

## Intelligence Isn't Everything.

*Understanding how Species Differences Effect Learning.*

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Almost eight years ago I bought a dog to train for obedience competition. His name is Russell and he is a Boxer. Now if I had had the mindset to listen to those who had gone before me, I probably would have never gotten a Boxer to train for competition. Ranked 48 out of the 79 breeds listed for obedience and working intelligence (just beating the Dachshund at 49)<sup>i</sup>, the data obviously wasn't supportive and many experienced trainers suggested a more 'trainable' breed. But somehow my mind was set.

If pet dog owners seem quick to compare the mental capabilities of their animals, professional animal trainers aren't far behind. Those of us lucky enough to train animals for a living have a very definite intelligence hierarchy that is widely agreed to. Dolphins, elephants and parrots are said to be very quick to learn while cats, cows and owls may get there eventually. In fact, whether trainer or not, most human beings seem quite obsessed with the notion of animal intelligence, even though when push comes to shove, no one seems to be able to agree on what it actually is.<sup>ii</sup> Surveys of our attitude towards the intelligence of animals show a remarkable consistency in our ranking of individual species. Everyone knows that apes are the smartest followed by dogs who are much more intelligent than cats (of course), with sheep, chickens and fish bringing up the rear. As trainers, our ranking is based specifically on the animal's 'trainability' - how quickly it is able to 'catch on' to the behaviour we are trying to condition and place under stimulus control. And while it is certainly true that animals definitely do vary in their ability to learn what we are teaching, it might just be that the yardstick that we are holding them to is measuring just a little more than 'brain power'.

During the early decades of the systematic study of behaviour a great deal of emphasis was actually placed on the insignificance of species differences when it came to learning. As prominence was placed on the various laws of learning that were coming from the laboratory (thanks to a large number of rats and pigeons); it was vastly held that any animal could learn any behaviour, as long as the laws of Operant Conditioning were precisely met. Skinner himself professed this belief, stating that as long as the correct methods were used every animal had as much capabilities as another to learn any behaviour it was physically capable of performing.

Then, in the early 1960's, doubts arose in the scientific community. Two of Skinner's followers, Marian and Keller Breland had begun to use Skinner's findings outside of the lab, setting up shop training performing animals for fairs, television commercials, zoos, museums and fun parks – the first to do so. While their success with thousands of different species speaks volumes, a number apparent 'failures' began to appear. In their 1961 paper, *The Misbehavior of Organisms*<sup>iii</sup> Keller and Marian described these 'misbehaviours' for the first time. Raccoons taught to drop coins in a piggy bank for a television commercial became increasingly reluctant to let them go, instead "rubbing"

them in their paws for minutes on end. Pigs that had been shaped with food to pick up tokens began to drop and root at these tokens, becoming slower and slower in completing the task. Chickens that simply could not be trained to do the simplest of things - to stand still. In each of these cases and many others like them these 'misbehaviours' consistently prevented the animal from gaining reinforcement.

Either these animals were really dumb or something else was going on.

Something else was definitely going on. A conflict between the behaviour that was being trained and instinctive behaviour had occurred. When training involved the use of food reinforcement the scenario actually began to trigger behaviours that were naturally linked to gaining food in that animal. The animal seemed to have no control, and, despite the best training efforts would drift towards this instinctive behaviour. Raccoons naturally wash their food, pigs instinctively root the earth to unearth their favoured fair and chickens have a tendency to scratch around in the dirt. This is what the Brelands experienced- the conflict between learned and instinctive behaviour. When this conflict occurs we can see behaviour that, in the absence of a sound knowledge of the animal natural behaviour, can quite frankly make the animal seem pretty dumb.

During training sessions it is easy to forget that behaviour doesn't occur in a vacuum. The animal we have in front of us bring to the training game a vast array of behaviours that have been shaped by nature and the process of evolution. This inheritance influences not only how they are likely to respond to certain stimuli, but also their actual capacity for learning certain types of associations between their behaviour and other environmental factors.

