



CROSSBREEDING HORSES CAN BE A GENETIC DEAD END

GUEST ARTICLE

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Horsebreeding is fundamentally different than the breeding of most other species, in that the desired end product is an excellent individual, rather than a uniform and predictably-performing group. Exceptions to this rule abound (matched driving or draft horses come to mind), but the rule holds fairly well. What significance does this have to horse breeds, their maintenance, and the production of good performance horses?

Breeds, to be useful, must be predictable. To be predictable, breeds have to be genetically uniform. Most genetic uniformity comes about from isolation and selection working together. Isolation can be "natural" (horses in Iceland, for example), or contrived (Thoroughbreds, internationally, are only mated to other Thoroughbreds for registerable foals). In any event, genetic isolation and fairly consistent selection procedures work to keep these breeds reasonably uniform genetically, and therefore predictable as to size, conformation, and ability. The same is true of every genetically based breed around the world. A good runner is much more likely to come from two Thoroughbred parents than from two Walking Horse parents, which is the essence of genetic uniformity and predictability.

Crossing of two distinctive breed types can be very useful in producing excellent performance individuals. This is especially true if the types are somewhat divergent. In today's market, one strategy that is widely used is the mating of a heavy type warmblood to a Thoroughbred. This strategy can result in some truly excellent individuals. They pick up aspects of conformation and athletic potential from both sides of the cross.

The problem then becomes what to do with such excellence. The superiority of crossbreeds is in part the result of pairing up diverse and unlike genetic material. These usually combine to give something much greater than the average - a boost that is referred to as hybrid vigor. Unfortunately crossbreeds, since they are made of diverse genetic material, are poor bets for breeding, since they cannot produce uniformly. Sometimes they will throw more toward one extreme of their heritage, sometimes more towards the other.

And this is the paradox of crossbreeding. While it can produce excellence, that excellence is usually a genetic dead-end. It uses things up, rather than contributing to them. Maintaining horse breeds is directed by a great many different philosophies,

but one very good one is that they need to be protected as unique sources of repeatable and predictable combinations. We are also wise to save a good diversity of these, because if all breeds start to look alike and perform alike, the future is boxed in because we have lost some genetic choices. This philosophy means that breeds need to be kept pure, need to be kept distinct, and need to be valued for their uniqueness.

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And why? One reason is that each breed has some intrinsic value and worth as a purebred. But equally importantly, some of them, in specific combinations, produce excellent crossbreeds. We need those excellent horses, and we need the purebreds to produce them. Ironically, for some breeds the crossbred foals have a higher market value than the crossbreeds. This phenomenon nearly caused the extinction of the Irish Draught Horse and the Cleveland Bay, but the trend toward more crossbreeding than purebreeding is fortunately being slowed in these two breeds.

A further potential problem with breeds such as the Irish Draught Horse is that the purebred individuals can easily depart from a more historic, heavy type, and converge towards a more athletic lighter type. This trend is present to varying degrees in many Warmblood and light draft breeds. The goal of this strategy is to provide purebreds with athletic ability, but to an extent this strategy diminishes the value of the breed in producing crossbreeds because the genetic diversity between the breed and its usual outcross (generally Thoroughbred in these examples) is diminished, so that the crossbreeds get less of a boost from hybrid vigor than would have historically been the case. Breeds must be very sensitive to the demands imposed on them by their end performance uses (favoring sport horse type in this example), but also need to be sensitive to their role in overall horse breeding (favoring a heavier type in this example). These two demands can pull in opposite directions, but once a breed's role has declined in overall horse breeding it is likely to be doomed to rarity or outright extinction. ♡