HOW TO USE A
SCENT WHEEL

By Simon Prins

Many ways will lead to Rome.
There is not one method as to how to use a scent wheel. There are many methods.
This article will explain how I use the scent wheel and I hope to inspire some trainers.

I know there are many assumptions, paradigms and beliefs in the canine world. A lot of comes from what we call the craftsmanship experience. Many trainers are taught by an experienced trainer how to train dogs. But is this the most efficient and effective way? It's fantastic that there is much creativity and many training methods in the canine world. That is needed because no dog is the same and no trainer is the same.

We, humans and dogs, have different learning styles and like us humans, dogs also have their own personalities. For these

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reasons, we need to offer a custom-made training program for each dog and trainer. Being able to train outside of the box also boosts motivation and

helps us to discover more of the incredible capabilities of our dogs. But there is a 'red line' or, better to say, a 'blueprint' on setting up detection dogs in their basic skill sets. To see this red line and hold on to it, we must use best practices. My question to the reader is: how fast can we grow if we share our experiences with each other? I ask this because, I agree, that alone you go faster, but together we go further!

Share Experience

We, as trainers, are fortunate that science is zooming into the dog training topics again. It's necessary that we collect and analyze data, share experiences and help each other. Often, I draw parallels with the development of aviation. Think back to when the Wright brothers were experimenting with flying. On December 17, 1903, their 'Flyer' made its first flight! The plane stayed in the air for 12 seconds and over a distance of 120 feet. A few years later,

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in 1927, Charles Lindbergh flew from the USA (New York) to Europe (France). It led to May 25, 1961, when John F. Kennedy set the goal of "Let's set a man on the moon and return him safely to earth." And only eight years later, they reached that goal! What would have happened if these first aviators didn't document what they did? If they didn't collect and analyze their data? And what if they decided not to work together? If they didn't follow the red line? As animal trainers, we need to set goals and work together!

Starting with Scent Wheels

I started to use scent wheels in 1996 when I was asked to create some special animal projects for the National Netherlands Police. I needed to find, select, imprint and train detection dogs quickly, reliably, efficiently and effectively. I was a newbie in the detection training at that time and I saw that the overall process was slow, time-consuming and many dogs didn't make it. They never passed their exams. Also, I saw a big arbitrariness in testing and selecting. There were no objective standards, no milestones during the training phase and if the dogs didn't pass the exams, the overall complaint was that the exams were too complex and too complicated. It was time for some change. In my previous article about this subject, I wrote about this change and experimenting with different scent wheels. Now, I want to zoom into basic training with these scent wheels.
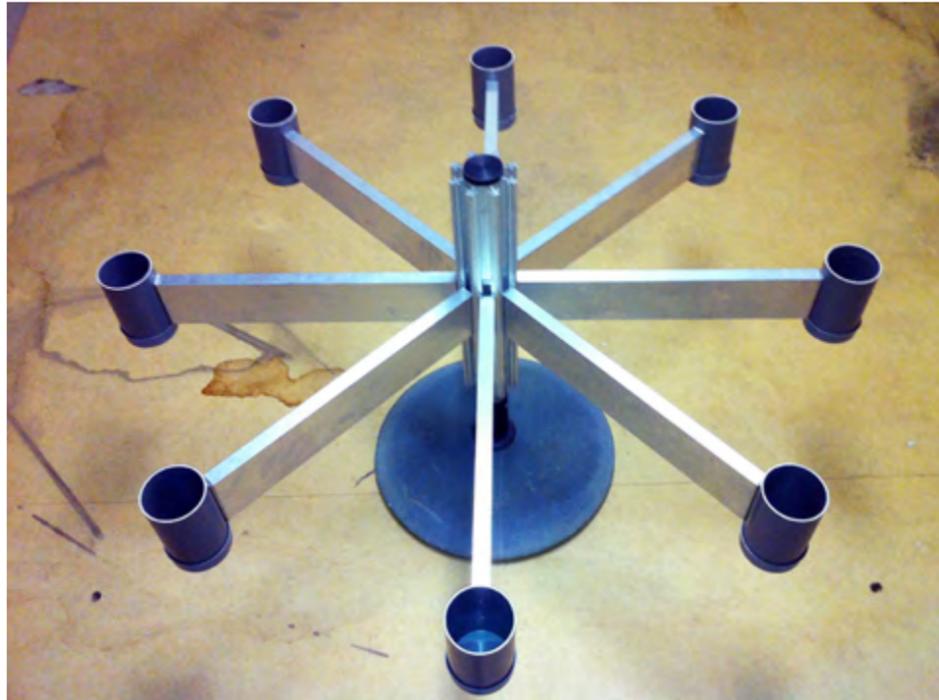

