossbreeding this way created a new dog breed named after its breeder, Saarloos Wolfhond.

Figure 2.3 The area of distribution of the wolf in the world.

Humans have always been the wolf's greatest threat. Not only has the merciless pursuit of wolves as a result of rumor and fairy tales taken its toll on the growth of wolf populations, but so has the encroachment of human developments into the wolf's habitat. Today there are wild wolf populations in Alaska, Canada, Siberia, Finland, Poland, and the Balkans. In Sweden, Italy, and northern Portugal, there are several small, protected packs (about twenty animals each). In Germany (Bavaria), an attempt to reintroduce a small pack in a large fenced area was unsuccessful. There are also several free packs in the southern United States.

Figure 2.4 As a characteristic of all Canidae, the wolf has a large adaptability to climate, soil conditions, and food sources. Only deserts and tropical rainforests stopped its spread to the southern hemisphere.

Wolves have great genetic diversity and are able to show much variability in body size and color, even among animals in the same region and living conditions (e.g., wolves with long, small skulls and wolves with broad skulls and heavy muzzles may live in the same region).

Canis lupus has thirty-nine subspecies, including two subspecies of domestic dog: the dingo *(Canis lupus dingo)* and the domestic dog *(Canis lupus familiaris)*. Two common wolf species include the gray wolf and red wolf.

Gray wolf (*Canis lupus lupus*)

- Also known as the timber wolf, tundra wolf, plains wolf
- The largest wild canid
- Originally lived throughout the northern hemisphere; now restricted to wilderness and remote areas
- Thick, usually gray fur, although color can include white, red, brown, and black
- Shoulder height 26–32 in (66–81 cm)
- Head and body length 39–59 in (100–150 cm)
- Tail length 12–20 in (31–51 cm)
- Weight 35–132 lb (16–60 kg)

Figure 2.5
Gray wolf.

Figure 2.6
Red wolf.

Red wolf (*Canis lupus rufus*)

- Coat is usually cinnamon and tawny with gray and black highlights
- Originally found throughout the southeastern United States; now a small population in North Carolina
- Shoulder height about 26 in (65 cm)
- Head and body length 37–47 in (95–120 cm)
- Tail length 9–14 in (25–35 cm)
- Weight 40–90 lb (18–41 kg)

The Wolf's Social Life

According to Professor Wolf Herre of the Zoological Institute of the Christian Albrechts University in Kiel, Germany, the wolf pack is one of the most developed social structures in the animal kingdom. Their highly organized social life is partly a result of their way of feeding. Wolves are big-game hunters, and their main prey animals are moose, deer, wild sheep, and reindeer—large ruminants that a solitary wolf cannot catch. Therefore, the wolf lives and hunts in a highly organized group called a pack.

Figure 2.7 The wolf pack is one of the most developed social structures in the animal kingdom.

Figure 2.8 When wolves howl together (a chorus in the true sense of the word), it is a group ritual expressing their unity and kinship through song, creating an impression of more animals howling than there actually are.

Wolf packs are tightly knit, and members rely on one another. The core of a pack is formed by one or more families. Individual pack members are strictly ranked in a hierarchical structure. This social order is maintained through a wide range of communication signals that include gestures, expressions, and positions of ears, head, and tail.

The leader of the pack can usually be recognized by his imposing figure and upright tail. When resting, the leader will commonly lie down at a higher elevation to watch over the pack. While less common, female wolves have been observed as pack leaders.

Acknowledgement of rank is an important method of avoiding or peacefully solving conflicts. Wolves are strong animals that could easily wound pack mates in a fight. Fixed gestures of submission are one way of avoiding fights or other struggles; lower-ranking wolves can make it clear to higher-ranking wolves that they surrender, thus avoiding serious wounds.

Well-known Austrian zoologist and animal psychologist Professor Konrad Lorenz describes a conflict between two male wolves in which the animals faced each other and with "admirable footwork"

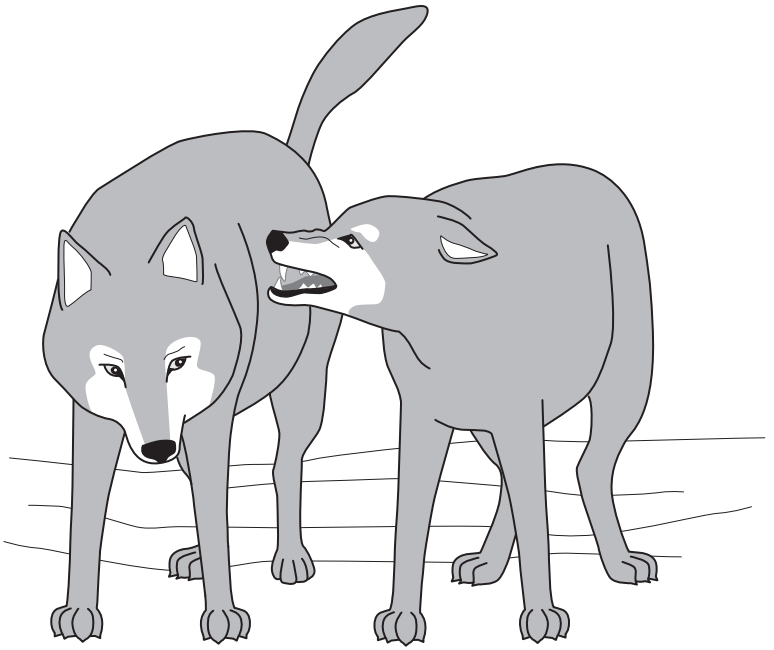


Figure 2.9 The position of the superior wolf (left) expresses challenge and threat, while the subordinate (right) shows inhibited and defensive postures.

walked around in tight circles. Both wolves flashed their teeth, but the bite of one wolf was deflected off the teeth of the other. The conflict ended when the smaller wolf was pushed on his back and the stronger wolf stood over him. As a sign of submission, the loser offered the winner his vulnerable body spots.

By making such submissive gestures, a wolf can avoid being seriously wounded by an opponent. Indeed, the winner walks growling and grunting around the prostrate wolf and even sometimes moves as if it is shaking the submissive wolf to death (prey shaking), but by an inherent inhibition against killing a pack mate, it does not bite. The submitting wolf will sneak off only after the winner moves a few yards away. The winner will then often walk back to the place of the fight and urinate there to mark the place and "flag" ownership.

Hunting

In spring and summer, many wolves hunt on their own; their prey are usually rodents and birds. In autumn and winter, cubs hunt with the older wolves, which teach the cubs hunting tactics. Such groups can have up to fifteen animals. The cubs are at least six months old and are led by the pack leader. The prey for a wolf pack has to be larger than the prey for a single animal so that all the animals will be fed. Many packs specialize in mainly one sort of prey (mice, deer, reindeer). Wolves tend to prefer older, ill, or

Figure 2.10 Wolves are very selective in hunting prey and so keep balance in nature.

Figure 2.11 Wolves are highly developed mammals; most of their behavior develops through experience and acquired qualities.

weak animals, although young animals are sometimes popular prey as well. Wolf hunting preferences can help keep prey populations in check and in proportion to available food sources.

A wolf's jaw can exert pressures in excess of 213 psi (15 kg/cm^2) and is thus able to chew the heavy bones of an adult moose with a body weight of 1100 pounds (500 kg). Wolves can eat enormous amounts of meat: consuming quantities over 22 pounds (10 kg) at once is not unheard of. But wolves are also able to go several days without food. In times of food shortage, a wolf will also eat carrion, small animals, or plants. A pack will often cover 37 miles (60 km) a day hunting. For such a hunt, wise teamwork is necessary as it is almost impossible for an individual wolf to kill larger game on its own.

To have enough food for all of its members, packs are not very large, rarely exceeding twenty animals. If that threshold is crossed, some members will form a new pack and establish their own hunting area. Respected by other packs, the borders of the hunting grounds are marked with urine and droppings. If members of divided families meet at a border, they will often exchange a friendly greeting and a have social gathering, after which each pack goes back to its own territory.

Reproduction

Wolves have only one litter a year. Mating takes place from January to April and whelping occurs after about nine weeks. Mating partners are usually the highest ranked male and female; matings of two lower-ranked wolves will usually be disrupted by higher-ranked animals or even by younger wolves. Female wolves will often have a clear preference for a certain wolf, which is not always the leader of the pack. Why some female wolves pay so much attention to lower-ranked animals is not completely clear. It may be that lower-ranked animals experience lower risk while hunting and therefore have a greater chance of surviving and bringing back food to the litter.

Wolves are monogamous and keep the same partner for many years. During mating season, there is more competition between the male wolves, but in whelping time there is competition between female wolves. Higher-ranked females may even kill the newborn whelps of lower-ranked animals. This may be a form of birth control that helps the pack avoid becoming too large, as well as ensuring that the descendants of only the best animals survive.

The whelps, generally no more than eight in a litter, are born in a burrow or den. Even the father of the litter is not allowed to enter; instead, he carries food to the entrance. The whelps are born blind, deaf, and helpless, and are breastfed for about eight weeks. In May or June, the cubs come out of the den and beg for food from the father or other wolves by biting the cheek of the older wolf and licking its snout. The adult responds by regurgitating food. When the time comes for the mother to go hunting again, a year-old wolf or a senior wolf will usually take care of the cubs. It is not until the cubs are at least six months old that they will go as pupils on a hunt. After two or three years, the young wolves are adults and sexually mature. They may stay with their parents in the pack, or they may go off elsewhere and start their own families.

Wolves live for ten to fifteen years. Older wolves are not able to take care of themselves, largely due to wear on their teeth. In most cases, the pack does not take care of older wolves; these animals usually leave the pack in order to die somewhere in the woods.

Wolf and Human Coexistence

The coexistence of wolf and human was not always friendly. Bones of prehistoric humans killed by wolves are found in many places in Europe. Because of the danger wolves posed, humans of the first agricultural eras often feared wolves and did not accept their presence. Due to fairy tales such as "Little Red Riding Hood," "The Wolf and the Seven Young Kids," and "The Boy Who Cried Wolf," many people believe wolves are bloodthirsty, human-devouring animals. Stories about children raised by wolves, as in

ancient Roman mythology where a she-wolf suckled Romulus and Remus, the founders of the city of Rome, show the wolf from a different side, but generally the wolf has a bad reputation.

Negative ideas about wolves were amplified during the period in Europe and the United States when wolves lived in large numbers, and humans started to rapidly deplete wolves' regular prey animals. Because of this, especially in severe winters, wolves had to move to other animals of prey and often chose cattle. At that point the wolf became a cattle robber, and for that crime there was only one punishment: death. Everywhere the wolf was hated and pursued. Many stories were also told about wolves attacking people,

Figure 2.12 "The better to see you with": woodcut of "Little Red Riding Hood" by Walter Crane (1845–1915).

Figure 2.13 Illustration of the fairy tale "The Wolf and the Seven Young Kids" depicting the wolf attacking the kids once he is let into their home. Illustration by Karl Fahringer (1874–1952).

Figure 2.14 The Capitoline Wolf is a bronze sculpture in the Museo Nuovo in the Palazzo dei Conservatori on the Campidoglio (the ancient Capitoline Hill), in Rome, Italy, where it has been housed since 1473. The statue's subject is inspired by the legend of the founding of Rome: when Numitor, the father of the twins Romulus and Remus, was overthrown by his brother Amulius, he ordered his sons to be cast into the river Tiber. They were rescued by a she-wolf that cared for them until a herdsman, Faustulus, found and raised them.

Figure 2.15 *Romolo e Remo allattati dalla Lupa* by Pieter Paul Rubens (1577–1640) in the Musei Capitolini in Rome. The painting from 1616 depicts Shepherd Faustulus (on the right) finding Romulus and Remus nursed by a wolf (center). An old man (symbolizing the Tiber river) and a woman (the vestal virgin Red Silvia, mother of Romulus and Remus) are seen on the left.

and so humans became afraid of the wolf although, in reality, the wolf is quite afraid of people.

In Europe, no wolf has ever, under normal circumstances, attacked a human—the exception is wolves infected by rabies—but the wolf was condemned by people and hunted the world over. In Scotland, large areas were even deforested to take away the wolf's hiding places, but humans also relied on traps and poisoned food. These tactics were successful, and except for some protected groups, the wolf as a species diminished in the United States and Europe. Today wolves are an endangered species. This is tragic because wolves play a key role balancing natural ecosystems.

PROCESS OF DOMESTICATION

Domestication is the separation of smaller groups of animals from wild species. To understand how and why people domesticated wolves—a wild animal with such a negative image—we first have to take a look at the characteristics of wolves that humans found desirable. The great adaptability of the wolf, to climate as well as to food, and its fundamentally social nature make it an ideal candidate for domestication. In addition, the wolf's exceptional sense

of smell and strong hearing make it an excellent hunter. These same traits help wolves give early warning of all kinds of danger—a most welcome trait for humans living near them.

Domestication of wolves did not take place at one time or in one place. Everywhere that humans and wolves coexisted, wolves were sometimes domesticated as pets, most likely in early agricultural communities. The timing of early domestication is not certain but was likely at least twelve thousand years ago.

In general, wild canids are timid, careful, and distrustful of everything unknown. Wild wolves avoid humans as much as possible, but the scents and perhaps warmth of human settlements may have been tempting. Hungry wolves are not fussy about their food, so hunger may have emboldened them to approach human settlements. Food found in such places is rife with human scent, and as the human scent became more familiar, wolves' shyness and fear of humans likely decreased. This acclimatization to humans may have eventually led to an urge to stay close to them, and in younger wolves probably led to self-submission. Young cubs from abandoned litters or those stolen from a litter may have been taken into the settlements. Female wolves may have chosen human settlements as safe places for their litters.

Figure 2.16 Discovery of dog skulls in the remains of human settlements around Lake Ladoga near Leningrad (Russia) indicates that as early as 2500 years ago, sled dogs were in use.

Studies of how early humans interacted with wild animals, and studies of wolves in the wild, have shown that taming social animals, such as those that live in packs, is relatively easy. Bonds of companionship likely developed between humans and the clumsy, frisky wolf offspring, and those friendships arose from a need to play and to nurture. Eventually the wolf submitted to the human as pack leader and was thus domesticated. Of course, this was a long and drawn-out process. Over time, by virtue of human-driven selection and breeding, the many dog breeds we now know came into being.

EFFECTS OF DOMESTICATION ON THE WOLF

Through domestication, humans interfered in the natural selection of wolves, changing their social structures, skills, habitat, food, and even reproductive opportunities. From this process emerged the domestic dog.

Today, dogs are distinct from wolves in several ways.

- As a subspecies, dogs show greater diversity than wolves due to selective breeding. There are more than 350 pure breeds of domestic dogs.
- Dogs have smaller teeth, a shorter muzzle and legs, and smaller feet than wolves. Most of these changes reflect the dog's dependence on humans for food and shelter.
- Dogs' brains are about 30 percent smaller than wolves' brains, and their hunting instinct is much weaker, reflecting the dog's reduced need for self-sufficiency.
- Dogs reach sexual maturity much sooner than wolves do. Dogs normally reach maturity between six months and a year, whereas wolves do not reach maturity until about two years of age. Female dogs go into heat more often than female wolves, likely because the dog's survival does not depend on a careful balance of its population with prey species.

People often wonder whether domestic dogs would be able to survive in the wild. There are wild dogs in Australia, Papua New Guinea, and on the Galapagos Islands that have been feral

for many generations. They did not devolve back into wolves but kept the typical characteristics of domestic dogs, such as color, decreased brain mass, and dog-like patterns. Not all kinds of dogs can survive in the wild, however. In the wild, there are no dwarf forms, extremely large animals, or dogs with behavioral anomalies. Natural selection has its part to play.

3

Basic Concepts in Dog Behavior

Although dogs have been domesticated for thousands of years, they continue to share many behaviors with their wild ancestor, the wolf. All dog behavior—desired and undesired—is a form of communication. Understanding the source of certain dog behaviors, as well as the meaning of these behaviors, will allow you to develop and adapt your training program for specific dogs.

Figure 3.1 The wolf is at one with its environment due to thousands of years of natural selection.

Types of Behavior

Behavior is a sequence of actions performed by an animal in response to a stimulus. A stimulus can be external or internal. An example of an external stimulus is seeing an enemy approaching; at such a stimulus the animal may react by escaping. An example of an internal stimulus is hunger; the animal might react by searching for prey. Just like humans, however, dogs cannot always decide what to do in response to a given stimulus.

Behavior can be conscious or unconscious. Not every animal reacts in the same way to the same stimulus, which is why there are differences in behavior. There are three main categories of behavior: innate, acquired, and trained behavior.

INNATE BEHAVIOR

Behavior is determined in large part by genetics, and it is important to understand that the heredity of behavior does not differ in principle from the heredity of the color of the coat, the shape of the ear, or the position of the limbs.

Innate acts are determined by heredity and are already at least partially present from birth. These are, in the beginning, simple acts, such as urinating and defecating when the female licks the puppies, kicking with the front legs against the female's nipple to get the milk out of the deeper regions of the milk glands, and so forth. In later stages of the dog's life, various other behaviors will appear that the dog was never taught, such as turning around before lying down, scratching away soil after answering nature's call, and so on.

Instinct—an innate behavior—is the ability of an animal, when placed in a situation it has never before experienced, to react in such a way that its survival or that of its species will not be in danger. Instinctive acts can be further developed by experience and exercises. In young dogs this development happens by playing together and imitating the behavior of older animals. In the play of young wolves, we see all acts necessary for hunting; the puppies are

Figure 3.2 This young wolf is already adapted to the life it has to live, the food that can be found in its habitat, and the normal climate for that area.

by turns hunter and prey. In dogs we see behaviors such as shaking rags as if shaking prey to death. In this way the reactions of the young animals are sharpened and their skills developed, while they also learn to control their bodies.

ACQUIRED BEHAVIOR

Acquired behavior is also determined by heredity but has to be further developed by learning. This special behavior is learned in the so-called socialization period, which begins in the third to twelfth week after birth. In this period the dog learns to react to siblings, other dogs, people, odors, sounds, sight, and so on. We will discuss this form of behavior in more detail in chapter four.

TRAINED BEHAVIOR

Trained behavior is the strengthening or suppression of innate and acquired behavior. This begins with obedience training and continues with the dog's K9 training and exercises. If part of the desired trained behavior is not innate or acquired, or if there is no hereditary tendency for a certain behavior, then teaching and training that behavior will make no sense to the dog. Understanding this principle is key to success in dog training.

Can Behavior Be Inherited?

Every dog behaves in its own unique way. Puppies of the same parents can be very different in their behavior patterns. This variation in behavior arises because of differences in genes, differences in socialization, and the owner's training methods.

Some breeders allege that certain actions during mating or gestation can influence the behavior of the puppies, but this claim has never been proven. Of course it is possible that certain illnesses, medications, or drugs can influence the development of the fetus, but that is a totally different situation.

Some trainers believe parents can pass on trained skills to their offspring, but this belief is also incorrect. If it were the case, young and poorly trained dogs would produce puppies with fewer good behavior patterns than older, well-trained dogs; but that is not

Figure 3.3 Puppies of the same parents can have very different behavior patterns.

what happens. What does appear to be true is that parents with a good aptitude for training, and who can be trained without a lot of problems, usually produce descendants with a similarly good aptitude for training.

FORCED MATING AND BEHAVIOR

Despite the common misconception, a forced mating will not influence the behavior patterns of the descendants. Sometimes forced matings happen when a breeder does not know the right time for the service or when a bitch absolutely does not accept a dog. In general, the correct time for mating is the twelfth day after the beginning of being in heat, but in practice the time the bitch wants to stay for mating can vary from the third to the thirtieth day. Impatient breeders or breeders with less knowledge may not want to wait for, say, the twentieth day, and so they force the mating. Such a service will not affect the offspring, but managing animals in such a way is most objectionable.

If, however, a bitch doesn't accept a dog because she displays some kind of deviant behavior, it is possible that the bitch will pass on her abnormal behavior to her offspring, not as a result of the forced mating, but by some hereditary defect. It is no surprise that the puppies of such a bitch will not meet the needs of a K9.

Figure 3.4 Forced matings happen when the breeder does not know the right time for the service or when the bitch absolutely does not accept the dog, neither of which is the case with these pugs.

Drive

Often a stimulus will drive a dog to specific behavior. A dog's drives are at the root of instinctive acts. However, when we try to divide instinctive acts according to different drives, then we have problems, because many times an act will correspond to more than one drive. That is why we like to speak of a *drive complex.* Konrad Lorenz writes, "A drive will be stimulated when a certain stimulus from inside or outside reaches a living being. This drive will be the button to relieve a whole set of reactions, the so-called instinct acts, which are pressing for satisfaction and relief. All little forms of behavior are in service to the four big drive complexes."

To further understand dog behavior, we will examine each of these drive complexes in turn: food acquisition, reproduction, flight, and aggression.

FOOD ACQUISITION DRIVE COMPLEX

If an animal gets hungry, its drive for food acquisition is activated. Dogs, like wolves, are pack animals, which hunt together. Hunger triggers the following behaviors: searching by tracking and air

Figure 3.5 A wolf has to eat very quickly because otherwise it will be chased away by hungry pack mates. As a result of this primeval instinct, the domestic dog still "wolfs down" its food.

scenting, running, locating and working out the hunted odor, indicating (pointing) as a precursor to the prey-jump, the kill, the drag off, and the fast eating of parts of the prey. While eating, the wolf is always in a hurry. It has to eat quickly, because otherwise it will be chased away by its hungry pack mates. This tendency for fast eating is also seen in dogs.

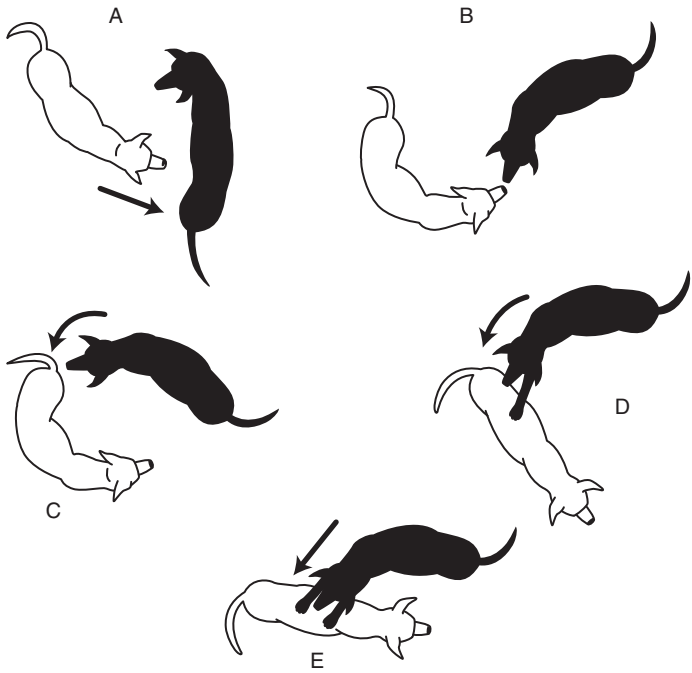
If all the pack mates have eaten, and no food has to be brought to the den, the remaining part of the prey is buried for later. A dog does the same thing: with its forelegs it digs a hole in the ground, puts in its bone, and with its nose and legs covers it with soil. The dog is not always able to find this hidden bone later; sometimes it will not even search for it. A well-fed dog that is rarely hungry for long will not encounter the stimulus to search for the bone. But in spite of its daily meal, dogs still have the food acquisition drive. We can see them searching, running, and hunting, and if they catch a rabbit, they will shake it to death. The smell of the rabbit track awakens these drives in the dog, and many years of natural selection mean a hunting dog cannot stop. As soon as this stimulus triggers the drive, the dog has to carry it to its conclusion.

REPRODUCTION DRIVE COMPLEX

The reproduction drive complex includes mainly the sexual drive and the brood-care drive. Both serve the instinct for survival of the species. The sexual drive is triggered if a dog smells a bitch in heat. The dog will follow this smell, and if the bitch is prepared to mate, the service follows. Before the service takes place, there is foreplay in which the dog and bitch play together, smell and lick each other's genitals, and run around. If the bitch stops and stands with her tail aside, the dog will mount her.

The brood-care drive is the behavior of the bitch toward her litter. In domesticated dogs males do not help with the care of the litter, but male wolves commonly care for pups.

Figure 3.6 Characteristic postures the dog (black) and the bitch (white) adopt before copulation.



A: The dog offers the bitch his side; she approaches and sniffs at him.
B: The dog turns and sniffs at the snout and ears of the bitch, which does the same to the dog.
C: The dog sniffs and licks the vulva, and the bitch facilitates by putting her tail to one side.
D: The dog lifts one of his front legs on the back of the bitch in an attempt to mount her.
E: After some playing, the dog lifts both front legs onto the bitch to mount her; if she is willing to mate she will not turn to the dog to bite him away.

FLIGHT DRIVE COMPLEX

The instinctive reaction of an animal to something or someone approaching is to flee as soon as a certain distance between the animal and the approaching threat is crossed. The distance at which fleeing happens is called the flight distance. If flight is impossible because of a cage or litter, the animal will give some sort of defensive warning such as growling or showing teeth. This behavior means, if you come closer, I will have to attack you. Coming within

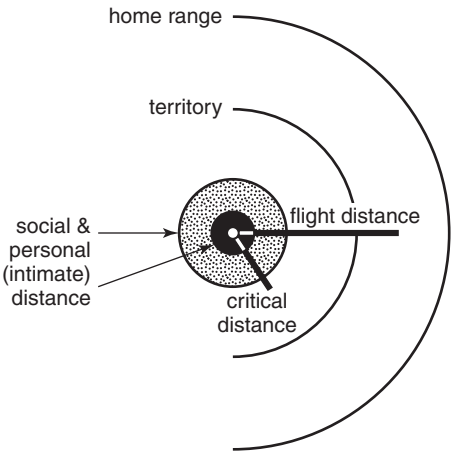


Figure 3.7 The different distances in an animal's world.

the defense distance or critical distance will cause the threatened animal to attack. Flight and aggression will be discussed more extensively in chapter five.

With a dog in the center, surrounded by conceptual spheres of territory and home range, if there is trust, one can enter the animal's social distance and make physical contact on entering the "personal" or intimate distance. With a wild/feral dog, entering within the flight distance will trigger escape. If the animal cannot escape, and one continues to approach and enters the critical distance, the animal may freeze or attack.

Flight by another animal or person triggers a dog's catch drive. Someone running away from a dog will be attacked more likely than someone standing still. The same happens if someone tries to withdraw a hand quickly from a dog that wants to bite. Humans have to suppress their own flight drive (running away or withdrawing the hand) so as not to awaken the catch drive in the dog.

The flight drive can also be observed in puppies on a leash for the first time. Animals deprived of their freedom want release. In all possible ways (scratching, biting, jumping around, etc.) they will try to get free. These are expressions of the flight drive in dogs,

as is biting away bandages or chewing a leash by which a dog is fastened at a certain place.

AGGRESSION DRIVE COMPLEX

According to Darwin, the struggle for life is a competition between individuals of the same sort. This rivalry is necessary for the survival of the species. The strongest, smartest animals usually get more food, are healthier, and produce more offspring. In wolves, aggression is seen to sort out social rank within the pack and between packs to establish territory.

RANK

A wolf pack has a strong order, and fights between pack mates establish the order of ranking. If the animals have enough space and can flee, such fights are never fatal. The strongest and most experienced wolf is the leader of the pack (the alpha animal). Ranking comes into play in puppies of about three weeks of age. As soon as the youngsters do things the mother animal cannot accept, she will growl, snarl, or take the puppy by the scruff of the neck and shake it. But she will never bite it to death. Her behavior teaches the puppies obedience, a trait vital to survival.

In another display of obedience, a puppy lies down on its back and shows its belly to its mother, after which the mother licks it. Through this licking the puppy is stimulated to pass urine and feces so the bitch can keep her puppies and litter clean. In both young and adult dogs we see the same behavior when they throw themselves on their backs if they want to be petted. Even adult animals can, in such a position, pass a little urine. Such animals are not displaying a problem with their house-training; they are demonstrating that they are highly submissive. This behavior can even happen after simply hearing the handler's voice.

In normal situations, a dog automatically acknowledges the human as superior, and a puppy will immediately recognize a human as the leader of the pack. By walking upright, the human

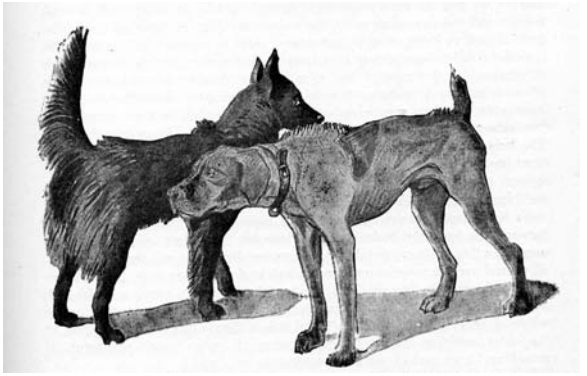


Figure 3.8 Dogs showing mutual mistrust, ready to fight.

shows an impressive figure, a characteristic of the pack leader. But whether or not the human can stay the leader depends on the measure to which he or she can maintain authority and raise and train the young dog. The future of leadership is fully in the hands of the handler. If the human is neglectful, a self-assured dog will struggle for the leadership.

When two self-confident strange dogs meet, they both make themselves taller, raise their hackles and hair on the back, and walk with stiff limbs and raised lips around each other. Neither wants to be inferior to the other. But if one of them is a less self-confident animal, it will demonstrate submissive behavior. It will lie down on its back, showing the higher-ranked animal its vulnerable spots: the belly and throat. By pulling its tail between its legs and close to its belly, the dog hides the odor of the anal sac glands, which in higher ranked animals are a sign of power. This submissive behavior inhibits the higher-ranked animal's urge to bite. The dominant animal may hold the submissive's neck for a short time, but it will not bite or kill the submissive dog.

The same inhibition to bite can be seen in mature dogs that squabble with younger dogs (until about seven months old). Such young dogs are not bitten, just as normally a dog will not attack a bitch.

TERRITORY

Dogs and wolves also use aggression to defend territory. In the reproduction section, we explained that the smell of a bitch in heat is part of a dog's finding a partner, but odor is also important in marking territory. By planting odor "flags"—by urinating on trees, house corners, stones, and other such places—dogs mark their territory. A few drops of urine are normally enough to tell other dogs that he or she is the owner of this territory. If a dog finds out that another dog has planted a "flag" in its territory, the dog will study the flag seriously and then mark the territory again. Many dogs put their feces at the top of a tussock of grass, a big stone, or a tree-stump. After this they make kicking moves with the hind legs, not like a cat to bury and hide the feces, but rather to disperse the odor by which other dogs know who owns the territory.

A wolf pack will not enter an area marked with any such odor flags from another wolf pack. If they do, serious conflicts and fights will follow. Wolves in strange territory will lose, because the ones fighting in their own territory are much more aggressive and sure of their position. We also see this in dogs guarding the garden, car, or house. Strange dogs avoid such places because a dog in its territory is aggressive in defense. In such cases we see the intruder will quickly run back to its own area, and the dogs will stand at the border of their territories, both with menacing postures, but they won't cross the border.

THE ROLE OF THE ANAL SACS

Smell plays a central role in a dog's life, and therefore dogs are sometimes called nose animals. Many drives are triggered by scent, and dogs recognize each other by their odors. Besides by urine and feces, the dog also produces odor by the anal sac glands. Two anal sacs lie to the left and the right in the surrounding tissue of the anus and have a round–oval shape with a diameter of 0.20 to 1.5 inches (0.5 to 4 cm) depending on the dog's breed, age, and sex. The anal sacs convert into a funnel-shaped constriction and discharge in the skin

parts of the anus. These openings can be seen if you turn the wall of the anus a little bit outside. You see the excretory ducts at the five and seven o'clock positions. In the walls of the cavity of the anal sacs are small glands—the anal sac glands—that fill the sacs with a mostly grayish-brown, slimy, pasty, and filthy-smelling secretion. The smell is thought to be unique to each dog. These glands enlarge in bitches who are in heat or pregnant, and there is a strong increase in their secretions. These secretions are stored in the sacs until the dog needs them.

The anal sac glands are stink glands and the fluid can be pressed out of the sac if the dog is in danger. So the function of the anal sacs is exactly the same as the stink glands of the skunk or polecat. But the domestic dog has no natural enemies, so there is no reason to squeeze out the anal sacs. And there the trouble starts. Normally the anal sacs are emptied when the animal relieves itself, and the contents mark its feces (marking its territory). If the compound of the excrement is too weak during several bowel movements, there will be too little pressure on the anal sacs to get rid of their contents during the dog's bowel movement. But the glands remain productive and do not stop, even if the sacs are full. This irritates the wall of the anal sacs and bothers the dog, which starts licking and biting under its tail or rubbing its anal area along the floor. Emptying the anal sacs manually is the treatment. This can be done from the outside by pressing both sacs in a tissue between thumb and forefinger while at the same moment bending the dog's tail forward over its back. Ask your vet for help if the irritation is persistent.

Displacement Behavior

If certain stimuli awaken drives in the animal and the dog cannot respond to them, the animal becomes frustrated. Frustration is a common emotional response to opposition, even in humans.

Displacement behavior is the result of two contradictory instincts in a particular situation. Birds, for example, may peck at grass when uncertain whether to attack or flee from an opponent; similarly, a human may scratch his or her head when uncertain about which of two options to choose. Displacement behavior often involves actions to bring comfort, such as scratching, drinking, or feeding.

An example of displacement behavior in dogs can be observed when you put on your coat to go out. The dog starts jumping around you, ready to go; but if you leave the dog at home, the tension that accumulated in the dog as a reaction to you putting on your coat requires release. The dog may go on a rampage in the home or howl while you are away to release the pent-up emotion.

Another displacement activity can be observed in a dog watching a mouse. Just as the dog starts the prey-jump, the mouse disappears in a hole. The tension in the dog then releases through some aimless act, such as licking its forepaws.

A dog's frustration is often released by defecating or urinating in the house or some other destructive behavior. A dog that was always house-clean can become not house-clean after a baby comes into the home and the dog receives less attention. The animal does this out of frustration. The only way to avoid such behavior is to ensure the dog experiences no change in the time and attention you give it.

Using Knowledge of Drives in K9 Training

Training K9s is most effective and successful when it is based on the natural abilities and drive complexes of the dog and when it is based on instinctive acts. Working against instinct creates frustration for the dog and makes it unhappy about the work we want it to perform. The pages that follow describe some of the important drives used in K9 training as described by Professor Eugen Seiferle.

