

Breeding Good Dogs: A Common Sense Approach

Producing dogs that you can be proud of is the goal of every conscientious breeder. Although no one ever sets out to breed bad dogs, in the excitement of the project it is easy to overlook or even dismiss some of the basic, common sense aspects that result in breeding quality animals.

Understanding genetics is a daunting task, seen by some as hopelessly complex and almost beyond comprehension, while others take a naively simplistic view of Mendel's experiments to extrapolate their own grossly oversimplified view of inheritance. I am not a geneticist, and a complete understanding of genetics is a lifetime's work, but the vagaries of the science make many aspects of everyday breeding decisions more a matter of sound judgment than scientific absolutes. Were this not true all the world's top breeders would be PhD. Geneticists. Therefore a common sense approach, based upon sound scientific and genetic principles is probably the best alternative at this juncture.

Working spaniels must exhibit many attributes to do their job. In my view, to qualify as a truly outstanding individual, an English Springer Spaniel must possess strong qualifications in 5 broad categories: 1) Athleticism 2) Biddability and trainability 3) Natural Instincts (mouth, range, retrieving, flush) 4) Bird Talent (nose, ability to track, etc.) and 5) Health and soundness. These traits are not ranked in order and all are very significant. A dog deficient in even one trait will fail the test of being a superior overall working spaniel and should not be seriously considered as breeding stock.

Obviously, the number of genetic factors that contribute to the dogs make-up in each of these five (5) categories is huge and the number of potential combinations approaches Infiniti.

In some cases the matching of a bad trait in the genes both of the sire and the dam is catastrophic. Examples are when both parents pass along PFK, Hip dysplasia, or severe eye problems. In these instances, all of the dog's fine qualities are nullified by one fatal flaw. Hopefully, in the near future easy and inexpensive genetic marker tests will be available to



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identify all the potential “fatal flaws” in the genetic makeup of brood stock, before it is devastatingly proven in the flesh.

RULE 1 *Common Sense*

Breeding good dogs is a complex task and focusing on only one or two traits is foolhardy.

The ability to predict the total results of a mating in all its millions of random combinations is unlikely to occur or to be cost prohibitive in the near term. I find it interesting that in the world of dogs, where \$500 puppies are the norm, there is much cocktail party talk about the potential to understand and hence engineer the genetic matching of dogs, while in the

world of thoroughbred racehorses where million dollar yearlings are an annual occurrence, the subject of genetic engineering is rarely broached. An article in the February 23, 2002 issue of *Thoroughbred Times* titled “New Technology: Genetically Speaking” was sub-titled “genetic manipulation to create a perfect racehorse is not as simple as you might think” and goes on to explain the difficulties that thwart the effort to genetically engineer the super race horse of the future. The experts interviewed in the article concluded that even minimal success is unlikely to occur in the next 25 Years.

Frankly, I believe professional racehorse breeders are more broadly versed in the complexity of breeding and thus more completely understand the inherent randomness that is a part of genetic make-up. This natural randomness in matings becomes obvious if one studies the differences of full siblings, be they dogs, horses or people.

It is a scientific reality that how an offspring inherits from each parent is purely by chance—called “independent assortment” half from the sperm and half from the egg. In theory, two littermates could differ completely (as opposite as their parents' genes) in every attribute. However, on average,

full siblings will share 50% of their genes. Obviously, the more alike the parents are, the less variation there will be in their offspring. The lone exception to this rule is the determination of sex in the offspring, which is always determined by the sperm.

The classic theory of breeding is to “Breed the best to the best and hope for the Best”. Even so, the results are often surprising. Throughout this article, I will sprinkle in a few racehorse examples, because in racing the records are exactly kept and carefully tracked, thus the facts are easily proven. An example; few would debate the fact that “Secretariat” was one of the greatest racehorses of all time and one of the most outstanding physical specimens that the breed has ever known. He went to stud with great fanfare and was mated to a book of the best mares available worldwide. Sadly, his results as a sire were disappointing. Although his get included several good stakes winners, none ever remotely approached the pentacle of his own achievements. Further, although “Secretariat” was successful at distances, (he won the mile and one half Belmont stakes in record time, and by 31 lengths), as a sire he produced mainly sprinters, generally only capable of winning at distances of less than one mile. Unlike “Secretariat”, the fine sires “Vice Regent” and “Mr. Prospector” were not wildly successful as racehorses. But when bred to a small book of only average mares, they produced such hugely successful racehorses that the stallions’ reputations grew and each went on to become key sires, producing racehorses far more successful than they had been.

