

# How to distinguish between wild and domestic animals - effects on resulting responsibilities

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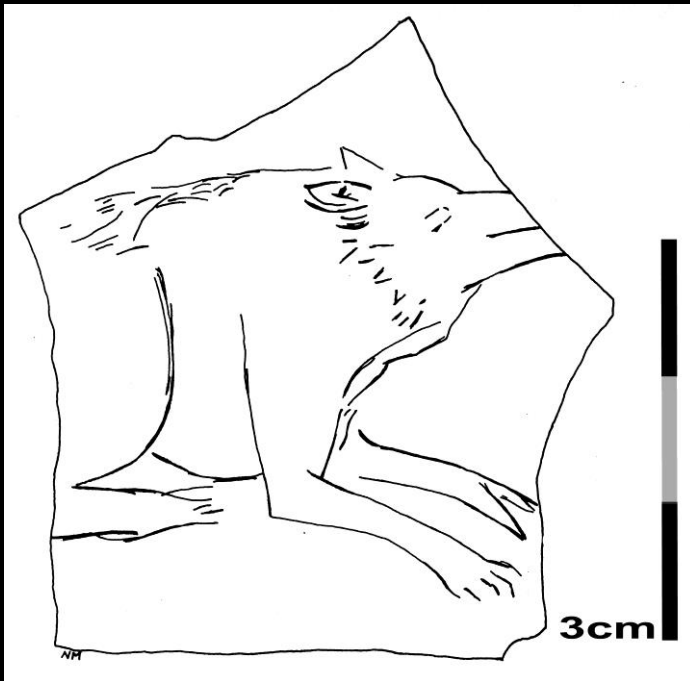


# Long common history of humans with wolves/dogs



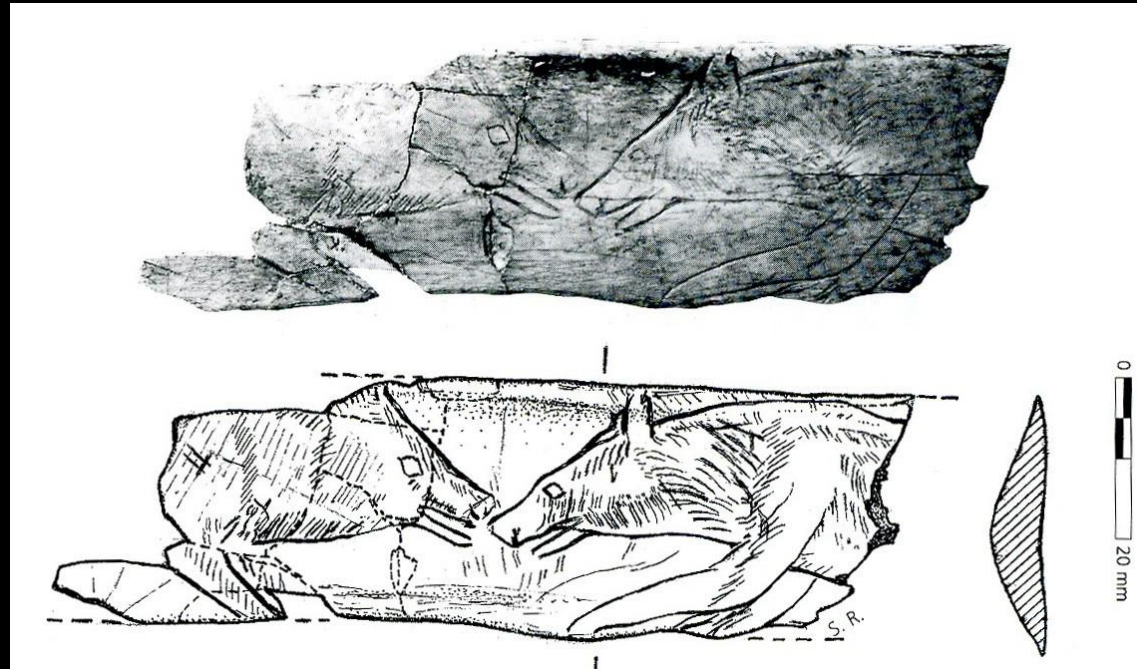
# Earliest dog carvings in the world

(SW France, Source: Nicolas MELARD)