Over the past fifty years the study of animal behaviour has shown us that animals must differ in their capabilities to react to certain stimuli because each species has obviously evolved to fill a unique niche in the world. It would make no sense for it to be otherwise. A general label like intelligence takes none of these factors into account and thus is vastly inappropriate, especially when we define it in respect to human qualities. For an animal to be 'intelligent' it must simply be capable of making the associations that help it to solve the problem of making a living and survival. Just because an animal can not make certain connections easily within the confines of our training program does not mean the animal is stupid, it may simply mean that that sort of association was simply not required of it naturally. As trainers it is good for us to remember that every animal posse the necessary tools they need to survive in the ecological niche in which they live - this is the intelligence of Mother Nature.

So if it's not intelligence, what makes one animal more trainable than another? When we compare those species that consistently score highly on our scale, we find a bit of a pattern of natural behaviour emerging. Animals that are naturally very flexible in their behaviour are often easier to train. When the world you live in is more varied than rigid it seems sensible that you would have to make more types of connections than an animal whose immediate environment is less flexible. If you need to be able to find numerous types of food in numerous places while getting on with others of your kind the ability to be flexible and generalise will be a huge advantage.

On the other hand a rigid niche in the world doesn't make such requirements of its inhabitants. It demands specialisation - specific traits that must be perfected to the letter. Predators, especially solitary hunters don't need to develop the ability to bend and change with the times, they simply need to do what they have always done with the smallest amount of effort and energy. Very smart indeed.

At the bird show we have the opportunity to work with some of the most flexible and also some of the most inflexible animals on the planet. While birds like parrots and corvids naturally live in social situations and spend a lot of time searching for various forms of food, birds of prey have evolved along a completely different path – that of the rigid solitary hunter. As you would expect, their learning capabilities vary enormously. While all of our birds have been relatively similar in their ability to learn basic A to B flights for food reinforcement the typical behavioural repertoire of a performing parrot is lost to a bird of prey as I found out first hand.

Coming from a background of dog training I was pretty convinced the laws of learning were universal, effecting all animals equally. It was during the process of trying to establish a full wing extension behaviour on a Crested Hawk named Simon that the wheels began to fall off my little red wagon.

A parrot that has a bit of history in learning will catch on to this behaviour quickly. Our Long Billed Corella learnt it easily in three sessions of a few minutes. We showed him some sun flower seeds which were just out of his reach and bridged him the moment he stretched his wings to fly. While the majority of the time we seemed to make progress within the session, at the start of the next we would be back to square one and continues to jump on the food as soon as he saw it. Simon was still none the wiser after a month. I guess jumping on food as soon as you see it is a very smart behaviour when you're a bird of prey.

When we look at the animals in our care predominantly via the notion of 'intelligence' we do them all a great injustice. By setting our focus in such a narrow and subjective way we not only obscure their true nature, but also lessen our chance of successful training. Every animal is the smartest for the ecological niche it lives in – if it were not it would not be there.

As trainers and carers of a great many species it is vital for us to understand our animals on their own terms. When we point the finger via subjective labels like intelligent, stupid, stubborn or otherwise we do nothing for our animals or for ourselves as trainers. But when we take a step back and make an effort to understand the animal in front of us we gain a lot of power to really influence that animal's life in captivity for the better. And by utilising our understanding of operant conditioning and our ability to skilfully apply this knowledge in our training sessions in a way that supports these natural tendencies, every animal has the chance to shine.

If the notion of intelligence has anything to do with animal training, the focus must be placed on the trainer. So next time someone asks you which animal is the smartest, tell them they all are.

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<sup>i</sup> Coren, S. 1995. *The Intelligence of Dogs: A guide to the Thoughts, Emotions and Inner Lives of Our Canine Companions*

<sup>ii</sup> See Sternberg, R.J & Detterman, D.K. 1983. "What Is Intelligence?"

<sup>iii</sup> Breland, K & Breland M, 1961. The Misbehaviour of Organisms. In *American Psychologist* 16: 681 – 684.