Two similar situations come to mind in Springer breeding; Hales Smut and Denalisunflo Coffey. “Smut” never became a champion, even though he was a frequent competitor. He was a dog whose drive pushed him over the edge and caused him to lose control in many trials. Even so, Hales Smut was bred extensively and produced offspring that were far more successful in trials than he had been. AFC “Denalisunflo Coffey” is often found far back in many East Coast pedigrees. Coffey was considered to be an “Outlaw” even by his owner/Handler Billie Garvan. But while he was only moderately successful in trials, when bred to bitches with more stable temperaments, most puppies tended to get drive from Coffey and mental stability from the bitch. By odds, it could have just as easily been reversed. The danger here is in deluding oneself that a mediocre dog (probably one the breeder owns and loves) has some hidden genetic treasure just waiting to be opened. Unfortunately, instead of a treasure chest the breeder is just as likely to open a Pandora’s box.

The inherited traits of an animal are not always obvious:

PHENOTYPE, is what you see—the appearance or behavior of a breed or an individual that can be directly observed.*

GENOTYPE is the genetic constitution of an individual, what it can pass along to its offspring.*

Our natural expectation is that the phenotype and the genotype are the same. In some dogs they are very similar and these individuals tend to breed true. However, in others there is wide variation between genotype and phenotype. If Geno and Pheno were always the same, the breeders’ decisions would be much easier.

RULE 2 *Common Sense*

An individual’s genetic transmittal will not necessarily match its actual physical, mental or performance profile.

Only after a significant number breedings can an individual’s propensity to transmit genetic traits be assessed. Unfortunately in dogs that is often too little and too late. Too little because of the poor records, lack of objectivity, and kennel blindness can often cloud the honest assessment of the offspring, and too late because, generally dogs are not bred until age 4 or 5. The puppies then mature at age 3 or 4 and by the time they can be fully assessed; the parents (especially the dams) are becoming infertile by age 8 or 9. By contrast, racehorses are proven on the track at age 2 or 3, bred at 4 or 5, offspring evaluated by the time the parents are age 8, then the parents continue to breed and produce until age 20 or even 25. Good horses have a longer breeding time.

A note of caution is important here; no responsible dog breeder would advocate aggressively breeding young dogs before they have proven themselves as individuals.

In horse breeding where very successful bloodstock agents spend their entire lives and stake their incomes on their ability to scrutinize pedigrees and predict the success rates of breedings, there is a very strong belief in the importance of the broodmare. Many breeders (some very prominent) believe that the broodmare somehow affects more than 50% of the success of the offspring, and I’ve heard some very successful dog breeders support that same contention. In horses the success of broodmare sires is carefully tracked and some sires do seem far more potent in passing on good traits through their daughters. “Secretariat”, a mediocre sire, has consistently ranked near the top as a broodmare sire. His daughters seem to pass on his good traits far better than he could directly. “Drone”, only an average racehorse and a so-so sire has also been a top broodmare sire. His daughters are known to impart soundness and sturdiness into bloodlines that are often too fragile to endure the stress of racing.

RULE 3 *Common Sense*

Carefully observe the results of all breedings to learn the good and bad results and be painfully honest in your assessment.

Optimism is a wonderful thing, but I'm always a bit surprised when a knowledgeable person believes that breeding A) a slow paced dog with a good nose to B) a speed demon with a weak nose, will automatically result in C) swift and focused bird finders. The odds are equal that the offspring could be just D) dull plodders that can't smell a skunk at ten feet.