SITE : Abri de La Marche, Vienne  
(France) Type d'oeuvre : gravure sur  
plaquette de calcaire

DATATION : 14 200 ans BP



SITE : Grotte de la Vache (Pyrénées, France)  
Type d'oeuvre : gravure sur os

DATATION : 14 000 ans BP



A man with grey hair, wearing a red and black jacket, is sitting on a wooden log in a grassy field. He is holding a small, fluffy brown dog in his arms and petting a larger, grey wolf with his hand. The background is a lush green field with tall grass and some yellow flowers.

How come?

Wolf domestication?

Dogs: companions,  
stray animals



# Wolves and humans are both highly cooperative within their groups in ..

- .. raising offspring together
- .. hunting together
- .. scaring off competitors and foe
- .. waging cruel wars against „others“ (those „not us“)



**Humans and wolves are similar by being the most radically social and cooperative animals ..**

*.. basically, both form caring warrior societies*

# How are wolves related with dogs and dogs with other dogs (Parker et al. 2004)?



# How are wolves related with dogs

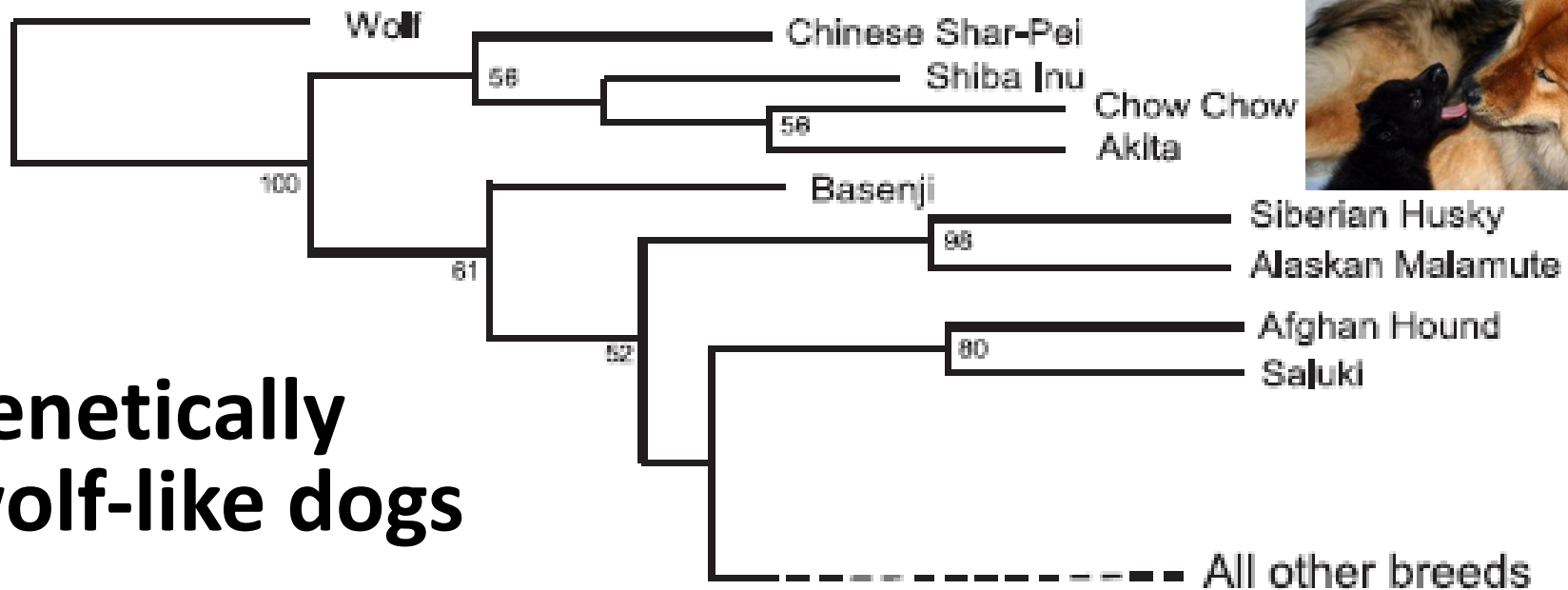
and dogs

with other dogs?

## Genetic Structure of the Purebred Domestic Dog

Heidi G. Parker,<sup>1,2,3</sup> Lisa V. Kim,<sup>1,2,4</sup> Nathan B. Sutter,<sup>1,2</sup>  
Scott Carlson,<sup>1</sup> Travis D. Lorentzen,<sup>1,2</sup> Tiffany B. Malek,<sup>1,3</sup>  
Gary S. Johnson,<sup>5</sup> Hawkins B. DeFrance,<sup>1,2</sup>  
Elaine A. Ostrander,<sup>1,2,3,4\*</sup> Leonid Kruglyak<sup>1,3,4,6</sup>