Coincidence

What do Coca-Cola, Post-It, Corn Flakes, Penicillin, Velcro and X-ray all have in common? They were discovered by coincidence. A lot of what we canine trainers learn by coincidence is often later confirmed by scientists. I love to work with scientists and I genuinely see the benefit of science in the K-9 world. But be aware that if you are working on a new project or a new idea, don't let scientists stop you before you start. Many of our projects, which are still covert, were received by scientists as 'not possible' but later turned out to be possible. Do understand that something is possible for a scientist as it has been proven and reproduced. That principle is called peer review, a process that has been around for hundreds of years. This will weed out invalid, poor quality or unoriginal science. Well, we also understand that most dog trainers are no scientists and they will not follow 'the rules of science.' In that case, the results of 'new' projects will be received by scientists as invalid or poor quality; skeptics will stand up and raise their voices. If we understand each other, we can work better together because we can learn from each other and grow together.

Working Together with Scientists

Scientists were skeptical when we gave dogs directional information by lasers and radio collars, but it didn't stop us. Later, scientists found out that dogs could see lasers and why. They found out that dogs could differentiate words like left, right and many more even out of sight from the handler. We could reproduce the training results with other dogs and even other trainers. This is the same for many detection issues. With the interest and help of scientists and their findings, we can do it faster and more reliable. So, this is the common good in and why I love to work with scientists! It's a win-win for the canine world, trainers, the handlers and especially the dogs! The scent wheel also plays an essential role in this.

The Scent Wheel Seems to be an Ideal Test Wheel

One of these random, lucky finds for us was that the scent wheel turned out to be an ideal way to test 'green' detection dogs. It allowed us to do a real objective test! We could collect objective data, despite who was testing the dog. We could rule out much human bias in the testing. The dog performed towards being accepted in the program or was not taken in for further training. Clear and straightforward, without emotions. After introducing the scent wheel and taking time for this, we standardized doing an end session of 10 trials. If the dog couldn't do those 10 repetitions, we rejected him because he's tired, not enthusiastic or whatever. On the occasion that someone was questioning this decision, believed in the dog and took the dog into the training program anyway, the dog would drop out later.

Splitting or Lumping

People who know me describe me as a 'splitter.' It means that I really go into splitting all parts of the training and carefully select the next step. I work on the details of each step and keep in mind that "you get what you reinforce!" This means only reinforcing the wanted behavior and ignoring the unwanted behavior.

On some occasions, I also use the technique of 'lumping,' which means, "let's see what we get." In the scenario of lumping, we place the dog in a training setting and see how he will cope with the puzzle we give him. Let me give you an example of lumping in a scent wheel setting. In this case, we will place a detection dog in front of the scent wheel, add a known target odor and some distractions in

the target positions, give the wheel a spin and cue the dog to search. The dog will start searching, hit the target odor and give a passive alert if we are lucky. From there, we can move on with our scent wheel training and eventually, work with more, minor amounts of target odor and more distractions.

Both methods have benefits. In lumping, we go fast, but we might miss some training steps, which can cause problems later. In splitting, we know all the details and prevent Murphy's Law because we have ruled out everything that can cause a problem. I prefer splitting because I will learn more about the dog and shape the wanted behavior precisely in the way I need.

To give you an idea about how the scent wheel training will take place, I will use the example of two different dogs. One is a pre-trained detection dog; trained in the way we usually get them from the vendors. The second is a new, green dog; just potentially a good dog, but not trained at all. At the age of 14 months, neither have never seen a scent wheel before.

The trained detection dog.
First, we must be clear about the entrance level of this trained dog. Let's presume the dog can find and alert on a KONG the size of 1x1 cm. The dog can give an excellent passive sit indication and can do basic detection work inside buildings.