People often breed an individual with a flaw to an individual strong in that attribute expecting the good to overcome the bad. But all individuals are a mixture of many traits, and how those traits combine is a roll of the dice. Let's take a human example: say a very healthy, extremely athletic, unattractive and not too bright fellow, marries a very beautiful, genius who is unfortunately also sickly and clumsy. The headline might read "All American Weds Miss America". True, the children might inherit all the good traits, and turn out to be healthy, beautiful, athletic and brilliant! But the odds are just as high that they could be sickly, clumsy, ugly, and dumb. What is much more likely, is that they would be a mixture of traits, generally tending back toward the norm. While many people view breeding as an averaging process; i.e., breed a short legged dog to a long legged dog to get average legged dogs. That is not the most likely result. What is possible is to end up with a litter of all long legged dogs, or a litter of all short-legged dogs, but what is more likely, is a litter with some of each and a few that seem to be an average of the parents. Generally, the wider the variation in the parents, the wider the potential for variation in the litter. Certainly breeding two dogs with the same flaw increases the odds of passing it on.

RULE 4 *Common Sense*

Avoid the natural temptation to harbor unrealistic expectations based on personal biases

We are lucky in one respect because compared to other animals, dog breeding is a fast learning process. The number of dogs in each litter and early maturity allows the result of the mating to be seen quickly.

Back in the 1980's, I closely watched the performance and career successes of over 20 puppies sired by a well traveled and much touted "High Point Springer". I was able to watch these dogs in training sessions, field trials and hunting and I also carefully noted their physical characteristics. What I found was an amazing variation in this sires get, even within the same litters. Several of the dogs became Field Champions,

while others quickly disappeared. Some dogs were tall and leggy, while others were short and long bodied; some had strong flushes, while others naturally locked up on classic points. Some could track, while others were baffled the instant a bird moved. Their colors and markings were like a rainbow's spectrum. I concluded that there was no strong foundation in this sire's genetic makeup and any puppy could be randomly wonderful or just plain bad. This randomness is not a good trait in a sire. Today, both the sire and his get have virtually disappeared from successful pedigrees.

An enthusiast for one of the pointing breeds once told me emphatically that only the "line-bred" dogs of that breed were worthy of consideration. Upon further questioning he gave me few specifics, just offered more emphatic statements. He really didn't understand what line breeding was supposed to accomplish or why it was significant.

Line breeding, which is the tool largely responsible for creating the breeds we know today, and focusing traits within those breeds, is also the culprit that aggregates bad genes to produce recessive and polygenic disorders.*

Line-breeding can be important because the genetic make-up of two related individuals should be similar; hence line-breeding increases the odds that the parents will have less diverse genes and thus combine more consistently. The results of line-breeding should be more predictable; good or bad and in the case of fatal flaws...sometimes very bad. But it is commonly acknowledged that carefully planned line-breeding is a known way to stabilize specific traits in the offspring. It is my experience with springers that a line bred dog is much more likely to throw it's phenotype than a dog with an outcross pedigree.

Individuals produced from an outcross are generally less genetically predictable, even though sometimes a very special animal can result from such a wide outcross. However, this product of an outcross may not be able reproduce consistently, because its genetic makeup is more diverse. In Springers, this may explain why some spectacularly successful outcross dogs have not proven as consistently successful as breeding stock.

In horses, most advisors encourage breeding type to type to avoid the potential for the wide and unpredictable variation that is possible when very different types of individuals are mated.

RULE 5 *Common Sense*

You can't build a breed or a foundation line based on stock that throws wildly random traits in its offspring.

Every dog has about 100,000 genes. Some characteristics are specified by a single gene—while other traits (i.e.: height at the withers) require the cumulative effects of multiple genes.*

RULE 6 *Common Sense*

How genes combine is a very complex and random process. This is especially true for polygenetic (multiple gene interplay) traits such as leg length. Two parents could be mated numerous times and never reproduce the same leg length due to the random combining of genes for each of the sections; hock, knee, calf, ankle, etc. I believe that while Mendel's explanation of genetics provides valuable insights, it may actually delude breeders into overly simplistic views of infinitely complex issues. A serious breeder should purchase a copy of "Future Dog Breeding for Genetic Soundness" and read it carefully, especially pages 36 and 37, for a discussion on the complexity of polygenetic traits.