21 MAY 2004 VOL 304 SCIENCE [www.sciencemag.org](http://www.sciencemag.org)



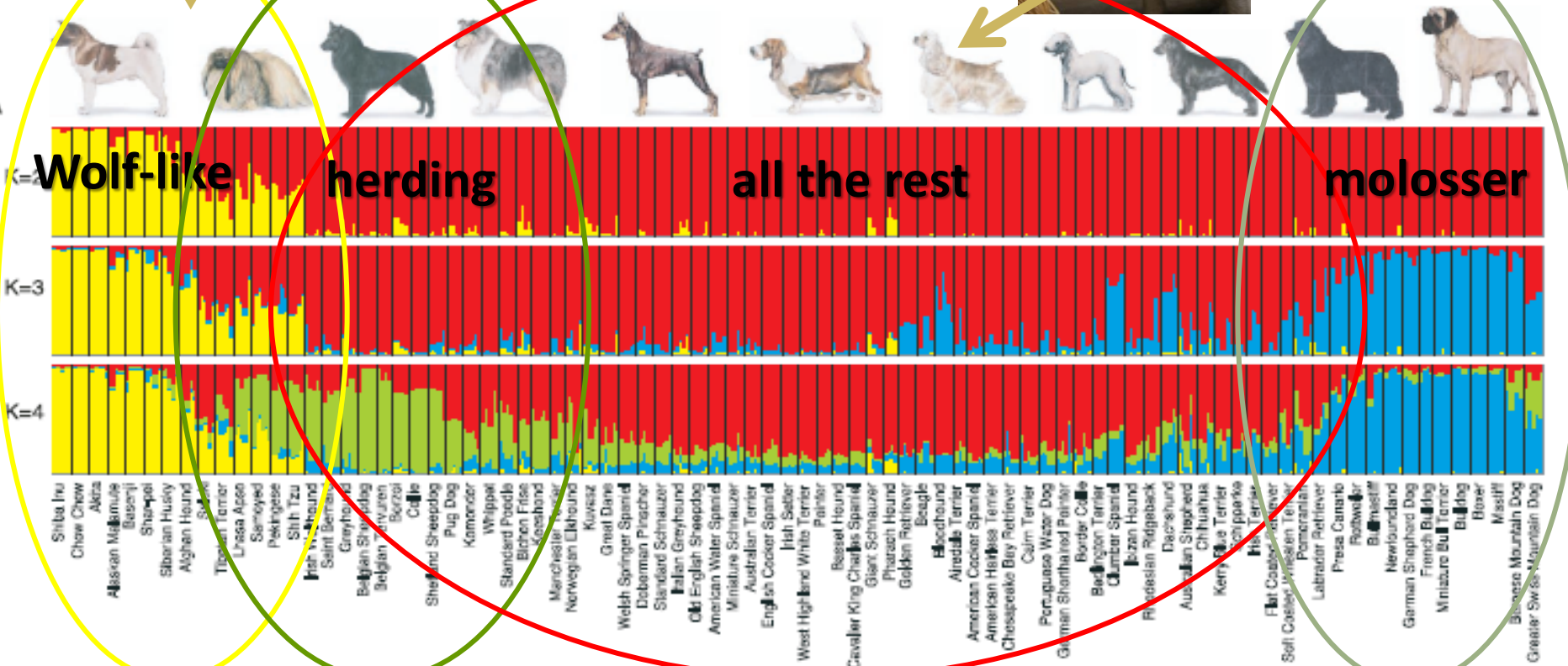
genetically  
wolf-like dogs

Fig. 2. Consensus neighbor-joining tree of 85 dog breeds and the gray wolf. Nine breeds that form branches with statistical support are shown. The remaining 76 breeds show little phylogenetic structure and have been combined into one branch labeled "All other breeds" for simplification. The



# How are wolves related with dogs and dogs with other dogs (Parker et al. 2004)?

– four genetic groups





# Domestication

- DOMESTICATION= Genetic and phenotypic change of species due to living in a human – dominated environment (human-facilitated selection, mainly selection for tameness, Hare et al. 2012)
- First split wolf-dog genome ~ 20 000 – 30 000 yrs ago in Europe (Thalmann et al. 2013; Friedman et al. 2014)



# Domestication

- Dog types in SE Asia ~ 16 000 yrs ago (Jung Feng et al. 2009)
- Major mutations from wolf to dog mainly affect brain development and digestion (Axelson et al. 2013)
- Dogs less capable than wolves to cooperate over hunting and raising of their young (Cafazzo et al. 2011)



# What wolves and dogs have in common

(WSC summary; Kotrschal 2012; Range & Viranyi 2011, 2013)

- Identical means of communicating, but depauperate in dogs
- Similar social dispositions and needs, similar basic cognitive skills
- Highly cooperative, among themselves (wolves) and with humans (wolves and dogs)





# How wolves and dogs differ (WSC summary; Kotrschal 2012; Range & Viranyi 2011, 2013)

- Wolves more independent, less will to please, socially more fine tuned than dogs
- Dogs better than wolves in coping with human pressure and demand, much more reliable in executing commands
- Wolves by far better problem solvers than dogs .. dog forebrain 30% smaller than wolf
- Dogs better motivated to cooperate with humans, different breeds with special skills much better expressed than in wolves (wolves generalists, dogs specialists)