The green dog.
The entrance level of this dog is a potential detection dog. The dog is tested in different environmental scenarios and seems mentally stable. The dog loves to chase and fetch a moving Kong, will bring it back and play tug of war with the trainer and the Kong. The dog doesn't understand obedience and does not give a passive alert.

Set up the Right Environment

We first manipulate the environment. This means that we work in a small environment without distraction and only the scent wheel will be there. We prefer to use a tiny room with no furniture, no wall decorations or anything else in the room. If this is not possible, you can use room dividers to design a 'distraction-free' environment. In this new environment, we use a reinforcer with the highest value in this unique setting. Let's presume in this example it's a red KONG for the dogs we are testing.

First, we enter the small or confined space and let the dog look around and sniff the new environment. If the dog seems to be a bit insecure, use a low-value reinforcer to make this place more interesting for him. Throw some food on the floor but don't use your high-value reinforcer in this stage! Also, turn the scent wheel a bit but make sure you do it slow. The dog will now see and hear a slow rotating scent wheel. As soon the dog is comfortable in all of this, take him out for a few minutes break.

The trained detection dog must cope with this new environment more quickly. He's already prepared and before that, he was tested on his mental stability. If the green dog needs more than three 5-minute sessions and still feels uncomfortable, it's already a question mark for us if this dog will become a detection dog.

When the dog feels okay and has had a little break, we go back to where we installed the scent wheel. Now we just place the high-value reinforcer, in this example, the KONG, on top of one of the targets in a way that the dog can see it and grab it. We let the dog hold it and repeat this a couple of times. Make sure the KONG is in different positions when the scent wheel rotates slowly. Don't work too long. After five minutes, take the dog out of the room and give him a few minutes break. It's essential to take him out and back into the room with some short breaks in between. Is there a rise in expectations? Does the dog remember the previous lessons? Is the dog coping fast enough with the ever-changing rules?

Scent Wheel Introduction to the Trained Dog

We start the training after introducing the dog to the new environment with the scent wheel, using the splitting approach. We want to set the dog up for success. At first, we start with some basic skills from basic detection training. We bring the dog back to a known scenario, similar to working on boxes or a short lineup. The goal here is to make sure the dog familiarizes quickly with the new targets it will encounter on the scent wheel. The ACT! Scent Wheel is specially designed for this transition training because it can also hold the unique ACT! Vertical targets. I love these targets because the dog can stick its nose in them. That is an obvious criterion, not only for the dog but also for the trainer. Bridge (click) when the nose is in the target, which is also easy to observe from a distance.

Scent wheel target conditioning

Vertical Target Practicing

We do this exercise not around the scent wheel but in another room. Place the dog on a small platform and place one of the vertical targets against a wall. All of this should take place in sight of the dog. We put a known target odor in this target, like a piece of KONG or the already imprinted target odor. By doing this in sight of the dog, expectations are built and the dog wants to go. Then cue the dog to search and bridge quickly but don't wait for the passive alert yet. We are setting the dog up for success.

Repeat this 2-3 times and then wait a bit longer for the passive alert. After we bridge the passive alert and repeat this two times, we place another target next to the wall. Use the same procedure, but now the dog will need to scan both targets to find the target odor. Wait for the passive alert and bridge. Switch the position of the complete target to left or right and ask the dog to search again. We are not training detection; we're using a simple, strong target odor with no distractions and are not worried about contamination from our human scent. We are training a system, not a detection. When this all is going okay, add a third target to the wall. The dog needs to search the three targets to find its target odor.

Adding more targets and changing the hot target position

Switch the complete target a few times to a different position in this row of three. Are there no mistakes? Is there a clear passive alert? Now we are ready for the scent wheel training! Give the dog a short break and go towards the scent wheel room.

The dog is waiting on the platform

After adding the vertical targets to the scent wheel, we lock the wheel so it cannot rotate. We place the dog in a sit on a platform a short distance away, in front of the scent wheel. In sight of the dog, we put one target odor in one target position. Make sure this target is positioned in front of the dog. That means that if the dog leaves the platform towards the scent wheel, he will encounter the loaded target first and doesn't need to circle the scent wheel to reach it. Add fewer targets to make the dog more successful.

