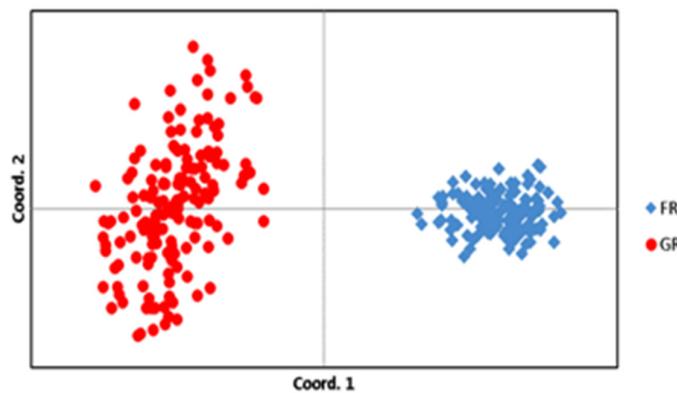


## Why did cross breeding become taboo in the world of pedigree dogs?

- Ingemar Borelius 2019-03-22

*Kennel clubs around the world are taking firm actions to improve health levels and to counteract unsound manifestations of different conformation features in pedigree dogs. Programs are initiated to follow up and act upon hereditary diseases in most breeds. But the measures taken to act upon the dramatic effects of inbreeding in most pure-bred dogs are to say the least inefficient. Molecular genetic analysis is de facto the most accurate method to assess inbreeding levels in a breed. Cross breeding, or breeding between varieties of breeds, is the only tool to broaden gene pools when a sustainable genetic diversity is lost. Successful crossbreeding programs are executed in the Nordic countries to restore lost gene pools, but why isn't it used on a larger scale?*



*Genetic diversity in Flat Coated and Golden Retrievers according to a study being laid out by the UC Davies VGL laboratory in US. The genetic diversity in Flatcoats is significantly narrow due to the original breeding stock in UK before WWI, where about 30 closely related dogs built the breeding base for this lovely breed.*

### **The history of the purebred or pedigree dog**

The breeding of purebred or “pedigree dogs” is described as a fruit of the Victorian era in Britain, lasting over the reign of Queen Victoria from 1837 to 1901. During this prosperous period living conditions changed dramatically all over Britain. Among the wealthy classes the industrialisation and profits from the growing British empire generated huge fortunes. Working hours were gradually reduced for most people. For the nobility and the landed gentry, sports became a favourite pastime where game shooting and dog sports had a most prominent place. Even if sport initially was very much the man’s domain, considered to be a gentleman’s pastime, women claimed their rights to take part and it gradually slipped down as well to the lower classes.

But the breeding of pedigree dogs was very much a gentleman’s task from the very beginning. If you look at the reports from dog activities at that time most pedigree dogs were owned and bred by wealthy men and British Dukes and Earls were not few among the breeders and dog owners. Sewallis Shirley, the founder of the Kennel Club, had a large kennel at his Ettington Park estate, near Stratford-upon-Avon, with prizewinning Bulldogs, Bullterriers, Fox terriers, Setters, Pointers and different kinds of Retrievers. He had a large estate as well at Lough Fea, Carrickmacross, on Ireland where he kept a kennel of Collies. He was the leading force in the creation of the Flat Coated

Retriever and his Collie dog Trefoil is considered to be the ancestor of all Rough Collies. A Mr H.R. Farquharson was noted for keeping over a hundred Newfoundland dogs at his Dorset estate. The prominent gundog breeders at that time kept large kennels, often with a variety of dogs. Dog men were hired to care for the dogs, to train them, to handle them at trials and shows and the greater kennels had more than a few. Shows and field trials for dogs were reported in detail alongside other sporting events in the daily newspapers and the debate was vigorous and initiated about the right ways to keep, train and shape the different breeds.

