

Wild Brains - Domesticated minds: opposites in welfare?

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Introduction...

There are clearly profound behavioural differences between domestic and wild animals which mean that welfare decisions based on the one may be harmful to the other. UFAW broaches the idea that natural selection has prevented emotional responses in wild animals rising above an intensity that would be intolerable amongst the challenges and uncertainties of the wild. Domestication has removed this check leading in the dog at least to some convergence with human sensibilities. This can only be due to changes in the brain.

Stages Of Domestication...

1. **Self selection** - commensal existence adopted by 'pre-adapted' individuals: continued genetic input from wild type.
 2. **Indirect human selection** - favouring sociable animals and discouraging contact with wild populations: beginnings of genetic isolation.
 3. **Selective breeding by humans** for specific characteristics. Complete genetic isolation: explosive increase in variability as natural selection is relaxed under human protection followed by controlled mating to give 'distinct breeds.'
- The speed at which changes can occur under these conditions is shown below

The Russian Farm-fox Experiment (Trutt, L 1999)

This demonstrates the power of selection and includes many changes typical of full-blown domestication

Before...



After...



Selection for approachability
Over 35 generations

Manifested physiologically by reduced adreno-cortisol production and extension of the breeding cycle and psychologically by tolerance of humans, acceptance of restraint and acceptance of environmental variety (reduced neophobia). Severe reduction in ability to feed, 'house' and protect selves associated with reduction in brain size overall (Hemmer, H 1990)

Evolution Of The Dog (Miklosi, A 2007)

Genetic studies have confirmed that domestic dogs are descended from wolves

Wolf



Domestic Dog



Selection over millennia, greatly accelerated in last 400 years
Initially for hunting, guarding, herding, later as companion animal

Huge changes in conformation are self evident
Behavioural changes include complex communication with humans, attachment to individual humans and amenability to training.
Associated psychological changes include heightened emotions and self awareness, extended time sense and ability to read human mind and intentions.

Speculation On The Neurological Consequences Of Domestication

The changes noted above suggest a move towards a human mind. This could only occur by interaction with and selection by humans so cannot exist elsewhere in the animal kingdom. It must come from changes in the brain.

We suggest a search for cortical areas analogous to those in humans which are uniquely or hugely developed and essential for distinctive human attributes. (Kolb, B and Whishaw, I 2003)

Examples, together with associated attributes:

1. Prefrontal cortex: dorsolateral - working memory, collecting data for conscious thought; orbitofrontal – sensing and elaboration of emotions.
2. Parietal cortex: quasi-spatial mental manipulation
3. Parietal/Temporal cortex border: polysensory data for complex awareness.
4. Anterior insula: fed by a unique dedicated tract – interoception (registration of internal body state), the basis for subjective awareness of self and external experience.

CONCLUSION

Modern techniques for studying brain function may be expected to underline the fundamental error of transferring welfare decisions derived from domestic species to their wild cousins.