HUNTING DRIVE

By hunting drive we mean the characteristic drive of dogs to scent game or to search for and chase game on sight. This drive goes back to dogs' wolf ancestors and finds its origins in the need to find food. The hunting drive is still more or less present in modern dogs, although it no longer has to do with feeling hungry or the pressure find food. In some house pets, the hunting drive is for the

Figure 3.9 The hunting drive is still present in modern dogs, as in this Irish setter.

most part lost. When this hunting drive still exists, we speak of a passion for hunting.

As a part of the drive to acquire food, the hunt is not an act motivated by aggression. As Dr. Erik Zimen writes, "During hunting, dog-related canids 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 behavior) when the animal cannot reach his goal."

PREY DRIVE

The prey drive is similar to the hunting drive. Originally the prey drive grew out of the attempt not only to hunt game, but also to

Figure 3.10 Using the dog's prey drive, you can teach it to chase a decoy and bite a sleeve.

catch and to kill it to satisfy both the animal's own hunger and that of its young. This drive is present in many dogs; however, it is now focused more on chasing toys. The prey drive is now strongly expressed in chasing, catching, and shaking articles.

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 near the soil) and in following that track with enthusiasm and perseverance. When the tracking drive, which can also be directed to objects 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 finding game (or hidden subjects, persons, or odors), not only by using the nose but also with the support of the eyes and ears, and in following the found odor by air scenting, with a high nose, enthusiastically and in a determined way.

PACK DRIVE

The pack drive is demonstrated by dogs wanting temporary or long-term group relationships. For most dogs, 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 changed form) toward living communally.

BRING DRIVE

In wild canids, the bring drive is expressed, under the influence of the pack drive, by animals bringing prey to the lair, where the young are waiting. The hunting, prey, tracking, search, and bring drives form a chain that ensures the animals get necessary food.

Figure 3.11 Using its prey and bring drives and after some focused exercises, this Bouvier des Flandres shows that dogs can be trained to pick up and bring dumbbells on command.

For dogs for which the problem of food acquisition no longer exists, these drives can show up independently. Then we see, for example, that the hunting drive can be present in a dog without the prey drive, or that the bring drive has nothing to do with acquiring food.

Therefore a dog's hunting drive, as well as the prey and bring drives, can be worked off by replacing prey with a toy, a stick, a ball, or, for greyhounds, a piece of rabbit skin. Given the prey and bring drives and some focused exercises, a dog can be trained to pick up and bring (replacement) prey, which is usually called retrieving.

MOTION AND OCCUPATION DRIVES

These drives originate in the constitutional circumstances of the animal, its temperament, and its muscular strength; in the conditional circumstances, the health, and the feeding level of the animal; and in its training. In canids living in the wild, the motion and occupation drives are satisfied by the struggle of daily existence, food acquisition, skirmishes with pack mates, and the desire to avoid enemies. Because modern dogs don't have to struggle for survival, they feel, depending on age, temperament, and physical circumstances, a more or less intense pressure to release energy in movement or in some sort of work. This drive is more intense in young dogs and in certain breeds.

PLAY DRIVE

The play drive is usually present in dogs until they are quite old. This drive has a strong relationship to the motion and occupation drives. By play-skirmishing with pack mates or by playing with objects, young dogs learn to use and control their physical and mental skills. They use play to prepare themselves without danger for the serious tasks of life. During play, dogs learn all important forms of behavior.

GUARD DRIVE

Although it can express itself in several different ways, the guard drive is primarily expressed by barking to pack mates to announce

Figure 3.12 The guard drive exists to announce the approach of strangers to the habitat.

the approach of strangers in the habitat. Although guarding is clearly characteristic of wild canids, it is somewhat lost in today's domestic dog. How the guard drive is expressed in modern dogs depends partly on their confidence, courage, sharpness, and defensive drive; it also depends partly on their fear, distrust, and flight drive. In general, uncertain and distrustful dogs are the best guards dogs. Past experiences also play an important role.

FLIGHT DRIVE

The most obvious expression of the desire for self-preservation is the flight drive. This drive is expressed in the pressure to escape from a real or apparent danger by flight or other species-specific escape behavior (for instance, to shirk, hide, play dead, etc.). Animals living in the wild show the flight drive as well as associated behaviors demonstrating distrust, fear, and timidity. A remarkable difference between wolf and dog is that, because of living closely with human beings for so long, most dogs have no shyness toward people. Dogs perceive the humans with whom they live as their pack mates.

DEFENSIVE DRIVE

By defensive drive we mean the willingness of the dog to protect threatened pack mates (for instance, the handler or a member of

the family) and actively defend them if necessary. From this defensive drive a dog will resist an enemy's threat without hesitation and will defend itself and its handler. Some dogs have a stronger defensive drive than others.

Because even working dogs have been selectively bred for beauty, many animals have a diminished or missing natural defensive drive. Trainers must therefore focus instead on the prey drive when training bite work. By using the prey drive, we can teach the dog to chase a decoy (usually a sleeve or burlap sack worn or carried by a human helper). To stimulate its defensive drive, the dog first must learn that it will always win the fight with the decoy.

Figure 3.13 For dogs with a reasonable defensive drive, it doesn't matter where they bite the decoy; the first thing their snout reaches will be bitten.

For dogs with a reasonable defensive drive, the sleeve as prey is not very interesting. They want to chase the threatening helper away by biting. To these dogs, it normally doesn't matter where they bite the decoy; the first thing their snout reaches will get bitten. Therefore, if we want these dogs to bite the sleeve, we have to teach them to do so. In this, the skill of the helper is paramount. If these dogs learn to bite the sleeve, they will normally do so all the time; but of course there are exceptions. If dogs with a strong defensive drive get the sleeve from the decoy after a fight, they often do not know what to do with it. Some even stumble over it because they want to chase the helper; all their aggression is focused on the helper. It does not make sense to teach such dogs to see the sleeve as prey and walk proudly over the field with it.

With such dogs it is better for the decoy to draw the sleeve up to chest height and for the handler to teach the dog to release on the command "Out." These dogs are often focused more than enough on the helper and will guard correctly after releasing the sleeve. To teach a dog the right way to bite, to search, or to obey, you absolutely must assess the dog's reactions and build the training on that knowledge.

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4

Developmental Stages and Behavior

Much of a dog's temperament and many of its general modes of behavior are a result of experiences in its early life as a puppy. Thus, many undesirable behavior patterns in adult dogs could have been prevented through proper management of the puppy's early environment. It is always easier to prevent aberrant behavior from occurring in the first place than it is to modify the behavior once it has been learned.

The Importance of Early Experience

Many experiments clearly indicate that if a young animal is taken from its mother too soon or deprived of tactile stimulation, its emotional makeup as an adult dog may be irreversibly damaged. For instance, the experiments of Dennenberg and Denelsky with two groups of forty rats that were each treated in a different way show that infantile handling has a dramatic effect on exploratory and emotional behavior. In the experiments, one group of rats was handled daily in the time between birth and weaning, while the other group was not handled. The two groups reacted quite differently to tactile stimulation when they became adults. The rats that had been handled during infancy reacted to a variable environment of different textures and colors by becoming more active and by

engaging in various exploratory behaviors, while the non-handled group tended to become less active, found the environment threatening, and reacted by cowering in the corner of their cage.

THE IMPORTANCE OF AFFECTION

Another well-known experiment is Harry Harlow's dramatic research on the development of the affectional system in the rhesus monkey. Harlow separated his monkeys from their mothers at birth and gave the monkeys surrogate mothers, rather strange-looking cylindrical objects made of either terry cloth or wire mesh with bottles in their interiors so the babies could nurse from them. One group of baby monkeys was assigned to the terry-cloth mothers while the other group was assigned to the mothers fashioned from wire.

The results of this experiment were quite dramatic. The monkeys raised with the cloth surrogate invariably formed emotional attachments to them and would, if frightened, run to their cloth-covered surrogate mothers and cling to them, much as they would have to living mothers. However, the monkeys raised with the wire mothers did not exhibit this behavior because they had not developed an emotional attachment to the surrogate mother. If frightened, these monkeys would run around the cage clasping the head and body, and would rock back and forth in an almost convulsive manner.

In another experiment, Harlow raised one pair of infant monkeys together from ninety days of age, eight other infant monkeys with cloth surrogate mothers and two infant monkeys in total isolation. Once again, the results were dramatic. The two monkeys raised together but separated from their mothers did not develop anything approaching normal infant–mother emotional interaction patterns. The eight monkeys raised with cloth surrogate mothers showed overly strong emotional attachment to their "mothers," yet their emotional development was relatively normal in comparison with the other groups of monkeys. The isolated monkeys were described as being in a state of "passive catatonia,"

and their behavior was deviant in every way. They did not develop the capacity to interact with other monkeys and instead simply lay immobile in their cages. What these dramatic experiments show in monkeys is the same in dogs, indicating the need for puppies to have certain important experiences during their early development.

Filial Imprinting

Konrad Lorenz popularized the term *imprinting* in the study of early learning. In filial imprinting, a young animal learns the characteristics of its parent. Imprinting is most obvious in birds that leave the nest shortly after birth. These birds quickly imprint on their parents and then follow them around. Imprinting was studied extensively by Lorenz working with greylag geese. He demonstrated how incubator-hatched geese would imprint on the first suitable moving stimulus they saw within a critical period (between thirteen and sixteen hours after hatching). Most notably, the goslings would imprint on Lorenz himself (more specifically, on his wading boots), and famous photographs show him being followed by a gaggle of geese that had imprinted on him. Lorenz

Figure 4.1 Through filial imprinting, a young animal learns the behavior of its parent.

stated that during the critical period, a genetically programmed series of behavior—fixed action patterns—are released by the first moving object the animals see. He also demonstrated that this imprinting process is totally irreversible once it has taken place.

Birds are precocial animals, meaning they are neurologically mature when they are born. Because birds are capable of interacting with the environment right after birth, their socialization process—filial imprinting—is an immediate phenomenon. Dogs are non-precocial animals; they must first go through a neonatal period of development during which their sensory and motor capacities must develop before they can interact with the environment. As a consequence, the dog's socialization process occurs over a longer period. Michael Fox has pointed out that "essentially, the two phenomena, imprinting and socialization, in the precocial and non-precocial animals, are similar in that there is an initial period which allows emotional attachment to any object (normally the mother), after which strong avoidance behavior to novel stimuli develops."

Critical Periods in Dog Development

Now we will take a closer look at the crucial periods in the development of behavior in dogs. Different researchers give somewhat different time frames and sometimes different names for these periods. For example, Michael Fox makes a distinction between critical and sensitive periods:

> Critical periods are those definable times during development when the organism is dependent on environmental influences for its development to continue normally. Sensitive periods are periods wherein the animal is not dependent upon environmental influences to continue along the path of development that is determined genetically and shaped by the environment. During a sensitive period, however, environmental events have especially powerful influences that affect the integration and development of the behavior system.

Overall, such discrepancies are beyond the scope of this book. We will discuss four important periods in the early development of behavior in dogs:

1. Neonatal period: from 0 to 13 days
2. Transitional period: from 13 to 20 days
3. Socialization period: from 3 to 12 weeks
4. Juvenile period: from 12 weeks through sexual maturity

NEONATAL PERIOD

A dog is born helpless and unable to stand, with little if any ability to hear and no ability to see. This helplessness is in direct contrast to the hyena pup, which can stand within an hour or so, can see and hear perfectly, and will attack viciously. The dog puppy will nevertheless react to certain stimuli. The puppy's brain is only partially developed; the motor cortex—the external gray layer of the brain—has the most advanced development. Several reflexes present in the newborn puppy are also present in the newborn human infant. One is vocalization. Both cry when they want attention. Other reflexes are the crossed extensor and magnus reflexes. In the crossed extensor reflex, if you pinch one hind leg of the puppy, it will flex but the other leg will stretch out, or extend. In the magnus reflex, if the head is twisted to the right, the right-side limbs will extend while those on the left side will flex. An important reflex in the newborn puppy concerns elimination. If the genital area of the puppy is gently massaged, urination and defecation take place. The bitch stimulates this reflex by licking the puppies' genitals. Dog breeders massage the area to prevent constipation in orphan puppies. This reflex disappears by the fourth week of life. The disappearance of the reflex is somehow keyed to the puppy's increasing ability to walk and to leave the nest to relieve itself.

The ability to feel pain is weak in the newborn puppy. Moreover, the nerves carrying pain sensations to the brain seem to tire very quickly and even seem to cease to function. If the tail of a puppy is docked—cut off—at two or three days of age, the puppy

Figure 4.2 After bottle feeding a pup, you must imitate the licking motion of the mother with a damp tissue, rubbing the anus and abdomen to stimulate the pup to pass urine and feces: elimination is almost as important as feeding.

may give a single cry, but then it will return to nursing or to sleep and will give no sign that it is experiencing any discomfort.

The so-called rooting reflex is also present in the newborn puppy. The rooting reflex pushes the puppy to a nipple and helps it burrow under other puppies in its quest. If a puppy is separated from its mates and its head is gently touched, it will move forward. It can move for a distance of some yards in this way and will show astonishing endurance in doing so. This reflex disappears at about four weeks.

A newborn puppy of even the long-jawed breeds has a short muzzle. As the puppy nurses, it pushes into the breast with a regular rhythm. It has been suggested that this is done to push back the breast so that the puppy can breathe while sucking, but the full reasons for this behavior are poorly understood. For example, such pushing may also be a method of stimulating milk production in the breast. This kneading of the breast ceases when the puppy is about four weeks of age.

Although the puppy is born with its eyes and ears closed, its sense of taste is already well developed, as is its sense of smell,

Figure 4.3 The newborn puppy cannot see and crawls about seeking warmth and nutrition by moving its head back and forth.

though to a far lesser degree. Fox found that pups exposed to an olfactory stimulus applied to the mother's mammary region during the first five days of life showed an orientation toward the stimulus outside of the nest that was distinctly different from the reaction of the control-group animals that had not been exposed to that olfactory stimulus. Fox concluded that the newborn dog can respond differently to odors and that habituation to an odor can develop at an early stage.

A puppy in the neonatal period is far different from the animal it will be as an adult. The newborn dog cannot see and simply crawls about seeking warmth and nutrition by moving its head back and forth. Dramatic changes occur in the next weeks of its life.

TRANSITIONAL PERIOD

Most puppies can open their eyes by day fourteen, but their vision is still poor since the retina does not become fully formed until sometime during the fourth week. At fourteen days, puppies show no response to noise, but during the third week of life, the startle reflex begins to appear. At first, noise will startle a sleeping puppy, while a puppy that is awake will ignore the sound. During the

fourth week, the startle reflex becomes more pronounced. Both the ears and eyes are functional, even though the section of the brain concerned with sight may not be fully developed before the seventh or eighth week.

With the opening of the eyes, the second developmental period—the transitional period—begins. During a period of about one week, the behavioral patterns of the young dog change dramatically as it makes the first transitions from the neonatal to the behavioral patterns of an adult dog. Its eyes open, its motor capacities develop, it begins to walk instead of crawl, and specific cortical areas in the brain undergo rapid differentiation. At the end of this week, the puppy begins to explore the environment beyond its mother. It can more or less stand up and eat and drink in a relatively efficient way, much as an adult would. At the end of the transitional period, the puppy begins to interact with its environment. It begins to leave the nest to urinate and defecate, it wags his tail when meeting littermates, and its teeth begin to emerge. We see a strong development of the sensory and motor capacities and changes in ingestive behavior patterns. The puppy is now ready for another critical period of development, in which it will become a social animal.

Figure 4.4 In the transitional period, the puppy begins to interact with its environment.

SOCIALIZATION PERIOD

During the socialization period, the puppy begins to notice both its littermates and people. Earlier it showed little interest in its littermates. Now it begins to see and recognize them and tries to communicate. The human baby's first attempt at communication is a smile. The puppy begins at the other end of the body: it wags its tail. At this stage the puppy also begins to practice grown-up behaviors. It begins to growl and bark, chews on the ears and legs of its littermates, and rolls and tumbles in mock fights. At this stage, pain sensation is fully developed. If its mate bites too hard, the puppy yelps. Socialization begins at twenty-one to twenty-four days and is one of the most critical periods in the psychological development of the puppy. The puppy begins to investigate everything in sight. If one puppy investigates something, the others rush to help. Deafness is difficult to detect in puppies in the beginning of the socialization period because they watch each other so carefully and react so quickly as a group. From the age of six weeks a Brainstem Auditory Evoked Response (BAER) test can take place to determine deafness in puppies.

The puppy forms a bond with humans during the socialization period. An earlier relationship between the two is weak and, for the puppy, does not last. But if humans and puppy associate during the period of twenty-one to thirty-five days, then a permanent dog–person bond will be fixed in the puppy. Once strongly fixed, this bond will never be entirely broken, regardless of the future experiences of the adult dog. However, if a puppy is taken from its littermates at, say, fourteen days of age, and then is raised without seeing other dogs until the socialization period has passed, the puppy will be severely damaged psychologically. It may never recognize itself as a dog. Its territorial instinct will be abnormally strong, and it will be extremely aggressive toward other dogs, male and female alike. It may be gentle with its human family, while vicious toward strangers or when in an unfamiliar environment.

Figure 4.5 During the socialization period, the puppy begins to notice both its littermates and people.

Figure 4.6 Proper weaning will start at about five weeks if it has not been necessary earlier.

Because this period of socialization is so vital to the mental health of the dog, puppies should not be taken from the litter before they are weaned. That is, they should remain in the nest until they are forty-nine days old. It is during the period from forty-nine days of age that the next critical stage in the puppy's life begins. Puppies must adapt to the world about them. Virtually all studies have shown that this adaptive stage comes between the sixth and twelfth weeks of life, although it may occasionally last until the fourteenth week. During this period, if the puppy remains in a kennel, it will adapt to kennel life; when taken out, it will be shy and afraid. Although it may adapt to life outside the kennel, its adaptation will never be complete. Experienced dog breeders sell their puppies at seven weeks of age, and all behavioral studies show this is the proper time to do so. The puppy then makes an easy and quick adjustment.

In the beginning of the socialization period, a puppy will run up to a stranger as soon as it sees a person and will follow, just like

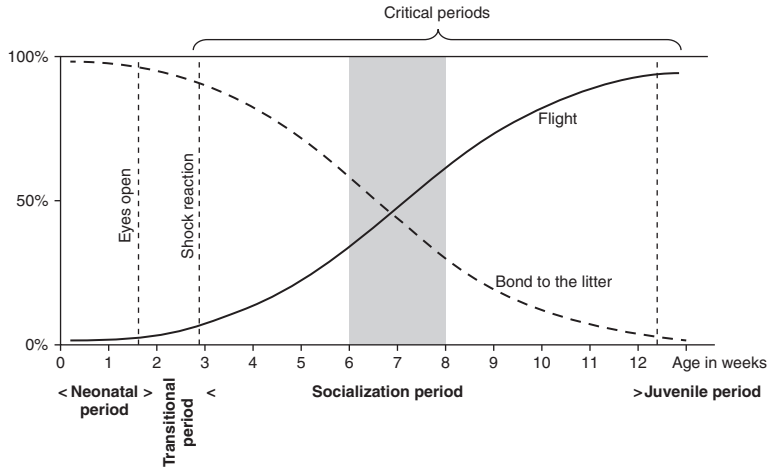


Figure 4.7 Between six and eight weeks of age, the hinge point is reached at which the bond to the litter decreases strongly and the tendency to flee increases. Seven weeks of age is the optimal time for the puppy to establish a strong bond with its new owner.

the graylag geese did with Konrad Lorenz. According to Michael Fox, both phenomena are similar in that there is an initial period during which an emotional attachment to any object occurs, followed by a period during which the animal begins to avoid new stimuli. As Fox points out, "this phenomenon is highly adaptive to any animal in the natural environment. The initial approach tendency enables the animal to establish a close emotional bond with his mother and members of his own species, while the following avoidance tendency acts as a natural survival mechanism in that it causes the young animal to avoid potential predators."

In puppies, the urge to flee is low—about ten percent—at three weeks of age, but by twelve weeks of age, the urge to flee is about ninety percent. The bond to the litter at about three weeks of age is about ninety percent, and at about twelve weeks only ten percent. At the age of about seven weeks, the hinge point is reached, and the tendencies to flee and to approach balance each other. So seven weeks of age is the optimal time for the puppy to establish a strong bond to his new owner. If little to no human contact is given until a puppy is twelve to fourteen weeks of age, it will not bond to its human companion. Lacking that dependence, the dog will then be difficult to train.

A dog that experiences this lack of human contact in its socialization period will be shy and lack self-confidence throughout its life. Here may be the explanation for the fact that some show dogs or working dogs, kept in the kennel of the breeder because they show great promise, later demonstrate shy and nervous behavior. Most breeders sell their puppies at the age of seven weeks, but if such promising puppies stay in the kennel with little opportunity to interact with different people, places, and situations, by the time they are adult enough for showing or for more intensive training, they may seem emotionally disturbed.

Before the age of sixteen weeks, dogs must have the possibility to develop all of their talents; otherwise, they will never be as good as they could have been. Between six and twelve weeks you

must lay the most important foundation for the dog's future role in life through simple obedience and scent training in a pleasant and easy way.

The instinct to seize and guard a territory appears to be basic in virtually all living beings, including humans, and it is strong in dogs. Both early and modern humans have bred dogs selectively for the guarding instinct. Dogs seem to have an inherent understanding of territory and are known to respect the rights of other dogs. Thus, if a dog enters territory claimed by another dog, it does so rather timidly. The home dog, though possibly smaller and weaker, will drive out the intruder with a great show of courage and noise. The intruder flees to neutral ground and the chaser is satisfied. But if the chaser should enter the home territory of the other dog, then the situation is reversed. The other dog becomes bold and aggressive and drives off its former pursuer. However, if during this adaptive stage in the socialization period a puppy is taken to visit neighborhood homes, including the children and dogs, then the territorial instinct is weakened. The puppy adapts to the idea that the entire neighborhood is its territory. It may permit, and even welcome, neighborhood dogs into its home ground. But it may drive a strange dog out of the entire neighborhood area.

Knowledge of the enormous influence of this critical socialization period on the future life of dogs is absolutely necessary for all dog owners, and especially K9 handlers.

JUVENILE PERIOD

The juvenile period of development begins at about twelve weeks of age and concludes at sexual maturity; for most dogs, this is seven to nine months of age. This period does not see the same dramatic behavioral changes and reorganization that occur in the earlier critical periods of development.

The long juvenile period can be divided into two phases:

- the order of ranking phase at about twelve to sixteen weeks of age;
- the cooperation phase in the period that follows sixteen weeks.

Figure 4.8 If "promising" puppies stay in the kennel and have too little contact with different people, places, and situations, as adults they will be emotional disturbed.

Figure 4.9 The juvenile period has fewer dramatic behavioral changes and reorganizations than the earlier critical periods of development.

In the ranking phase, the puppy will get its place in the pack—for dogs, this means their human family. In a wolf pack, young wolves experience scuffles and intimidation with pack mates to determine their order of ranking. In a family, a young, bold dog can try to take over the lead from the human by growling, snarling, and sometimes even biting at housemates. Of course this has to be stopped with a firm hand, but always with full understanding that this is a normal phase in the young dog's development.

In the cooperation phase, young wolves, together with parents and other wolves, go hunting. The older wolves teach them hunting techniques, and they gain experience in pack life. For humans, this is the time to raise and train youngsters and prepare them for their future tasks. In dogs, at about four months of age, the speed at which conditioned reflexes are established starts to slow down somewhat because the dog has reached a point in life when previous learning begins to interfere with new learning. Dogs going through the juvenile period of development are not known for long periods of prolonged attentiveness, a characteristic they share with human adolescents.

The juvenile male dog begins to raise his leg to urinate at between five and ten months, depending on both the breed and the dog's speed of development. The act is not a learned response to seeing older dogs raise their legs. Instead, the action is controlled by a hormone. Female dogs may also raise a leg even when squatting to urinate.

Urinating is also a powerful sex stimulant. Bitches go in heat (estrus) for the first time between six and nine months of age. If given her freedom during that period, the female urinates in as wide an area as possible as a way of luring suitors. The male urinates repeatedly during direct courtship. The urine of the female contains traces of chemical odors that draw the male and stimulate the release of powerful hormones in his own urine.

Urinating also serves as a means of communication. The dog approaches a landmark—a tree or stump, a post, or a fire

hydrant—and releases a few drops of urine. It may then scratch with its back legs. Another dog, reaching the spot, studies the odor left by the former dog. From this, the dog learns whether the first dog is friend or unfamiliar, whether it is sick or healthy, fed or hungry, and whether or not a bitch is in heat. Bits of soil carried to the area and left there during the scratching action of the hind legs may also tell the second dog where the first came from, or possibly provide other information.

A bitch going into heat, a dog lifting its leg to urinate, and a dog beginning to scratch after defecation are normal indicators of sexual maturity, when a dog's juvenile period ends and life as a mature dog starts.

The importance of a dog's early life experiences should not be underestimated. While training can enhance a dog's natural abilities, instincts, and behaviors, if a dog's development was hampered by mistreatment or illness at a critical developmental stage, its progress through training will be disappointing.

5

Expressions, Gestures, and Signals

In this chapter we will compare wolf and dog behaviors and discuss how to read the various forms of signals and expressions wolves and dogs use to communicate. Research in this area is ongoing, and there is, of course, disagreement among researchers about how to interpret some signals. Where applicable, the different views will be presented.

Research in Wolf Behavior and Communication

Most research on wolf behavior is restricted to the study of wolves kept in captivity in large habitats. This restriction is necessary because research on the behavior of free-living wolves is complicated by the large distances the animals travel.

A unique wolf project in Burgers Zoo near Arnhem, Netherlands, offers researchers an opportunity to study wolf behavior up close. There, as in many other projects around the world, dog fanciers also have the chance to take a closer look at canine behavior and communication. For K9 handlers, the chance to observe such behavior is invaluable.

Erik Zimen investigated the behavior of a group of wolves kept in captivity and compared the results of this study with a group of

Figure 5.1 The wolf "speaks" with its whole body; posture, especially head and tail position, is important. Compare the different facial expressions of the wolves in this picture; note how the wolf at the top right withdraws his ears and his neighbor keeps them upright. This higher-ranked wolf eats first, and the others wait for their turns. While waiting, they make clear to the even lower-ranked animals that they are next to eat.

poodles. His systematic work forms the foundation of this chapter. We also draw on the work of other researchers as necessary.

A wolf communicates with its whole body; posture—especially head and tail position—is very important. Ears, lips, snout, jaws, eyes, and forehead all contribute to the wolf's facial expression. Unless we specify otherwise below, we consider the behavior of the wolf and the domestic dog identical.

Dominance Behavior

Most research on captive wolf packs shows the pack to be a tightly knit group composed of individuals that have earned a ranking in a linear hierarchy. This social structure may not apply to natural wolf packs, natural dog packs, or dogs living in a human household. Research on packs formed in the wild indicates that wolves generally live in a family group that includes a breeding pair and its offspring. In these familial packs, the terms *dominance* and *submission* are less useful than *parent* and *offspring,* and they bring

with them several misconceptions. While most research to date indicates that domestic dogs conform to a hierarchy around an alpha–beta–omega structure, domestic dogs, like their wild wolf counterparts, have complex interactions with one another.

Some researchers believe that dogs establish a dominance hierarchy through aggressive play and roughhousing. However, the establishment of social hierarchies among dogs is unproven and controversial. For successful socialization and learning to relate to other dogs, puppies need to interact with their littermates. Dogs learn to relate successfully to other dogs by learning to keep the peace, rather than by constantly fighting to re-establish a dominance hierarchy.

Although dogs are commonly characterized in terms of their dominance (e.g., "my dog is the alpha"), there is some controversy as to whether dominance is a stable personality trait.

In wild wolf packs, displays of dominance include "licking up," which essentially involves begging for food; "pinning," in which a dominant wolf appears to threaten another wolf that shows submission by rolling over; "standing over" another wolf; territorial marking; and more passive expressions of dominant body language, including holding the tail and ears erect, looking directly at other wolves, circling and sniffing other wolves, and growling if another wolf moves.

Submissive displays mirror dominant displays and include adopting a posture that is physically lower than other animals', such as crouching, rolling over on the back and exposing the abdomen, lowering the tail (sometimes to the point of tucking it between the legs), flattening the ears, averting the gaze, nervously licking or swallowing, dribbling urine, and freezing or fleeing when other wolves are encountered.

Research on wolves has indicated that dominance behaviors have been misinterpreted as personality traits that determine the individual's place in a linear hierarchy in the pack. In contrast, L.D. Mech (1999) argues that packs are family units and that the

alpha of a pack does not change through struggles for dominance. Rather, Mech argues, the family unit serves to raise the young, which then disperse to pair up with other dispersed wolves to form a breeding pair and a pack of their own. This model undermines the popular conception of dominance in wolf social behavior.

Kenth Svartberg and colleagues (2002, 2004) have studied the existence and nature of personality traits in dogs (15,329 dogs of 164 different breeds). Using an approach similar to that used in studies of humans, the authors performed a factor analysis of their data and identified five consistent and stable traits: playfulness, curiosity/fearlessness, chase-proneness, sociability, and aggressiveness. Higher-order factor analyses showed that all factors except aggressiveness were related to each other, creating a broad factor that influences behavior in a range of situations. A further higher-order axis for shyness–boldness was also identified. A similar analysis by Goddard and Beilharz (1985) revealed two major factors in social behavior: confidence and aggression–dominance.

All these studies suggest that dominance, per se, may not be a personality trait. Rather, underlying personality traits such as aggressiveness, confidence, and curiosity may affect the prevalence of dog behaviors often considered dominant.

Submissive Behavior

This behavior is expressed in situations of conflict between wolves, especially if it is not possible for the loser to flee due to physical constraints or because the animal is strongly bound to its social group. Wolves use submissive behavior to express their defenselessness. In some situations, the submissive animal does not even dare to look at its opponent. This behavior makes it possible for a strong, committed social group to maintain order and ranking without risking serious injury.

Submissive gestures have quite logical and pleasant antecedents. Wolf cubs first roll over on their backs so their parents can lick them clean. They nuzzle adults to trigger regurgitation. Thus,

Figure 5.2 When a puppy licks and nuzzles an adult's snout, an older dog will regurgitate food for the puppy.

submissiveness is not neurotic, but rather essential to the maintenance of group harmony. Submissiveness has nothing to do with fear or anxiety; there is a difference between submissive behavior and shy or fearful behavior.

ACTIVE SUBMISSION

According to L.D. Mech, the main characteristic of active submission is the amiability and tolerance it expresses. In active submission, a wolf approaches another with a bent back and strong, angular hind legs. It wags its tail, which is kept in an *S* form. Most of the time its head is turned aside or upside down, usually approaching the dominant wolf from beneath. The ears are drawn back and lie close to the neck while the forehead is smooth. The

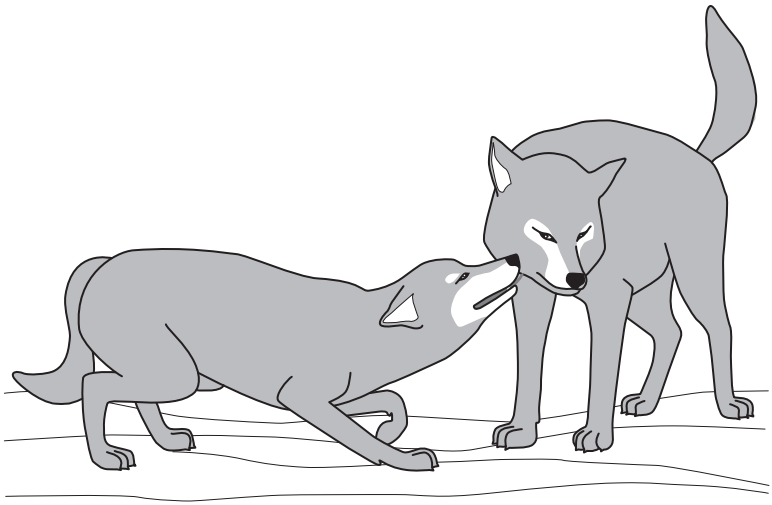


Figure 5.3 In active submission, the subordinate animal makes itself small, approaching the opponent from underneath and licking the dominant's nose. The dominant animal shows severe behavior. If it is friendly, the dominant lifts its head to avoid contact.

lip slit can be somewhat longer than normal and many times the tongue is placed somewhat forward. Sometimes the submissive will attempt to lick the other. A nudge move with the nose, called "nose pushing," toward the dominant may also be seen. If the dominant wolf behaves in a friendly way, the submissive wolf will press its nose against the dominant's lips or will lick its snout. It also might raise its front leg or make small steps in place.

This behavior is seen most frequently in younger animals toward adults or in lower-ranked animals toward higher-ranked ones. Such behavior is usually followed by a period of cheerful activity.

Active submission can also be seen toward slightly aggressive animals that are mouthing another dog's muzzle, baring teeth, or growling; it seems as though the other submits to make amends for some slight. Sometimes the expression of submission is more extravagant. The dog might throw itself on its back, kicking its legs in the air and trying to make nose contact. But if the higher-ranked

Figure 5.4 The small dog flees from so much rushing danger. The facial and body expressions show clearly that this is playing.

animal tightens its teeth, the submissive will change to a passive submission behavior or to a defense or protest behavior. If the higher-ranked animal accepts the submissive behavior, it will generally offer an invitation to play by, for instance, swaying its head or running away with a bent back.

Zimen's study found that the exaggeration in wolves' active submission behavior, such as keeping the back and head to the ground and approaching the partner from below, was often absent in his dog group, but the friendly parts of the active submission were always clearly visible.

