



Reflections on state-of-the-art dog breeding

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Animal breeding, by its nature, is not a static but a dynamic process, a process that is inclined to perpetuate itself following its own internal tendencies, if allowed to. For this reasons it is advisable to guide the process and also take a step back periodically and ask ourselves whether that which was good yesterday is still advisable today.

Declining dog health begs new approaches. In the early 1960s, breeders reflected on this ‘what’s best’ question, not because someone told them to, but because they had no choice. Up until that time, dogs were bred simply because they had a pedigree without much further consideration. The breeding goal was conformation and for actual working breeds it was championships – these goals were pursued with considerable singularity of purpose. Few asked themselves whether this practice could continue unchecked. As time went on, however, a steady increase in heritable defects in dog populations could no longer be overlooked. Still, discussions tended to be covert rather than overt, but the concern was palpable.

I can still vividly recall this time. It was not a good time, because those seeking open discussion were before long accused of being negative and undermining a good cause. Everyone knew the defects were on the increase but few were willing to discuss it openly. This was also the time when debates were heated on the degree to which hip dysplasia was heritable, and whether breed clubs should make x-rays mandatory. All in all, the dog community was argumentative and insecure. Some saw the situation ‘only minutes away from 12 midnight,’ others thought it was ‘past 12’ already. Still others vehemently resisted any new breeding strategies.

It took several years for the arguments to subside and for sentiments to calm. Gradually a new climate emerged on the dog scene. A re-thinking had taken place. It became clear that dog breeding could not be left to its own devices, but needed guidance. The discussions became more open and gained in substance. Viewpoints, which were hotly debated before, became obvious. Disease rates in breeds were not only published but a constructive search for solutions began.

At this time, a new relationship between breeders and scientists emerged also. Beforehand, breeders considered scientists as enemies and scientists breeders as unteachable. The new relationship was built on a recognition of interdependence and that the solution in large measure lay in cooperation. Yet another trend became apparent, that is the desire on the part of breeders and owners to become better informed. Prior to that time, the suggestion that the Verband

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Deutsches Hundewesen² organize a series of workshops and courses on dogs, as it does today, would have been considered laughable. The 1960s, then, were formative years for dog breeding and the paradigm shift that took place then is still with us today.

The desire to become ever more informed is still strong. This has led to a more mature approach to the raising and keeping of dogs. The desire to breed healthy dogs on the part of breeders and breed clubs is no longer mere lip service, one sees demonstrable success now. I have the distinct impression, that, apart from a few failures, purebred dogs are now healthier than they were. They are as or more healthy than many cross-breeds, which unfortunately do not continue to enjoy the health claims made previously.

A contradiction emerges – or does it? Some readers might think me ill informed on the positive health prognosis, given that we now know more dog diseases than ever before. Is it truly a contradiction, claiming that dogs are healthier while known diseases are on the rise. Actually, I find this no contradiction at all, because on closer examination it is not the diseases that are increasing but our understanding of them is. Our diagnostic tools are far superior today and for this reason we know more diseases.

In the past things were simpler. Old dogs that were unable to run as fast or far were considered arthritic. Today we make the distinction between HD, elbow dysplasia, spondylosis, patellar luxation and we rightly select against these. In the past dogs with skin diseases had mange – today we recognize numerous skin conditions such as allergies, skin parasites and unlucky genetic predispositions, and here again we try to reduce this incidence by working against each. Other body parts and organs show similar trends of better diagnosis and more knowledge, supporting the likelihood that not the ailments themselves, but our better knowledge of them accounts largely for the increase in diseases.

This improved knowledge pertains not only to genetically influenced defects, but also to defects which are caused by excessive selection toward certain elements of a breed's standard. For example, we used to consider the rasping breathing of dogs with brachycephaly as a condition typical of the breed. Today, we no longer think of the noisy breathing as a sign of contentment but of a dog gasping for breath. In these cases too our knowledge, as well as our sensitivity, has increased.

Changing with change. We are once again faced with a situation for which our past experiences have not prepared us, that is, our improved knowledge will expose yet more defects. This trend held true up to now. One need not be a prophet to recognize that for the medium to long term it is unlikely that selection by breeders can keep pace with the increased medical research and understanding. In other words, we find ourselves again at a point where we need to take stock and ask whether our past breeding strategies are best suited under the new conditions of the future, or whether a redirection of our strategies is needed.

As a first step, we could re-evaluate our breeding goals. In my opinion it may be illogical to continue to try and make our dogs yet more handsome. That continued striving is not only unnecessary, but also dangerous. Our experience in the past has shown that the singular pursuit of superior conformation and championships has endangered many breeds. It would be more logical to pursue a goal that maintains the breed specific conformation and behavioral traits in

² The Verband Deutsches Hundewesen (VDH) is the German parent organization for breed clubs. The VDH also represents German breed clubs within the international kennel club FCI.

such a way as to provide at the same time a good chance for the breed's survival in the long term.

A breeder may well question where is there room for a breeder's creativity in the goal of mere breed maintenance without breed improvement. I fear we could easily forego the 'breed improvement creativity' because experience has shown that it compromises the health of the breed sooner or later. Many problems associated with pure breeding are derived specifically from this misguided 'creative' mentality. There is no breed standard that mandates ill health, and yet there are a number of breeds in decline because of it. For this reason it would serve the breeders, and particularly the dogs, well, if we were to re-orient more clearly toward the basic breed standard. A breed can ill afford the temporary 'fashion-selection' that focuses on this or that trait in vogue at a particular time. A state-of-the-art breed strategy does not merely require a reduction of genetic defects but it also requires a holistic and individual-dog-friendly consideration.