Now step away from the scent wheel and cue the dog to search. As soon the dog is interested in the target odor, bridge and reinforce. Again, don't wait for the passive alert yet. Reinforce, place the dog back on the platform and change the position of the hot target. Rotate the wheel 90 degrees, in sight of the dog. For example, presume we start at 12 o'clock position; we'll then turn the wheel towards 3 o'clock, away from the dog. Then we repeat the exercise.
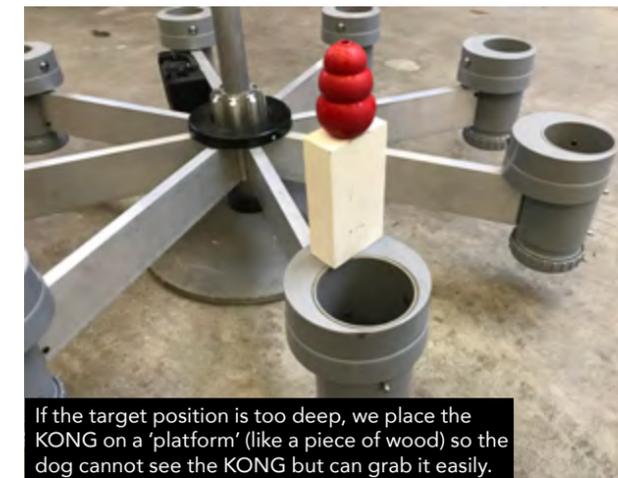
In this way, we use positions 12, 3, 6 and 9 to move the dog around the whole scent wheel. After these repetitions, we give the dog a break. Check your observations and data to see if the dog is comfortable enough to work around the whole scent wheel.

If needed, do more repetitions. If the dog is comfortable enough, you can move on to the next phase.

We repeat practically the same session but wait for the passive alert before we bridge. When we have reached the level that the dog is comfortable working around the whole scent wheel and he gives us a good, fast and reliable passive alert we know the basic training is done. We can move on with the introduction of distractions and work on more minor amounts of target odor. I need to explain that it's a trainer's choice to define your passive alert. It does not need to be a sit. A freeze would also be okay, as long you know what it is, that it's okay for your operation and that you can add some duration (3-5 seconds) into it.

Scent Wheel Introduction to the Green Dog

By coincidence, we found out that we could use the scent wheel as an ideal test device for young dogs. At first, we took time splitting the scent wheel's introduction to a green dog. It was costing us much time and many times, dogs that were not stable on the scent wheel training later also failed

If the target position is too deep, we place the KONG on a 'platform' (like a piece of wood) so the dog cannot see the KONG but can grab it easily.

The dog cannot see it but can grab it.

overall detection training. A 'misunderstanding' changed our way of future testing. There was a moment when we tested a young dog in our training facility. The dog was, as most young dogs are, fanatic on a KONG. Throwing the KONG around in our training facility, an enthusiastic young colleague saw our scent wheel in a corner. He put a KONG in the scent wheel, gave it a spin and let go of the dog before I could stop him. The dog looked at the fast-spinning wheel for a few seconds, then started to chase the target position with the KONG. The dog used his body to block the wheel and did everything to get it. It was too profoundly hidden and despite the moving wheel, the dog kept working on this target position. Of course, we helped the dog get it, which changed our selection procedure.

From that moment on, we introduced green dogs to the scent wheel as part of their selection procedure. It's an essential part because we will not select the dog if he fails. In this test, we use the vertical target positions. We first find what sort of reinforcer the dog likes. A KONG? A ball? Whatever the dog wants to work for is okay. Then, only one target position will be loaded with that high-value reinforcer for this dog. Now, we manipulate the target position so that the dog can grab this reinforcer and be able to pull it out of the target position without our help.

We bring the dog towards the scent wheel if we have the setup ready. The wheel is fixed and cannot rotate. The trainer holds the dog on a leash, throws the KONG to the helper, who is loads it into the manipulated target position. This is all done in the sight of the dog. As soon the KONG disappears into the target, let the dog go! The dog, in drive, will go for the target, pull the KONG out and play with the trainer. Repeat this in positions 12, 3, 6 and 9 then give the dog a short break.