PASSIVE SUBMISSION

According to Mech, the most outstanding feature in passive submission is a reverent attitude with an expression of defenselessness and helplessness. To show passive submission, the wolf lies half on its side, half on its back so the chest and belly are visible. The lying animal spreads its legs and the dominant wolf inspects the submissive animal's genitals. A bit of urine may be produced. The ears are drawn back and lie close to the head, and often the neck is stretched. The tail is put between the hind legs and close to the belly, sometimes with a small wag. Usually this act

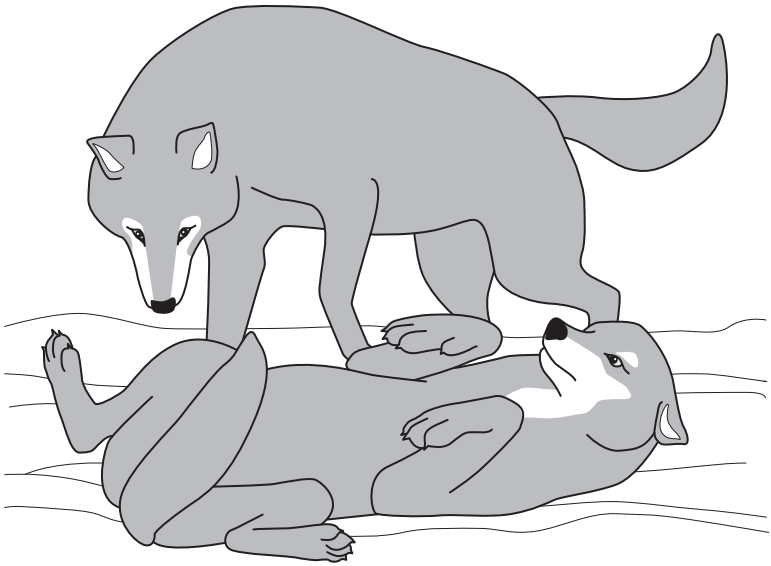


Figure 5.5 In extreme passive submission, the animal lies on the ground, presses its tail to its body, doesn't move, and urinates a bit. The dog may also stretch its neck out.

can be seen as a reaction to a threat or an attack. In dogs, crawling can also be considered passive submission behavior.

INTERMEDIARY FORMS OF SUBMISSION

According to Schenkel, there are two intermediary forms of submission between active and passive:

1. The wolf lies down with its chest sideways and its rump in a bent position pressed to the ground. While the higher-ranked animal inspects the groin and the surrounding of the tail base, the wolf on the ground pushes its nose in the air.
2. The submissive animal lies down with its whole body, including its neck, pressed to the ground. Only the nose is somewhat held up to make nose pushings. The higher-ranked wolf growls and mouths the other's muzzle.

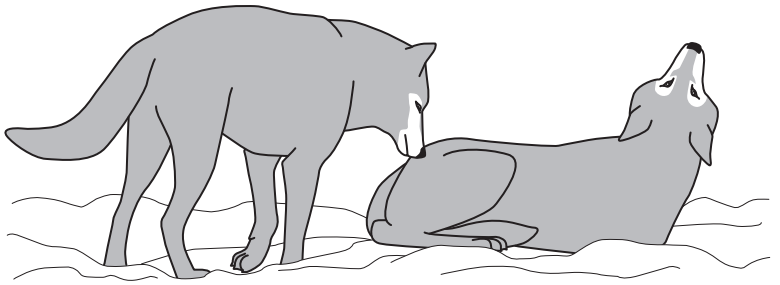


Figure 5.6 Passive submission with signs of activity: pushing the nose at a distance and movement.

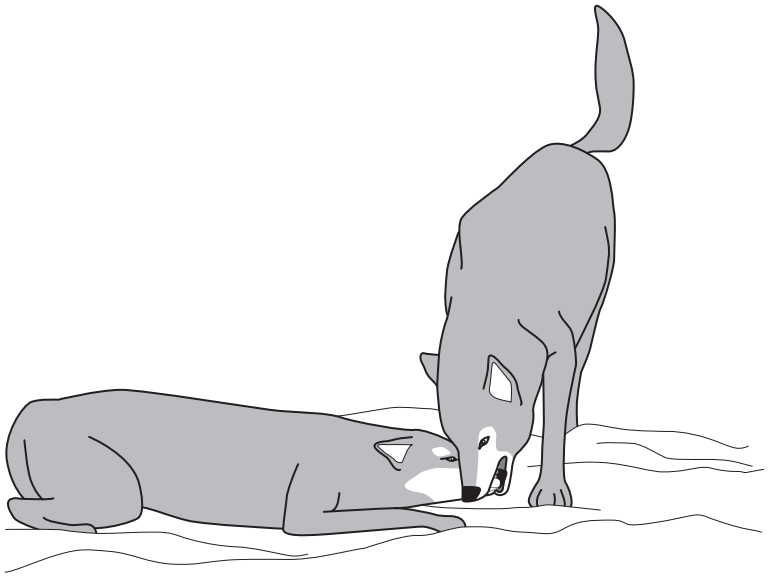


Figure 5.7 The high-ranked animal encloses the snout of the submissive with its teeth, showing a certain severity in its behavior.

CALMING SIGNALS

Many expressions of submissive behavior are known as *calming signals.* Dogs use these signals to prevent conflict. The gestures are also used by animals to calm themselves when they are nervous, stressed, or fearful.

FACIAL LICKING

Both dogs and wolves will lick the snout or face of another animal to placate it. This is a friendly submissive behavior that is a part of active submission. According to J.H. Frijlink, dogs see human hands as heads and so lick hands as a replacement for the face. Much of the dog's behavior is directed to those second and third "heads."

Figure 5.8 In the opinion of some scientists, this is the way dogs see humans: as animals with three heads (the hands have the appearance of dog heads). Many dog behaviors are directed toward these "heads."

Figure 5.9 The dog clearly licks its own snout at some distance from another animal (or human); this behavior is a sign of passive submission. Note the withdrawn ears.

Figure 5.10 When threatened in a situation where the dog cannot or dares not approach the opponent, the endangered dog licks its own face from a distance.

Sometimes an animal will lick its own mouth while keeping its distance from another animal (though making the gesture clearly visible). This form of licking is expressed if the other animal is somehow unapproachable or in a menacing posture. This behavior is part of passive submission. It is often seen in the social contact between domestic dogs and humans, especially if the human's hand or face is unreachable.

NOSE PUSHING

If a given social interaction becomes more intense, sometimes a dog or wolf will attempt to nudge its nose toward the lips of another animal. This behavior is often seen in combination with licking. Dogs also nose push when trying to make contact with a human. If the human does not respond, the dog will often step back a few paces and try to get attention with short barks.

If a higher-ranked animal threatens a subordinate with an intimidating look from a crouched position, as if the dog might attack, the subordinate can start nose pushing at a distance. The dog will stretch its neck out, moving its nose forward and up, and will draw its ears back close to the head. Its forehead will be broad and smooth. This form of nose pushing belongs to active submission.

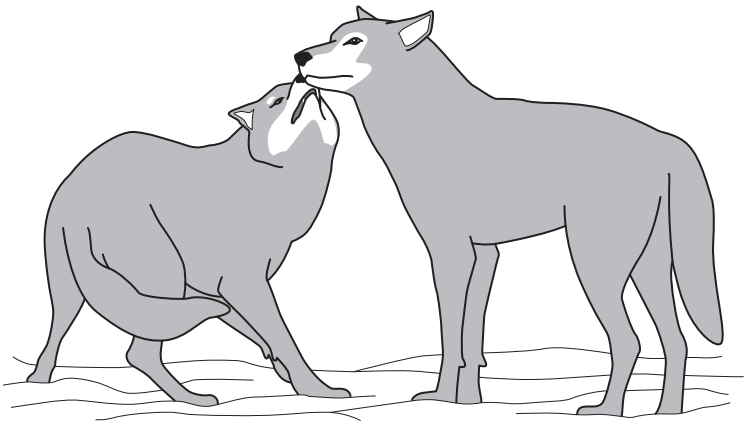


Figure 5.11 Nose pushing and facial licking are forms of active submission.

Figure 5.12 As the contact between the dogs becomes more intense, nose pushing will occur in combination with facial licking. These gestures of submission reveal amiability and tolerance.

MOUTHING THE MUZZLE

Nose pushing, jaw wrestling, cheek rubbing, and facial licking are common in wolves or dogs living in groups. One animal mouthing another's muzzle is a friendly gesture. Clamping another's muzzle between bared teeth is less friendly but not as ferocious as it appears to the human eye.

TURNING AWAY THE HEAD

Mostly in reaction to eye contact with a threatening dominant animal, a subordinate animal will often turn its head away. The degree of turn can be quite pronounced, to the point that the animal appears to be looking over its shoulder. Most of the time the animal also uses a submissive facial expression with this turning of the head.

This behavior is also often seen as an invitation to play or to stop an interaction through passive submission. It can also be performed at a distance.

Figure 5.13 Turning away the head while at the same time looking at an opponent out of the corner of the eye is also seen in playing.

LIFTING THE FOREPAW

From a standing or sitting position, the front leg is raised, somewhat bent, and kept in front of the partner. The front paw may also be placed on or over the other's shoulders or leaned at its side. This is a common gesture, especially among pups. It is also observed in response to threatening but not quite aggressive situations.

Lifting a forepaw is a sign of social subordination and has an inviting character. This behavior in dogs is often seen when the animal is begging for food or attention.

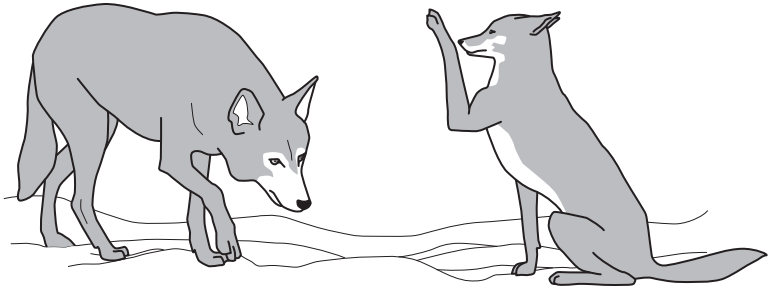


Figure 5.14 Lifting the forepaw is a sign of submission that may be seen even in young animals and exerts a calming effect on other animals or humans.

Figure 5.15 You may also see the lifting of the forepaw in mock fights.

Figure 5.16 At the start of play, dogs often walk around each other to get a feel for the other's strength and speed.

Figure 5.17 While walking around each other, dogs show other behaviors such as licking their own snout.

Figure 5.18 From the dog's dominant posture and facial expression, we can clearly see who thinks he's the boss. Also note his outstretched left forepaw.

Figure 5.19 Even from its downward position, the dog admits no defeat in this play. In a real fight, this posture would be different.

Fear, Protection, and Defense Behavior

Except for the total fear found in some dogs, most show fear only in specific situations. A fearful dog has usually had a traumatic experience with a given stimulus in the past. Common traumatic stimuli include car accidents, shootings, thunderstorms, or suffering a defeat in a fight with another dog in its own territory. A traumatic stimulus may also be a scent, such as that found in a vet's surgery. After one dog we know was almost trampled by a herd of cattle, he ran away as soon as he smelled cows; he even shunned flowerbeds that contained cow manure.

Negative experiences can happen in adulthood as well as youth, but dogs are more sensitive to negative experiences during the critical phases of their young lives, such as the period of timidity around five to seven months of age. Unpleasant experiences during a period of emotional instability, such as when a bitch goes into heat, can unbalance even dogs that previously were well socialized

and had no fear. These unpleasant experiences can have serious consequences for the dog's later behavior. Therefore, it is important for young dogs to avoid trauma as much as possible.

Fear without a clear stimulus can be caused by nutritional deficit, poison, or illness. One such illness is Graves-Basedow disease, an immune disorder of the endocrine system that stimulates and attacks the thyroid gland. Fear can also be a symptom of distemper, toxoplasmosis, or concussion. A deficiency of vitamin B1 can cause fright disease, or canine hysteria, a disease characterized by fits of frantic running terminating in convulsions (commonly reported in dogs fed biscuits made of flour whitened by the agene process, a method no longer used). Rabies can cause behavior changes that resemble great fear; regular rabies shots prevent dogs

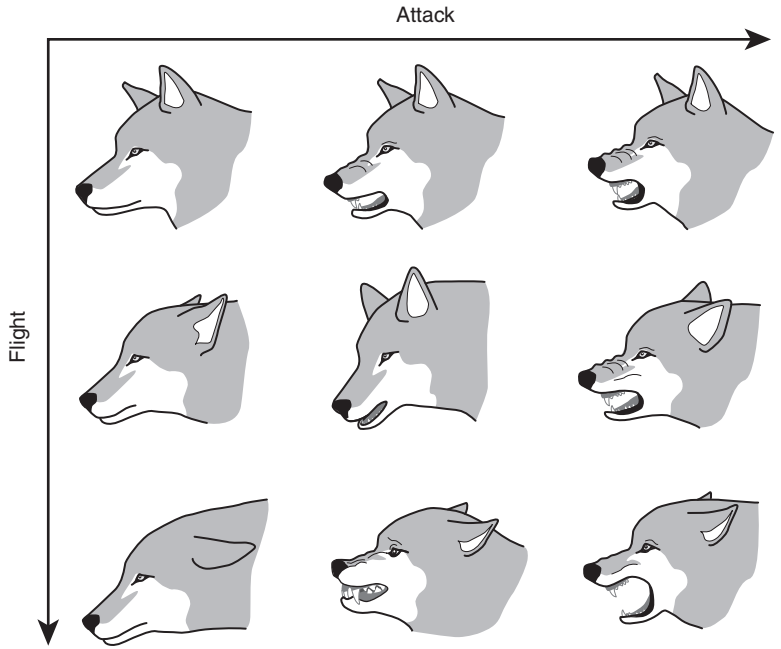


Figure 5.20 Note the facial expressions and position of the ears. The expressions are based on the simultaneous presence of attack and flight responses. The sequence goes from self-confident without aggression to fearful without aggression to aggression with or without fear.

from contracting this fatal illness. Chronic lead poisoning, which is usually caused by paint or insecticides, can also affect dogs. Kennels and other objects dogs might lick or chew should always be coated with lead-free paint.

At the age of one year, one dog we know was startled out of its sleep by the deafening noise of a passing truck. At the age of three, the dog always fled to dark corners or under the table if trucks drove past. After a traumatic experience, fear can sometimes broaden to include similar stimuli. At first a dog might show fear only of cars passing nearby, but later on it might become afraid of cars at a distance, idling engines, or even bikes. The dog might eventually become too afraid even to go outside.

Fear of people can be caused by excessive punishment, inconsistent handler behavior, or being handled by an unfamiliar person. Animals afraid of people display either submissive behaviors or aggression.

FRIGHT RESPONSE

After an unexpected event, such as the sudden flight of a bird, a dog's muscles contract. You may also see the animal recoil or jump or step backwards. With its eyes toward the threatening subject, the dog may lift its front legs to turn its body or jump aside.

FEAR BITING

For dogs (and wolves), fear biting is a normal reaction as soon as a threat comes too close. This behavior can be seen when an animal flees in a forward direction and, to clear the way, threateningly bares its teeth and snaps. Fear biting is not abnormal behavior; even a normally steady dog can end up in a situation in which it will defend itself by biting. This situation occurs if the dog is threatened and has no other possibility to escape.

The posture and expressions of an anxious fear-biter show that the animal is terrified and prepared to flee; it pulls its ears back, it has a long lip slit, a bent back, and strong angulated limbs, and it draws its tail between its legs and close to its belly.

An aggressive dog is free of fear: its ears are erect or to the side, the corner of its mouth is forward, the top of its nose is wrinkled, and its tail is straight backwards or upright.

PROTECTION

In response to fear, dogs may display behavior designed to protect themselves from a perceived threat. Protective behavior is more passive than defensive behavior, but more active than expressions of fear.

REPELLENT FACIAL EXPRESSION

A wolf with a repellent facial expression will face the perceived threat with its ears spread far apart and, depending on the social situation and preparedness to flee, more or less drawn backwards. The forehead will be broad and the skin tight and without wrinkles. The eyes will be open wide, and the animal will look uncertain. Skittish, the wolf may look around, sometimes with uncoordinated eye movements. In dogs, this expression of insecurity can be seen with similar eye movements and ears slightly drawn back.

LYING CROUCHED

A wolf will watch danger from a crouched position on its belly, hidden, if possible, behind a hillock or in a hole. The wolf will show a repellent facial expression with downward-drawn ears. This behavior usually appears when the wolf requires rest and the danger is well outside the flight distance. The same behavior is observed in dogs.

PRESSING IN A CORNER

While facing toward the danger, a wolf may lie on its belly or sit in a corner or against a wall. The animal will have a repellent facial expression and its tail will be drawn between the hind legs. The wolf doesn't move, although it may raise a forepaw slightly. This behavior is most often seen in young animals driven to a corner without the possibility to flee, and is seldom seen in adult animals.

However, mature animals that are totally exhausted and inside a closed area may sometimes exhibit this behavior. After such protective behavior in response to a threat, the wolf will normally attack the source of the threat.

A dog will generally stay sitting with its head kept high (completely exposing the throat) and one or both forepaws raised. In dogs that lie down, the head is mostly hidden, a behavior also observed in wolves. Until about eight or nine weeks old, young wolves will react to danger by hiding their heads in a dark corner. Until the age of about twelve weeks, wolves in danger will huddle close together in a corner. Adult dogs also show this huddling behavior.

FLIGHT

Animals flee life-threatening situations as well as other situations in which there is no clear evidence of immediate danger. Although every species has its own reasons to flee, depending on the dangers the animals face in nature, almost all animals in the wild flee humans. If a human approaches an animal, the animal will flee as soon as the person crosses its flight distance. The flight distance is

Figure 5.21 Running after each other is also a great form play in which the animals take turns as pursuer.

specific to the species and is determined through natural selection based on the species' habitat and the surrounding dangers. In areas where predators are numerous, animals are shyer and will flee earlier. There are also examples of animals adapting to the shooting range of human weapons. Flight distance may also depend on the threatening animal. A satiated wolf will cause less fear among prey animals than a hungry wolf. A dog will always maintain its flight distance from a perceived source of danger. It may walk away, but with a watchful eye. If the flight distance is crossed, the animal will quickly flee.

A peculiarity of flight distance can be seen in animals that have never seen humans. They don't flee, and people can quietly walk close to these animals; they seem tame. Hediger called this phenomenon *pseudo-tameness*. Mostly these are animals living on islands or in barren areas. The experiences of Darwin at the Galapagos Islands or those of Arctic explorers document this phenomenon. The lack of fear toward humans can put an animal's survival in danger.

If danger comes close, a wolf will flee by walking, then trotting, and finally galloping with crouched legs. The wolf may quickly regurgitate part of its stomach contents and then continue fleeing.

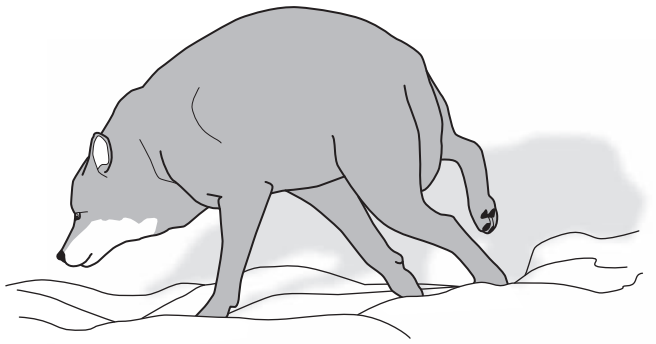


Figure 5.22 Flight in a crouched position.

This behavior is most commonly seen in wolves that have just gorged; this behavior is not found in dogs.

Some animals will urinate while fleeing. This posture is the same as in normal urinating, with the clear difference that the animal does not stand still and the tail is kept tightened. The head is turned toward the danger and the animal shows a repellent facial expression. A cornered wolf—especially a young wolf—as well as a shy dog may show this behavior.

An animal may also defecate in flight. With the exception of the tightened tail and the somewhat lifted tail base, the posture is like normal defecation. If possible, the animal slowly slides away with a repellent facial expression. The feces is often soft, and defecation sometimes happens together with urinating, although urinating most of the time occurs first. This behavior is seen in dogs, but only in very shy animals.

DEFENSE AFTER FLIGHT

A fleeing dog will, if the distance between it and the pursuer crosses a certain threshold, turn to defend itself. It will then show teeth and growl to warn the pursuer: if you come closer, an attack will follow. The distance at which flight behavior becomes self-defense behavior is called the defense distance.

BEHAVIOR FOR DEFENSE

We have so far looked at several forms of wolf and dog behavior in which fear prompts behavior designed to protect the animal and the species. The terms *flight distance* and *defense distance* were compared. Here we will take a closer look at behavior for defense.

DEFENSIVE MENACE

Defensive menace is a common behavior. If a wolf is very uncertain, it will retract its lips vertically, creating a long lip slit. The lips can be raised, showing the teeth. A snorting sound is sometimes produced. In this phase, the wolf still shows a strong inhibition

Figure 5.23 In a posture of defensive menace, the dog displays a bent back, bare teeth, tail against the belly, and repellent facial expression.

to bite. In a serious threat, the wolf raises its upper lip, causing a strong wrinkling at the top of the muzzle. With this behavior, the wolf shows a readiness to defend itself.

If the threat continues, the animal opens its mouth more, as if yawning. In some cases the animal will also make a squealing noise. This is the most intensive form of repellent menace in uncertain animals.

In the first stage of defensive menace, only the upper lip is raised and the top of the nose is wrinkled. If the animal is more self-assured and shows a willingness to defend itself, it will display bared teeth, a strong wrinkled top of the muzzle, and a small lip slit. In this situation, the corners of the mouth are not drawn back but are moved more to the front. The bristled hair on the back stands upright and the ears are directed to the front. If the threat persists, the animal will growl.

The posture in this kind of situation is normally of minor importance and can vary. A very unsure animal may tighten its tail to the belly and stand with a bent back, but the main menace is displayed in the facial expression. Zimen compared this wolf behavior with that of a group of dogs, and he observed a similar behavior, although without the strong wrinkling on the top of

the muzzle, the bared teeth at the same time as a long lip slit, or the opening of the mouth like yawning. Fox found rare cases of nose wrinkling and yawning in dogs. In general, dog displays of defensive menace are not as strong as those of wolves.

DEFENSIVE SNARL

If the critical distance is reached or crossed, a wolf will make fast biting movements in the air directed at the opponent, but still with a clear inhibition to bite. In some cases the sound of chattering teeth can be heard, although not in dogs.

DEFENSIVE BITE

If the critical distance is crossed, a wolf may still show an inhibition to bite, so it does not bite hard. Young animals can show an inhibition to move, in which case they turn on their back or press together in a corner, but with their heads free to bite.

SORTIES

If the critical distance is crossed and the inhibition to bite or move is gone, a wolf may make a clear and directed sortie, or attack. Sorties on people are directed toward the head and neck. As soon as there is a possibility to flee, the animal will do so.

ATTACKING

While a sortie is the last defense of a threatened wolf, a full-fledged attack is hard to distinguish from aggression. An attack can happen when a stranger enters a wolf's habitat or sleeping place. In dogs, defense and attack behaviors are of less intensity than in wolves. In comparable situations, with a stranger entering a dog's habitat or sleeping place, some dogs show no active defense behavior.

FOREPAW BUMPING

With short, stiff jumps, the wolf gallops to its opponent, briefly stands still, raises its forepaws, and then bumps both with power to the ground. This is quickly repeated before withdrawing, although a new attack may follow the withdrawal. The wolf displays bristled

Figure 5.24 A dog bumps its opponent with both forepaws.

back hairs and a high head and tail. Dogs may use the forepaw bump as a form of inhibited attack at strangers. The dog's attack is normally accompanied by intense barking.

MOVING AROUND

A wolf attacked by pack mates moves in a circle to give its opponents no chance to bite its back. While moving around it bites angrily at the others.

When one wolf approaches another from the side, it may deliver a sort of "hip slam" and, after more pushing and shoving, ride up on the other animal by placing its forepaws on or over the other's shoulder. This is a gesture of dominance and is common among pups.

LYING DEFENSE

A wolf lying down defends itself against the bites of its pack mates by kicking its legs, menacing, and snarling. This behavior is mainly seen in trivial conflicts or during play. If it becomes more serious, the animal quickly stands up and starts an active defense.

Figure 5.25 In playing, youngsters develop their skills. Older dogs do not always play with pups.

INHIBITED MOVEMENT

In this behavior the animal shows little movement. In extreme cases the limbs are completely stiff and only the eyelids blink if something moves quickly. This behavior is especially common in young wolves that are threatened, but may also be seen in animals that enter a strange situation or that are seriously ill or weakened. If dogs are strongly intimidated, they sometimes show a slight inhibition to move.

Other Common Forms of Behavior

WALKING AROUND EACH OTHER

This behavior can express either aggression or submission. One or more animals will walk with strong bent legs and intense tail wagging with the tail in an S-form around one or more older, higher-ranked animals. Sometimes wolves will howl a little and try to lick the face of the other animals. From this behavior a pack ceremony can develop in which younger animals behave submissively and mature, equally ranked animals walk around each other in a friendly, neutral manner (not overtly submissive). Such a ceremony creates a friendly and tolerant mood in the pack. Most of the time the younger and lower-ranked animals take the first steps,

Figure 5.26 The friendly walk around each other is often the start of an invitation to play.

but it can also start with the highest-ranked animal as a friendly demonstration.

JUMPING

Wolves will sometimes jump with their front legs numerous times in front of another animal. They can do this without touching the other animal, but they can also jump and land with their forepaws on or over the back or neck of the other animal. This behavior is especially displayed to express an elated and friendly mood. Dogs also jump in this manner, and sometimes also jump from their hind legs. Young dogs will sometimes jump tirelessly in front of mature dogs. This behavior is also directed at people, mainly after a temporary separation. With unfamiliar people, dogs often jump at a distance. During jumping, the dog always looks at the human face, sometimes licking its own snout.

PLAY-BOW

The front part of the body is put to the ground while the front legs are stretched. The head is in an upright position so the other animal can be observed. This way the bowing animal can react quickly and jump aside if chased.

Here also the behavior of dogs is less marked than in wolves. During playing or as an invitation to play, the play-bow posture

Figure 5.27 In the play-bow, the front part of the body is put to the ground while the front legs are stretched.

can be observed toward other dogs or humans, after which quick reactions such as jumping, running, and turning may occur.

Variations in Behavior

This rather systematic description of behavior might create the incorrect impression that the behavior of wolf and dog is clear cut and invariable. In fact, individual dogs and wolves show enormous variety in their behaviors. There are many transitional forms between different types of behavior. Often signals come in quick movements and you really have to pay attention to see them. With experience you can learn to see them, just as other dogs do. All it takes is a little patience and practice.

6

Reading Your Dog

For a K9 handler, the most important parts of a dog's behavior are the acts and expressions the dog shows while working. No two dogs react to stimuli in the same way, so it is wise to keep a close eye on the dog's behavior and expressions during training and to be able to change the training sessions if necessary. You should fit a training program to the needs of your dog: only then will you and your dog obtain optimal results.

Because dog behavior is complex, we observe a whole range of expressions and body language. To read a dog, the handler must pay particular attention to all the changes the dog shows in its behavior. To recognize such changes, of course, the handler has to know the dog thoroughly in normal situations, at home as well as during training. This knowledge requires a long and close cooperation between handler and dog. We now explain concepts of behavior that are sometimes misused or misunderstood. Then we will take a closer look at the dog's expressions and body language.

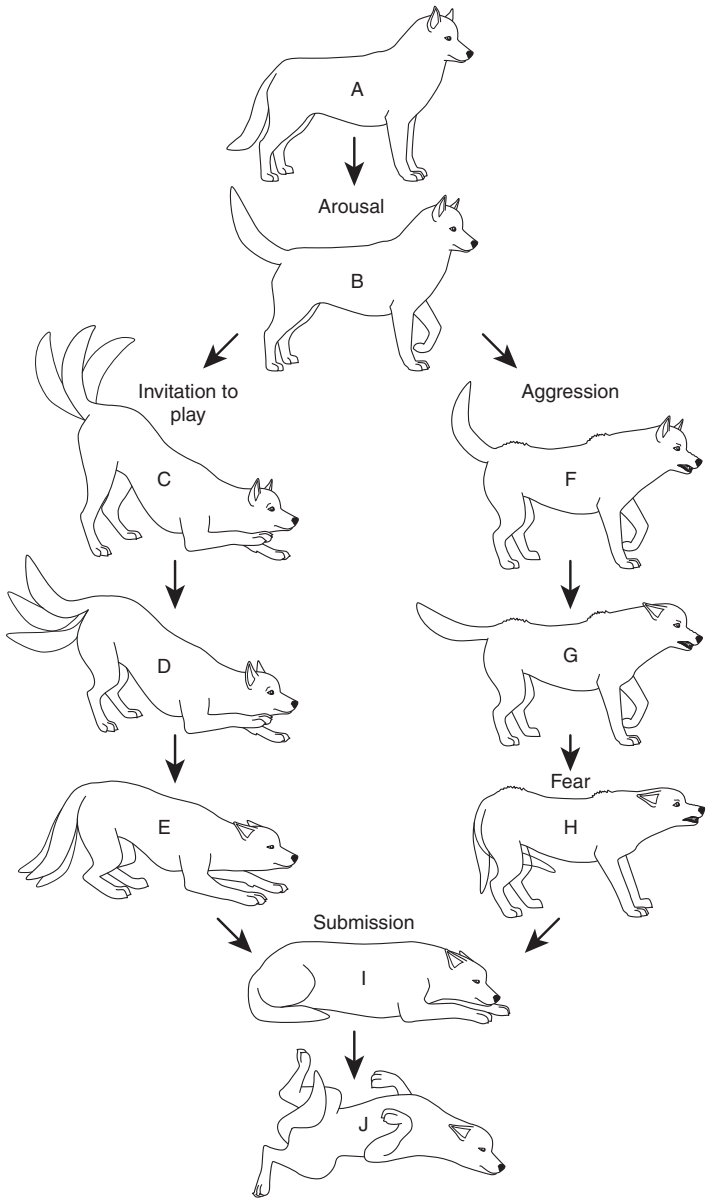


Figure 6.1 From an alert posture (A) a dog becomes aroused (B) with tail up and ears erect—a display of confidence. In (F), a display of dominance–aggression with hackles raised and a snarl turns into defensive aggression (G–H) as tail and ears are lowered and weight shifts backward. Passive submissive displays include crouching and avoiding eye contact (I) and rolling over (J). The dog may go from aroused posture (B) into play-bow (C) to invite play or to display a submissive friendly greeting (D–E).

Intelligence

We distinguish between three forms of intelligence: the instinctive, the practical, and the adaptive.

- By *instinctive intelligence* we mean all hereditary skills and behavior. The hunting drive, for instance, is a form of instinctive intelligence: every puppy runs after a moving object.
- By *practical intelligence* we mean the speed with which, and the degree to which, a dog conforms to the desires of the handler. Put another way, this is how quickly and how correctly the dog learns different exercises.
- *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, which refers to the dog's skill in choosing the correct behavior to solve a problem.

Strength of Character

A dog with a strong character behaves in a self-confident manner, with an attitude free of nervousness, fear, or jumpiness. Sudden and unexpected stimuli, such as gunshots, noise from traffic, or waving flags, do not bring the dog out of balance.

Temperament

Temperament is expressed in the dog's psychological skills and degree of reaction to different stimuli from its environment. The more lively a dog is and the more intense its response to its surroundings, the more full of temperament it is. The slower the dog reacts to the environment and the less intense its reactions, the less temperament it has. If certain drives (e.g., the guard drive) are very strong in a dog, we observe it is full of temperament, focusing intently when an appropriate yet small stimulus occurs (e.g., a person approaching from far away). Such a temperament is beneficial for a K9 because the dog is naturally attentive and active.

It is important to recognize the difference between a dog full of temperament and a nervous dog. Because their dogs respond to a stimuli immediately, some handlers believe their dogs have temperament, but that isn't always true: often an animal has three-quarters nervousness, possibly combined with sharpness, the inclination of a dog to react with hostility to the unfamiliar.

A dog full of temperament is a fast-reacting animal, stable in mind. A nervous dog can also react quickly, but does so out of a frightened, unsteady state of mind. The difference between a dog full of temperament and a nervous dog can be seen, for instance, in their reaction to unexpected events, such as an object suddenly falling down and making a lot of noise. A dog full of temperament will react briefly and quickly recover from the fright. The nervous dog will jump and flee, and it might take a long time to recover and return to the environment. If a dog is not full of temperament, it will not be able to complete K9 training.

Composure

Composure is an important characteristic for a K9. An adult dog must stay absolutely calm and show self-confidence, even when placed in strange circumstances. It should quietly survey its situation, neither afraid nor panicked. Whether among people, in a town, or in traffic, the dog must stay calm. Only then is it able to act at the right moment in the right way.

Reliability

K9s must be reliable and must perform without surprises. Suddenly lunging at playing children or at adults, or displaying aggression to housemates or the handler, can cause serious damage to the acceptability of the K9 in society. Dogs that are too independent and that resist training are disturbing in daily contact, and they are poor choices for K9 training. But dogs that are "everybody's friend" are not always the best choice either because they may be more attracted to people than to doing their job. A K9 must be well socialized but not overly friendly.

A dog that is somewhat reserved with an appropriate, natural sharpness can be a good K9 as long as it is absolutely reliable. The dog must know to assess a situation and act only when it receives its handler's command.

Willingness to Work

A dog you have to wake up before going to work is a poor choice to become a K9. You should look for a dog that likes to work, makes a lot of noise, and shows great interest when it sees the handler is getting ready to go. What is even more important is that the dog shows an almost tireless willingness to work. To be able to respond in this way, the dog must be in good health and have a great deal of stamina. In short, you want a dog that needs no encouragement to continue and concentrate on its work.

Toughness

By toughness we mean the ability to suffer unpleasant stimuli or events, such as pain, punishment, or a defeat in a fight, without being put off for even a moment. The dog must be able to forget these unpleasant stimuli just as quickly—that is, it must have low sensitivity. The dog must not be prevented from carrying out the handler's commands because it is hurt or in pain. A K9 should not be deterred by an attack, nor be upset by yelling or shooting.

Softness

Softness is the opposite of toughness. A soft dog will be strongly affected by unpleasant stimuli or events, or by frightening circumstances, and will avoid such situations or stimuli in the future—that is, it has high sensitivity.

Softness must not be confused with fear of pain, however. Some dogs are very sensitive to pain and squeal at the smallest amount, such as when they receive an injection, but they will not lose confidence in the one who causes the pain. Fear of pain will not necessarily influence the dog's willingness to work, because during the work they normally don't recognize pain.

Courage

Courage is the characteristic of a dog that steps into dangerous situations without any pressure from outside and stays there, even when the situation goes against its instinct for self-preservation.