# Summary

- Dogs have the longest history of domestication of all animals
- Dogs are genetically, phenotypically and behaviourally distinct from wolves
- Dogs may become feral, but never reach the competitiveness and social skills of wolves in hunting and cooperative breeding



# Summary

- Dogs are NOT tame wildlife
- Hence, by all means (Biology, Wildlife Management, Ethics), humans remain forever responsible for individuals dogs as well as populations, be it human-associated, stray or feral
- Attitudes towards animals correlate with attitudes to people – cruelty to animals is ALWAYS an indicator for societal problems (Milan Kundera)..





# Thanks

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WOLF

[www.wolfscience.at](http://www.wolfscience.at)

# How to distinguish between wild and domestic animals - effects on resulting responsibilities

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Animals are “domesticated” if genetically changed as compared to the wild ancestors, through the selection pressures of living in a human-shaped environment. Generally, domestication is mostly selection for tameness, which changes the morphology, behaviour and physiology of the animals as compared to their wild ancestor species. This means that these animals remain “domesticated”, even if they are temporarily or permanently not under human control, such as stray animals. Feral dogs, for example, deviate from wolves in social organization, lifestyle and pack-internal cooperation. Hence, stray animals differ permanently from their wild ancestors. Their genotype developed under human influence and inadequate control/care by humans turned them into strays or let them adopt a feral lifestyle. Generally such animals still remain dependent on humans to some degree. They remain genetically and behaviourally distinct from wildlife.