The focus on pure-bred dogs was very much a consequence of the time. New inventions radically transformed daily life, changed business conditions and initiated the industrial revolution. Change was fast and there was a strong belief that man could do anything to transform the world. Mendel and Darwin were radically changing man's knowledge about genetics and the development of all living species. Even if many breeds or types of dogs had existed over centuries, the rapidly growing dog show movement, during the second half of the eighteen hundred, transformed those dog types into a growing number of specialised and more exactly defined breeds. Needs to assess more exact rules for the judging of different breeds initiated the first dog clubs and the definition of breed standards. Studbooks were gradually closed to promote the breeding of absolutely pure breeds.

The needs to set standards for the examination of dogs, leading breeders' personal preferences and role model dogs, favoured by the most respected breeders and judges, defined the new breeds. A rapidly growing "dog world" became passionate when it came to the breeding of more perfectly looking and "purer" breeds. "Purity" when it comes to breeding became a buzzword reflecting the zeitgeist at that time and no one could deny it had a relation to the contemporary belief in the purity of human races as well. It was a broadly accepted dogma around Europe long before holocaust and it was a well-hidden and dark truth for a long period of time that my home country, Sweden, was a leading nation when it came to the research on human races. The fatal belief in the values of keeping different races absolutely pure and the aspiration to refine dog breeds to become blueprints of a role model was constituted at that time.

It's an evident fact in all dog breeding that good capabilities are developed via selective and targeted breeding, where dogs with the desired capabilities are used at stud and dogs with undesired traits are not bred from. In ambitious breeding programs for utility dogs, the logic is that stud dogs should be well tested at relevant tests proving the expected capabilities. From experience (and by genetical logics) breeding results are significantly improved if the same goes for previous generations. Good individuals from strong work merited lines produce better and more even litters than dogs with a poor or mixed background from a working point of view.

These are facts that are obvious when you look at the British utility dog scene. You can easily follow the good utility dog lines from generation to generation as far back as to the beginning of the last century. This goes for all working gundog breeds and most probably as well for working shepherd dogs and for other utility breeds as well. Thus, a good working standard has been maintained within individual breeds over decades.

Field trials are used within several utility breeds, in parallel to dog shows, to evaluate the typical breed characteristics. The birth of the field trial movement for working dogs in UK went hand in hand with the first dog shows even if the first field trials for Hounds and Sighthounds had been arranged long before. The very first organized dog show was held for setters and pointers in Newcastle upon Thyne in 1859 and the first field trial for pointing dogs was arranged in 1865. According to a book about working sheep dogs, "the first dog shows brought together breeders of working gundogs, working sheep dogs and dogs bred for appearance. The Flatcoat man and Kennel Club founder,

Sewallis Shirley, played a key role in these dialogues. He became one of the initiators of the very first retriever field trial in 1870 in northern Wales and it's a fact as well that the first working test for sheep dogs was held in the same area in 1873. The field trial movement did have an immeasurable effect on the improvement of working dogs. But again, the drive for perfection and the targeted breeding on different role models has a similar impact on genetic diversity as seen in the show world. It's an evident and well documented fact that the targeted breeding for different purposes lead to a division of types and mental capabilities from day one in all utility dog breeds. The continuous drift towards more extreme types for different purposes has reduced options to cross-breed between sub populations in a breed to a minimum.

Competition was a key word that walked hand in hand with all the big changes that appeared during the second half of the eighteen hundred. Competition was a most important facilitator in most sectors of human life. But even if competition has been a most important enabler and lead to rapid progress in most areas there is a downside of it as well. Competition in the world of dogs tends to take most pedigree dogs to the extremes. Ambitions to produce the "perfect" show winner promotes the breeding of artificially looking dogs were breed characteristics are exaggerated. Breed classes are getting more and more even, and most show-dogs are getting closer and closer to the role model of the day. Judges' work is getting more and more challenging and when asked to award, the most exaggerated breed characteristics tends to be the winning points. The tendency is the same on the working dog scene were competition and the role models of the day promotes more even and more extreme dogs. Seen from an ethical perspective, the breeding of useful companion- or utility dogs for the ordinary dog owner should be priority one, but I presume most of you could agree that it's secondary for most prominent breeders, trying to breed the great winners in different spheres.