Sharpness

Sharpness is the hostile response of the dog to the unknown. Sharpness can be based on self-assurance and an inherent fighting spirit, or on uncertainty, distrust, and fear. In the first case, it is a hereditary, natural sharpness; in the second case, it is a false sharpness acquired by faulty training and a need for self-defense. The drive for self-preservation figures prominently in sharpness. The stronger this drive for self-preservation is developed in the animal, the greater the sharpness will be.

Because courage is understood to be the characteristic of a dog to stay in dangerous situations without pressure from outside, a courageous dog will suppress the drive for self-preservation. Courage and sharpness sometimes complement each other, but can also be opposites. In the relationship between courage and sharpness we can distinguish four types of dogs.

COURAGEOUS–SHARP

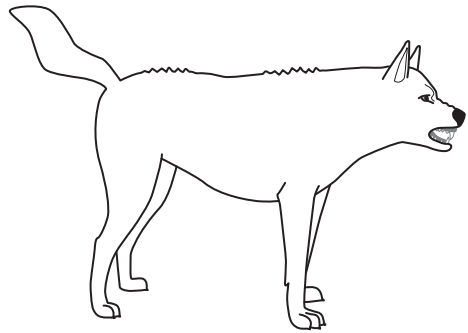


Figure 6.2 The dog moves in a hostile manner in the direction of what it sees as a danger: it displays a high tail, barking or a combative, opened mouth, and bristled back hairs. The dog expresses no fear and is ready for a fight.

COURAGEOUS–NOT SHARP

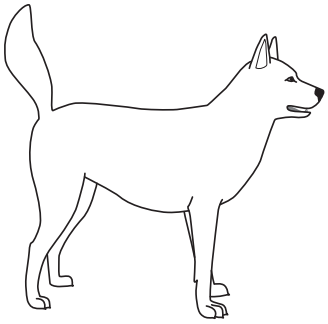


Figure 6.3 The dog is not combative but is indifferent or curious, showing no sign of fear. It either approaches the unusual with interested tail wagging or ignores the stimulus entirely. The dog is fearless without hostility.

NOT COURAGEOUS–SHARP

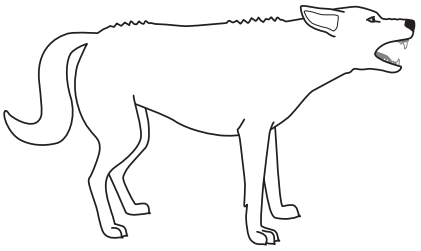


Figure 6.4 The dog expresses anxious willingness to defend itself, displaying bristled back hairs, usually with a hanging tail but sometimes with a high tail, and growling, showing the teeth, or barking. The dog withdraws from the area of danger and expresses anxiety and hostility.

NOT COURAGEOUS–NOT SHARP

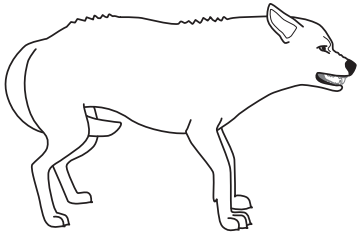


Figure 6.5 The dog is anxious and ready to flee but lacks a hostile attitude. The dog withdraws with its tail pulled between its legs, sometimes with a crouched body or a crooked back, and in extreme cases screaming in fear or urinating. This dog is anxious without hostility.

Key Qualities in Successful K9s

Courage and sharpness are often confused, and this confusion can cause many problems in breeding and training. Sometimes people try to encourage a dog's sharpness through training in the mistaken idea that they are increasing its courage. However, any attempts to artificially increase a dog's sharpness will fail because the dog itself cannot take stock of the effects. For this dog, it will never be possible to distinguish between acting and seriousness, between apparent and real danger.

In our experience with K9 training, dogs without courage, whether sharp or not, will always cause disappointment. In the interest of the dog and goals of the trainer, it is better to exclude such dogs immediately from K9 training.

A reliable K9 must have a great basic confidence in humans and in itself. The ideal dog for K9 training is one that is well balanced, reliable, self-confident, tough, and courageous. If the ideal K9 also has a natural sharpness, the dog's job may be adjusted accordingly. Dogs that are not well balanced, not self-confident, and not courageous, or that are too sharp, will normally fail in K9 training.

WHAT DOGS DO WE PREFER?

It is important that dogs bond with and want to work for their trainer.

The dog should have the following abilities and qualities:

- motivated to work for food rewards and/or play objects;
- physically able to navigate obstacles and willing to move in tight spaces;
- courageous and confident, and not inclined to make noises such as wheezing, whining, or barking;
- able to act in difficult areas and all buildings or structures and during transportation;
- unafraid to work on any type of surface;
- able to work at heights;

- accepting of the presence of other animals and people, responding without aggression (the dog must not be a hunter of other animals);
- able to move freely and reliably, and willing to work in a variety of conditions such as in and around water;
- able to focus well in distracting situations such as environments that include other animals or humans, in daylight and darkness, or in adverse weather;
- able to endure situations that include loud noises such as the discharge of weapons or explosives.

The pre-training of the dog must not be based on traditional compulsive training principles but rather should be based on the principles of operant conditioning. Dogs that have learned to work through compulsion are unsuitable.

Because of bad education, poor breeding combinations, or poor training, a dog can develop into a sort of psychopath. Such dogs may attack or chase anything that moves, barely respond to training, seem impervious to physical corrections, refuse to interact with people, or ignore offered reinforcements. Such dogs are not suitable for training and cannot be used in operational practice. The human world is similar: some individuals cannot be reached by normal education or repressive measures such as fines or imprisonment.

Behavioral Expressions

A dog's behavioral expressions can be roughly divided into the following categories:

- **Confident behavior**: Confidence is demonstrated when the dog directs its ears to the front, has an open look, shows an attentive attitude, carries its tail normal to high, and looks immediately, without any fear, when something happens.
- **Uncertain behavior**: A dog shows uncertainty through restless ear movements, with the ears laid back; restless panting, sometimes slavering a bit; or a tail carried low with uncertain, irregular wagging. This dog will look for support from and refuge behind the handler.

- **Anxious behavior**: The dog pulls its tail between its legs and tries to escape with panic.
- **Submissive behavior**: Submissive behavior should not be mistaken for anxious behavior. Submissive behavior is a sign that the dog knows its place in the pack and is submitting to the will of one higher in rank. Submissive behavior is seen when a dog lies on its back or crouches with its chest on the ground and offers its neck. The latter behavior seems to arouse a bite restraint in the higher-ranked dog. We also see the dog's nose pushing out when standing at a distance, with the dog licking its own snout. We often see submissive behavior combined with uncertain behavior, although they don't consistently appear together.
- **Aggressive behavior**: The dog threatens, lunges, and bites. Its neck and back hairs bristle.
- **Evasive behavior**: With this behavior, one has to be able to distinguish literal evasion (such as taking a step aside or walking around a difficult situation) and avoidance. Dogs showing avoidance behave as if they haven't seen something. They avoid awareness of a confrontation and walk as though wearing blinders.
- **Displacement behavior**: Most of the time, displacement behavior happens when uncertainty or frustration interrupts the dog's natural drives. The dog is unable to work out the situation and switches to another behavior. Expressions may include scratching itself, shaking, stretching, biting into a leash, sniffing at something, yawning, and so on.
- **Stress behavior**: Indications that an animal is under stress include chewing, blowing, restless panting, licking its own snout, and so on. Combinations of stress behavior with other behaviors are also possible.

Overall Picture

As soon as a K9 handler can interpret the normal behavior of a dog, then the handler can identify any deviations from normal while working with the dog; the handler can then adjust training

accordingly. A dog's mood can be accurately assessed by looking at its body language. For example, if a trainer observes a dog that normally holds its tail upright has put its tail between its legs, the trainer can infer that the dog might be ill or under too much pressure.

BODY LANGUAGE

- A *normal dog* has a straight tail carried neither high and nor low, shows no stress in its body, moves freely, and carries its head upright; its tongue may hang out a bit and its jaws are relaxed.
- A *threatening dog* has a bristled neck and back hair; its legs are stiff and it shows its body from the side. It can barely walk because of all its power.
- An *uncertain, threatening dog* has most of the same expressions as the threatening dog, but its tail isn't carried straight and it pulls its ears back. We recognize in its overall posture the inclination to react with fright.
- The *submissive dog* makes itself as small as possible or lies on its back.

Head

Dogs that are interested in a certain spot, or that hear or smell something interesting, often tilt their head toward it. In particular, a dog will turn its head to localize a sound.

EARS

The ears of a dog are extremely lively and can, in combination with the turning of the head, follow sounds. Even dogs with hanging ears show lively ear play, although less than those with pricked ears.

In dogs with pricked ears, ear position means the following:

- Pricked-up ears, standing straight up: self-confident, attentive, interested.
- Ears turned in a certain direction: locating interesting sounds.
- Ears drawn to the side or laid back: doubt, uncertainty; if the back hairs are bristling and the dog is growling: the dog is ready to attack.

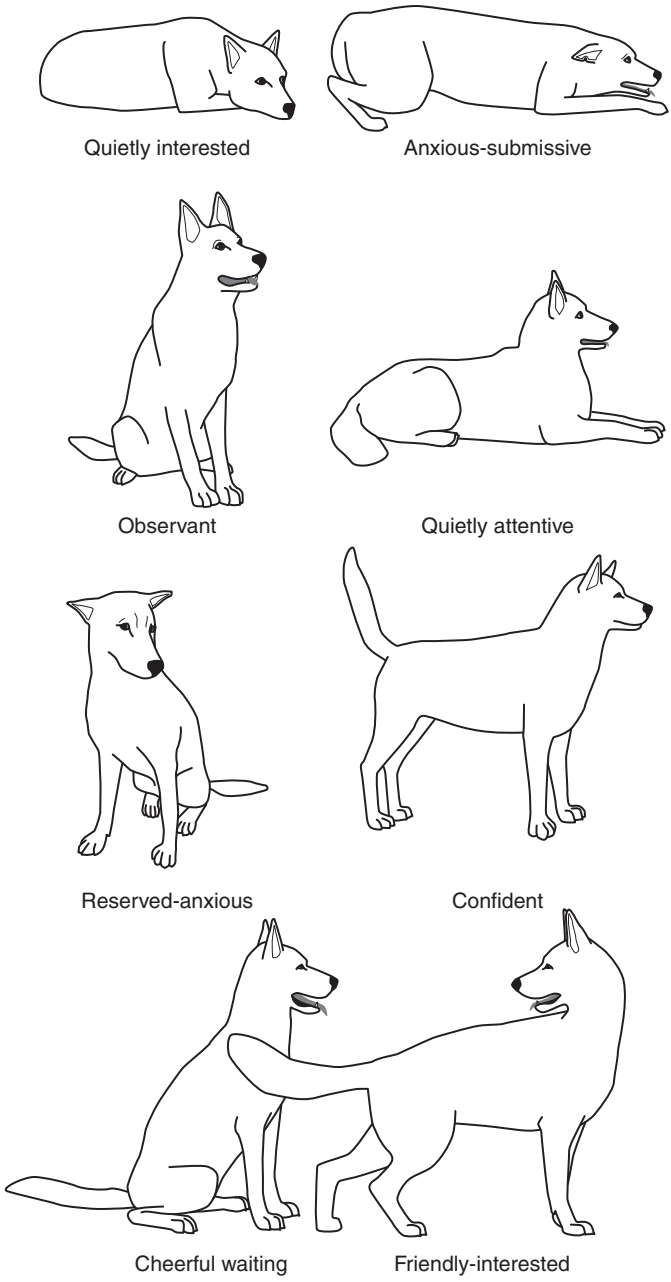
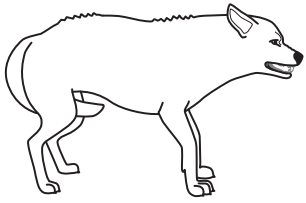
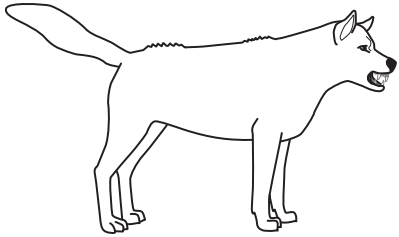


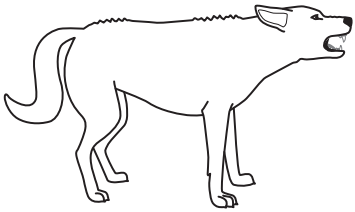
Figure 6.6 To read a dog, pay attention to the overall picture of its behavior, expressions, and body language.



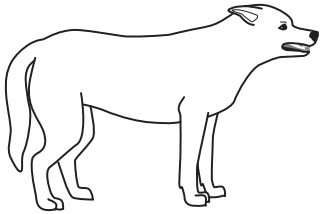
Anxious-defence



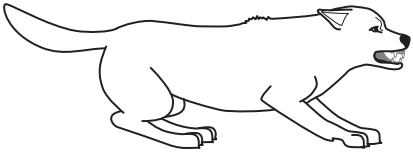
Threatening



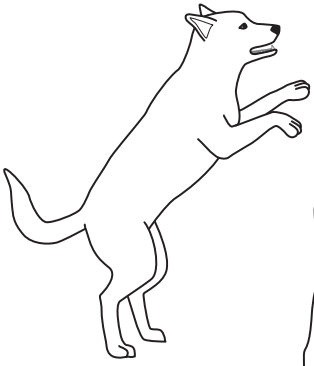
Uncertain-threatening



Uncertain

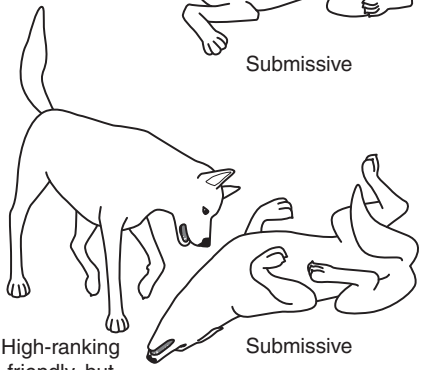


Threatening-aggressive



Displacement behavior (jumping up or biting on leash)

Submissive



High-ranking friendly, but strict

Submissive

In dogs with hanging hears, ear position means the following:

- Loose hanging ears: well balanced, a normal, relaxed attitude.
- Perked ears (ears tensed to open them more at the front): heightened attentiveness.
- Perked ears combined with a tilted or turned head: an attempt to locate interesting sounds.
- Ears pushed away or carried low: submissiveness or uncertainty.

EYES

A handler can immediately recognize a dog's mood and behavior through its eyes. When a dog is satisfied, its eyes shine; if it isn't satisfied, its eyes show a dull expression.

In uncertain situations, the dog will look at its handler questioningly, as if it is asking for confirmation or direction about what to do. It also does this when it is thirsty or tired. You've probably

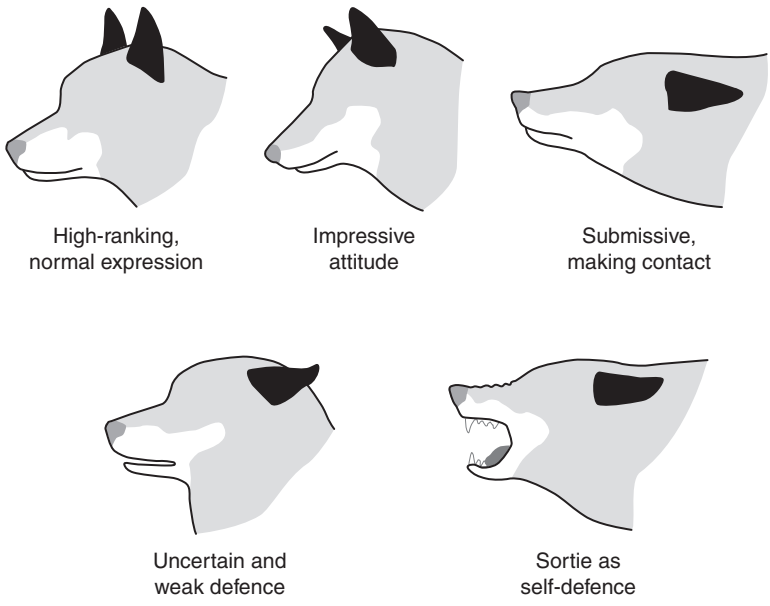
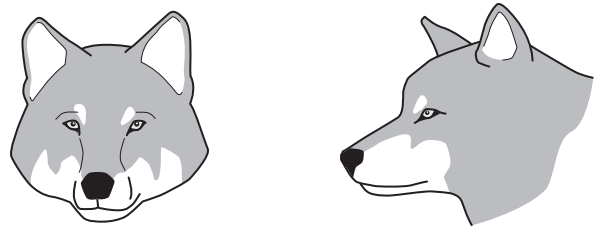
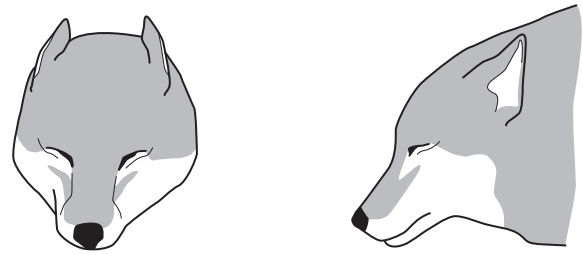


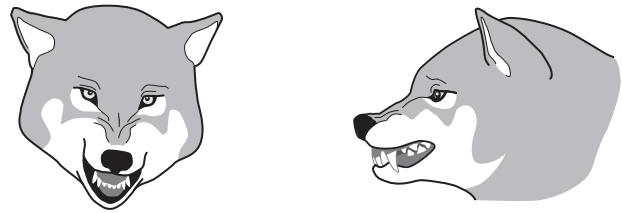
Figure 6.7 Expression of head and ears.



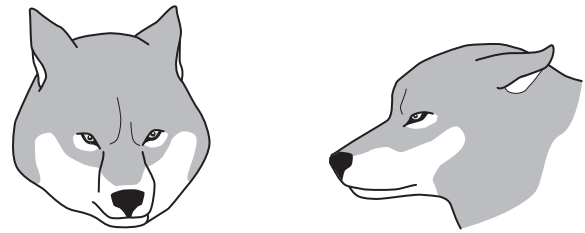
Normal



Submissive



Threatening



Suspicious

Figure 6.8 Facial expressions in wolves.

seen a panting dog, tongue hanging far out of its mouth, with a slightly questioning look in its eyes.

Many dogs raise their eyelids when they are amazed or something captures their attention and they want to investigate further. They often combine this signal with a tilt of the head.

A search dog at work will sometimes look at its handler when the latter stays too far away, and a K9 will give its handler a disturbed look when the handler hinders the dog's search, such as by calling its name, talking unexpectedly, or making noise or sudden movements.

LIPS, TONGUE, AND CORNER OF THE MOUTH

The lips may be pulled up to show the teeth. This is not always an expression of aggression; some dogs look like they are laughing. When these dogs are very happy, they may pull up their lips so that their incisors are visible. In aggression, the canine teeth are visible.

Holding the corners of the mouth in a normal position means certainty; when the corners of the mouth are brought to the front, it indicates depression or distrust. If the corners of the mouth are pulled to the back, it means fear, defeat, or defenselessness.

The handler should also pay attention to slanting, slavering, blowing, and the tongue hanging out restlessly. These are signs of a strong feeling of uncertainty. Signs of stress include chewing, blowing, and the dog licking itself along the snout. The tongue hanging out and slanting does not always indicate fatigue, thirst, or extreme heat.

When a search dog suddenly opens the back part of its lips and makes a sniffing or blowing sound, it can be an indication that the dog has smelled what it was looking for or at least has detected a trace odor of the search goal. The same may be the case when the dog, with a closed mouth, brings its nose up high as if trying to follow an odor. This happens most of the time along walls, and sometimes one hears the dog sniffing loudly at doors and along other chinks.

TAIL

Like the ears, the dog's tail gives an important indication of the dog's emotional state:

- Horizontal tail: satisfaction.
- Tail straight up: heightened attentiveness or excitement.
- Tail pulled between back legs: reservation or fear.

Such signals have exceptions. For example, greyhounds almost always carry their tails between their legs, regardless of their emotional state.

The significance of the tail as a form of expression can be seen in the attempts of a dog with a docked tail to wag with the stump.

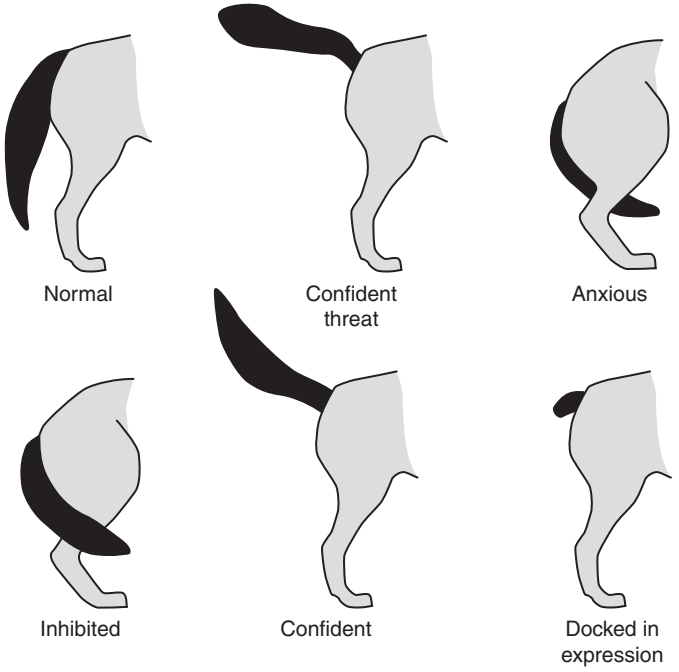


Figure 6.9 Expression of the dog's tail.

To express happiness, it has to shake its whole backside. This dog cannot, however, give finer signals, often important for search dogs.

BARKING

Barking is the dog's vocal language. Dogs can produce many different sounds, from a deep rolling bark to clear barking and crying. They use their voices to express themselves, and change the pitch and volume of their bark to express their emotions and frustrations. Barking does not always mean aggression; it more often means "Are we going to play?" or "Nice that you are here again."

In adult dogs, growling is more often an expression of displeasure or aggression than in young dogs. Many breeds of dog, such as Rottweilers, make a deep rolling sound that resembles growling, but varies in pitch; it is a sign of pleasure. The pitch of aggressive growling, on the other hand, stays the same or becomes slowly stronger as the body expresses more aggression.

When a K9 handler is not standing near the location where the search dog has made a find, then the dog may use a bark to call the handler over. With this bark we often see the dog walk in the direction of the handler and make eye contact.

In some dog breeds, barking seems to come out of the drive complex to tend or to guard. In other dogs it is only displacement behavior, because the dog knows the handler will help in difficult situations.

This concludes our introduction to the basics of dog behavior, beginning with their instincts and drives and concluding with how to read various forms of dog communication. In the next chapter, we discuss the principles of operant conditioning and how your understanding of drives and behavior can be successfully employed in the training of your K9.

7

Operant Conditioning: Development and Basic Principles

In animal training, *conditioning* is a process by which the frequency or predictability of certain behavior is increased through reinforcement (i.e., a stimulus or reward for the desired response).

In *classical conditioning*, a dog learns by establishing associations between different events and stimuli. For example, when a neutral stimulus (such as a bell) is paired with an unconditioned stimulus (such as food) that produces an involuntary bodily response all on its own (such as salivating), the neutral stimulus begins to trigger a response (salivation) in the dog similar to that produced by the unconditioned stimulus. In this way, the dog learns that the neutral stimulus equals something good (just like the unconditioned stimulus).

To teach with *operant conditioning*, we strengthen a behavior (i.e., cause it to occur more frequently) when we follow it with reinforcement; we weaken a behavior (i.e., cause it to occur less frequently) when we follow it with punishment. Operant conditioning is based on a simple premise: behavior is influenced by the consequences that follow. When a dog is reinforced for doing

something, it is more likely to do it again. When a dog is punished for doing something, it is less likely to do it again.

The Need for Professional Training Programs

The training of service dogs is often associated with work, duty, and moderation in the interest of the service. Play and reward are subordinate to the service.

During World War II, and with the establishment of European police forces after the war, dogs were used with more frequency and for more purposes. Within the military service, but also within police service, the service dog was no longer used only as an offensive weapon but also with increasing frequency to detect enemies, trip wires, explosives, and other traces invisible to humans. To meet these demands, trainers needed methods that were faster and more effective and that produced better results. A more professional approach to training service dogs was established. Both the English and German armies wrote training protocols. Gradually these protocols became accepted by many other organizations.

Since they were developed by the military, these protocols were based on *par force* methodologies. Such training is focused

Figure 7.1 Police dog handlers in the Netherlands in the 1950s with their German and Belgian shepherds and Bouvier des Flandres.

on learning to dominate, control, and manipulate K9s. Hierarchy between human and dog is often established through violence, and the animal is fully subject to its human trainer. Play and reward are pushed into the background. It is a methodology that arose from the way the army dealt with its soldiers: hierarchy, discipline, and chain of command.

The army and police produced service dogs that played an important role in protecting people and finding goods. However, the failure rates in these dogs was high, the training was inefficient, and the overall quality was low.

Trainers kept their methods secret, and few dog handlers were successful. That trainers kept their methods secret is not surprising. In the Middle Ages, "magic" trainers were hired to prepare animals for hunting or farming. To protect their income, trainers did not share their methods.

Today, however, professional dog trainers share knowledge. Animal training is not magic, but rather a professional, efficient, and reliable process conducted by trained experts using scientific methodologies.

Figure 7.2 The police dog is still an essential part of crime prevention.

Scientific Foundations

Drawing on the ideas of Charles Darwin, late-nineteenth-century psychologists realized that observing animals could provide a deeper insight into the psychology of humans. Many of their tests and experiments used animals to help understand the human mind better. As an unintended consequence of their research, they also revealed the best way to train animals. Animal trainers began using such research in their training programs. Some of the most significant pioneers in this field are discussed in the section that follows.

JOHN B. WATSON

John Broadus Watson (1878–1958), considered the founder of American behaviorism, changed psychology from the study of the mind to the study of behavior. Watson saw that he could learn much from the behavior of animals without questioning what was going on in the "spirit" of the individual. His theories linked behavior directly to environmental changes. Watson stressed the role of *stimulus* and *response.* He focused his research on the process of changing individual behavior. In 1913 Watson published a controversial article—"Psychology as the Behaviorist Views It," sometimes called "The Behaviorist Manifesto"—in which he explained his ideas about behaviorism. He claimed that psychology had to be the science of behavior. Watson's followers, the behaviorists, observed and measured responses of subjects to various stimuli. These processes of observing and measuring responses to stimuli are activities K9 trainers do every day to determine every step in training.

EDWARD L. THORNDIKE

In 1898, Edward Lee Thorndike (1874–1949) was already describing the basic principles of operant conditioning. Thorndike worked with cats he put in "puzzle boxes" of his own design. A puzzle box is a small cage that the animal can open after performing a

simple act. Thorndike put the cat in the puzzle box, put some food outside the box, and studied the animal's behavior. How would the cat discover how to open the box? How long would it take before the animal discovered how to open the box? And what kind of behavior would the cat show? Thorndike found that after twenty or thirty attempts in one puzzle box, cats knew almost immediately how to escape from a new puzzle box. Thorndike argued that learning is based on trial and error, a key understanding in operant conditioning.

B.F. SKINNER

Burrhus Frederic Skinner (1904–1990) brought operant conditioning to a wider audience. In 1938 he published his book *The Behavior of Organisms: An Experimental Analysis,* which further developed Watson's theories of behaviorism.

Skinner spent much of his time in laboratories, where he did all kinds of research with animals, especially rats and pigeons. There he developed his famous operant-conditioning chamber, also known as a Skinner box. A Skinner box is a small box in which the behavior of an animal can be studied. The Skinner box has a food dispenser, a response lever, a loudspeaker, lights, and an electrified grid. In this box Skinner placed a rat or pigeon, and the response frequency (the number of responses within a given time) was graphically recorded. When the animal pressed the lever, Skinner could reward the animal by giving food or water or by powering off the electric grid. Skinner studied the animal's behavior and the subsequent effects of what he called positive or negative reinforcement. He discovered that he could change animals' behavior through science.

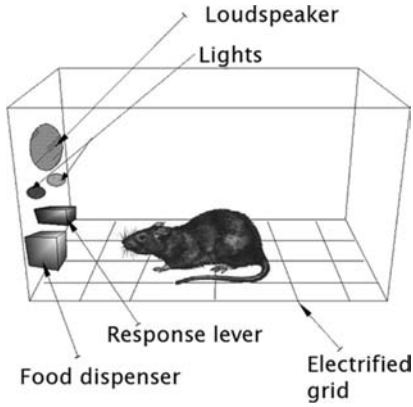


Figure 7.3 The Skinner box, a cage used to perform behavioral experiments with animals.

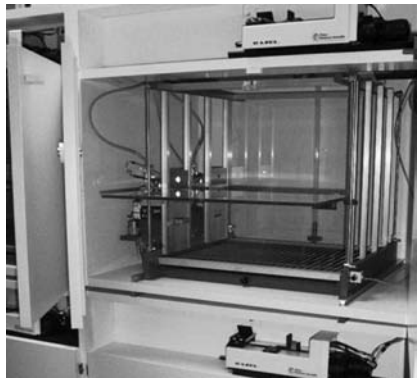


Figure 7.4 The Skinner box for a rat.

Skinner presented this methodology—*operant conditioning*—outside the boundaries of the laboratory through Project Pigeon (later Project Orcan, for "organic control"). During World War II, at the request of the US Navy, he and his students created the first bird-guided missile. Skinner conditioned pigeons to send a Pelican missile with a bomb to a specific target. The control system involved a lens at the front of the missile projecting an image of the target to a screen inside, while a pigeon, trained

by operant conditioning to recognize the target, pecked at it. As long as the pecks remained in the center of the screen, the missile would fly straight, but pecks off center would cause the screen to tilt, which would then, via a connection to the missile's flight controls, cause the missile to change course. The pigeons

Figure 7.5 The Pelican missile with a bomb. The device first flew in March 1942. However, while guidance problems were being solved, the U-boat menace for which it was conceived was being effectively handled by the US Navy and ULTRA cryptanalysis.

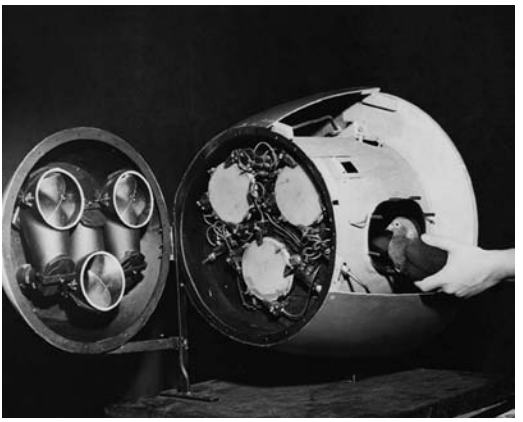


Figure 7.6 The Pigeon-Orcon Project attempted to solve early problems with television and radar—both of which were easily defeated by electronic jamming devices. However, Skinner convinced the US Navy that birds had great potential as a jam-proof missile-guidance system. Pigeons were trained to peck at the image of a target projected on a screen in the missile's nosecone, and these signals corrected the missile's flight path.

produced excellent results and were reliable under stressful conditions including extremes in cold, vibration, acceleration, pressure, and noise. Even though this organic-control system worked well, due to secrecy concerns the US Navy would not provide Skinner with sufficient technical data, and Skinner had the almost impossible task of "guesstimating" what electronic inputs/voltages were required to control the missiles. Due to no fault of Skinner (nor of his pigeons), the Navy canceled the program early in 1944. But by then Skinner was famous for training animals using operant conditioning.

IVAN P. PAVLOV

Ivan Petrovich Pavlov (1849–1936) discovered classical conditioning during research on digestion in the late nineteenth century. As part of his research, Pavlov measured dogs' saliva production after he gave them various sorts of food. During the course of his research, he found that some dogs produced saliva before they got the food, throwing his results off. He saw that in some cases the dogs started producing saliva when they were brought into the research area or saw one of the employees in a white coat. By ringing a bell a few seconds before feeding the dogs, Pavlov noticed something he could not understand. After several repetitions, the dogs began to produce saliva when the bell rang, even when there

Figure 7.7 One of the many dogs Pavlov used in his experiments. Note the saliva catch container and tube surgically implanted in the dog's muzzle.

was no food around. Pavlov called this phenomenon *classical conditioning;* today we call it a *conditioned reflex.*

Scientific Influence on Animal Training

Although scientists were initially interested in the psychology of humans, they discovered many secrets of animal training. They reduced the training of animals to a mechanical skill and took out the "magical" element. They examined issues like motivation, reward, and learning processes. They discovered individual differences in learning, and they also researched the influence of pain, fear, and reward in learning processes. In a laboratory setting, they analyzed various forms of learning and proved that learning can be sped up, slowed down, or even blocked by using various reinforcers, positive and negative. In our opinion, a scientific approach to dog training is the difference between working at an amateur level and working at a professional level.

Scientists and professional animal trainers can make the world safer: safer for the trainer to work with dangerous animals such as elephants and killer whales, and also safer and more enjoyable for the animal. Solid training techniques for dogs and handlers can also increase the evidence value of K9s.

K9S IN THE COURTS

A dog's nose is much more sensitive than many currently available scanners and detectors. But for defendants in a court of law to be convicted based on dog evidence, the evidence must be clear and reproducible. Over the years, some court verdicts based on the outcome of dog work have been questioned in court. But it is the fault of trainers and handlers, not the dogs, that innocent people have been convicted and imprisoned using dog-sourced evidence. The role of the human interpreter of the dog's work is not always objective. Many times people "translate" the dog's work mixed with personal feelings and anthropomorphism.

In 2009, the human scent identification program in the Netherlands was stopped because of disappointing results caused by the

manipulation of results by irresponsible trainers. It is exactly those dog trainers and handlers who keep the training of K9s at an amateur stage, and the gap between science and animal training remains.

OPERANT CONDITIONING FOR THE GENERAL PUBLIC

Keller Breland and his wife Marian Breland (who, after the death of Keller in 1965, married Bob Bailey in 1976 and continued their work) used operant conditioning on a variety of animals and brought it to the attention of a wider public. The Brelands learned operant conditioning from B.F. Skinner as graduate students. Their work in their IQ Zoo in the early 1950s is known all over the world; the Brelands' animals entertained people by acting in animal shows and commercials. IQ Zoo was a concept that arose from their Animal Behavior Enterprise (ABE), founded in 1943. ABE proved that the new scientific psychology of training by positive reinforcement could be used for any species.