After the break, we change the rules a little bit. Just like before, the trainer holds the dog when he throws the KONG towards the helper. The helper loads the scent wheel with only the KONG. This time, before the trainer lets go of the dog, the helper spins the wheel gently. Then the trainer lets go of the dog. Now, we want to see a dog chasing the target position filled with the KONG. Here, we see potential, strong detection candidates rise to the surface. We will spin the wheel a bit faster each time so that the dog needs to put more energy into the chase. We can also manipulate the target position again and place the KONG deeper, making it harder to reach. The wheel's spinning shows us a dog chasing the odor with his nose! It also shows us a dog that is not distracted by moving things. The fact that the dog needs some power to stop the wheel shows us his perseverance. So yes, it's an essential part of testing. After the selection, we bring the green dog to the routine detection training program. He will reencounter the scent wheel in a more splitting method, later in training.

I just gave you a few ideas on introducing your dog to a scent wheel. You can use all sorts of scent wheels for this start. We used the self-built PVC-based scent wheels during the selection and introduction training. But a few sessions later, when we begin to use distraction odors, different target odors and smaller amounts, the material of the scent wheel becomes very important. You will find these professional scent wheels in our online shop on www.simonprins.com.

Here you also will find our latest smart sensor scent wheel. This scent wheel is a real game-changer in the detection world! It's our newest innovation and we've worked hard on the electronics and software and fine-tuning the overall data system. This eight-position scent wheel is unique globally and you will not find it on the market! All target positions are equipped with sensitive sensors. As soon as the dog puts his nose in a target, the sensor will log it and send it to the computer. The computer is installed on the scent wheel and registers milliseconds and logs the data! All sensors will be active during the runs. The information the trainer learns is not only if the dog finds the correct target but also how long the dog sampled each target position in milliseconds before he alerted on one. This data is sent directly to your MacBook in a data file.

Besides the fact that the information is sent to the computer, the wheel also indicates by the light the actions and results of the dog's work. The 'ring of results' in the middle of the scent wheel is blue when the system is operational. A purple light will show the action whenever the dog's nose is in one of the targets. A red ring indicates a false positive and the ring will turn green when the dog finds the hot target. Of course, you select the target position and set up the duration for how long the dog needs to indicate before he gets a green light.

As soon as the dog puts his nose in a target, the sensor will log it and send it to the computer.

The trainer can give a bridge signal and throw a reward when the green light appears. Or, you can opt for the scent wheel to reinforce the dog on its own by using the feeder in fully automatic mode. On top of all this, we have developed a unique app for this scent wheel in which you will see the data live on your screen! The patent is pending, but I didn't want to wait any longer to bring you this exciting news.

In the following article, I will go into detail about how to introduce and use distractions in scent wheels. I'll discuss preparing target odors and using less target odor to alert your dog on lower thresholds. For now, I wish you a lot of fun while training! 🐾

Simon Prins is known for introducing operant conditioning to the Police K9 training world. For the last 25 years, he's skillfully trained and purposed dogs for special operation missions and has mastered the art of using robotics and sensors with dogs to perform such tasks successfully. He's titled and trained countless dogs and trainers from special units across the globe, and firmly believes that science can significantly improve our work with animals. Simon Prins is a/n speaker, author, innovator, animal trainer and behaviorist, and is currently working with the Netherlands Police Agency.

He started working with hunting dogs in 1989. When he joined the police force he became one of the youngest patrol dog handlers and worked with these dogs for several years. In 1996 he was asked to set up a special K9 R&D project. Working with radio guided camera dogs was one of the many topics of this program.

In the years that followed he started programs as hard surface tracking, laser guided attack dogs, detection dogs for special operations and trained many different detection dogs and their handlers. In 2002 he selected and trained the 16 dogs and handlers to start USAR, focused on search and rescue operations.

In all of these topics he also worked himself with dogs in these operations. In 2006 he started to make combinations of dogs and electronics. Radio directional canines equipped with sensors and carrying small robots into operations. During these years Simon wrote many training protocols and developed innovative training apparatus. He is convinced that following protocols, collecting data and educating trainers is the key of the success. But the most important issue is taking out the traditional punishment training methods and replace this by operant conditioning techniques.

If you are interested in one of our seminars or workshops, please take a look at our website **www.simonprins.com**