According to the law of genetics the gradual move towards more even phenotypes means more even genotypes, i.e. reduce in heterozygosity. Although the overuse of linebreeding and top winners in many breeds have been reduced by enlightened breeders and modern breeding tools, the strive for more even phenotypes in most targeted breeding programs are in fact increasing inbreeding, causing continuously narrowing gene pools. The calculation of inbreeding coefficients in breed planning doesn't give the full picture of the inbreeding status in contrary to more accurate molecular genetic analyses of genetic diversity. Even if many breeds had solid gene pools at an earlier stage the drive for more uniform types are transforming several minor breeds into vulnerable breeds. It's an urgent need today to introduce another buzzword, "sustainability", as the key word for all pedigree dogs and to sustain gene pools for a growing number of breeds must be significantly broadened.

### ***Interbreeding within Retrievers and Spaniels***

If you look at the popular Retrievers, they were considered to be one breed, being divided in different varieties for a quite long time. The Retrievers were shown in different classes as wavy coated, smooth coated, rough coated, curly coated, black coated, liver coated retrievers and somewhat later as flat coated, long before the Labrador and the Golden appeared on the scene. But in 1916 a clear brake was initiated by a Labrador named Horton Max. He was a great winner in the Labrador ring, but his pedigree exposed 50 % Flat Coated Retriever blood. It generated fierce reactions in the leading retriever circles and a new set of rules was defined by the Kennel Club. The Retrievers, although sharing a common origin, being bred for the same purpose, according to a similar mental breed standard and basically the same conformation standard were divided in a number of different breeds, continuously but not deliberately drifting apart when it comes to

conformation and mental characters.



THE RETRIEVER (LABRADOR) HORTON MAX (K.C.S.B. 708U).

THE PROPERTY OF MR. J. SCOTT MCCOMB.



**Horton Max** (b. 1913), a successful winner in the Labrador ring. His grandfather Jimmy of Riverside (b. 1906), was one of the great winners in the Flatcoat ring.

But for a long time, it wasn't about a solid iron curtain dividing the breeds. Between 1916 and 1970 an interbreeding option was kept, allowing retriever-crosses to compete at field trials and if bred to a specific retriever breed for three generations the "Interbred" was registered as a pure bred again. Although this interbreeding option did affect the pure breeds to a limited extent, it was used quite frequently up to WWII. Interbreds were presented under its own heading in the Kennel Gazette, dogs from Interbred lines (Lab/Flatcoat) went to the top at the Retriever Championship at least three times up to the thirties and it offered a window for targeted pedigree dog breeders to get true outcross blood. It was used quite frequently in the Labrador up to the nineteen thirties, where Flatcoats were used to broaden the gene pool and to improve specific working features. It was used in the Flatcoat and Golden breeds until the end of the thirties adding Labrador blood to improve working qualities in the strongest working lines, without any negative impact on the show strains.



The Flat Coated Retriever Tonggreen Sparrow Boy (b.1966) had a most dominant impact on the development of the breed from a conformation as well as working perspective. He had six appearances of a Labrador/Flatcoat cross in his six-generation pedigree and he's a gleaming proof that cross breeding could have an excellent impact on a breed seen from many different angles. Photo: Ann Strander

Similar rules were maintained up to 1970 for the spaniel breeds and it's a fact that the division between springer and cocker spaniel was just a matter of weight in the old days. The quite logical method to improve the working spaniel strains via interbreeding have probably been used now and then "sub rosa" over the years. It's against the current set of rules and breeders using it would be severely punished for being fraudsters. But why isn't that the most natural thing to do to improve specific features in dogs and to maintain sustainable gene pools?