Figure 7.8 Keller Breland with an otter trained for the IQ Zoo, a tourist attraction in Hot Springs, Arkansas, that showcased the operant conditioning of animals, circa 1960.

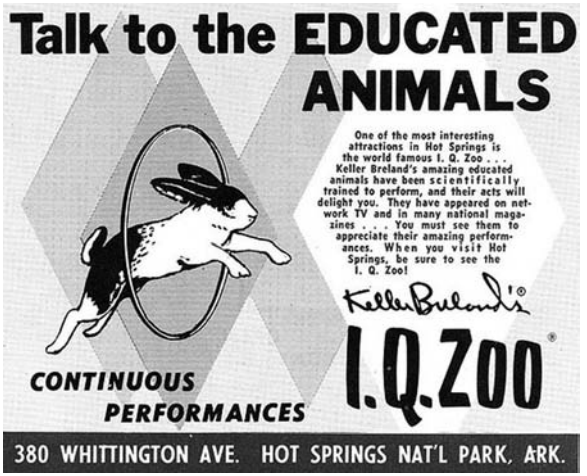


Figure 7.9 IQ Zoo advertisement from a 1969 issue of *Today in Hot Springs*.

Figure 7.10 B.F. Skinner (left), Marian Breland Bailey, and Bob Bailey.

In 1945 the Brelands introduced the clicker. The clicker gives trainers the ability to indicate the exact moment of the behavior that will lead to reinforcement. This prevents an animal from paying attention to the body language of the trainer. The Brelands called it a *bridge signal*. The click tells the animal that a positive reinforcement is on its way. With clicker training, animals focus more on their behavior and less on the trainer. An additional advantage of the clicker is that trainers can work farther away from the animal.

Figure 7.11 Keller and Marian Breland with one of the stars of the IQ Zoo, circa 1960.

In articles such as "A Field of Applied Animal Psychology" (1951) and "The Misbehavior of Organisms" (1961), the Brelands wrote about their results in applying operant conditioning to the field of animal training.

ABE grew into a large company with up to forty full-time trainers. Robert E. (Bob) Bailey, who had been the first director of training in the Navy's Marine Mammal Program, eventually became ABE's general manager. ABE developed its own training programs and materials, and collected data and analyzed training procedures. Innovation was an ongoing process. More than 120 different species were ABE trained.

ABE trainees were taught a diverse skill set for effective animal training. For example, trainees learned line skills and how to offer reinforcements quickly and flexibly from different positions around the animal. They also learned how to handle, grab, and carry animals. Trainees were taught to follow training protocols, which ABE frequently reviewed and adapted to new insights based on experiences and data.

CHICKEN-TRAINING CAMP

The Baileys used live models to train their students—not dogs, but chickens. Chickens are quick to learn and easy to take care of. Trainees had to train the chickens to discriminate colors and shapes, retrieve objects, stretch rubber bands, drag small trolleys, work with laser cues, and run various kinds of obstacle courses. Students were not allowed to use any kind of coercion in the chicken training. Even touching the chickens was not allowed. There were no long leashes or small shock collars, and yet they managed to teach chickens many complex behaviors. At first students needed to invest many hours to teach the chickens to complete simple tasks, but then the learning process accelerated. Eventually the animals learned to perform complex behaviors in relatively little time. In this way, Marian and Bob Bailey let their students discover the strength of operant conditioning.

A few years ago, a former student of Marian and Bob Bailey started her own chicken-training camp in Sweden: House of Learning. We now rent these facilities to train our new trainers in the basics of operant conditioning. Computer programs such as *Sniffy, the Virtual Rat* are not adequate simulations. We still regularly visit Sweden and practice our own skills because it is necessary to maintain good mechanical skills, and chickens remain the best training models for that purpose.

Figure 7.12 Our new dog trainers learn the basics of operant conditioning at a chicken-training camp in Sweden.

ABE laid the foundation for the bird shows and marine mammal shows that attract many thousands of enthusiastic visitors every day around the world. In large animal shows featuring cows, pigs, or marine mammals, we see people and animals interact in a common open area. These animals choose to show a set of conditioned behaviors for which they receive positive reinforcement.

OPERANT CONDITIONING AND TRAINING MARINE MAMMALS

Marine mammal shows are well-known examples of the application of operant conditioning. For research on the remote guidance of dogs, Simon Prins visited a dolphin-training facility in 1996 and was impressed by a young trainer's perfect show with seven dolphins. Her work seemed to require no effort.

Many people do not know that animals are used to protect US Navy ships and crew around the world. Dolphins in the Navy Marine Mammal Program (NMMP) patrol harbors and help protect ships from attack by divers. Dolphins with cameras scan the seabed for hidden mines. Sea lions and other marine mammals are deployed to pick up lost items. These animals work in open oceans and are deployed from large ships, small boats, or helicopters. These animals work in a stimulus-rich environment with their natural prey and enemies. They are not attached to long leashes, nor do they have electric collars. They choose to interact with their environment and with their human trainers to perform one or more conditioned behaviors. They come back to base when they are called and every day they are ready to work. They do all this in exchange for positive reinforcements. Their work is possible only through an intensive training program based on operant conditioning. The animals of the NMMP are deployed in twenty-six countries.

OPERANT CONDITIONING IN ZOOS AND ANIMAL STUDIES

Over time zoos around the world also adopted elements of operant conditioning. Zoos were at first reluctant to use operant conditioning because most zoos consider *training* a dirty word. Many directors and zookeepers are convinced that zoo animals should

Figure 7.13 A dolphin trained by operant conditioning on patrol.

Figure 7.14 A sea lion leaps back into the boat after a harbor patrol mission. The animals are trained using operant conditioning, emphasizing positive reinforcement.

not be trained at all. They believe animals should maintain their natural habitat and behavior as much as possible. Training could solve many problems and improve animal welfare, however. Training also makes medical care much easier because tranquilizing animals causes stress—not only to the individual animal but also to the group or pack in which the animal lives. And moving animals to different cages or accommodations is much easier with some training. Training is also a valuable tool in enrichment programs, and it reduces the aggression of animals toward zookeepers.

The public likes to see an animal approached in a friendly manner for a simple medical treatment, and the standard method of tranquilizing or immobilizing animals is much criticized. Operant

Figure 7.15 Apenheul in the Netherlands is a primate park that allows the animals to run free. Through operant conditioning the primates have learned that they are not allowed to steal property from the visitors.

conditioning has also been used in various animal laboratories, increasing animal welfare and preventing use of standard, stressful procedures such as the squeeze cage.

Operant conditioning is used to train elephants in the Maesa elephant camp in Thailand. This relief camp was set up to protect elephants from the traditional way of training in which elephants learn to work for humans by force or under threat of violence. Now painting elephants and elephants playing football entertain tourists. This amusement park provides the finances to maintain the elephants and to save more animals. The animals are "working" but not under stress. They work in exchange for positive reinforcement. Operant conditioning is also implemented in the Apenheul in the Netherlands, a monkey park that allows animals to run free. Through operant conditioning, the monkeys learned not to steal property from visitors.

Becoming a Better Trainer

Some people try to make dog training complex. Indeed, training animals is difficult, just as playing tennis is difficult, but if you want to become the best, spend your time on training. You can

read all the books in the world about tennis, but without spending a lot of time on the tennis court hitting balls, you will never win Wimbledon. Even a racket and balls from Andre Agassi are no guarantee for success. The same goes for animal training. Spend most of your time training dogs.

In his book *Outliers: The Story of Success,* Malcolm Gladwell writes that innate talent is not sufficient for success. Whether you're a writer, a professional athlete, a classical pianist, or a dog trainer, in his opinion you must practice for at least ten thousand hours to be successful. This means that you need to invest in training. At an average of three hours a day, you would need to spend at least ten years to reach ten thousand hours of training. And, as Gladwell writes, this is really the *minimum* investment you will need to do something well. We calculate that a full-time dog trainer in the Dutch police force will need to spend twenty-one years training dogs to be able to reach the minimum ten thousand hours of training time in service. A patrol-dog handler needs to spend some 166 years in service to reach ten thousand hours of training. Calculate for yourself what your actual training hours per day with one or more dogs will be alongside your other responsibilities: writing reports, making phone calls, driving, setting things up, doing police work, performing operations, taking holidays and days off, and so on.

UNDERSTAND SOME THEORY

Although experience—the hours you spend training dogs—is critical, some theoretical knowledge is also important. We know several successful dog trainers who have no theoretical knowledge, although they train dogs every day. If we ask them about their methodology, some of them can't answer because they train based on instinct or gut feeling. Their methodology is the result of years of experience and trial and error. It is not a method written down; rather, it is a "we've always done it that way" method that works. What we often see in these trainers is that they try to find a certain type of dog for their needs. After all, a certain method of teaching

fits only one type of student, and this logic applies to both animal and trainer.

If we try to talk about the theory of dog training, such trainers often ask us to stop. For what they want, their method works, and the theory of training is so complicated and confusing that they don't want to know it. We understand this perspective. Before someone can become a "behavioral expert," there is a minimum four-year study at the bachelor's level to understand all the theory. No dog training is performed during this period; it's purely theoretical.

Nevertheless, we believe a dog trainer needs to have a basic theoretical background. The time of "we've always done it that way" is over. Every helicopter pilot can tell why a helicopter flies, how to control it, and what all the instruments mean. Every driving instructor can explain how to drive a car or motorcycle. They don't need to explain why a circuit board may overheat and which components must be replaced to solve the problem. They don't need to explain what the wreck looks like after a major crash and how the wreck may be fully recovered. What we expect from them is that they can explain, in understandable language, how to fly or drive.

From a dog trainer we expect that he or she can explain the way animals learn, how to increase behavior, and how behavior can be reduced or stopped. We expect that the trainer can identify differences between desired and undesired behavior, and the trainer should also have the basic principles of classical and operant conditioning in his or her toolbox.

UNDERSTAND THAT CONDITIONING IS 24/7

Conditioning is a process of teaching. Consciously or unconsciously, we all learn from our environment, stimuli and responses, and the consequences of our actions. Just like our dogs, we learn twenty-four hours a day, seven days a week, not just during our three days a week of formal training time. Dogs are always learning: in the back of the car racing to an operation, lying in their kennel, or while walking with their handler.

Figure 7.16 K9s learn quickly that the "suspect" always wears protective clothing. If you are not careful in designing your training, dogs in an operation will not attack or will hesitate to attack a person without protective clothing.

Because our dogs are learning all the time, they sometimes learn things we do not want to teach them. For instance, patrol dogs quickly become conditioned by their environment. While these dogs at home are quiet and friendly, they turn into dangerous biting animals in the center of the city, their working environment. Conditioning happens faster than most handlers realize. Dogs are sometimes conditioned to specific behavior after being in a certain area only three times. Jumping out of the patrol car in the city in a threatening situation can easily condition an aggressive attitude in the dog. And there are many more stimuli that can cause unwanted behavior, like a siren, the acceleration of a patrol vehicle, or a handler checking his equipment. All these subtle signals can cause a sleeping patrol dog in the back of the car to wake up and suddenly start spinning restless circles in its cage.

KNOW THAT CLASSICAL AND OPERANT CONDITIONING GO TOGETHER

Pavlov discovered and described the process of classical conditioning. After finding that he could get his dogs to salivate after hearing a bell, he discovered that we can give a new signal significance

Figure 7.17 During the training process, Pavlov and Skinner sit on your shoulder.

if it is given just before a well-known signal, such as a clicker before a bell. The other way around is not possible. Teaching the clicker is only possible if the dog first hears the clicker and then gets the food. If the dog gets the food first, it will never make the association between food and clicker. The shorter the time between the new signal and the well-known signal, the faster the connection will be made.

Pavlov believed classical conditioning is the basis of all learning. All behavior is a response to a stimulus, although the stimulus prompting a particular behavior is not always clear. Just as you blink when something seems likely to hit your eye, your heart beats when prompted by the heart nerve, you breathe when your

brain senses a lack of oxygen, and your knee moves when the doctor hits your extensor muscle, so a dog may do something in response to a stimulus in the surroundings that the trainer isn't even aware of.

What would have happened if Pavlov's dogs had not been tied up during his experiments? Would the dogs have reacted differently after hearing the bell? If you limit the dog's freedom, you also limit the number of behaviors the animal can show. Classical conditioning and operant conditioning always go together. As Bob Bailey says, "During the training process both Pavlov and Skinner always sit on your shoulder."

REALIZE THAT CLASSICAL CONDITIONING ALONE IS NOT ENOUGH

It would be nice if classical conditioning alone were sufficient to train a K9. No complicated training protocols, no variable reinforcement schedules, no difficult discussions, and all animals would react in the same way. But practice is different: some dogs bite harder, some run faster, and individual dogs perform differently in search tasks. If we hide explosive material in a shed and send in ten well-trained explosive detector dogs, they will all find it. But the dogs will find it in different ways and within different time frames. We see dogs search with a high or low nose, quickly or slowly, systematically or seemingly accidentally locating the explosive material. And the reward differs: one dog is fond of a tennis ball and another dog is rewarded with food or patting or verbal praise. But every dog immediately shuts its eyes when you touch it with a finger, will furiously try to breathe when you block its airways, and will shake its head when you put something in its ear. The basis of our training will always be a combination of operant conditioning and classical conditioning. In general training, trainers use trial-and-error setups (operant conditioning) to achieve specific behaviors in animals. But by classical conditioning, or involuntary learning, the animals also learn things that trainers are not aware of. This learning can lead to unwanted behaviors if you are not careful.

Basic Concepts for Operant Conditioning

Skinner quickly understood that a large part of human and animal behavior could not be explained by classical conditioning alone. For instance, if we decide to go to the cinema on Thursday evening, what incentives are responsible for us doing so? They cannot be definitively stated. We might have seen an advertisement, have an appointment with a friend, feel like sitting in the dark in an air-conditioned theatre, like the delicious coffee served there, and so on. Skinner found that there is more than classical conditioning at work in behavior. He distinguished between *instrumental responses* and *operant responses*.

INSTRUMENTAL RESPONSES

To explain complex behavior, Skinner referred to instrumental responses. If we kennel our dog and place a food bowl in front of the kennel, the dog will try to reach it. It will go to the door, try to open it with its paws, or try to stretch its legs between the bars to get the food bowl. These are instrumental responses, which are aimed at a particular change in the environment. Through this behavior the dog could change its environment to its advantage: reaching the food in the bowl.

OPERANT RESPONSES

Imagine we let the dog sit in a kennel and within its line of sight walk away with the food bowl. We walk over a lawn, jump over a fence, follow a sandy path, wade through a pond, climb the bank, and see an open fire escape outside a building. We go up the stairs, place the food bowl on the roof of the building, and walk back to the dog and command it to be free. Immediately the dog runs over the grass, jumps over the fence, follows the path, jumps into the water, swims to the other side of the pond, runs up the stairs, and ends up on the roof to eat the food. Now we are not talking about an instrumental response but instead a whole operation. Skinner called this operant, or operation, behavior. Operations are performed in a given environment with complex stimuli. A dolphin

that works in an unknown port in an unfamiliar ocean for several hours on patrol looking for enemy divers is using operant behavior. The process that causes operant behavior is called operant conditioning. The complexity of such a series of acts over a longer time in a stimulus-rich and often unfamiliar environment where the animal is not restricted in its movements indicates that the conditioning process must be enormous. Some of our own training programs are four hundred pages long.

In operant conditioning the trainer is not occupied with simple reflex behavior; instead, the trainer focuses on the larger process—the whole operation. The animal learns that it can affect its environment through cause and effect. Skinner talked about learning the ABCs: Antecedent, Behavior, and Consequence.

Figure 7.18 For a dog to work on a moving ship during a wild chase requires strong conditioning.

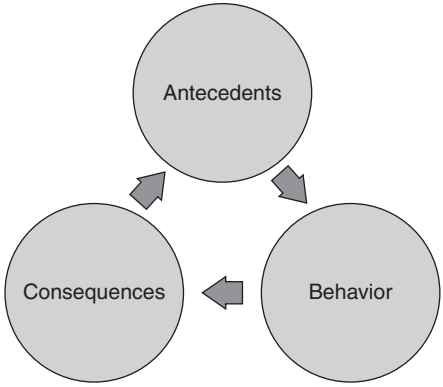


Figure 7.19 Skinner's ABC method tells trainers that animals learn to recognize the *antecedents* that will result in specific *consequences*, both good and bad. They modify their *behavior* accordingly.

We sometimes hear trainers say that they first have to teach a new dog how to learn, but this is nonsense. Nature has worked on dogs for thousands of years. Nature made the generation of animals we now work with and gave them the understanding that behavior produces consequences. This understanding means dogs know very well what is pleasant and unpleasant, what is profitable and what is not. Nature has made sure our animals know that burning energy is a waste if they get nothing in return. This is one of the natural mechanisms that causes animals such as K9s to adapt their behavior to the circumstances and the environment. Nature developed our dogs into learning machines. They are ready for our lessons, but are we, as trainers, ready for them?

Trainers must realize how dogs learn and how to design a training program that works with this knowledge. Pavlov showed us that if we want a dog to respond to a new signal, we have to associate it with a well-known one. So if a dog has learned to sit on a verbal signal, it is easy for the dog to learn to sit on an electronic signal. Just give the new electronic signal shortly before the well-known verbal command to "Sit." But if we want to teach the dog to sit in front of a busy store where kids run in and out, petting the dog or pulling its ears, and we are one hundred yards away out of the sight of the dog, we need other techniques.

OPERANT CONDITIONING MADE SIMPLE

Our neighbor is a car mechanic. When we talk with him about cars, he loses us after about half an hour. All the technical details and procedures are too in-depth for us. We are only interested in driving a car. We need to know how to shift gears, steer, accelerate, and brake.

We should not make training any more difficult than necessary. As Bob Bailey says, "Animal training is simple but not easy." Prior to the training, you must know how to distinguish between desired and undesired behavior. Beyond that, if you know the four basic components of operant conditioning and are able to apply them, then you can accelerate, switch gears, steer, and stop. Operant conditioning gives you the tools or skill set to teach your dogs to work under control in a stimulus-rich environment, but the basis of operant conditioning is still as simple as Skinner explained it in 1938. It consists of four main components:

1. Positive reinforcement
2. Negative reinforcement
3. Positive punishment
4. Negative punishment

POSITIVE REINFORCEMENT (INCREASES TARGET BEHAVIOR)

Positive reinforcement means that you give something the dog likes. Note that it is the dog and not the trainer that selects what it likes. The reward can be play or food. Affection and attention can also be rewarding.

NEGATIVE REINFORCEMENT (INCREASES TARGET BEHAVIOR)

Negative reinforcement means you take something away that the dog experiences as unpleasant. A well-known example is the use of ear pinching to teach fetching. If the dog takes the dumbbell in its mouth, the trainer stops squeezing the ear. If the dog lets go of the dumbbell without command, the trainer again pinches the ear.

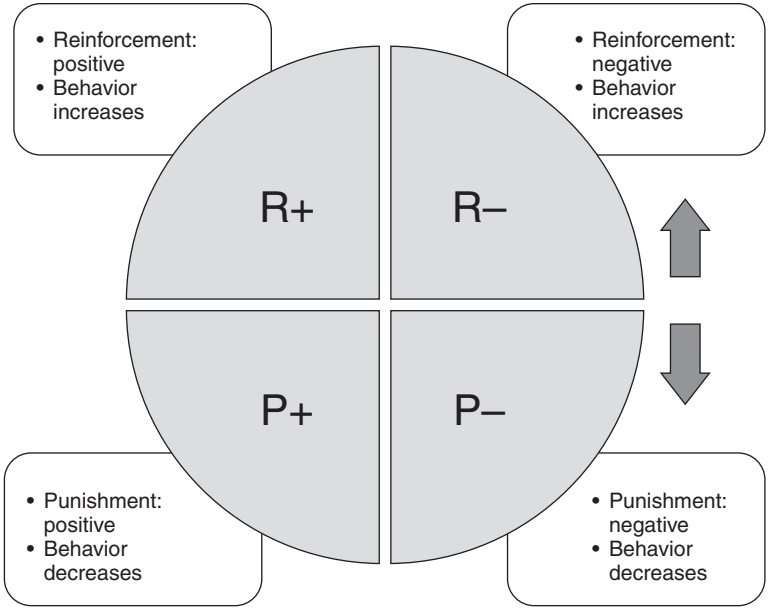


Figure 7.20 The operant conditioning matrix.

POSITIVE PUNISHMENT (DECREASES TARGET BEHAVIOR)

With positive punishment, you give the dog something it experiences as unpleasant. The clearest example is giving a physical pain such as a sharp tug on a leash, a slap, a kick, or an electric shock.

NEGATIVE PUNISHMENT (DECREASES TARGET BEHAVIOR)

The trainer takes away something the dog experiences as pleasurable. For example, a dolphin trainer, ready with a bucket full of fish, leaves the stage if the animals do not pay attention.

OTHER IMPORTANT CONCEPTS IN OPERANT CONDITIONING

PRIMARY REINFORCERS

Primary reinforcers are what the dog needs to survive. These are basic needs such as food, water, air, and sex. They are naturally reinforcing stimuli. We use food rewards as primary reinforcers. We also make use of social contact and play.

SECONDARY REINFORCERS

Secondary reinforcers are objects or events that the dog has experienced as pleasurable. A wild dog in nature would ignore a tennis ball or a Kong; however, many K9s find these to be great rewards because they associate them with a fun game with the trainer. Even seeing a tracking leash can be a secondary reinforcer for a tracking dog. If the tracking dog is in the back of the car and sees that we are preparing the tracking leash, this sight can be extremely reinforcing. The sound of the feeder is a secondary reinforcer that involves the acquisition of food, a primary reinforcer.

PRIMARY PUNISHERS

These are objects or events that the dog experiences as punishing, something that hurts the animal or even damages it, such as biting, kicking, or hitting. This is not just a pain stimulus given by a trainer. Other stimuli can affect a dog's learning, such as an electric shock on a railway or a spray of hot water from a kennel attendant cleaning the shelter. We will discuss the use of punishment in more detail in the next chapter.

SECONDARY PUNISHERS

These are objects or events that the dog has experienced as unpleasant. The word *no* is a good example. The dog soon discovers

Figure 7.21 Keep in mind that not only veterinarians but also trainers can create negative associations of themselves.

that a painful stimulus follows after hearing a trainer say "No." So although there is nothing inherently negative about the word *no*, the dog experiences it as a punisher because it associates the word with pain or the trainer's displeasure. If a dog is frequently physically punished by a trainer, this trainer, the training field, and also all surrounding objects can become conditioned punishers. Incorrect use of the electric collar will lead to the dog experiencing the collar as a secondary punisher.

EXTINCTION

Extinction is the disappearance of a specific behavior through a deliberate process of not reinforcing the unwanted behavior. As a process, extinction works; yet in practice, many undesirable behaviors are reinforced. Think of dogs that jump on visitors. Many people consider this behavior undesirable, but many dogs continue to do it. The behavior continues because it is reinforced every time a visitor pushes the dog away or otherwise gives the dog attention. However, if we ask the visitor to ignore the dog, the undesirable behavior of jumping on visitors will decrease until it disappears completely. This method leads to a reduction of behavior, but without punishment. Extinction is the best way to reduce unwanted behavior because it is simple and has fewer negative side effects than punishment.

Make sure that the reinforcement (both primary and secondary) does not occur again or it will hamper the elimination of the behavior. For example, in attack-dog training, if the dog barks or squeaks during the approach of a decoy, we stop the approach. No chance to attack, no chance to strengthen, and we reset the exercise and start again. The dog quickly learns that it must be quiet to get the chance to attack. The use of extinction techniques requires absolute consistency from the trainer.

STIMULUS CONTROL

Stimulus control means you train your dog to respond only to the stimuli that are important for your work and to no other stimuli. In practice this means your service dog doesn't respond to a rabbit

that runs away but immediately catches a suspect on your command "Attack." It means that your explosive detector dog does not respond to an object with human scent, but only to an explosive's odor. If we compare stimulus control with our way of moving in traffic, then it means that we stop for a red traffic light but not for a lady in a red coat. It also means we will again accelerate when the traffic light turns green. Many trainers understand they need to be able to control their animals in a world full of stimuli, but they forget that the animal needs to start when it perceives the right stimulus. Our camera dogs, when suddenly confronted with a running rabbit, are taught to sit down immediately. Then a reward or a new command will follow. In this way we prevent the dog from chasing rabbits, but we don't try to block its hunting instinct.

STIMULUS PICTURE

A stimulus picture evokes associations for the dog, typically with a set of expected actions. A picture of a target works well as a stimulus picture. We work with several different targets because we train different behaviors. Sometimes we teach a dog to touch a particular target, while other targets are used to teach the dog to lie down or sit. If we would like the dog to learn to touch a door,

Figure 7.22 Search and rescue dog Gerry sees the debris as a stimulus picture.

we start by using a target. In the beginning, the target on the door is easy to detect and represents the exact place to touch. Later, we use a smaller and smaller target, ultimately removing the target entirely. Eventually the dog learns to touch the door at the exact place and receives a reinforcement for doing so. The door itself becomes the stimulus picture.

Sometimes we are not aware of stimulus pictures. A stimulus picture could be the sight of debris for a rescue dog, a duck for a hunting dog, a warehouse for a narcotics dog, a row of cars for an explosives dog, or a helicopter for a military dog. The decoy used in patrol-dog training is a stimulus for the dog. Consistently used, the decoy's attitude and body language create separate stimulus pictures. A decoy running away will be attacked at the legs. A decoy making forward-facing threats with the arms and running toward the dog will be attacked at the arms. A decoy standing still with crossed arms will be guarded, not attacked. Different stimulus pictures will tell the dog what to do and how to respond to get a reinforcement.

Another example is the training of a search and rescue dog. In the beginning of its training, there is little debris, allowing the dog to concentrate on finding a hidden person. Later, more difficult debris is introduced. After some training, the sight of the debris cone will become a stimulus picture for the dog, and the dog's behavior will change visibly at the sight of a debris cone. The dog will become excited, know how to move in the debris, and know that someone could be found, after which it will receive a reinforcement.

In much the same way, tracking dogs become excited and start turning around in their car kennels when they see us preparing the tracking leash and harness. They know it's tracking time.

NEGATIVE STIMULUS PICTURE

Improper training can also ensure that a stimulus picture is perceived negatively. If a patrol dog experiences physical violence during a training session, in the "recall" the dog in this particular setting

might not pursue the decoy. If during the search for an object a detector dog is physically corrected for taking or biting the object, the dog may deliberately ignore such items in the future. Even more dangerous: the trainer can become a negative stimulus picture.

Set Up Your Dog for Success

Many dog trainers work reactively. They train the dog to a certain level and then bring it into a distracting, stimulus-rich environment too soon or bring it directly into operational practice. If the dog decides to chase a rabbit or fight with a cat, then the handlers react, often with violence, to control the dog. This behavior is not always understood by the dog and damages the relationship between it and the trainer, after which training quickly becomes negative.

We set up our dogs for success using the following guiding principles:

- We use a high rate of positive reinforcement in our training to condition desired behaviors.
- We begin target training in a low-stimulus environment, and we focus the training in such a way that the dog can only succeed. Because our training is planned in detail, we know when and how we will slowly introduce temptations.
- By keeping good data on our training, we can check when the rate of reinforcement is too low, and we use this information to adjust the training.
- Before we begin training, we establish desired and undesired behavior and put these behaviors into the training protocol. For example, in our training protocol, we plan a moment when the K9 will be confronted with a distraction like a cat. Data tells us when to make this step and when it is okay to move on to the next step in the protocol. An operant-conditioning trainer is proactive. We are not waiting to see what will happen if the K9 is suddenly confronted with a cat: we've planned for this and other situations, such as performing a task at different distances, in light and dark conditions, and so on.

As operant-conditioning trainers, we feel that we sometimes work simultaneously in the Arctic and in Antarctica. We reinforce behaviors to increase them, and we must sometimes ignore or correct a behavior to reduce it. Increasing and decreasing behavior is the tension in professional training.

HIGH RATE OF REINFORCEMENT

Your training steps should not be too large: a dog must be successful. Success motivates the animal and promotes learning. Dogs learn faster with smaller steps. If we see several sessions where the success rate is only 30–50 percent, we know that we have gone too fast or that the training step for this particular dog is too large. In the beginning, we like to achieve and maintain a high rate of reinforcement. We use a 100 percent reward schedule that later on will be reduced and become variable, but we don't want to reinforce too infrequently. A high rate of reinforcement is important to maintaining strong behaviors. Keep this idea in mind not only during the learning phase, but also later in operations. Keep paying your dogs for work, and don't take their efforts for granted.

Figure 7.23 If the dog sits for a previously determined time, it gets the reinforcement.

THE BRIDGE SIGNAL

If you stand close to the dog when you start training, you can give a reinforcement quickly, and the faster you can reward, the faster the dog learns. However, proximity can be a disadvantage if the dog becomes too attuned to your body language: the hand to your pocket where the food is, the movement of your shoulder as you bend toward the dog, or even breathing as a verbal approval signal. Why do we care about these sorts of signals? It is because the unintended signals interfere with training. The signals predict a reinforcement but are not clear enough. As trainers we need to have clear communication with our dog: the bridge signal. The bridge signal means clearly, "Well done! Here comes the reward."

A bridge signal gives you a precise way to communicate with the dog. The signal is clear because it is always the same. It will tell the dog at what exact moment or which part of the behavior is triggering the reinforcement. If you want a dog to touch a target with its nose, then give a bridge signal at the exact moment it touches the target with its nose—not before and not after, but exactly at the moment of touch. The dog then learns that only when the signal sounds will it receive the reward. All other signals

Figure 7.24 Chicken training with a clicker as bridge signal and food reward.

that come afterward, such as body signals, your hand movement, or verbal cues, are irrelevant. As Pavlov explained, each signal after a known signal has no meaning.

The bridge signal is at first used to bridge the gap between desired behavior and the acquisition of the reward. We use several bridge signals. In principle, we like to work with the clicker. When working farther away from our dog, we switch over to the silent whistle often used in dolphin training. In covert operations, we use an electronic bridge signal to reward the dog at a distance without betraying our position and so no one else can hear the signal.

FEEDERS

Another good reward method is a feeder, a remote-controlled food dispenser. A push of the button activates the feeder's motor. The feeder then runs and remains running as long as the button is pushed. After a few repetitions, the motor of the feeder serves as a bridge signal. The advantage of a feeder is that you can place the device anywhere and eventually hide it. This way you can remotely reward dogs immediately. You can form a very strong relationship between the behavior and the reward that follows, even when the dog is far away from your position. The quicker you can reward, the better it is for learning.

Feeders give you the opportunity to reward your dog during a prolonged training session. You can reward the dog repeatedly from a distance, with the added benefit of rewarding the dog without it seeing the trainer. Something we hear many times is that you cannot use feeders in operations; but consider whether that is really true. Because the dog is taught from day one that the reinforcement will come, but it never knows exactly where or when, we can also use a feeder in operations. Indeed, you could place a feeder next to your position. So if the dog returns from the operational site, it will encounter the feeder on its way back. The dog doesn't know that it's the way back because it's still working in the operation and doesn't know when the operation ends, but the dog

Figure 7.25 Labrador Twingo staring at a feeder after a long and difficult training session.

Figure 7.26 Remote feeders are a powerful training tool.

expects a reinforcement sometime and somewhere. So that can be the feeder next to your position where you collect the dog, or you can place the feeder in the back of the car that collects the dog from the operational site. Make sure the feeders will fire when you push the button.

REWARD WHEN EXPECTED

We often draw parallels between service-dog training and raising children, or dealing with employees and colleagues. Both humans and dogs are constantly influencing their environment in an attempt to reap the maximum benefit. Humans (and dogs) need to be rewarded when expected. You can't change the target midway through a task. Think of an employer who asks employees to reach a certain target and makes promises of rewards such as a bonus, an interesting course, a trip abroad, or a better salary if they succeed. What do you think would happen if every time the employees

Figure 7.27 Even after 250 tracks you need to reward the dog with the same energy as after the first track.

reach the target, they receive nothing but new targets and needed to work harder to reach them? If trainers work with dogs in this way, the dogs will quickly stop working. Imagine that you ask your dog to touch the target to get a reinforcement, but every time the animal gets close, you take the target away and place it a little farther or higher. Soon this dog will stop trying.

Dogs Always Look Out for Themselves

To understand why operant conditioning works, remember this key information: a dog is always looking for a shortcut to the reward. Dogs want the shortest, easiest route to the payoff. If you understand this, you won't be frustrated by your dog, but you will adjust your training protocol.

Try to visualize training as three platforms. The dog sits at platform one and must go to platform two, after which it is allowed to go to platform three and receive a reinforcement. If the dog is sitting on platform one, where is it going to go after the start signal? To platform number three, of course, to grab the reinforcement.

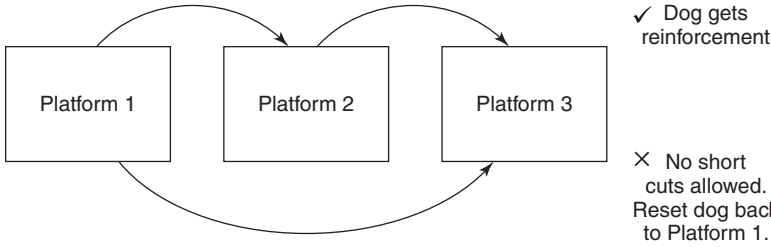


Figure 7.28 From platform one, the dog must go to platform two, after which it is allowed to go to platform three to grab the reinforcement. No shortcuts from one to three are allowed. If the dog goes directly to platform three, then the exercise is reset and the dog is moved back to platform one to start over.

Trainers need to make clear to the dog that shortcuts will not be tolerated. Instead of using physical punishment or other coercion techniques, it is simple to come up with other forms of reinforcements. Teach the dog that shortcuts will produce nothing. Only by following your training plan will it be possible for the dog to earn a positive reinforcement.

BEHAVIOR ECONOMICS

Another term for the relationship between effort and reward is *behavior economics*. Behavior economics is the theory that both humans and animals try to achieve the maximum profit using the least amount of energy. Nature gives us many clear examples. A cat that stalks birds learns that it gets better results if it remains as quiet as possible. The cat also discovers that if it moves slowly, it makes less noise, and by this its success rate increases. The cheetah learns that it can run quickly for long periods, and it discovers that exhausting its prey is more effective than physical conflict, particularly if the prey animal has enough power to defend itself. So the cheetah chases its prey until the prey is exhausted and can't defend itself anymore. Other predators know they should sneak close to their prey before running.