Many field Springer traits are mental and hard to fully assess without spending time with the dog. These include: birdiness, biddability, human connection, mental stability, mouth and range. Mouth and Range? - Certainly. Any dog has the power in its jaws and teeth to mangle birds. Whether it does so or not is mostly a mental trait. Hard mouth can of course be diminished or escalated by the environment (training practices), but the best measure of the dog's natural response is its natural reaction to its first few birds. Nowhere is the inherited trait of range more evident than in the major pointing breeds where the different strains; i.e., Field Trial, Hunting Test and gun dogs naturally reach out to totally different ranges. This is not trained.... It is inherited.

The outstanding breeder must really know his breeding stock and be able to make a ruthlessly unbiased assessment of its inherent attributes. That is the only way to decide whether or not to breed an animal and then to whom and for what reasons. Some great trial dogs are more a result of training than nature and you need to know which is which. Remember, you are breeding to the dog, not the trainer.

The combination of some strains seem to consistently produce outstanding offspring. In horses, when two individuals or two well-known and distinguishable bloodlines merge well to produce strong performing individuals, they are said to "NICK". This means that the genetic patterns of each parent merge positively to produce above average offspring. You should be vigilant to observe nicks in your own animals or bloodlines. Sometimes the most appropriate match for your bitch might be an AFC of a proven nick rather than the trendy well advertised dog or the latest National Champion.

A good example of a nick is the Kentucky Derby winner Sea Hero, produced by the known nick of "Danzig" line stallions to "Damascus" line mares.

In springers, such a nick was obvious when "Ru-Char's Roger Junior" was mated three times to "Sunrise Bess" (by Sunrise Zinger), and each litter produced several field champions and one produced a National Champion.

Look for Nicks of Bloodlines, and do the homework necessary to know the facts.

Some individuals have such strong ability to pass positive traits to their offspring that names have been developed to convey this trait. Sires who consistently produce offspring with a distinct pattern of traits (especially appearance traits) are said to "STAMP" their get. Females that consistently produce outstanding offspring (regardless of sire) are called "Blue Hens".

I once owned a bitch that produced three litters by different sires. The sires were very different physically and from totally unrelated bloodlines. Each of the three litters produced fine gun dogs and each litter produced at least one Field Champion. However, in each case the offspring resembled the sire physically but behaved, performed, trained and reacted more like the dam. My assessment was that the dam's genetic makeup had little physical impact on her offspring, but she stamped her great mental instincts and bird-work talents on her puppies. She was my blue hen.

RULE 7 *Common Sense*

What you see may or may not be what you get.

The danger of all this discussion of course, is that the vagaries of genetics can lead the breeder to discount all known qualities in the potential parents on the grounds that genetic transmittal is such a crapshoot that anything is worth a try. Such a viewpoint would quickly lead to disaster. Knowledgeable breeders clearly understand that despite the vagueness in the art of breeding, the odds of genetic transmittal are far more likely in individuals who exhibit those positive traits, characteristics and qualities themselves. Thus the saying, "Breed the Best, to the Best and hope for the Best" has a sound basis in fact. But, it is the wise breeder that can puzzle out which Best parents are most likely to NICK in a positive way while aggressively maintaining the discipline to not breed any dog that is known to carry a fatal flaw. That is the key to breeding success.

The age-old interest in breeding animals with highly desirable traits stands on the threshold of scientific breakthrough. Someday it may actually be possible to look into genetic makeup of an individual in order to understand how it will transfer its hidden inventory of genetic clues to its offspring. Until then, we must rely on breeders who carefully and objectively assess their own dogs, then breed them to carefully selected mates that have the highest potential to produce outstanding English Springer Spaniel field dogs.

*This sentence or paragraph was quoted or paraphrased in part or whole from "Future Dog Breeding for Genetic Soundness" by Patricia J. Wilkie, Ph. D, published in 1999 by the Canine Health Foundation of the American Kennel Club and the Minnesota Agricultural Experiment Station of the University of Minnesota