Breeds offer a definite value for the average dog owner, giving an option to obtain a dog with a size, type and character that pleases the owner's eyes and fit in with the owner's ways of life. But looking in the mirror most of us would probably agree that the division of breeds often went to the extremes, where dog types with a similar purpose and conformation were divided just by the colour and/or the structure of coat. Ambitions to reshape exact role models promoted a rapidly increased inbreeding. Even if committed breeders continuously try to find true outcross blood, ambitions to reshape an exact type means that the great role models, the matadors are duplicated uncountable times in an extended pedigree. But the presence of similar "cousin-breeds" could be turned into an advantage today, when wiser men and women have realised that crossbreeding is the most efficient and necessary tool to counteract the severe consequences of inbreeding and the excessive use of popular sires in many vulnerable breeds.

### ***What does the scientists say?***

*The leading Swedish geneticist, the late Professor Per-Erik Sundgren, and other prominent geneticists gave warnings many years ago for the negative consequences of the targeted breeding programs in different breeds. Today there are improved tools for counteracting these with the help of DNA analysis, providing a more accurate picture of a breed's genetic diversity, and increased opportunities for making crosses between closely related breeds. A number of successful crossbreeding programs are currently being carried out within the Nordic kennel clubs.*

Who are we breeding for? Even if most targeted breeders today are sharing a profound ambition to produce excellent companion dogs or utility dogs for the ordinary dog owner, competition is the strongest driver for the leading breeders. Competition has shaped and is continuously reshaping all modern breeds, no matter if it's about conformation or specialised working skills.

Most breeders as well as the ordinary puppy buyers are becoming increasingly aware of the risks of bad health in many traditional breeds. It has become a bit of an axiom among ordinary people that pedigree dogs are inbred, and that bad health goes with pedigree dogs. Many pure breeds are facing growing image problems. The fact that the so-called "designer-breeds" are rushing to the top in the league of the most popular dogs is a fact that must be taken seriously in the pure breed dog world. Many breeds are experiencing declining registration numbers and there are good reasons to believe that it will be a continuing trend if radical action isn't initiated. If there are reasons to believe that a breed suffers from severe and frequent health problems, due to a narrowing gene pool, it must be a moral duty for Kennel Clubs and breed clubs around the world to act and to act fast.

In the early days of pedigree dog breeding, open studbooks enabled crosses which could promote a sufficient genetic diversity. It is obvious, with experience from both historical and more recent crossings, that such matings can be done with great success and that a typical conformation and function can be restored within a few generations of back crossing.

Today, with few exceptions most studbooks are closed, which could have critical consequences for many breeds and for smaller dog populations. Per Erik Sundgren, repeatedly claimed "that the close

family relationship that occurs in most pure breeds gradually leads to a deterioration of health." He stated during the 1980s that these problems will be strongly aggravated over the next 10 - 20 years. Sundgren also claimed that "control programs without other measures are insufficient as a cure for the increasing health problems in the world of pedigree dogs. In many breeds, rules limiting the usage of individual stud dogs could improve the average health status and improve options to run sound breeding programs. Other breeds have already passed the limit where the consequences of inbreeding cannot be repaired."

### **A new path ahead**

Sundgren unfortunately spoke for deaf ears at that time, but now the winds seem to have turned into another direction. At the Nordic kennel clubs there is a most positive attitude towards thoroughly motivated and well-planned cross breeding programs and there are a number of ongoing programs. The purpose is to create healthier and more functional breeds, through carefully implemented crosses, preferably laid out between "cousin breeds" with a similar function and appearance.

The most comprehensive Swedish cross-breeding program is laid out within the four domestic hound breeds. The project being inspired by a corresponding project within the Norwegian hound breeds, was initiated in 1999. Based on an initiative from the Breeding Committee of the Swedish Kennel Club, an idea was raised to create a "Swedish hound" by opening the stud books for the four domestic breeds, keeping the original breeds as varieties with different characters and conformation. However, a different path has been chosen within the clubs and crosses are executed mainly with foreign hound breeds to broaden the gene pools. There seems to be an insight that the gene pools are too narrow, indicating that the program will be continued, although there is a challenge to inspire individual breeders to join the program.