LEARNING THROUGH IMITATION

An interesting study of a difference between humans and animals was published in 2003 by Victoria Horner of the University of St. Andrews in Scotland. She used an opaque black box to investigate how people learn. With a group of children from Uganda watching, she poked different parts of the box with a stick, eventually stabbing the stick into a hole in the middle of the box. Then she pulled the stick out and, as a reward, a sticker clung to the end. The children imitated her actions and also received a sticker as a reward.

Horner then repeated the test with the same group of children using a transparent box. The children could now see that all the acts they had carried out on the black box were unnecessary to get the sticker—all they had to do was stab the stick directly into the hole. Yet all the children repeated nicely all the acts she did on the black box, and at last they stabbed the stick into the hole to reach for the sticker.

Horner then repeated these experiments with chimpanzees. The sticker was replaced by food, and two thirds of the monkeys repeated all of Victoria's actions on the black box. In the end they stabbed the stick in the hole and the food was stuck to the end when they pulled it back. But when Victoria showed the monkeys the transparent box, they immediately went straight to the hole with the stick. None of the monkeys repeated, like the children did, any of the acts they did before on the opaque black box.

Through imitation, people gain experience and learn certain behaviors. This is how people learn languages, cultural values, and the use of tools. Animals such as dogs, however, learn through experience and will always be looking for a shortcut to the reward.

Design your dog training with behavior economics as a central tenet. In a controlled, low-stimulus environment, it is you who gives reinforcement. This control means you can affect the environment and will thus affect the behavior of the dog. In traditional K9 training, police service dogs get nothing if they do their job well. Such training is founded on a human point of view: the animal that works as a service dog is "rewarded" for its work by pride in its contributions, as well as a daily portion of good food and water. If the service dog does not perform satisfactorily, it receives

physical corrections; the corrections stop once the work is done properly.

But does this method work? Large companies have learned that production on the assembly line does not increase by simply paying employees more. They have also learned that it is not helpful to "correct" employees for every mistake they make. Neither will employees work harder or better if their manager yells, "That's what you're paid for!" Yet this is the way many police service dogs are still trained. "No punishment is also giving a reward" is an old phrase we still hear from outmoded trainers. Besides the type of dogs produced by this system, you can imagine what type of trainers this system creates.

Most animal trainers struggle to reinforce the right behaviors and ignore the unwanted behaviors. Many fail to set up a good reinforcement schedule and fall back on punishment when they feel they are losing control over the situation.

Our dogs learn early in training that meeting the criteria starts the reinforcement process. They also learn that the strength of the reinforcement can vary: it can be a play game, a search game, a food reward, a hug, or many other things. The amount and duration of the reward is also variable. If the dog does not meet the criteria, there is no physical correction. The dog's experience is that meeting the criteria will lead to reinforcement, which strengthens the dog's desire to exert effort to meet the criteria.

If specific behavior fails to lead to reinforcement, the dog rapidly adapts its behavior, not because we say so, but because the animal is so programmed by nature. The dog will always try to influence its environment so that it will produce positive benefits for itself. Your task as a smart, strong trainer is to set up the training in a way that uses this motivation. Let the dog discover that it is worthwhile to play your silly game (silly because we never see a wild dog searching for explosives or narcotics). If we are going to ask our dogs to play our games, then we need to make sure that playing these games provides the dogs some benefit.

Suppose that for a specific operation it is important that a dog cover one hundred yards in twelve seconds. Start your training in low-stimulus, familiar surroundings. First let the dog experience that covering the required distance will start the reinforcement process. Then teach the dog to cover this distance in the specified time. Such engagement is variable and very exciting. If the dog receives a start signal, and within twelve seconds reaches the destination, provide a reinforcement. However, if the dog takes longer than twelve seconds, do not give a reinforcement and reset the exercise. You do not use physical correction to teach the dog to go faster because the secret here is in applying behavior economics. The dog learns to assess the situation and figure out how fast it needs to walk or run the distance to score.

The Case for Operant Conditioning

Simon Prins had worked with patrol dogs for many years before he was asked to train an attack dog for the anti-terrorism unit of the Netherlands. Simon had already trained remote-controlled camera dogs, detection dogs, and search and rescue dogs using operant conditioning. These dogs were all successfully and reliably deployed in operations. However, he had never trained an attack dog using operant conditioning methods.

Simon selected a Dutch shepherd, Ivan, a very hard and aggressive patrol dog that was taken out of patrol service because he had become too aggressive. Ivan was not obedient to his handler and had started to attack everybody, including the handler and the police-dog trainer. Simon prepared the attack dog by operant conditioning, just as he prepared his patrol dogs.

In 2007, Simon and Ivan entered a two-day international match in Germany in which fourteen anti-terrorist units of dogs and handlers from all over Europe were to compete. All teams were experienced in the operational field, and Simon entered to see whether Ivan, trained by operant conditioning with no traditional coercive techniques, could compete with this select group.

Figure 7.29 Andor, the first radio- and laser-guided camera dog.

Figure 7.30 Simon Prins with his attack dog Ivan during laser-target training.

Figure 7.31 Attack dog Ivan, European Champion 2007.

Simon was surprised and proud that Ivan performed reliably in all situations and won the competition. Ivan's performance at the competition showed that even deadly attack dogs could be well conditioned for their high-risk job through operant conditioning.

No coercion was used in training this aggressive dog, only operant conditioning and behavior economics. The *par force* method had already been used by the dog's former handler and trainer to break its aggression, but force didn't work and only blocked the learning curve of the dog. Trained with operant conditioning, Ivan did his work in a predictable way without fear of the handler or the environment. Ivan was taught using Skinner's ABC model, and he discovered that he could manipulate or change his environment into something beneficial. Ivan had no reason to attack his handler and became a reliable friend for Simon.

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8

Physical Punishment in Dog Training

When our son was four years old, we took him to school. We walked into the classroom and saw no long leashes, no pinch collars, and no electric collars. He was not beaten or kicked, yet he learned. And, most importantly, our son wanted to go back to school the next day. Not so long ago, corporal punishment in schools was common. In the 1950s, for example, children looking outside instead of into the classroom often received physical punishment from a wooden stick striking their fingers.

Today, teachers realize they need to create a safe learning environment to encourage optimal learning for children. They create a system in which children can succeed and earn rewards in the form of attention, a compliment, or a sticker in their books. Our son discovered that he can influence his environment through his behavior. His positive attitude created a positive environment for himself at school. He generalized that the positive completion of assignments in the third grade would bring similar rewards to those he received in grades one and two. He remained curious and interacted with his new environment.

Violence Harms the Learning Process

Powerful physical corrections will seriously damage and may even block the learning process. Many studies prove this. In one study, researchers used a shuttle cage with two chambers: A and B. A dog was placed in space A and was taught to escape to space B when the floor of space A was suddenly electrified. The dog then learned to avoid the pain when researchers rang a bell before they turned on the electricity. After three sessions, the dog learned to run out of A and go to B when the bell was rung to avoid the pain. But then researchers placed a fence between A and B so the dog could not escape from A. The bell was rung and the shocks were given no matter what the dog did. At first the animal yelped, ran around, and tried to escape. But after a while the dog was apathetic, sat on the floor, hardly moved, and accepted the shocks. When the fence between A and B was once again removed, the dog stayed lying down. Only if the researcher now pushed the dog to B would it escape the shocks. The learning process in the dog virtually stopped. We saw a similar situation at a training field where a dog was punished and the trainer asserted angrily that "the stupid animal doesn't even want to work for me." But in fact, the trainer's methods had stopped the dog's learning process.

Operant Conditioning with Video Games

When we see children play with electronic gaming devices, they learn how to play solely by trying and learning; in no time the children know exactly what to do. They learn quickly how to move through the levels, where the keys and treasures are hidden, how to discover cheats, and how to score the maximum points. The game teaches this by positive reinforcement—no negative reinforcement or positive punishment is used. What would happen if the controller gave children an electric shock if they did not pass the level quickly enough? What would happen if they got two shocks when they made a mistake or could not find a key or treasure? The pleasure of playing the game would end quickly.

Figure 8.1 Chickens can be trained to move through an obstacle course using positive reinforcement.

Operant Conditioning Is Not for Sissies

Just because we use a lot of positive reinforcement in our training method doesn't mean that it is weak or ineffective. A commander of an important police-dog training center once excused the use of violence in his K9 training center by saying that dolphins can be trained with food, because if dolphins make mistakes, the public will applaud anyway. If his dogs make mistakes, however, lives are at risk. His attitude is unfortunate and shows that he, like so many other traditional dog trainers, does not understand the technique and power of operant conditioning. If the dolphins and sea lions of the NMMP make mistakes, the soldiers will not applaud—their lives are at stake. Being an operant-conditioning trainer is hard work, and you have to be tough with yourself in observing, analyzing, thinking, planning, and training. An operant-conditioning trainer must constantly adapt to the dog.

Punishment in Training

In some organizations, the use of physical punishment in the training of police dogs seems to be the rule rather than the exception, and we find that strange. It is strange because police officers have

to respect the law, and the use of violence against animals is punishable. It is also strange because scientific studies have shown that violence harms training. It is time to rethink old training methods and to accept the use of operant conditioning in modern police-dog training.

WHY DO SOME TRAINERS USE SEVERE PUNISHMENT?

Social psychologist Stanley Milgram (1933–1984) performed a well-known experiment demonstrating why people are prepared to harm another person or animal. His findings were published in 1963 in an article titled "Behavioral Study of Obedience" and in his 1974 book *Obedience to Authority: An Experimental View*. In his experiments, the experimenter ordered the test subject to give what the latter believed to be painful electric shocks to a learner who was actually an actor and confederate. The subject believed that for each wrong answer, the learner received actual electric shocks, though in reality there were no such punishments. A tape recorder integrated with the electroshock generator played pre-recorded sounds for each shock level. After several voltage level increases, the actor banged on the wall that separated him from the subject. After banging on the wall several times and complaining about his heart condition, the actor stopped responding completely.

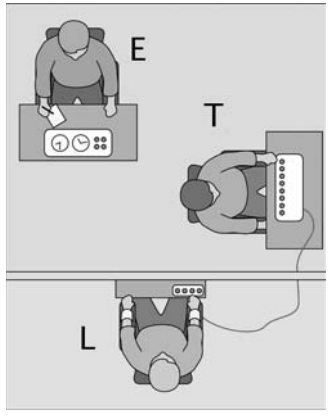
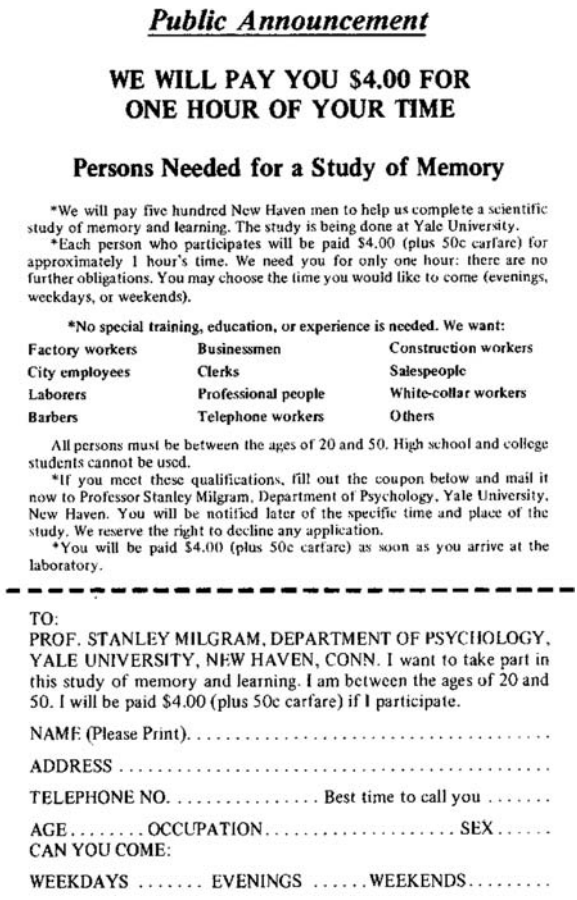


Figure 8.2 Illustration of the setup of the Milgram experiment. The Experimenter (E) convinces the subject ("Teacher" T) to give what are believed to be painful electric shocks to another subject ("Learner" L), who is actually an actor. Many subjects continued to give shocks despite pleas for mercy from the actors.



Public Announcement

WE WILL PAY YOU $4.00 FOR ONE HOUR OF YOUR TIME

Persons Needed for a Study of Memory

*We will pay five hundred New Haven men to help us complete a scientific study of memory and learning. The study is being done at Yale University.

*Each person who participates will be paid $4.00 (plus 50c carfare) for approximately 1 hour's time. We need you for only one hour: there are no further obligations. You may choose the time you would like to come (evenings, weekdays, or weekends).

*No special training, education, or experience is needed. We want:

Factory workers	Businessmen	Construction workers
City employees	Clerks	Salespeople
Laborers	Professional people	White-collar workers
Barbers	Telephone workers	Others

All persons must be between the ages of 20 and 50. High school and college students cannot be used.

*If you meet these qualifications, fill out the coupon below and mail it now to Professor Stanley Milgram, Department of Psychology, Yale University, New Haven. You will be notified later of the specific time and place of the study. We reserve the right to decline any application.

*You will be paid $4.00 (plus 50c carfare) as soon as you arrive at the laboratory.

TO:
PROF. STANLEY MILGRAM, DEPARTMENT OF PSYCHOLOGY, YALE UNIVERSITY, NEW HAVEN, CONN. I want to take part in this study of memory and learning. I am between the ages of 20 and 50. I will be paid $4.00 (plus 50c carfare) if I participate.

NAME (Please Print).....

ADDRESS .....

TELEPHONE NO. ..... Best time to call you .....

AGE..... OCCUPATION..... SEX.....
CAN YOU COME:

WEEKDAYS ..... EVENINGS .....WEEKENDS.....

Figure 8.3
Advertisement for participants in the Milgram experiment.

At this point, many people indicated their desire to stop the experiment and check on the learner. Some test subjects paused at 135 volts and began to question the purpose of the experiment. Most continued after being assured that they would not be held responsible. A few subjects began to laugh nervously or exhibit other signs of stress when they heard screams of pain coming from the learner. If at any time the subject indicated a desire to halt the experiment, the subject was given a succession of verbal prompts by the experimenter in this order: 1. Please continue; 2. The experiment requires that you continue; 3. It is absolutely essential that

you continue; 4. You have no other choice, you must go on. If the subject still wished to stop after all four prompts, the experiment was halted. Otherwise, the experiment stopped after the subject gave the maximum 450-volt shock three times in succession.

In dog training, it isn't always an authority who tells the trainer to punish a dog physically. Group culture often determines the actions of the trainers. Physical punishment may be used by someone who has already been active in the canine unit for many years, someone who has achieved many successes using physical punishment to train, or simply someone who is higher ranked in the human pecking order.

THE LINK BETWEEN PHYSICAL PUNISHMENT AND TRAINING

It is no wonder dog handlers and trainers may now find themselves scratching their heads. Ask yourself why the use of severe physical punishment seems so ordinary. Given the results of Milgram's studies that show that subordinates, against their better judgment, execute all the instructions of their superior, it is perhaps not so strange. Consider that our system of education inside and outside schools is largely punctuated by the word "no" and punishment in the form of disapproval, rejection, physical penalties, fines, or imprisonment. In the late 1950s, teachers' physical violence toward pupils (corporal punishment) was normal. Even dolphin training used to be based on physical punishment.

And what about the child who goes horse riding? She carries a whip, the animal is wearing a halter, and a sharp bit is inserted in the horse's mouth. To control the horse, the child will use the whip, jerk the bit, and kick the horse with the spurs on her boots. Parents smile at their daughter executing the commands of the trainer during coercion-based riding lessons. Correction is inextricably linked to the education of humans and animals. The question is, what is the most successful training method?

Punishment is also used in training detector and tracking dogs. For some trainers, punishment is a calibrated method to check and

change the work of the dog. If the work is not good enough, they give "information" to change it. The handler knows exactly where the track is and uses punishment when the dog loses the track. But what is the effect of that punishment? And why is the dog not working well enough? Is it scared? Stressed? Sick? Not trained well enough?

What you want is a motivated tracker that does not lose a track. But if the trainer does not know where the track is, the dog can't be forced to track. And believe us, in the real operational world, you will never know where the track is. So you need to use other techniques to achieve your goal of conditioning a reliable tracking dog. The use of coercion will not be successful. With coercive techniques, stress will sometimes fully overtake the dog, and the dog will never be ready for operations.

The same goes for scent identification dogs. Some trainers physically correct the dog if the animal makes an incorrect choice. The result is often that the dog doesn't dare to make any choice, and then it is punished for its hesitation. Eventually the dog won't approach a new lineup.

The mental pressure that punishment causes in a dog's brain can be enormously destructive. Compare it to a five-year-old child learning arithmetic. The teacher gives the child a simple sum and twenty seconds in which to solve it. Finding the answer within twenty seconds will be reinforced with a sticker. After solving the problem, the teacher sets a new time limit. Solving a new sum in ten seconds will be rewarded with two stickers. Again the child will solve the problem and smile. Now the teacher changes the rules. A new problem, a new sum. No reward will be given, the teacher explains, but as long as the child finds the answer in thirty seconds, the child will not receive a physical punishment. Now stress blocks the child's learning process, and the child will not be able to solve the problem that she used to be able to do in only ten seconds.

Figure 8.4 Stress blocks the learning process and may prevent a child from solving a sum that the child can normally do within a short time.

THE TRADITIONAL WAY OF TRAINING

Why do so many trainers still use the traditional method of training? It's because the traditional process is simple and clear and can achieve fast results. But traditional training is also limited. It is not possible to teach complex behavior in an unfamiliar environment. As long as the trainer can control and manipulate the animal and is able to limit its freedom, the trainer can keep things manageable. Dogs are smart enough to figure out what will bring them the most advantage in a conflicting situation. Dogs that cannot succeed drop out as unsuitable or do not work hard enough. For instance, in the training of patrol dogs we still encounter trainers who use brute force against their dogs in various situations. The most common example is the dog that will not release the decoy in bite-work training. After brute force has been applied, the dog releases from the helper and then the handler yells "out" to the dog. This conflicts with everything Pavlov ever discovered, for in this way a dog will never make the association between violence and the "out" command. To work, the command must come as a signal before the dog releases. For people this method can work—humans have the capacity to learn by punishment and reward,

even in the wrong order. This difference in learning between humans and dogs is difficult for some trainers to understand.

With restricted freedom and repeated training in the same situation with the same stimuli, an intelligent dog will learn to "survive." The smart dog will figure out how to avoid violence, and by that it might appear that the traditional way of training has been successful. However, many handlers know better because operational practice is quite different, and unless we use the dogs only in limited situations, keeping them on a long leash and deploying them in a well-known environment, dogs may react differently to operational situations. But operant conditioning can make dog teams more efficient and more reliable.

Do We Use Punishment in Training?

Imagine you are hard at work, sitting behind your computer, and one of your children suddenly runs into the room. "Dad, please can I have a candy?" he asks enthusiastically. You get up and put the jar with candies on the table and continue to work. He asks, "One or two candies, Dad?" You say that he can select two candies, but you see him pick a handful of candies out of the jar and run to the door to leave. Of course you do not accept this, but you don't attach him to a pinch collar or pull a long leash, and you certainly don't kick him, chase him to his room with a broomstick, or pinch his ear. Although you know that this kind of physical correction will stop the unwanted behavior, you also know that your son will be physically and emotionally damaged by it. You know that you will disrupt, slow, or even completely block the learning process. A parent, just like a good dog trainer, chooses a different method.

Physical punishment is not necessary, but corrective action, of course, is. As a parent (or as a trainer) you can reset the negative situation by giving only one or no candy as punishment. If a dog does not reach the criteria, we don't punish the animal in a physical way, but instead reset the exercise, which can be experienced as

a correction or punishment. After all, the dog gets no reinforcement and must start again.

But there are some behaviors that cannot be solved with a simple reset or by withholding a reinforcement. If a guided camera dog must travel one hundred yards to a target zone, and the dog decides to chase a cat before it reaches the target zone, we have a problem. In this scenario, the camera dog will not change the unwanted behavior (chasing the cat) because the trainer is withholding the food reinforcement. Chasing the cat is much more reinforcing for this dog than anything the trainer can offer. Or what about the patrol dog that is so dominant that it tries to bite its new handler? This dog will not change the behavior if you withhold a reinforcement.

NOBODY GETS AWAY FROM CORRECTION

You can reduce behavior by punishment. You can also increase it through negative reinforcement. Both concern the administration or stopping of physical correction. We have had many discussions with trainers who use operant conditioning in their training but have trouble determining whether or not to use physical correction. We do sometimes need to use physical correction, but only very selectively. Our dogs, like our children, interact as independent individuals with their environment, and there will be times our dogs or children break the rules. If you can consult your data, if your training structure is clear, and if the rules for humans and dogs are clear, there is room for correction within operant conditioning.

We use very little positive punishment during training, but it is impossible to avoid it completely. We will explain in a few examples of when and for what reasons we must sometimes use positive punishment. We might use a low-stimulus e-collar, a loud verbal "No" command, or a restraining leash. Punishment does not always have to be hard. Just as a child may alter its behavior with a parent's look or facial expression, a dog will also respond to cues

from the trainer. We have three criteria establishing when to use positive punishment:

1. Behavior that is a danger to the trainer or handler;
2. Behavior that causes a risk to bystanders;
3. Behavior that causes a risk for the operation.

Punishment must be the last option. In the example of the camera dog chasing the cat, something in basic training was done wrong, because when we select dogs that will become camera dogs, we must test the behavior of the dog in front of cats, rabbits, other dogs, and other distractions. During training we set up exercises where the dog is confronted with running cats or rabbits on its route. If the dog gives chase, we quickly remove the target so there will be no chance for any kind of reinforcement, and we reset the exercise. Dogs will learn from this method much better than through physical punishment. The dog will not learn faster, though. You need to have patience to use operant conditioning, but eventually the end result will be highly reliable.

Control the Consequences of the Dog's Behavior

How do you change a dog's behavior in serious situations, such as when an attack dog tries to attack its handler, colleagues, or bystanders? Consider a dog that is noisy during operations. It can betray your position and cause a danger for you, the team, and the whole operation. You cannot accept these behaviors, and you cannot change them simply by withholding a piece of food.

You start to change a dog's behavior in these cases by making sure you can control the consequences of its behavior. For example, an aggressive dog will become your friend when you provide it with food, water, and attention. But the dog needs to see you as the source of what it needs. If the dog has free access to food and water, then it may not view a relationship with you as crucial for meeting those needs. If the dog is in a kennel, however, you can

control its access to food, water, and exercise. The dog will need you, and that need gives you an opportunity to build a relationship, communication, and trust. Work on your relationship and build trust before you start to train.

As another example, if a dog likes to chase cats, putting a food reward back in your pocket is not enough of a punishment for not following your "Here" command. You need to restrain the dog—to control the consequences of its action. Use a long leash and verbal reprimand to ensure the dog does not get to enjoy the chase. The reinforcement of chasing the cat is much bigger than your food reward. So you need to be able to control the consequences and not allow the dog to select its own reward—the chase.

We prefer to stop negative or unwanted behavior before we start training. Think carefully about what to do and what impact your actions will have for now and the future. You need to have a good relationship with your dog before you can start training. Build communication, trust, and motivation. Know what reinforcers work best for the dog and in what setting.

Negative Reinforcement

The best-known example of negative reinforcement is forced retrieving. This is a fairly familiar process used with police service dogs and field trial dogs. While there are variations, the procedures are fundamentally the same. If the dog does not comply with what the trainer wants, the trainer puts pressure on the dog. This pressure can be physical or mental, or a combination of both. The dog can stop the pressure by responding to what the trainer wants. For example, if a dog refuses to take a dummy in its mouth, some trainers will pinch the dog's ear. The dog will suffer pain and may open its mouth, and the trainer will place the dummy in the dog's mouth. By relief of pressure at that precise moment, the dog learns that the pain will stop when it holds the dummy.

If the trainer, before squeezing the ear, looks at the dog sternly and uses a verbal cue such as "uh uH UH," through classical

Figure 8.5 The best-known example of negative reinforcement is forced retrieving.

conditioning the trainer can condition the dog in a more subtle way than using negative reinforcement techniques alone. Now the trainer can use the verbal cue in the future without touching the dog, but with the same effect. As soon as the trainer looks at the dog and says, "uh uH UH," the dog will experience pressure. To avoid the trainer's negative attitude, the dog will grab the dummy. The trainer stops the "uh uH UH," and the dog feels relief. Positive punishment will decrease behavior, but negative reinforcement can increase behavior.

NEGATIVE VERSUS POSITIVE REINFORCEMENT

In many dog-training clubs, negative reinforcement is used more than positive reinforcement. Many older and experienced members of the club are accustomed to negative reinforcement, and they teach it to others in the club. Like the children and the opaque black box, many trainers keep doing the same actions over and over again, even after they no longer have a reason for the actions. It is difficult to change your way of training, especially to move away from negative reinforcement and start using more positive reinforcement.

The advantage of dog training by negative reinforcement is that effects can be measured quickly. It also seems familiar and comfortable. As humans growing up, we have all experienced negative reinforcement and positive punishment in our lives.

A clear example is basic police-dog obstacle training. Within a short training time the dog learns to take the standard obstacles in its training field. Negative reinforcement will teach the dog to jump higher, farther, and faster. Positive punishment suppresses unwanted behavior. Negative reinforcement cannot be applied without first using positive punishment. The dog will learn because it is scared of the trainer and is trying to survive. But every time the dog is faced with a new obstacle in another location, or a different color or material, there will be problems, and the trainer will need to use negative reinforcement again to overcome the obstacle. If the trainer and dog can work on the same obstacle course over and over again, the result can be perfect. The dog will finish the obstacle course in the fastest time and will score the maximum points on the exam day.

But most trainers do not fully understand the essence of training principles. They do use positive punishment and negative reinforcement, but they don't always know how to use them to get more of the behavior they want and less of the behavior they don't want. For example, you know you want sit behavior and that you'll get more sit behavior if the dog sits and you provide a positive reinforcement. However, if your dog disobeys the "Sit" command and receives a positive punishment or is put in a kennel for a ten-minute time-out, you've shown the dog you're not happy but haven't reinforced the behavior you want. The more time you spend punishing what you don't want, the less time you have to reinforce the behavior you do want.

Another problem is that trainers may be unable to state clearly what they consider desirable and undesirable behavior. For example, what is the exact criteria for the "Sit" command? Does "Sit"

means stay in a sit position and not react to distractions? Look at the trainer while sitting? Look somewhere else? What should the position of the rest of the body and the front legs be in sit? If you punish animals for barking during a sit and reinforce for sitting at the same time, the dog won't know what to do. Another conflict occurs when a dog is rewarded for jumping a fence but punished for touching the obstacle. If you don't know exactly what you want to train and carefully set up your reinforcements to achieve your criteria, you and your dog will not progress.

There is an inherently fine line between positive punishment and negative reinforcement. When you want a dog to sit, the best approach is to use positive reinforcement. You command "Sit," the dog meets the criteria, and you give reinforcement. Using negative reinforcement, if the dog does not meet the criteria for sit, something the dog doesn't like will start and stop as soon the dog is meeting the sit criteria. But therein lies the problem. You cannot use negative reinforcement without the dog experiencing positive punishment. And there the border between negative reinforcement and positive punishment becomes very thin. Negative reinforcement will give you more behavior and positive punishment will give you less. The behaviors you will get using negative reinforcement can only be kept alive by using positive reinforcement.

Research indicates that positive reinforcement produces much deeper and longer-lasting effects than positive punishment or negative reinforcement. A common observation is that after a few weeks' vacation, many patrol-dog handlers need to restore order between themselves and the dog. Several solid training sessions are necessary before the officer can work reliably with the dog again. This problem does not occur if you train with positive reinforcement. You'll discover that your positively reinforced dogs react very differently when you resume work after your holiday. Even if the dog and trainer do not see each other for a long time, the dog will still be enthusiastic when it sees the trainer again. The dog will

be excited and ready to work. There is no ranking conflict, and the dog will be motivated from the first session. The dog will try to do the best it can to start the expected reinforcement process.

Another important factor is how dogs approach their environment. A negatively reinforced dog will always enter a new environment with some suspicion, and a dog that has experienced much positive punishment will consider a new environment hostile. But positively reinforced dogs see every new environment as full of opportunities and challenges. Even if their environment changes, they will experience the change as positive and look for reinforcements.

In the changing environment of a real earthquake mission, our search and rescue dogs are still eager to work for reinforcement. Our attack dogs go excitedly into any new environment to find a suspect and will always attack at our command. Our guided camera dogs expect a reinforcement in any new environment. They know a reinforcement will appear, but they don't know where, when, or what the reinforcement will be.

These positively trained dogs expect to encounter a reinforcement, which strengthens their desired behavior. This is a big difference from the negative reinforcement technique. Negative reinforcement gives fast results, but every time the dog is placed in a new situation, the trainer will need negative reinforcement again to enable the dog to work. Although in the beginning positive reinforcement works slowly, in the long run it becomes faster, and it results in effective and highly reliable animals. In addition, positive reinforcement is also more fun for the trainer and the dog.

POSITIVE AND NEGATIVE REINFORCEMENT IN THE SKINNER BOX

Skinner boxes have been used in many experiments with various species, providing us with lots of data about how animals learn. One study focused specifically on the effects of teaching behaviors

through positive reinforcement or negative reinforcement. A rat was taught that pressing a lever would produce a piece of food. After several repetitions, the rat was removed and the lever was placed somewhere else in the box. When the rat was put back in the box, the rat quickly found the lever again and pressed it to receive food. When the procedure was repeated, the rat became faster at finding the lever and thereby moved through the entire box. Every time the animal was placed in the box, it would quickly search for the lever. The animal viewed its world (the box) with a positive attitude.

With the same box as training environment, another rat was trained in an entirely different way. An electric current was run through the floor of the cage. By pressing the lever, the rat could turn off the electric power. These rats responded in principle much faster than the positively trained rats. Once the power was turned on, the rat quickly switched it off by pressing the lever. However, when the lever was placed somewhere else in the box, the rat's panic took over. The rat searched frantically where the handle had been before, but it rarely moved through the box to find the lever. They saw their changing world as much more negative.

Escape and Avoidance Training

Escape and avoidance can play a role in learning, but if the dog is going to avoid a behavior, it first needs to learn that it can escape a problem or situation. Consider it this way: if you burn your fingers on a hot cup of tea and you escape the heat by pulling your fingers away, the next time you will be able to avoid burning your fingers by not touching the hot tea cup. But first you must burn your fingers to learn this avoidance.

Now imagine this scenario: a trainer has a new dog that barks if kenneled in the car. The trainer wants the dog to stop barking and chooses the following methodology. If the dog barks, the trainer gives a verbal warning, opens the kennel, and physically punishes

the dog. At that moment the dog chooses to "escape" the trainer by being quiet. The trainer lets go of the dog, closes the kennel in the car, and disappears from the dog's view. Moments later the dog starts barking again. If the trainer again verbally warns the dog, it stops barking. The dog is now in the process of avoidance. As long as this communication is absolutely consistent, the dog will learn from this procedure. But has the learning been enough? Indeed, what if the trainer is not only out of sight but also out of hearing distance? Or what if the dog starts to bark when the trainer is driving on the highway or busy in a police chase? It would be difficult to be consistent in these situations. Again, think carefully in advance what you want to achieve and how to achieve it.

In a similar way, if your dog enters the kitchen and tries to steal a steak from the table, you can correct the behavior with a verbal warning or by physical action. But this way you only teach your dog not to steal the steak from the table when you are nearby. If you are not present, the dog may again try to steal the steak.

We need to teach the dog that its behavior (stealing the steak) adversely affects the environment. The dog will then adapt its behavior to prevent this negative impact on its environment. Thus the dog will leave the steak alone, even if you are not around. An electric collar and video camera for observation are effective tools to achieve this goal. When the dog tries to steal the steak, the electric collar turns on, and it switches off when the dog stops trying. In this case, it is essential that the trainer not give any verbal commands. If the trainer does give a verbal command, the dog will associate the correction with the presence of the trainer. If you don't want to use an electric collar, there are other methods you could choose. For example, you could connect a thin fishing line to a steel pan and set it up in such a way that any attempt to steal the steak will cause the steel pan to fall, causing a loud noise that scares the dog. The dog will associate the noise with the action of stealing the steak, regardless of the position or action of the trainer.

APATHETIC DOGS

Escape and avoidance training is used regularly in dog training. This method is effective; however, it is important that the trainer fully understands this training theory before applying it, because otherwise the result is an apathetic dog. Unfortunately, we see dogs become apathetic as a result of incorrect training methods far too often. Scientists call the dog's response learned helplessness. This occurs when a handler cannot recognize or misinterprets the dog's signals of fear or stress in response to punishment and physically punishes the dog even more. The result is a totally apathetic dog and an angry or frustrated trainer. Positively reinforced dogs will never be apathetic and will continue to move in their world with a positive attitude.

ELECTRIC COLLARS

The electric collar is often used in escape and avoidance training. It can be a powerful tool in the hands of a good trainer and can be a highly effective training device. But in the hands of an inexperienced trainer it is a very dangerous device—just like a fast motorcycle is a dangerous machine in the hands of an inexperienced driver.

Although we believe electric collars can be effective tools for negative reinforcement or positive punishment, we find it strange that anybody can buy such a device and use it on a dog. We therefore understand the controversy over their use in some countries. However, in some cases, the use of electric collars prevents the serious physical violence some trainers would otherwise use to control their dogs—violence that has sometimes even resulted in a dog's death.

We argue for solid education when it comes to application of the electric collar. At least one certification should be required in which the user demonstrates understanding of the device's dangerous side effects and how to use it properly. All current models of the major manufacturers are equipped with a safety system. The

collar switches off if it is used too long or incorrectly, and all systems are sold with a clear manual.

Learning Is Trying

When our son was only four years old, he yelled, "Learning is trying!" He tried to climb the table and learned that it hurts when you fall down. He tried to steal handfuls of candy and learned he should ask first because stealing candy was not a good option. Divers learn to check their equipment to avoid drowning. Our dogs can and should try all sorts of behaviors. It's not a problem if your dog makes mistakes. Don't prevent the animal from making mistakes. Set up the training situation in such a way that the dog can choose and can make mistakes, because then it can learn.