But how then should we respond to the rising number of diseases and the ones yet to come? The solution hardly lies in ignoring these or even lessening our vigilance. On the contrary, breed- and selection strategies will remain a cornerstone in dog breeding. However, these strategies need to be better oriented toward achievable goals. Little should be left to mere tradition or chance, all measures should be critically examined and their efficacy monitored.

In future, no breed club should agree to aimless action for action's sake, nor ill-conceived breeding adventures. It is possible to select a breed to death. One can abide by yet another ill-logic, that is to make demands in breeding which are not achievable. This includes for example the call for a breed that is totally healthy genetically. That is not only an illusion, but it is also not necessary for it is a perfectly laudable goal to raise dogs that are not lame, dogs that can see and hear, and dogs that are able to enjoy their healthy existence. Of course we'd all want genetically healthy dogs, as we'd also like permanent peace on earth, but we run the risk of over stressing what today's realities can provide. I find it counterproductive to set goals where I know in advance that they are not achievable. Let's not pursue pie-in-the-sky goals, but remain grounded, that is raise dogs that are functionally (by phenotype) if not genetically (by genotype) healthy.

In the fight against defects it will become necessary in future to construct a list of priorities. This raises the question for breed clubs, which criteria to use in constructing such a list. I believe that the burden experienced by the dog should be given primary consideration. We must learn to respond in both a more sensitive and more sensible manner. There is a difference between a dog with a sore knee and one gasping in every breath, because the latter could be life threatening. There is also a difference between a cloudy lens in the eye and being exposed to a persistent itchy skin. Of course, ideally we'd have dogs that have no ailment at all, but that remains wishful thinking.

One needs to retain a certain perspective in the fight against genetic defects or risk the viability of the entire population. It is clearly more fruitful to pursue a few defects effectively than all halfheartedly. The so-called phase-model recently instituted by the Verband Deutsches Hundewesen serves as a promising approach to minimize heritable defects. Those guidelines put the onus on breed clubs to examine known heritable defects in the breed in collaboration with scientifically competent help.

A new model. The VDH phase-model recognizes three stages in selection. In the first phase, data will be compiled to ascertain disease frequency, prevalence by sex, by age and so on. In the

second phase, these data will be evaluated in collaboration with a scientist and an appropriate breeding strategy devised where possible. After an appropriate period, the effectiveness of the strategy will be evaluated in the third phase. Depending on the outcome of the three-stage approach, three conclusions are possible. First, selection may simply require more time and should be continued. Second, selection can be relaxed in the event that the trait has been significantly reduced, or third, the selection program may need to be revised or abandoned altogether if the desired results appear out of reach. I believe this three-stage approach is clear and promising. While it requires considerable energy on the part of a breed club, it is after all a fundamental part of what breed clubs do.

Estimates of breeding value. Two additional tools should be mentioned, which are part-and-parcel of state of the art breeding today. These are statistical estimates of breeding value via the inclusion of offspring and relatives' performances, and DNA tests.

Without doubt, the estimation of breeding value is a useful tool to estimate more closely the genetic contribution a given dog can make. In the commercial livestock sector this method is widely used. Had it not been invoked, butter, eggs and meat would be far more expensive now. The breeding-value approach, however, is only as successful in livestock as it is because virtually 100% of offspring are evaluated and their performance-data incorporated. This is where dog breeding is likely to be different. If breed clubs rely on only 20-25% of tested offspring then the estimate will be much less accurate and success doubtful. Despite it's potential utility, however, the estimate of breeding value should not be blindly used in a mistaken belief in the vague purity of science. Breeders do and must know their dogs and should never abandon in their selection the intimate knowledge they have of their dog. If the estimation of breeding value is to be useful in a dog population, then breed clubs must look after the prerequisite, which is to find ways to increase the rate of performance testing and making the data available. The approach is only as successful as the data are reliable.

DNA tests. The second important tool in dog breeding is the use of DNA tests where available. Currently, DNA tests are only available for single gene traits. It'll likely be some time before more complicated traits can be evaluated via DNA. Still, the currently available tests are an important boost to dog breeders and the number of available tests is bound to increase. It will be important to have breed clubs familiarize themselves with such tests and learn to use them to advantage. It goes without saying that available tests should be made mandatory for all dams and sires if the particular situation warrants this. With DNA tests it is now possible to not only exclude affecteds from the breeding population but also exclude carriers. The strategic use of DNA tests actually can widen the breeding pool, because carriers in a litter could be used for breeding as the gene can be monitored and avoided in subsequent generations.

Preventive medicine. Yet another approach in state-of-the-art dog breeding and keeping is the use of preventive medicine. In reality, a dog population could become exhausted from overly aggressive selection. The overall goal should be to work against defects by all means available, genetic and medical. It is widely accepted that inbreeding opens the door to defects. It is therefore important to maintain a gene pool as diverse as possible. A key here is not to rely on too small a pool of sires, but to limit the use of sires and thereby encourage diversity. The old and sometimes still held notion that there are individual dogs with superior ability to pass on quality genes and that these should be used preferentially is no longer tenable. Superior "genetics" can be expected more readily in livestock where the number of valued traits is much smaller than in dogs. For us, the total dog is valued with its qualities based on many genes

functioning in a complementary and coordinated complex. Even if such a dog with superior heritable quality existed, there are still brothers and sons that could be relied upon.

In sum, it can be said that dog breeding is an enterprise requiring responsible behavior, which is best guided by informed know-how and not solely by emotion. We now have the great advantage of scientifically verified methodology and strategies, compared to the past. Still, this advantage should not be informed by fear, nor should it be in conflict with our day-to-day enjoyment of dogs. Serious action is not the same as a draconian agenda, for if we allow urgency to express itself negatively we detract from the rich coexistence our dogs should and do provide in our lives.