Another cross-breeding project in Sweden was initiated in 2002 when a Clumber Spaniel and a working Cocker Spaniel were mated. The project has been most successful and already in the second generation, two bitches from two different litters, were examined and registered as typical climbers. In the following generations, there are show winners in several countries. A bitch born in the fifth generation is one of the few climbers in modern times who has succeeded at British Any Variety Field Trials, in competition with working cockers and springers. However, a single cross couldn't have any significant impact on the genetic diversity, not even within a small breed, and it can be assumed that it will be followed by further crosses, now when the door is opened.



*The Clumber Spaniel bitch Spindel's Crossline was the grandchild of a working Cocker dog and a Clumber bitch. She was examined and considered to be a purebred Clumber in 2008, at three years of age, being awarded as the 4:th best bitch at the Swedish Clumber Spaniel Club Show the same year by a breed specialist from USA.*

Ambitious cross breeding programs are initiated in other Nordic countries as well and the Nordic Kennel Clubs must be looked upon as pioneers sharing a pragmatic as well as scientific approach on this. In Norway, an ambitious cross breeding project is currently carried out to restore the domestic Lunde-hund through crosses with the domestic Bu-hund, the Icelandic sheepdog and the Swedish Norrbottenspets, three domestic Spitz breeds with a similar appearance and character.



*Erik, to the left is a first-generation cross between an Icelandic Sheepdog and a Lunde-hund. Lina to the right is a pure-bred Lunde-hund. Photo Bård Andersen*

Finland is undoubtedly the frontrunner when it comes to this. There are a number of different cross breeding programs running in close partnership between the breed clubs, the Finnish Kennel Club (FKK), a renowned DNA laboratory and in most cases with the breed clubs in the home countries of the different breeds. But as it seems several Kennel Clubs in other European countries are reluctant and defend more orthodox views when it comes to keeping breeds absolutely pure.

The Finnish Kennel Club is maintaining an informative website, *Kennelliitto*” -> kennelliitto.fi, continuously reporting about the ongoing programs. It states that it's a real long-term commitment for the breeders involved and that a continuous follow up of the offspring is required where comprehensive data on health and mentality is collected.



*Nuts Over Vigo is a first - generation cross between a Spanish Waterdog and a Barbet. He's won the Finnish champion title as a Barbet. Photo: Paula Horne.*

One of the Finnish projects is using the Schnauzer on the closely related Pinscher with the purpose to improve health as well as the temperament in the Pinscher breed. A number of third generation descendants have obtained certificates at international shows. In another Finnish project the Poodle, the Tibetan terrier and the Parson Russel Terrier is used on the German Kromfohrländer, in order to broaden the significantly narrow gene pool of the breed. As far as I've been able to assess the project is carried out in close collaboration with the breed clubs in Germany and Switzerland. There are a few more Finnish initiatives ongoing within vulnerable breeds to broaden narrow gene pools, making Finland a testing laboratory for sustainable breeding policies. It's obvious that these programs are executed on a scientific basis where molecular geneticists are giving strong support to skilled and strongly motivated breeders.



*Yarracitta Kaneliprinsessa was awarded "Showdog of the year in Finland 2009 and 2010" and has obtained championstatus in most Nordic and Baltic countries. She's a third generation Schnauzer x Pinscher cross being certified as a pure-bred Pinscher. Photo: Karoliina Suomalainen*



*The Kromfohrländer Raasillan Champ is a first-generation cross between a kromfohrländer and a parson russel terrier, being examined and certified as a purebred Kromfohrländer in Finland. He has obtained championstatus in all Nordic and Baltic countries. Photo: Outi Heikkiä-Toni*