We regularly meet trainers who avoid situations in which their dog can make a mistake. They train too long in the low-stimulus environment with no distractions. They use long leashes so the dog cannot make a mistake and never give the dog a chance to try anything else until the day the dog is placed in a live operation—no long leash, lots of distractions, a strange environment, and a tense handler.

Figure 8.6 The triangle is the hot target and will be reinforced, but the chicken will make mistakes as it learns. Mistakes are a normal part of learning.

We like to place a dog in all sorts of situations and give it the chance to learn. In practice this means that at some point you have to place a distraction in a controlled training environment. For example, we use target training. If the dog touches the target within a certain time, it will receive a reinforcement. After a few repetitions, we place a distraction near the route of the dog and ask the dog again to touch the target. But this time the dog gets the chance to try something else, such as responding to the distraction. If the dog reacts to the distraction, the target will disappear. This means there is no chance for reinforcement. The trainer will reset the exercise, and the dog can choose again: avoid the distraction and touch the target to get a reinforcement or go for the distraction again.

Getting Rid of Punishment-Based Training

In the Netherlands in the early 1990s, it was still customary for patrol dogs to be trained *par force*. In 1996, Simon Prins, a young police officer, was asked by the Canine Department of the Netherlands National Police Agency to develop a methodology to guide camera dogs at great distances. The idea was to send these dogs into operations to perform difficult tasks and guide them back to the pickup point. After some struggle, he convinced the organization that the *par force* methodology would not give the desired effect. Working remotely with animals running free in an unfamiliar, hostile environment requires strong conditioning based on trust. Simon's research into operant conditioning brought him in contact with Bob and Marian Bailey, who taught him operant conditioning.

When we work with former patrol-dog handlers, it takes about six months to get rid of all the punishment skills they have deeply conditioned in themselves. Even after months, these skills sometimes come back. We start these trainers with a food-based training program, where the only risk is that the dog will become too fat or too thin. Using physical correction is prohibited. We start

Figure 8.7 Bob Bailey and Simon Prins discussing operant conditioning during Bob's visit to the Canine Unit of the Netherlands National Police Agency in Nunspeet.

Figure 8.8 After a solid conditioning process, Andor, a radio controlled dog, is able to work under any circumstance.

with simple, basic behaviors. The dogs and trainers learn that a food reward will increase desirable behavior. By ignoring every other behavior, and resetting the exercise when the dog does not meet the criteria, trainers discover that the dog will change its behavior. They also learn that this change is possible without the use of physical correction. A reset means that the training (or a part

of it) starts again. You go back to the moment just before the error occurred and start the exercise again. Take, for example, a "Sit" exercise. We set the criteria at sitting for ten seconds. If the dog will sit for ten seconds, it gets the food reward. However, if after eight seconds the dog stands, the animal will get no food reward, and we will reset the exercise. Without applying force, the "Sit" command is given again. If the dog sits for ten seconds, it receives the food reinforcement.

POSITIVITY

After publication of Karen Pryor's book *Don't Shoot the Dog*, the hype about the positive training of dogs hit the police-dog training world. A famous Dutch dog trainer on television gave viewers some good, sincere advice. A viewer called to ask what to do if her dog chased game in the woods and would not return when she called. His answer was simple: "Don't let your dog run free in the woods. He cannot chase game, and you will never have this problem again."

We all know it is not so simple to do a recall when your prey-driven dog is chasing game. Not receiving his normal reinforcement because he does not return at your command does not compensate for the fun the dog experiences in chasing the game. But the dog trainer's solution can't always be used for police or other service dogs. If a patrol dog could choose between a tennis ball, a piece of sausage, or attacking a suspect, many dogs would choose to attack the suspect. If a remote-guided camera dog sees a running cat crossing its way, the choice between a little piece of food from the trainer and the pursuit of the cat is quickly made. And if the tracking dog, while tracking with his nose in the bushes, suddenly smells a rabbit, the temptation will be to grab the rabbit.

We strongly support the positive strengthening of behavior, but we also know that we do not live in an ideal world. Indeed, there always will be situations in which the dog is balancing the

reinforcement offered by the trainer and against some other benefit. Keeping a police patrol dog on a long leash in the forest to prevent him from chasing game is not an option if you need to search the forest for lost items or a suspect. Patrol dogs busy in a big fight with football hooligans will attack everyone who comes near, including colleagues. They do not wait for an attack command in that sort of a situation. We have found that tracking and search dogs like to chase rabbits and cats, just as we discovered that camera dogs try to catch rabbits despite the expensive camera equipment on their bodies.

This whole approach to training and handling means the dogs will choose what is the best for them. The animal learns what will give the best result, the most reinforcement. The animal learns to avoid actions where no reward will come. The dog's world is and remains very positive if it moves along the path as the trainer directs. The trainer sets the borders of desired behavior. The borders ensure the dog understands what the trainer wants and what the trainer doesn't want. Skinner's "ABC method" gives trainers the tools to make this clear. The wonder is that our dogs are smart enough to recognize such situations. Using experience, dogs recognize and avoid situations. "Survival of the fittest" does not mean that the strongest wins, but rather the one that can best adapt to a changing environment. This is precisely why dogs are such champions and why they have lived so close to humans for millennia.

Characteristics of an Operant-Conditioning Trainer

Operant-conditioning trainers must have a creative, innovative attitude. They must be able to adapt quickly to the dog and the circumstances. Operant-conditioning trainers should have knowledge of many different training methods. They must have a broad view with regard to training and be receptive to new ideas. They should be able to observe and analyze, and to handle criticism; they should have a critical, positive attitude and self-discipline. Characteristics such as patience, action-intelligence, cooperation,

independence, sensitivity, and responsibility are a must. But these trainers must also be able to comply with instructions and collect data. And of course they must have communication skills and be capable of explaining how to train, because training often includes teaching.

OPERANT CONDITIONING IS FUN FOR THE TRAINER

Young patrol-dog handlers are often very tense when they first use their K9 in a real operation, and they try to control and dominate the dog. But dog training or operational deployment can be relaxing. Of course, it is hard work to perform all stages of training, and indeed operations are always stressful; but if you apply operant conditioning, you don't have to fear that your K9 won't listen, will ignore commands, or will stop working. Many patrol-dog handlers say their aggressive dog tries to dominate them. If they use operant-conditioning techniques, their problem will vanish. With operant conditioning, you will never be bitten by your dog, and the dog will always like to work for you. You will not need to train behind closed doors, and everyone can and will like to watch the training. Spectators see the fun and interaction between trainer and dog, and you can teach this way of training to others, because operant conditioning is a skill that anyone with a willingness to watch, listen, comprehend, and exert self-control can learn. Operant-conditioning trainers must look in the mirror and ask themselves, "Am I further now than I was this morning when I started training?" If your answer is no, you have done something wrong and you need to change the training plan, adapting to the dog, the environment, and the circumstances. Willingness to change is the key to success.

OPERANT CONDITIONING IS FUN FOR THE DOG

Whenever it is at work, the operant-conditioned dog sees a chance for reinforcement. The dog never knows where or when the reinforcement will take place, but it can be certain that a reinforcement will arrive. Dogs take on every challenge and will work with great pleasure, even in prolonged operations. It may be that a dog

needs to work for more than forty minutes in an unfamiliar and dangerous place. If the trainer cannot reward the dog because it is tactically impossible or simply too dangerous, then the trainer makes sure the dog is rewarded somewhere on the way back or near the trainer or even around the vehicle used to collect the dog. Our K9s learn that they can be rewarded en route to where we want them, but they could also be rewarded on arrival, on the way back to the meeting point, or at an even more delayed point in time. Of course the dogs never know the outward route, the target site, or the return route. And if they have an idea about what the target location may be, then we send them there several times before rewarding them.

CONSISTENCY IS KEY

Consistency is the key in dog training. Consistency applies not only to the administration of physical correction, but also to provision of rewards. This means that if we take our K9 out of the car and prepare it for a specific operational action, our actions should always be the same. It is important that the dog not notice any difference between an exercise and a real operation. If you control your dog through a two-way radio, it is always in the same place on its body and is always the same device—no difference in speakers or anything else. If you use a bridge signal, it is always the same bridge signal; and if you reward your K9, you always give 100 percent of your attention to the animal when you do it. Don't reward the dog and talk to a friend or look elsewhere. Be consistent in everything you do.

9

Training Service Dogs Using Operant Conditioning

An experienced handler we know trained intensively with his new dog for weeks. All the exercises took place in a known and proven training ground until the day of the exam, and on a Friday he and his new dog passed the exam. That meant he could immediately start to work with this dog in operational police-patrol work. The evening after passing the exam, the handler was proud to use his new dog for the first time in a real operation. On Monday, he returned to the training ground and told the trainer that the dog was unfit for police work. He explained that he was called that Friday night to help his colleagues arrest an individual fighting with other people in a local pub. The dog handler entered the pub and commanded the offender to surrender; the man refused. Eventually the handler gave his patrol dog an attack command, but the dog did not attack and instead looked desperately at his handler.

This is a classic case of a trained and certified police dog being unready for operational practice. After all, police dogs must learn to work in all circumstances, not only in safe and well-known training environments. They must learn to attack all sorts of people—men and women—in all kinds of situations and clothing,

Figure 9.1 The main reason for using operant conditioning is the performance of our dogs in live operations.

not only protective biting suits. We even teach our attack dogs (with a leather muzzle) to attack people wearing no clothes at all to make sure the dogs are well conditioned and will attack *any* person when they receive the command in live operations. In this example, it was not the dog that made a mistake but the trainer, who did not prepare the dog for the real world.

Preparation for Operant-Conditioning Training: Think, Plan, Do

What this story means is that you must do a lot of thinking before your training. Police officers are action and control oriented, but this is not always the right approach for dog training. A dog trainer must first think and then make plans. Then, and only then, comes action. Many take action first, then think and plan. In the sequence Think, Plan, and Do, we spend a lot of time in the Think phase. In this phase, we use the matrix of operant conditioning: Skinner's four basic concepts and the ABC model. Antecedent, behavior and consequences are always part of the training protocol.

Then we go to the Plan phase. In this phase, we plan all the steps for training.

- To fix our training time, we select an appropriate number of dogs. If you need one dog, train two or three so you have spare dogs in case there are problems or injuries during the training process.
- We arrange training sites, build all our training materials, gather various types of reinforcers, and ensure we have enough rewards in stock. If we work with equipment such as feeders and lasers, we check everything in advance. We also ensure we have a backup option if something breaks down during training.
- We make a meticulous schedule in which all steps of the training are defined and issues such as distractions, traveling, or relocation are accounted for. If on day thirty-six of the training we will need three people with other dogs to distract the dog in training, we organize it now. Planning may also include experiences such as flying in a helicopter, training with an operational team, and working in a large-scale deployment of various units.

Finally, in the Do phase, we train.

FORM AND CONTENT

Training involves both form and content. The best example for police-dog trainers is the obstacle track.

- By **form** we mean the start and the end of the obstacle track: where I start, how I move, in what order I do the obstacles, what the verbal commands are, and so on.
- By **content** we mean specifically how and with what energy the dog should complete an obstacle: how high the dog should jump, how fast, where the dog needs to stop, and so on.

You should not design both form and content simultaneously. Focus on the content first and only then on the form. An obvious example is retrieving. As long as the content—fetching and releasing an object without biting or chewing it—is not finished in training, there is no point in focusing on form, such as fetching

an object at one, ten, twenty, or one hundred yards. The distances will be taught only after the dog reliably meets the criteria for fetch and hold.

DESCRIBING THE EXERCISE

Make your description as detailed as you can so there will be no room for mistakes or other interpretations. Here's a sample description.

> After a given "Sit" cue, the dog must react within 2 seconds. The trainer drops the long leash and walks away immediately towards a given position specified by schedule. The trainer stands still, facing the animal, but not making eye contact. As soon as the trainer is in position, the time starts. If the dog meets the criteria specified on the schedule, the trainer gives a bridge. The animal is allowed to break position and run to the trainer to receive the reinforcement.

The bridge should not always be given while the trainer is in position. Sometimes the trainer should walk toward the animal and bridge, sometimes walk past the animal and bridge. The trainer in position should also show variety. Sometimes the trainer should be still, sometimes facing another direction, or jumping, clapping, playing with a tennis ball, running around, sitting, doing pushups, or hiding.

Example of a "Sit" exercise

Number	Distance between Trainer and Dog	Seconds in "Sit"
01	10 yards	30 sec
02	05 yards	10 sec
03	20 yards	40 sec
04	15 yards	15 sec
05	30 yards	60 sec
06	10 yards	05 sec
07	50 yards	30 sec
08	15 yards	20 sec
09	50 yards	90 sec
10	20 yards	30 sec

MISTAKES

If the animal doesn't meet the criteria, this will be noted as a Reset 1. The trainer will say, "No, no," and walk to the animal. Don't be aggressive. Just go back to the start position, get the animal under control with the long leash, and return to the first position where you gave the animal the sit cue. Be sure to remember this position each time you start in case you need to return. The next trial is a repeat of the trial that went wrong.

You can add different reset numbers for different elements. For example, if your dog is highly distracted by cats, you can give cats the number 2. If you see R2 in your data, you know you had to reset because of a cat. If the dog is distracted by food, you could use the number 3, so an R3 on your data form means you needed to reset the animal because it was distracted by food.

PROTOCOL TRAINING

Our basic protocol training starts with Protocol 001, which trains the animal to sit after hearing the "Sit" command. After meeting the first criteria consistently, the criteria for the command changes in time, distance, surroundings, distraction, and so on. Following on page 200 is a quick example of how we build a protocol training session and track data from each session.

Work quickly. After the bridge, reinforce as soon as possible. After each reinforcement, repeat the "Sit" command so you work through 10 repetitions quickly. Try to get a high rate of reinforcement. The more repetitions, the faster the animal will learn.

Codes We Use for Data Collection

Surroundings:	01 no distraction (empty horse arena), 02 training field, 03 kindergarten, 04 shopping mall, 05 car park, 06 suburban area, 07 industrial park, 08 football field, 09 park with dogs
Surfaces:	01 sand, 02 grass, 03 forest, 04 rural, 05 pebbles, 06 asphalt, 07 concrete 08 sidewalk

Protocol SIT 001

Trials:	10
Trainer position:	In front of canine in passive way
Canine:	Restrained by leash attached to fixed point
Reinforcement:	Immediately after the dog's butt hits the ground, push the clicker (bridge signal) and reward with food or play.
Surroundings:	01 no distraction
Surface:	01 sand
Distance:	Trainer to canine: 1 yard
Command:	"Sit"
Distraction:	None
Criteria:	2 seconds after command "Sit" canine must "Sit" in right position
Reset:	When dog does not meet criteria

Protocol SIT 002

Trials:	10
Remarks:	The same as 001 except where noted below
Criteria:	After the dog's butt hits the ground, start the timer. After 2–5 seconds, give the bridge and reinforcement.
Reset:	When dog does not "Sit" within 2 seconds, sits in wrong position, or breaks the duration

Protocol SIT 003

Trials:	10
Remarks:	The same as 002 except where noted below
Trainer position:	Moves 5 yards away from the canine and stands still for 3–5 seconds
Distance:	Trainer to canine: 5 yards
Criteria:	The canine meets criteria for 002 and stays in position when the trainer moves away

Sample Data Sheet

Trainer: _____

Canine: _____

Protocol: SIT 003 Session 4 **Surroundings: 01** **Surface: 01**			**Trainer:** **Date:** **Canine:** **Place:**
	B	**R**	**Remarks**
01 5 m distance / 2 sec			
02 5 m distance / 4 sec			
03 5 m distance / 1 sec			
04 5 m distance / 5 sec			
05 5 m distance / 2 sec			
06 5 m distance / 5 sec			
07 5 m distance / 4 sec			
08 5 m distance / 2 sec			
09 5 m distance / 1 sec			
10 5 m distance / 5 sec			

B = Bridge (note type of reinforcement)
R = Resets

Sample Checklist

Trainer: _____

Canine: _____

Phase	Description	Start	Ready (80% score)	Sessions needed to achieve 80% score	Remarks
SIT 001	"Sit" in 2 seconds	*date*	*date*	*3 × (10 trials)*	
SIT 002	Duration 2–5 seconds			*2 ×*	
SIT 003	Trainer moves 5 yards			5 ×	
etc.					

LUMPERS AND SPLITTERS

Lumpers are people who take large steps or progress quickly through a training program. Lumpers regularly meet problems in their training. If the dog does not know exactly what to do in a given situation to earn the reinforcement, it will be in trouble when it moves to the next step.

Splitters are people who dissect an exercise into the smallest steps. They work step by step through the entire exercise and make every step as strong as possible. They never move to the next step until they have completed the current one and the animal has fully met the criteria.

WATCH WHAT YOU GET

Even though we are avid splitters, we have learned first to assess the animal and observe what behaviors it has already learned. We used to work rigidly with protocols and always started at step one. But individual differences between dogs can be significant, and we regularly have to work with dogs that already have some form of training. In addition, some dogs pick things up faster than others, allowing you to proceed more quickly with training than with other dogs. You can save time and energy if you skip some steps

Figure 9.2 Splitters know exactly when to bridge and when to reinforce.

because the dog has already mastered them. So while progressing slowly and methodically is best in general, sometimes it's okay to lump tasks.

KNOW WHAT YOU WANT TO CONDITION

It is important to realize that the "hard drive" of an animal cannot be as easily erased and reformatted as that of your computer. The dog's brain has been formatted by nature and is pre-loaded with crucial information during basic training. Retraining a dog is possible but problematic. If you condition a K9 as a narcotic detector dog and later want to make it an explosive detector dog, realize that the dog will always respond to the smell of narcotics. If you condition a dog to bark when it finds a target odor, it is not the ideal dog to participate in covert actions where everyone, including the dog, must remain very quiet.

A dog trained as a KNPV attack dog is less suitable for us as a search and rescue dog, because if this dog is confronted with a violent, screaming victim during search and rescue work, the victim may scare the dog or, worse, may trigger the dog to bite, as the dog learned to do earlier in its life during the KNPV training.

In a famous murder case in the Netherlands, the so-called Paskamer moord ("fitting-room murder") of 1984, a police dog was used for a scent identification lineup. This dog pointed to a suspect who, many years later, turned out to be innocent. In an appeal case, a lawyer showed that the dog used for the scent identification test had been previously trained as a drug detector dog. The lawyer argued that his client was identified by the dog during the lineup on the basis of drug residues rather than murder-related human odors. New DNA techniques in 2001 proved the suspect was innocent. This case was a shock to the dog-training world. As a trainer, this case reinforces that you should think well in advance what you want to train your dog for: using a narcotics dog for other purposes, for instance, may produce unreliable results.

When planning, give priority to what the dog's most important skills will have to be. An explosive detector dog will first learn

to use its nose and the priority has to be finding explosives. The search task takes precedence over everything else, and such dogs can even ignore certain commands when they smell explosives nearby and start to search for their hiding place. Our advanced or specialized training makes the main task of the dog its top priority. Only after the dog learns this will we teach all the other, different parts of the skill set. This means that a laser-guided explosive

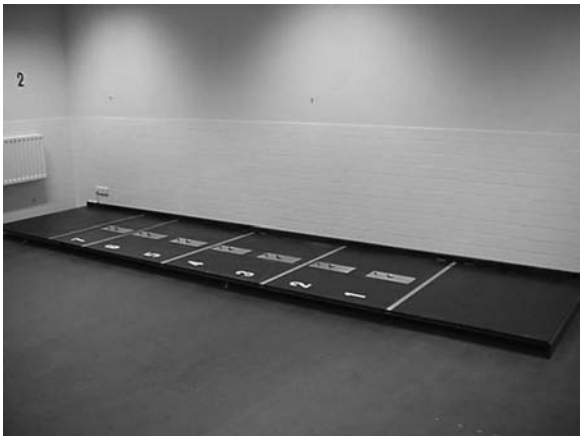


Figure 9.3 The lawyer in the "fitting-room murder" argued that his client was identified on the basis of drug residues during the scent identification lineup rather than by murder-related human odors.

Figure 9.4 Attack dog Ivan during skill-set training for rappelling.

detector dog first learns to search for explosives and then learns to respond to a laser.

Be Careful What You Condition

Remember that dogs learn constantly. If you are not careful, you will unconsciously condition behaviors you don't want. Detector dogs recognize more than just the smell of explosives or drugs. If you train your explosive dog using a half-ounce target scent, it will miss one pound of the same material because the scent pictures of a half ounce and one pound are different. For humans the scent is the same—a bit stronger or weaker—but for the dog it is the difference between making a detection and not. You need to plan for this potential and reinforce using targets of different sizes and weights.

LEGALIZATION OF MARIJUANA

In the United States, some jurisdictions have legalized the possession of small amounts of marijuana. This change is causing problems for K9 units with drug-sniffing dogs that have already been trained to find cannabis. If the dogs were properly trained to detect any amount of cannabis, the dogs will have trouble learning to only give an alert for only large amounts of the substance.

In most cases, new drug-sniffing dogs will need to be trained to ignore small amounts (in some US states, up to 1 ounce), but alert for larger amounts. Dogs can be trained to do this because dogs smell the small amounts as completely different from large amounts. To the dogs, it is almost as though the small amounts and large amounts are completely different substances.

It is also possible to train K9s to give different responses for different kinds of drugs. For example, dogs can be trained to bark at the presence of any amount of cocaine or methamphetamines, but to sit or lie down at the smell of large amounts of cannabis. However, as is the case in some US states, if the possession of small amounts of cannabis is only legal after a certain age, the dogs may not be able to help. If they are trained to ignore small amounts of a substance, they will always do so, even if the marijuana is in the possession of someone under the legal limit.

A dangerous problem can occur when dogs learn that there is always a particular human scent picture next to the hidden explosive material or drugs. It is important to plan for multiple people to hide target scents for the dogs. In the same way, attack dogs learn quickly that the "suspect" always wears protective clothing. In a group of people, dogs are able to select the person with protective clothing on sight, smell, or other indicators like body language. If you don't pay attention to these indicators, the attack dog in an operation will not attack or will hesitate to attack a person without protective clothing.

Many explosive-detector dog handlers know how quickly a dog becomes accustomed to their explosives exercise kits. Within a few sessions, the dog learns to find only explosives that belong to a particular series. Thus, you need to work with many different explosives in a blind training system. Such requirements mean that training the dog and maintaining a high level of performance are hard work and require a lot of planning. Testing an operational combination—a dog and a handler—and maintaining this combination is an intensive investment.

Design your training in such a way that the K9 learns to cope with many kinds of situations. Attack dogs must learn to attack naked people. Explosive detector dogs must find explosive materials in all sorts of situations and in all sorts of weights and sizes. Tracking dogs must never know whether the track is an operational or training track.

TELEPATHY?

A great deal happens inside the dog's head that we do not clearly understand. Especially as dogs get older, it seems like a form of telepathy occurs between dog and trainer. The dogs work so automatically that the role of the human trainer seems to decrease. Is this telepathy or a form of communication we don't notice? The smallest details of body language and experience play an important role in communication. We often use video recording sessions to see what sorts of non-verbal communication are going on that we may have missed during the actual training process.

THE CLEVER HANS EFFECT

Clever Hans was a stallion that lived in Germany at the turn of the twentieth century. His owner was an eccentric person who was convinced that a horse could count, read, and think like a human. He taught his horse to tap his front hoof to represent numbers and letters in the alphabet. Initially the owner took Hans's hoof with his hands and taught him the language, but later the horse learned to communicate with his hoof without the help of his owner.

A committee of leading scientists was allowed to question Hans—and the horse knew a lot! Hans could tell the date and time, convert fractions into decimals, add, subtract, multiply, and divide. The fame of *Kluger Hans* (Clever Hans) made its way around in the country and earned international press coverage. It was animal psychologist Oskar Pfungst who finally exposed Clever Hans's secret of intelligence. When Pfungst asked Hans questions that nobody in the room knew the answer to, the results were surprising. The stallion started tapping his hoof and didn't stop. It became clear that the stallion was waiting for a cue to stop tapping. This cue couldn't be given, because nobody present knew the answer to the question. Pfungst concluded that the horse had learned to watch his trainer carefully and respond accordingly. Hans reacted to small, unconscious movements of the head or the body of the questioner and used them as a cue to continue or stop tapping. Dogs can also pick up such cues. These kinds of cues are called the Clever Hans effect. You can read more about the Clever Hans effect and a dog's responsiveness to human gestures in Gerritsen and Haak's *K9 Fraud: Fraudulent Handling of Police Dogs*.

Figure 9.5
Clever Hans.

CONSIDER THE EFFECT OF EMOTIONS DURING TRAINING

Animals, especially dogs, are sensitive to emotions. Have you ever attempted a training session after an argument with your partner or a difficult meeting? Few trainers can train without emotion. Everyone is under its influence. The way you reward a young dog when it first finishes a track in an urban environment will be different from the reward you give it after finishing its 250th track in an urban environment.

As dog trainers, we know our animals are sensitive to emotions. Our dogs scan our joy, excitement, and fear, and we cannot hide our emotions during training, in a reward process, or in operations. The Technical University of Delft in the Netherlands developed software to identify the six basic emotions in humans because people often interpret them incorrectly. But dogs do not need a computer; they are often very close to us and quickly learn to recognize our fear, anger, surprise, disgust, joy, and sorrow.

Emotions can cloud training. You can modify the effects of your emotions using bridge signals such as a clicker or whistle rather than your voice. You can use feeders or ball machines rather than handing the dog the food or ball yourself. Emotions can also work positively, though. What motivates our dogs to work for us is not always something we can determine with certainty, but we know our presence or affection can motivate dogs to work harder than they do for simple food rewards.

Still, training a dog to work in response to your emotions can cause problems when you are out of sight while the dog works or when you want another handler to work with your dog. From our perspective, it benefits the work if we can limit our emotions as much as possible in training. Yet it is not realistic to remove all emotions. Our operational system is constructed such that we ourselves always bring our K9 into an operation, send it out, and get it back from the operation. The dog needs to be able to deal with the emotions of its handler at the starting point of the operation

and at the collection point of the operation. For us it's important that the dog learns to deal with our emotions. Indeed, it is part of the whole operational concept.

BODY LANGUAGE IN TRAINING

The story of Clever Hans shows that animals are extremely sensitive to body language. Dogs in particular perform better in this regard than animals such as primates because dogs are naturally better focused on humans and their body language.

A simple test shows how quickly dogs learn to pick up human body language. The trainer puts out three buckets upside down in a row, hides some food under one of the buckets, brings in the dog, and stands aside looking at the bucket with the food underneath. The dog gets the command to search and examines the buckets. After only three times he stops using his nose and simply looks at the trainer and runs to the bucket the trainer is looking at.

This phenomenon can work to your advantage because you can speed up certain training processes, but it can also be a disadvantage. Detector dogs quickly find hiding places by paying attention to bystanders. During training, if the spectators stop somewhere, it is usually the place where something is hidden. Or if the bystanders suddenly stop talking during a search, the dog knows it is near a hide. Tracking dogs learn in the same way when, after laying the track, a tracklayer returns to the start to follow the tracking dog at a distance. The tracklayer unknowingly provides information to the handler and the tracking dog. Dog and handler get information from paying attention to the tracklayer's movement, walking speed, and so on.

This is why we prefer blind trials in detector work and tracking. Blind trials ensure that the handler, the dog, and even bystanders cannot know where the product or track will be. Many handlers fool themselves and their dogs by working on familiar tracks. Dogs quickly learn to watch for unconscious, almost invisible, clues from the handler.

Beginning Your Protocol Training

We like to work with training protocols. Our prototols include specific criteria, rates of reinforcement, data collection, small steps, analysis, and provisions for monitoring. We do not ignore the protocol when it becomes uncomfortable. For example, if the protocol indicates that the training should take place outside and it's raining that day, we don't change our plan and move inside. Our goal is to train to achieve the next step or phase in the protocol. Each training session has a purpose, and we set the dogs up for success. The protocols are the route we take with the dogs to the goal of training a deployable operational animal.

PROTOCOL, SESSIONS, AND TRIALS

Our training protocol describes the training steps for many different elements, such as sit, down, fetch, jump, and so on. Our sit element, for example, has twenty-four steps, each consisting of several sessions. Each session involves numerous trials.

For example, in our sit protocol, training step SIT 008 consists of three sessions with ten trials in each session. After the command

Figure 9.6 Training session SIT 008 consists of at least ten trials in which the dog will be sitting. After the "Sit" command, the trainer walks away ten yards, stands still for five seconds, and then goes back to the dog.

"Sit," the trainer walks away ten yards, stands still for five seconds, and then goes back to the dog. If the dog has met the criteria, the clicker acts as a bridge signal, and the dog is rewarded. Once we have two sessions with 80 percent success or better, we move to training step SIT 009. Some steps can be completed in three sessions. Others might need twenty or more sessions.

Every part of the training is written down in protocols, but there is still space to adjust protocols as we discover new technologies or other insights. Other training sessions may consist of only four such trials when the distance that the dog has to travel is large or when the dog must perform a certain behavior for a long time.

COLLECTING DATA AND MEASURING SUCCESS

It is relatively easy to collect data during this type of training. For example, if the dog in a SIT 008 training session makes a mistake in trial five, the mistake will be marked. We also note when the dog is given a bridge signal, and of course, details are briefly described. If the dog scores 80 percent or higher over two sessions, we will switch to the next step. Ultimately this data gives a lot of information about the dog and the effectiveness of the training. Using this data the training becomes faster, more stable, and analyzable. We can predict how long we need to train to condition certain behaviors, but we can also see when a dog or the trainer does not develop quickly enough to a certain point.

START IN LOW-STIMULUS AND SAFE ENVIRONMENTS

We start training dogs in low-stimulus surroundings and create a safe environment for them. This means they cannot fall, are not hurt by bumping into an object, and are not suddenly faced with issues they perceive as stressful. In other words, we bring the dog into an area we can control. A good example is a closed horse-riding facility. If we close the doors and windows, and turn off mobile phones, we have everything under control; the facility is empty and there is only sand. It is important to minimize any stimuli not directly related to the training. The dog will feel safer,

Figure 9.7 At the horse-training site, all distractions are under control and reinforcement can happen by feeders.

and because of that, it will focus more on the trainer. If you get the attention of the dog and can keep it, you can start the conditioning process. A football field or a parking lot is not a good choice because there will always be distractions such as birds flying by, a cat running around, or people interested in watching the training. Such people will move, talk, and ask you questions, creating distractions that you cannot control.

INTRODUCING THE DOG TO THE SAFE LEARNING ENVIRONMENT

Once you are convinced you have control over the environment, bring the dog inside the area. Ask nothing of the dog; ignore it completely, and let it study the space. You can sit quietly in a corner or walk slowly through the area, observing only what the dog does and how it reacts. After about ten minutes, walk to the exit and make contact with the dog. Usually the dog will curiously walk to you and interact with you as the only distracting stimulus. Bring the dog back to its permanent residence or the car and give it fifteen minutes' rest. Then you can start with the second encounter.

SECOND ENCOUNTER IN THE SAFE LEARNING ENVIRONMENT

Bring the dog back into the same safe environment and let it do what it will. After about five minutes, when you see that the dog feels completely at ease, produce a food reward out of your pocket. Pretend you are interested in the food by looking at it and smelling it. This will arouse the dog's interest, and it will approach you. Share the reward with the dog and get its interest. Keep the session short and provide several food rewards with the dog. Move slowly through the area to determine whether the dog is truly interested in you. See whether it follow you, turns its ears in your direction, looks at you, tries to make eye contact, and so on. After that, bring the dog back to its normal residence. If the dog is not interested enough in you, then you need to choose a better reward.

FIRMER MUTUAL BOND

Repeat these sessions until you have the complete interest of the dog as soon as you step together inside the learning environment. In the beginning, reward any indication of interest in you. The dog will learn to influence its low-stimulus environment by interacting with you, an activity that yields a food reward.

FIND THE BEST REWARD FOR THE DOG

When working with the dog in the safe learning environment, try to determine what reward it prefers. Use a variety of rewards: game rewards, food rewards, tactile rewards, and feeders. It is the animal that chooses what it likes most. This is your first set of data: favorite rewards!

SHORT SESSIONS AND POSITIVE CONDITIONING

Continue reinforcing the dog's interest in you for a time, always within the safe learning environment. Build a reinforcement history so your dog views interactions with you as a positive event. Sessions should be short—usually no more than five minutes—because you have to keep the dog's attention and must remain the

most attractive stimulus in the training environment. It is very important to condition the dog to respond positively to you as the trainer.

CONDITIONING OF THE BRIDGE

The next step is to condition a bridge signal. We start with the clicker. Press the clicker and give the dog a reward as reinforcement. The faster you provide the reward after pressing the clicker, the faster the dog will make the connection between the clicker and the reinforcement. After a few repetitions, you will see the dog anticipate a reward at the sound of the clicker. It will approach you to receive its reinforcement. Now you've conditioned the bridge signal. We now always use this signal before we give the dog a reinforcement—not only in the safe learning environment but also outside this specific area. The bridge signal will become a form of communication. It will mean, "You have done a good job, and the reinforcement is on its way." The dog will learn quickly, and in a few days the bridge signal will be strongly conditioned.

Later on you can add different bridge signals, such as a whistle. The benefit of the whistle is that you can use it at a greater distance. A whistle works, for example, when the dog is more than two hundred yards away. When the dog is conditioned on a clicker, it is easy to add a new bridge signal like the whistle. Using classical conditioning, we first blow the whistle, then press the clicker, and then reinforce the dog. Because we give the new signal before a known signal, the animal soon picks up the new bridge signal. After a few repetitions, the dog reacts quickly to the whistle, and you can stop using the clicker altogether. Now you have conditioned a new bridge signal.

FINISHING OF THE PROTOCOLS

After conditioning the bridge signal, dog and trainer are ready to work with the protocols. Start with the sit protocol; ours currently involves some thirty-two different steps such as the following:

Step 001 SIT 5 seconds

Step 002 SIT 7 seconds

Step 003 SIT 10–15 seconds

Step 004 SIT 5 seconds and distraction by ball

Step 005 SIT 7 seconds with trainer at 5-yard distance

In the protocol, the dog learns to sit, sit down quickly, sit only after a verbal command, sit for longer periods, and resist distractions while sitting. But the dog also learns to sit at a distance from the trainer and sit while the trainer runs away or is out of sight. All of this is hard work: observing, recording, collecting data, analyzing, planning, implementing, and keeping up momentum. After the sit protocol comes the down protocol, the here protocol, and many other protocols that prepare the dog for eventual operational work.