# .. at the Wolf Science Center



.. we experimentally compare cognitive and cooperative abilities of equally raised and kept wolves and dogs





# Wolf Science Center (WSC) - Research



## Why ?





# Wolves the ancestors of all dogs,



so mutually socialized wolves and dogs understand each other





# Wolves the ancestors of all dogs



But if not socialized, wolves and dogs are aliens, killing each other..





# .. but how did wolves and humans become companions? How did dogification start?



# Cooperation is at the very core being wolf or human





# Big role of wolves in mythology

Rome:  
Romulus & Remus

Germanic Edda Saga:  
Fenris wolf



NW American:  
Klingit totem



Mongolic totem,  
Turkish totem



Germanic Berserks





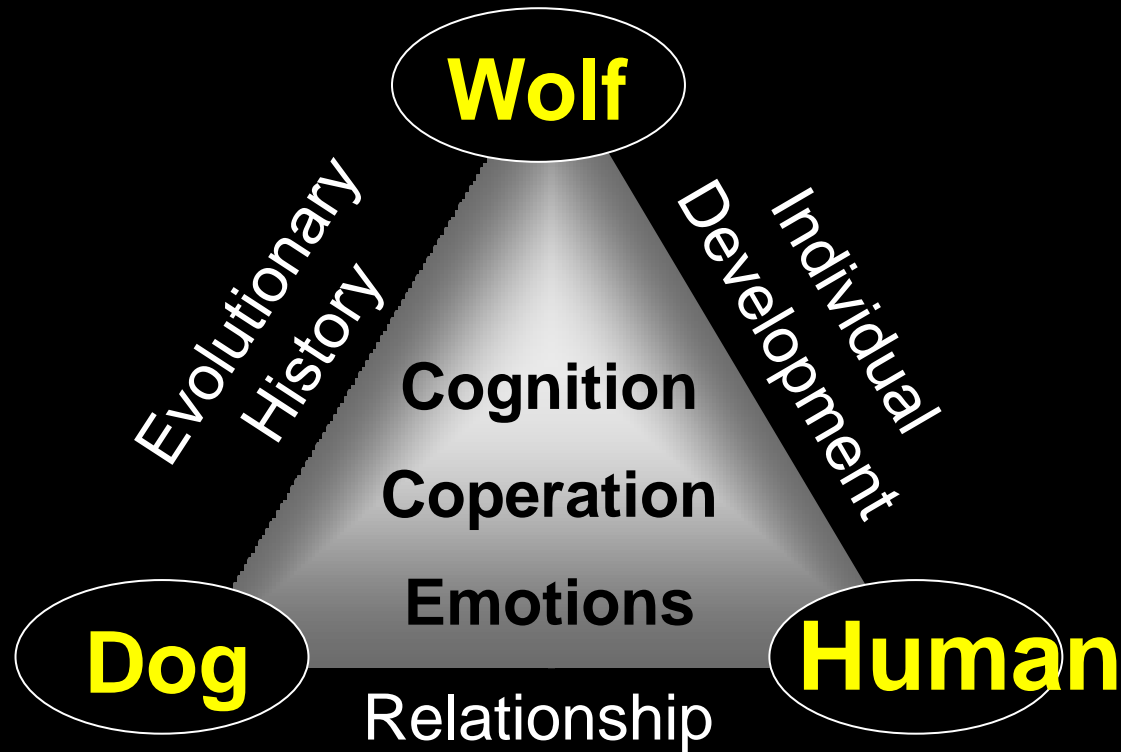
# werwolf

man ↔ wolf

wolf in human  
spirituality



# Our WSC triangle of research



# Our leading pack



Friederike Range

Kurt Kotrschal

Zsofia Viranyi



# Our trainers





# Our 14 timberwolves, 13 mongrel dogs





# Work and life at the WSC

Pack visit



Handraising



Testing



Training



Leash walking





# How we do what we do at the WSC





# Socially involved handraising of wolves and dogs: Building trust





# Socially involved handraising of wolves and dogs



**HOW?**

**Assisted by our adult wolf and dog partners**



**With mutual respect, without any domination or conflict ever**





**By handraising:**  
**socialization** and excellent  
**„Executive Functions“**  
by optimal maturation of the  
**Prefrontal Cortex**