The sanctioned crossbreds are registered in a special (ER) register for three generations. The dogs in the ER register can be freely used for breeding with purebred FCI-registered dogs and is allowed to enter all shows, utility tests etc. as pure breeds, but it cannot compete for international championships. They are considered to be purebred, being registered in the ordinary studbook, from the fourth generation, in accordance with the rules of the international kennel club organization, FCI. But the sooner the cross could be used to augment the ordinary gene pool the better it is from a genetical diversity standpoint. The complete pedigree, including the pedigree of the outcross, is presented in the registry, which is of importance if a more comprehensive cross breeding program is executed within a breed.

The Nordic Kennel Clubs are offering full support when a cross breeding program is motivated. But breeders and breed clubs are still reluctant, probably due to ignorance, prejudices about other breeds and strong traditions.

The international DogWellNet site, set up by the Sweden based International Partnership for Dogs, is offering detailed reports on the extensive and methodical crossbreeding projects being executed in Finland.

## ***A new openness in the Nordic countries***

There is strong commitment among the scientists and at the Nordic kennel clubs when it comes to using the full range of breeding tools to counteract narrowing gene pools and impaired health in vulnerable breeds. If the genetic diversity is lost, it can never be restored unless new genes are obtained from other breeds. Nordic molecular geneticists (= DNA specialists) are at the forefront when it comes to research on hereditary diseases and the genetic diversity within a breed could be assessed via DNA-analysis. There is a strong will to give support to breed clubs, planning for progressive breeding programs where crossbreeding is included. The Nordic pedigree dog culture has a very good reputation seen from an international perspective, top dogs are exported to several countries around the world and the ambitious breeding policies being followed in different breeds could have a strong impact on other countries.

When a cross breeding program is started full transparency is a must to offer breeders and breed clubs in different countries full insight. Complete and open information is a key to success and progress as well as setbacks must be reported openly. It must be of utmost importance as well that crossbreds are allowed to compete at equal terms with the purebreds at any competition open for purebreds, even if it's normally unfair to present a first-generation cross at a show. To give the crossbreds the best possible options to prove their values in different fields, experienced and active dog owners are required.

Most concerned breeders would probably agree that it is the primary task for all breeders and breed clubs to produce mentally healthy, typical dogs, with a satisfactory utility function who can live for over ten years of age. DNA studies conducted in the United States and Finland show that even numerically large breeds could lack sufficient genetic diversity, but if the breed is numerically small the probability is much larger. If there is reason to presume that a breed has come to a point where the genetic diversity is insufficient to secure good health and a normal lifespan, it must be a definite obligation to test all options to broaden the gene pool. But even if a cross breeding program is executed there's a need for additional plans to reveal and use dogs preserving the current gene pool.

There is hardly anything to lose. If the crossbreds aren't good enough, they won't be used at stud just as other dogs from pure bred litters that aren't good enough. If they succeed, they can radically improve health as well as functionality in a vulnerable breed and show a path ahead for other breeders in other breeds.

## ***To summarize***

It's a growing awareness in most breed clubs that a sustainable level of genetic diversity must be assessed and maintained. But the mental barriers are still strong among the majority of breeders, breed clubs and Kennel Clubs, when it comes to the necessity to run cross breeding programs restoring genetic diversity in vulnerable breeds. Hence, scientists must ask for support from the Kennel Clubs to enlighten breeders and actively push for a change.

It must be stated as well that there is a growing openness in FCI to sanction well planned cross breeding programs.

It's been proven in the Nordic countries that crosses could be made to broaden gene pools and a true breed character could be restored within a few generations, if a well-planned cross breeding program is executed.

When cousin breeds are available with a similar type, conformation and function, conditions are probably ideal for a cross breeding program.

***From a longer perspective sanctioned interbreeding rules for recurrent crosses between defined cousin breeds, must be a relevant option to give concerned breeders a permanent tool to keep genetic diversity on a sustainable level.***