SATISFY THE OBJECTIVES

The protocols define the steps and sessions in the training and are modular. We mean that if a session is completed twice with a score of 80 percent or higher, we move to the next step. But if this score is not achieved, we must invest more time in the current step. The objectives vary from session to session and each objective is essential. One objective might be for the dog to sit at least thirty seconds or even forty-five minutes! Another objective might be for the dog to reach a certain speed on a set route or to bear a certain weight. Objectives are crucial to success and must not be skipped.

MOVING FROM LOW-STIMULUS TO STIMULUS-RICH ENVIRONMENTS

An important objective is that the dogs be able to work in the face of distractions. Our protocols indicate when it is time to slowly introduce distractions into the training. We start our distraction training by placing some items on the field, such as a chair or a big box. Simply observe how the dog responds. Then regularly place more objects and change the composition or positions of the

objects in different training sessions. The position of the trainer or the starting place in the field should also change regularly.

The next step is to place balloons. Their mobility makes them a great distraction. You can tie balloons on strings and float them above the ground at different heights. You can use a wind machine so the balloons float in a certain way, or you could even draw faces on them. You can snap them or shoot them with an air rifle.

Then introduce people as distractions. Instruct the people beforehand what they should and should not say or do. For example, we might tell people to stand in one place, to avoid eye contact with the dog, or to clap their hands every five seconds. Next introduce other sounds from sound machines or gunfire, and then finally other animals. We place animals such as dogs, cats, and rabbits in cages in the training space. In the beginning, we will place these animals at a distance and in an enclosure to prevent them from running around. In this way you limit the movement of the distraction, but you also protect the animal and avoid the dog experiencing "success" should it decide to chase or attack the other animal. Here, as in all other training sessions, our dogs are set up for success and not for correction. Design the sessions so that your dog has the opportunity to succeed. The best way for an animal to learn is by maintaining a high rate of reinforcement.

Build Communication

Because dogs naturally focus on people, it's easy to communicate with them—much easier than with many other animals. Although dogs don't speak human language, their body language is clear. It is easy to see when they are having fun, are anxious, or don't understand what the trainer wants to teach. You can see when they are stressed and when they are relaxed. Although we know dogs understand non-verbal communication, we still teach them simple verbal *yes* and *no* signals. Through bridge signals and body language, we need a form of communication that provides clarity and gives confidence.

Figure 9.8 Besides the use of bridge signals and body language, we need a form of communication that provides clarity and gives confidence.

Dogs look for confirmation and approval, but also for affection and trust. Because service dogs are often far away and out of sight during their work, we often communicate with a radio link, so a clear structure of communication is essential. But even without a radio link, and with closer contact with the dog, a clear communication structure is still enormously helpful. Clear communication gives the dog confidence. Two steps to clear communication include the following:

- Always be aware of your non-verbal communication, and make clever use of this to be sure you are consistent and clear during training and operational activities.
- Teach the dogs to deal with auxiliary verbal commands such as "Good," "OK," "Free," and "No," as well as basic commands like "Sit," "Down," "Fetch," and "Here."

THE COMMAND "GOOD"

We use the command "Good boy" or "Good girl" regularly in the training of a young dog. With this verbal signal we tell the dog that what it is doing at the moment is exactly what we want, thereby reinforcing the behavior. It is an encouraging command.

Young dogs learn that this encouragement will lead to reinforcement. More experienced dogs start to see the encouragement itself as a reinforcer.

THE COMMAND "OK"

We use a 100 percent reinforcement schedule to teach new behaviors. As soon as we reach a certain standard, we start with a variable schedule. We like to use a word like "OK" to help make responses to commands stronger. After the dog reliably responds to a command, we don't reinforce it every time, but only the quickest or strongest responses to the cue. We use "OK" to tell the dog it has done a task correctly, that the objective is satisfied, and that it is allowed to stop the specific behavior. It is possible that another command will follow.

For example, we give the dog a "Sit" command with an objective of fifteen seconds. After fifteen seconds, we give the dog a verbal "OK," and the dog is allowed to break the sit behavior and walk toward us. You might ask why we don't replace the verbal "OK" with a bridge signal, because the animal performed the desired behavior and met the criteria of sitting for fifteen seconds. Our experience shows that if such simple behavior is always followed by a bridge and reinforcement, the dog will become bored.

Some clicker trainers frequently use their clicker and sometimes give a reinforcement. Out of the ten times the dog receives the command "Sit" and meets the criteria, the animal will hear the clicker ten times but will receive a reinforcement only one or two times. This is confusing for humans, let alone dogs. The click must always result in a food or play reinforcement, keeping it a clear signal. The command "OK" means a release; the animal is allowed to break its behavior. The release is also reinforcing. The procedure works well. The dog sits and waits for the clicker (resulting in food or play) or an "OK" (meaning "Well done! But no food or play this time").

We appreciate clear and honest communication as much as our dogs do. Training and getting reinforcements should be exciting and challenging. The best motivators are unsatisfied needs.

THE COMMAND "FREE"

We use the command "Free" to tell the dog to stop any command it is currently fulfilling. If we give the dog this command, it can do whatever it likes. You can also use this command in situations when everything goes wrong. If your search dog is suddenly attacked by another dog, you can use the command "Free" to give the dog permission to stop working and react, that is, flee. Or, after working on a long track, you can give a dog the command "Free" to indicate that it has finished work. Otherwise, it may be hard for the dog to understand when it can stop tracking. Perhaps the suspect has fled the scene by car, or continuing to track would be dangerous, or perhaps you have to stop tracking to cross a river, bridge, or highway. The "Free" command helps keep communication with your dog clear.

THE COMMAND "NO"

The first word young children learn is "no." This is also a word we use with our dogs. It means "immediately stop what you're doing," which could be anything. In practice, the behavior could be the dog smelling the grass intensely during a walk because of the odor of a bitch in heat, or the dog focusing on a cat in the bushes. However, on our command "No," the dog must immediately stop its action. If a young tracker dog starts to follow a wrong track, we can communicate by a simple and sufficient "No." If our camera dog looks at the wrong detail of an object, a "No" command is sufficient to move its head (and camera) in another direction.

More challenging is using a "No" command to tell the dog it should not respond to a temptation. Saying "No" in this situation is less clear to the dog because it is not actively engaged in the activity—it is merely thinking about chasing the rabbit, running to meet another dog, or whatever seems to have caught its attention.

WHAT IS CLEAR COMMUNICATION FOR OUR DOGS?

After a "Sit" command, the dog will start the sit behavior. We can now use one of the following commands:

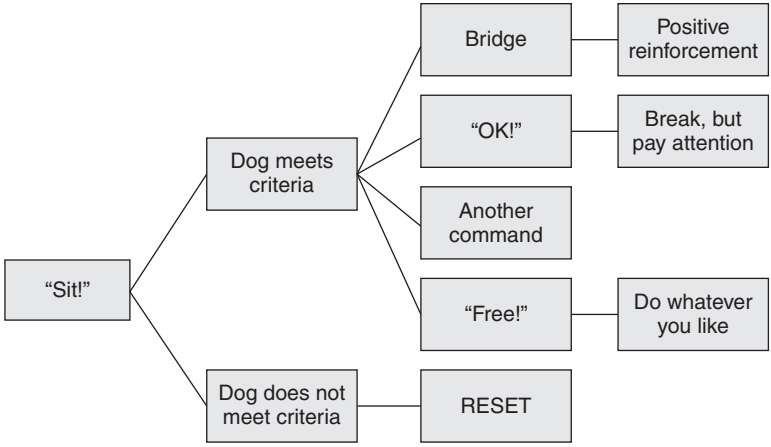


Figure 9.9 Our communication process looks like this.

"Good" = You're doing well and hold on.

"OK" = You can break the sit behavior but pay attention; another command may follow.

BRIDGE = Well done; the reinforcement process will start.

"Free" = You can break the sit behavior and do what you want to do.

"No" = Stop what you're doing (e.g., looking at a cat).

NOTHING / SILENCE = Eventually we teach our dogs to work without any confirmation, verbal or non-verbal.

"Down," "Here," or another command.

USE OF TARGETS

Targets are part of the communication with the dog. A target can lead an animal to a spot where it must take a certain position or execute a certain action. A target is a clear stimulus for the dog. We use targets in the process of conditioning, but first we must condition the dog to the target. We use targets to teach dogs to press their nose against something, to look at or inside something,

Figure 9.10 Target training.

to place something, to take a particular position, and many other goals. We use a laser to target dogs quickly to a specific place.

We've taught our attack dogs to crawl beside us by using a small target placed in our glove. When the dog is crawling, we open the glove, and the target becomes visible. If the dog quickly touches the target, it gets the chance for a reinforcement, which could be food, play, or an attack on a suspect. Eventually the dog will be quiet, lying beside you for a long time, crawling, and following you in hope that your hand will open, giving a chance to touch the target and earn a reward.

WORKING WITHOUT APPROVAL

People can become confused if during training they receive constant affirmation that later stops suddenly. The instructor observes the student who looks to him or her for the expected affirmation; the sudden silence of the instructor causes the student to feel uncomfortable. In such a situation, students begin to doubt themselves and wonder whether the requested action was performed correctly. This is not a desirable outcome in the training of specialists. They should act independently and be self-confident. They

must be trained so that they no longer need approval. People who are unable to handle a lack of approval will not pass this sort of specialist training.

Dogs should also learn to act without constant affirmation from the handler. While in principle we use approval in training, we are also aware of the possible negative side effects. Teach the animals to work without immediate approval; that affirmation will come later. We use fixed ratios for reinforcements and gradually increase the ratio. We start with 1:1 (one reinforcement for every good trial), then gradually move to 1:4 (one reinforcement for every four good trials), then 1:6, and so on.

Training for Operational Practice

Young soldiers who will be trained for special tasks are first trained as regular soldiers. They are taught how to care for their bodies, find food and water, and maintain equipment. They are taught to survive in many circumstances, and they are taught how to shoot under various conditions. Only after they have learned these skills do they start training for special tasks. The army teaches them a set of basic skills that is widely applicable so the soldiers can do their jobs.

Dogs must also learn a basic skill set. Besides basic obedience, the dog must learn to cope with different obstacles and circumstances, such as various forms of transportation. You can look at a skill set like a toolbox. As a trainer you fill this toolbox so the animal can eventually perform all tasks under any condition.

To be successful at operational training, the dog must understand our verbal commands, and dog and trainer must comprehend each other's non-verbal communication. The basic communication skill set will lead to optimal confidence in the dog's performance. The trainer must also know how the dog responds to stressful situations. What are the dog's stress signals? You need to see whether the dog is concentrating on its work or

is busy doing other things. You must know what your dog experiences as most reinforcing and as least reinforcing. How does the dog cope with other animals? As dog trainers we need to understand these facts about each animal before we can start specialist training.

TRAINING AN ATTACK DOG

Before starting the training, you must consider what the dog must ultimately be able to do. After the basic skill set of communication, you can train skills like conquering obstacles, good bite and hold, good attack, learning to focus, attacking only on command, and so on. Training will become more specialized over time. Then you teach the dog to remain in coverage for a long time and to attack from various positions and types of transport vehicles. Finally you teach the dog that it may attack anyone if you focus the dog on that person. In the real world, small, almost invisible, forms of communication can make your dog hesitate to attack a suspect in real life. Use a muzzle for such attacks. Now you can get rid of all the other signals that will trigger the dog to attack. If you use a muzzle, you don't need the protective clothing. By working with a great variety of men, women, and even older children, the dog learns to target only the person that it is focused on, because no other signs tell the dog who the target is.

Include inexperienced people as training targets. If you only use experienced decoys to train, your dog will pick up their body language and use this to zoom in on the target. You will discover that the secretary of the boss responds quite differently when you suddenly focus your muzzled attack dog on her, rather than on the experienced colleague who knows what will happen. You need to teach the dog that the prey can be anybody, in any circumstance, and in any posture. The only precondition to attacking an individual is your verbal command. The dog no longer waits for other signals like protective clothing, shooting, aggressive body language, yelling, or other forms of communication.

TRAINING AN ATTACK DOG VERSUS TRAINING A SEARCH DOG

There is no difference in training dogs for these different tasks except that one dog will attack and the other dog will search. As a trainer, you prepare the dog for whatever role it eventually will fill, but you cannot offer all scenarios in the training. You cannot teach a dog to work under the stress of an actual operational deployment with the stress of its handler, the presence of a suspect, real gunshots, and real panic. These specific situations cannot be trained. One day everything will come together, and then you will see whether your training was good enough.

Since our first real mission in Italy in 1980, we have had a lot of operational experience in search and rescue missions in many countries, including Iran (2003) and Pakistan (2005). During these missions our dogs were faced with many corpses in the rubble while searching. You cannot train for this in advance; however, after strong dog conditioning, we have almost all other stimuli under control. We know or can predict how our dogs will react to various new stimuli, and such knowledge makes it easier to cope with new situations. The method of training is no different for an attack or search dog: THINK, PLAN, and DO.

Figure 9.11 Dr. Resi Gerritsen with her German shepherd Tessa at a mission in Duzce, Turkey, in 1999.

Figure 9.12 Ruud Haak with his Malinois Speedy at a mission in Bam, Iran, in 2003.

Setting Standards for Testing

Dogs can be trained to high standards to perform well in operations, but dogs are still animals, not computers. As with humans, a perfect score on tests is rare and cannot be the standard. As soon as we set a 100 percent score as the standard, the system is set for failure. But what *can* we expect from our dogs and handlers? What will be an average? What is a good or bad result?

No operational case is the same. Every track will be different, and every hide is different from the hide before. A simple and proven way to assess a dog and handler is to look at the last one hundred operational tasks of the team. Select those tasks that became standards in their working environment. Thus a tracking dog in an urban environment will track often in an urban environment. A dog working in a wooded area will track more often on rural terrain. If you and the dog did many tracks for a stolen car, then select this as your test in the dog's accustomed environment. Give the dog ten different blind tracks. Park the car somewhere, walk away, and hide yourself. When the dog finds you, record a positive result; when it doesn't find you, record a negative result. An 80 percent score means that this dog is good enough for operational work, and as a commander you can use this dog for your work.

Figure 9.13 Despite their reputation for good nose work, in numerous blind tracking tests with bloodhound combinations all over the world, Simon Prins showed their average success rate to be below 10 percent.

TEST PROTOCOL IN THE NORDIC COUNTRIES

To select police and military K9s, we prefer the test protocol used in Nordic European countries. Both police and army units test their dogs using a similar test in which the dog is viewed objectively using a fixed protocol based on many years of experience in testing dogs. The dog follows its owner over a fixed route in a forest. This route is the same for every tested dog. The test begins when the handler and dog approach the group of testers and bystanders. The testers watch how the dog responds to the group of people and their movements. Then the group goes through a prescribed route to various test elements. In one test, the dog must find a discarded object; in another, the dog has to search for its owner in a hiding place.

The dog is also tested on courage and fear. For example, after the dog and owner take a position in the forest, a sledge with a small "ghost" figure slowly comes out of the woods. As the "ghost" is slowly pulled closer to the dog, testers watch its response. Does the dog bark, run away, or attack? What does the dog do when it walks with the owner through the woods and suddenly hears a

Figure 9.14 Suddenly the dog is confronted with "spooks" in the forest.

Figure 9.15 The dog is given the opportunity to check out these strange "ghosts."

Figure 9.16 Because of the fixed protocol and experienced observers, the test creates a good and objective overall picture of the dog.

loud noise behind them, like a heavy anchor chain falling out of a tree onto an iron plate? What does the dog do when a man under a large white sheet approaches it with small jumps? No one says anything, and the owner is instructed to look to the sky and let go of the leash. What reaction does the dog give when suddenly a small white cloth, like a rabbit, is pulled quickly through the woods? Does the dog chase it, and how? What does the dog do when this "rabbit" suddenly stands still?

Because of the use of a fixed protocol, and the experience of the testers, a good and objective overall picture of the dog can be formed. Ideally, the dog remains steady no matter how exciting the test. The dog may watch the events with interest, but always with its body and mind under control. The handler shouldn't need force or punishment to maintain control.

KNPV Training

The Netherlands is known throughout the world for the harsh police dogs produced by the program of the Royal Dutch Police Association, the Koninklijke Nederlandse Politiehond Vereniging (KNPV). Indeed, this program produces mentally and physically hard and aggressive patrol dogs. However, the design of the program also makes it weak. Dogs are conditioned to stimuli that are not always clear. Remember that dogs pick up on unintended stimuli from the practice field and the decoy. Dogs can identify exercises by seeing the setting of the terrain, the movement of the decoy, or the position of the judge or audience. While waiting for their turn, dogs listen to what is happening on the training field. Then the dog doesn't listen to the commands of the handler because it thinks it already knows what to do. This is highly undesirable and will become a problem later on. After a KNPV dog is sold to a police officer and prepared for operational police work, all sorts of problems become apparent. Many KNPV dogs will not respond to the recall command when they are attacking a suspect in different terrain than the well-known training field. Many KNPV

Figure 9.17 The Netherlands is known worldwide for its harsh police dogs produced by the KNPV program.

dogs will look for small metal objects in a small search area with nicely cut grass, but finding a bloody knife under a car in a big parking lot is something else.

During an operation, a police dog handler and his dog with KNPV training history happened to be "in the right place at the right time" one Saturday night. An older couple was being robbed right in front of the handler and his dog, and they ran toward the suspect to arrest him. The suspect saw the police uniform and ran away. The handler gave his patrol dog an attack command when the suspect was about fifty yards in front of him, running in the middle of the street; the dog pursued the suspect. The dog was a large, aggressive Malinois and was difficult for the handler to control. Just as the dog jumped for the final attack, the suspect stopped, turned around, and stood still in the middle of the road with his arms up and a pistol in his hand. The handler closed his eyes for a moment as he prepared himself for the impact of the dog and the suspect, but the dog did not bite. The dog sat behind the suspect and barked at him in a guarding way. As he was trained, the dog chose not to attack but to guard because it looked like the suspect was surrendering.

This was not a good situation because the handler was still about twenty yards away and the suspect was still holding the pistol. Ignoring the officer's commands, the suspect did not drop the pistol and the dog did not attack, so the handler drew his gun, finally convincing the suspect to drop his weapon. There was no backup, so the handler needed to detain the suspect himself. As the officer approached the suspect, the dog was lying on the ground about five yards away. When the officer kicked away the suspect's pistol and holstered his gun to handcuff him, the suspect jumped off the ground and attacked the handler. In a split second the dog attacked the suspect at the shoulder, even without the handler's command. The suspect later told detectives that he thought that the dog would not bite.

Ring Sports

With pleasure and enthusiasm we regularly visit competitions in the Ring Sports, dog sports involving impressive jumps, obedience, and bite work. Participants from different regions are arranged together in an unfamiliar area. The competition site is designed by fellow trainers and includes many strange tests. Unlike the tests in the KNPV program, the Ring Sport tests are unpredictable and therefore exciting to watch. One test, for example, involved a loud sound and an agitator suddenly rappelling down a rope onto the field. Another had an agitator running toward the handlers, yelling and waving his arms; then he suddenly stopped in front of the handler and dog and shook hands with the handler. Then he ran away. Dog sport here is really great to see!

Handlers show that their dogs are under control in all conceivable situations. The dog shows that it is brave, confident, and enthusiastic, and that it will obey all the commands of the handler. The program tests all skills, including biting, searching, listening, and watching. The strength of the bite is also judged. Dogs from the Ring Sports are all-round potential service dogs, but, of course, these dogs will also need specific operational training before they

can be deployed on the streets. But unlike many KNPV trained dogs, Ring Sport dogs are quickly able to adapt to new situations.

The Way of Training

Much happens along the training road. It is the art of the trainer to filter out what behavior should be reinforced, what behavior should be ignored, and what actions should be corrected. The most important question is how much behavior will be rewarded, how much behavior will be ignored, and when the trainer should correct unwanted behavior.

We can estimate an answer based on our experience. About 20 percent of the dog's behavior will be reinforced, some 70 percent of the behavior can be ignored, and about 10 percent of the behavior must be corrected. The process of training consists of making decisions. Learning as simple an act as "Sit" requires many decisions: how quickly the dog needs to sit; how it should sit; how long it must sit; where it must sit; whether the trainer should help the dog to go into a sit; whether the trainer should lure the dog, use body language, pull the leash, give one or two commands; and many other decisions.

Try to imagine the training process as a road. In the middle we see a wide green line. This is the ideal place for the dog to be. All the behavior we see along this line will be reinforced—about 20 percent of the dog's behavior. The rest of the behavior will take place to the left or right of this green line—around 70 percent of the behavior—and will be ignored by the trainer. We will color this part of the road yellow. At the outside of this yellow section we see a small red line—some 10 percent of the dog's behavior, which will be corrected. We cannot ignore this unwanted behavior because it can be dangerous for the trainer, bystanders, or operation. The dog will learn by behavior economics and will adjust its behavior to come closer to the ideal green line and get more reinforcements.

In the beginning of training, the dog will not be in the green area very often, but any behavior in this area is 100 percent rewarded. The dog will spend most of its time in the yellow area, and

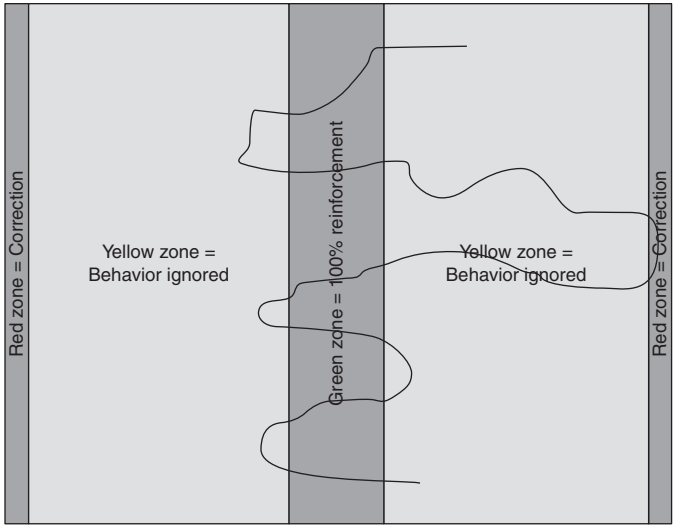


Figure 9.18 At the beginning of training, you will ignore most of your dog's behavior.

Figure 9.19 Training or learning is an ongoing process.

this behavior is ignored. Sometimes the dog will be in the red area, and this behavior is corrected. Gradually the dog will stay closer and closer to the green area in its behavior, will receive much more reinforcement, and will rarely need corrections anymore.

Bibliography

Allman, J.M. 1999. *Evolving Brains*. New York: Scientific American Library.

Alloway, T., G. Wilson, and J. Graham. 2005. *Sniffy, the Virtual Rat*. Belmont, CA: Wadsworth Publishing.

Bailey, Bob. 2006. *The Fundamentals of Animal Training*. Las Vegas: Dog Sports Video. DVD.

Bailey, Bob. 2006. *Patient like the Chipmunks*. Hot Springs, AK: Bob Bailey (www.behavior1.com). DVD.

Brückner, G.H. 1944. *Der Hund im Kriege: Erfahrungen über Abrichting und Einsatz. Zeitschr. f. Hundeforschung*. Leipzig: Verlag Paul Schöps.

Campbell, W.E. 1985. *Behavior Problems in Dogs*. Santa Barbara: American Veterinary Publications.

Dennenberg, U.H., and K. Denelsky. 1967. *Symposium on Post-Natal Development of Phenotype.* Praha: Czechoslovak Academy of Sciences.

Department of the Army. 1977. *Military Police Working Dogs*. Field Manual No. 19–35. Washington, DC: Army Headquarters.

Donaldson, J. 1996. *The Culture Clash*. Berkeley: James and Kenneth Publishers.

Fox, M.W. 1971. *The Behavior of Wolves, Dogs and Related Canids*. New York: Harper and Row Publishers.

Frijlink, J.H. 1976. *In Het Spoor van de Wolf.* Naarden: Strengholt.

Garrett, S. 2002. *Ruff Love*. Chicopee, MA: Clean Run Productions.

Gerritsen, Resi, and Ruud Haak. 2010. *K9 Fraud! Fraudulent Handling of Police Search Dogs*. Calgary: Detselig Enterprises Ltd.

Gladwell, Malcolm. 2008. *Outliers: The Story of Success*. New York: Hachette Book Group.

Goddard, M.E., and R.G. Beilharz. Jan 1985. "A multivariate analysis of the genetics of fearfulness in potential guide dogs." *Behavior Genetics* 15 (1): 69–89. http://dx.doi.org/10.1007/BF01071933. Medline:3985912

Haak, Ruud. 1984. *Honden en Hun Gedrag.* Best: Zuid Boekproducties b.v.

Hare, R. 2005. *On Target: Training Substance Detector Dogs*. Columbia, MO: Canine Training Systems. DVD.

Harlow, H.F. 1962. "Development of affection in primates." In *Roots of Behavior*, ed. E.L. Bliss, 157–166. New York: Harper Press.

Harlow, H.F. 1962. "The heterosexual affectional system in monkeys." *American Psychologist* 17 (1): 1–9. http://dx.doi.org/10.1037/h0043587.

Hediger, H. 1959. *Die Angst*. Zurich: C.G. Jung Institute.

Herre, W. 1958. "Abstammung und domestikation der haustiere." In *Handbuch der Tierzüchtung,* 1–58. Hamburg: Parey.

Horner, V.K., and A. Whiten. Jul 2005. "Causal knowledge and imitation/emulation switching in chimpanzees (*Pan troglodytes*) and children (*Homo sapiens*)." *Animal Cognition* 8 (3): 164–181. http://dx.doi.org/10.1007/s10071-004-0239-6. Medline:15549502

Koehler, W. 1962. *The Koehler Method of Dog Training*. New York: Howell Book House Inc.

Krall, K. 1912. *Denkende Tiere*. Leipzig: [n.p.]

Lindsay, S.R. 2000–2005. *Handbook of Applied Dog Behavior and Training*. 3 vols. Ames, IA: Blackwell Publishing. http://dx.doi.org/10.1002/9780470376874.

Lorenz, K. 1970–1971. *Studies in Animal and Human Behavior*. 2 vols. Cambridge, MA: Harvard University Press.

Maren, S. 2001. "Neurobiology of Pavlovian fear conditioning." *Annual Review of Neuroscience* 24 (1): 897–931. http://dx.doi.org/10.1146/annurev.neuro.24.1.897. Medline:11520922

Mech, L.D. 1999. "Alpha status, dominance, and division of labor in wolf packs." *Canadian Journal of Zoology* 77 (8): 1196–1203. http://dx.doi.org/10.1139/z99-099.

Mech, L.D. *The Wolf*. 1970. New York: Natural History Press.

Milgram, S. 1974. *Obedience to Authority: An Experimental View*. New York: Harper Collins Publishers.

Pryor, K. 1984. *Don't Shoot the Dog!* North Bend, WA: Sunshine Books Inc.

Reid, P.J. 1996. *Excel-erated Learning!* Berkeley: James and Kenneth Publishers.

Schenkel, R. 1947. "Ausdruck-studien an wölfen." *Behavior* I (Part 2): 81–129.

Schmidt, B. 1923. *Die Sprache und andere Ausdrucksformen der Tiere*. München: [n.p.]

Scott, J.P., and J.L. Fuller. 1965. *Genetics and the Social Behavior of the Dog*. Chicago: Unversity of Chicago Press.

Seiferle, E. 1972. *Wesensgrundlagen und Wesenprüfung des Hundes—Leitfaden für Wesensrichter*. Bern: Schweizerischen Kynologischen Gesellschaft.

Simonet, O., M. Murphy, and A. Lance. 2001, July 14–18. "Laughing dog: Vocalizations of domestic dogs." Animal Behavior Society conference, Corvallis, Oregon.

Skinner, B.F. 1938. *The Behavior of Organisms, An Experimental Analysis*. New York: Appleton-Century.

Svartberg, K., and B. Forkman. 2002. "Personality traits in the domestic dog *(Canis familiaris)*." *Applied Animal Behavior Science* 79 (2): 133–155. http://dx.doi.org/10.1016/S0168-1591(02)00121-1.

Svartberg, K., I. Tapper, H. Temrin, T. Radesater, and S. Thorman. 2005. "Consistency of personality traits in dogs." *Animal Behavior* 69 (2): 283–291. http://dx.doi.org/10.1016/j.anbehav.2004.04.011.

Voith, V.L. 2002, July 13–17. "Use of crates in the treatment of separation anxiety in the dog." *AVMA Convention Notes*. Nashville, TN.

Whiten, A., V. Horner, and S. Marshall-Pescini. 2005. "Selective imitation in child and chimpanzee: A window on the construal of others' actions." In *Perspectives on Imitation: From Neuroscience to Social Science*, ed. Susan Hurley and Nick Chater, 263–283. Boston: MIT Press.

Zimen, E. 1971. *Wölfe und Konigspudel, Vergleichende Verhaltensbeobuchtungen*. München, Zürich: Piper und Co.

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About the Authors

Ruud Haak is the author of more than thirty dog books in Dutch and German. Since 1979 he has been the editor-in-chief of the biggest Dutch dog magazine, *Onze Hond (Our Dog).* He was born in 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 Amsterdam harbor. He later started training his dogs in Schutzhund and I.P.O., and successfully bred and showed German shepherds and Saint Bernards.

Figure 10.1 Ruud Haak with his German shepherd Yes van Sulieseraad and Malinois Google van het Eldenseveld.

Ruud worked as a social therapist in a government clinic for criminal psychopaths. From his studies in psychology, he became interested in dog behavior and training methods for nose work, especially the tracking dog (Fährtenhund) and the search and rescue dog. More recently he has trained drug and explosive detector dogs for the Dutch police and the Royal Dutch Airforce. He is also a visiting lecturer at Dutch, German, and Austrian police dog schools.

In the 1970s, Ruud and his wife, **Dr. Resi Gerritsen**, a psychologist and jurist, attended many courses and symposia with their German shepherds for Schutzhund, tracking dog, and search-and-rescue dog training in Switzerland, Germany, and Austria. In 1979, they started the Dutch Rescue Dog Organization in the Netherlands. With that unit, they attended many operations responding to earthquakes, gas explosions, and, of course, lost persons 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 rescue and avalanche dogs. They lived for three years at a height of 6000 feet (1800 meters) in the Alps and worked with their dogs in search missions after avalanches.

With their Austrian colleagues, Ruud and Resi developed a new method for training search and rescue dogs. This way of

Figure 10.2 Resi Gerritsen with her Malinois Halusetha's All Power and Malinois Google van het Eldenseveld.

training showed the best results after a major earthquake in Armenia (1988), an earthquake in Japan (1995), two major earthquakes in Turkey (1999), and the big earthquakes in Algeria and Iran (2003). Ruud and Resi have also demonstrated the success of their unique training methods for tracking dogs as well as search and rescue dogs 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 have held many symposia and master classes all over the world on their unique training methods, which are featured in their books:

- *K9 Search and Rescue: A New Training Method*
- *K9 Schutzhund Training: A Manual for Tracking, Obedience and Protection*
- *K9 Professional Tracking: A Complete Manual for Theory and Training*
- *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 Fraud: Fraudulant Handling of Police Dogs*.

With Dr. Adee Schoon, Ruud wrote *K9 Suspect Discrimination: Training and Practicing Scent Identification Line-Ups*. All of these books were published by Detselig Enterprises Ltd., Calgary, Canada (now Brush Education Inc.).

Ruud and Resi now live in the Czech Republic near the Austrian border. They are training directors and international judges for the International Red Cross Federation, the United Nations (OCHA), the International Rescue Dog Organisation (IRO), and the Fédération Cynologique Internationale (FCI).

Simon Prins was born in the Netherlands in 1967. After a career as a military diver, he joined the police force. Raised with dogs as a child, Simon started to train KNPV dogs as a hobby. Within

Figure 10.3 Simon Prins with his Dutch shepherd Ivan.

two years he was working as a police patrol-dog handler in a large city. During his work as a police officer, he used dogs with great success in many operations.

In 1996, Simon was asked to become trainer in an innovative police project. One of his new tasks was to train a guided camera dog. He trained and deployed Andor, the first radio- and laser-guided camera dog. He also developed a total training concept to guide all sorts of police dogs in operations. His training concepts are now being used to guide camera, explosive detection, and search and rescue dogs in operational circumstances.

Over more than fifteen years Simon worked with many specially trained police dogs in special operations and search and rescue missions in different countries. He selected and trained the dogs, deployed them, wrote training manuals, and, with the help of close friends, designed devices such as feeders, camera systems, laser systems, and radio communications.

Besides guidance training, Simon did substantial research and innovative training in all sorts of detection dogs. His favorite discipline is tracking, especially hard-surface tracking. He has visited many famous dog trainers all over the world, including Dr. Resi Gerritsen and Ruud Haak. His ultimate goal is to train police dogs

using the best methods possible and to share this information with colleagues.

Trained as a punishment trainer at the start of his police dog handler career, Simon was able to switch to the operant conditioning methods initiated by Marian and Bob Bailey. Through that process, he also discovered the battle in bringing operant conditioning into a police organization with a long history of traditional dog training. Fortunately, more and more trainers are starting to realize the power of operant conditioning. They see and feel the benefit to their animals and their success in operations. Simon has now educated many trainers to use operant conditioning with working dogs.

After working with the Baileys for many years, Simon has discovered another important goal. We need to train K9s in a positive way, he feels, because doing so will give us the opportunity to get the best out of our four-legged colleagues. Simon is thankful to be able to write this book with Resi and Ruud and reach more trainers all over the world.

You can contact the authors by e-mail at onzehond@bcm.nl.

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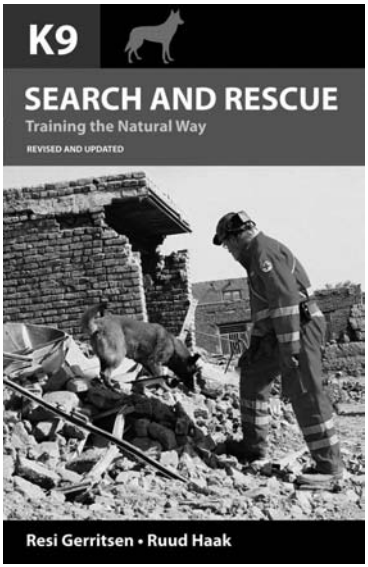

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