**Impuls control**

**Social trust, social competence**

**Social and episodic memory**


**Judging the consequences of own actions**

**Strategic decision making**









# WSC: experimental wolf and dog research

Generally two approaches:

1. With human experimenter

2. Without human experimenter:  
touch screen





# One of many examples of WSC-science: a wolf-dog comparison of using human pointing

- dogs perform like 2-yr old children  
(Lakatos et al. 2009)
- dogs better than chimps (Soprani et al. 2001)
- dogs seemed to do better than wolves handraised  
by humans







# How do human-like social skills of dogs emerge?

1) Individual learning from humans?  
(Udell & Wynne 2009)

2) Or based on wolf-typical social skill?

Gaze following





# The Test

With equally raised and kept dogs and wolves







# Using human gaze or pointing

11 wolves, 10 dogs, 6 months of age

3 experimental conditions:

- Dog gazes
- Human gazes
- Human distal pointing

2 x 10 trials per condition and animal

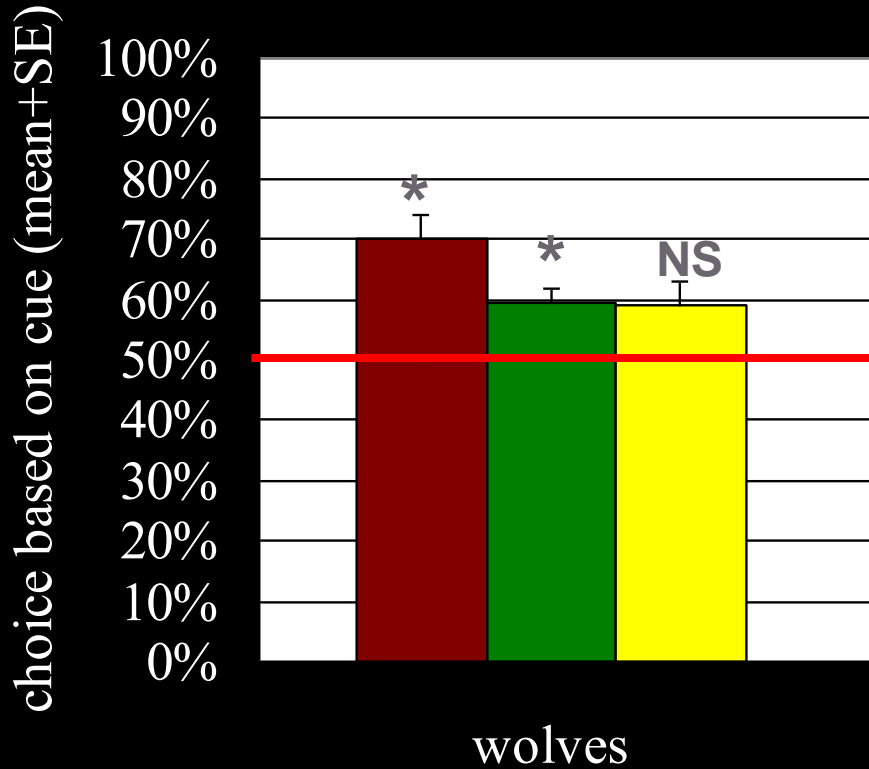
1-4 days between replications,

Conditions in counterbalanced order



# Results

■ dog gazing ■ human gazing ■ distal pointing



LMM: cue x species interaction

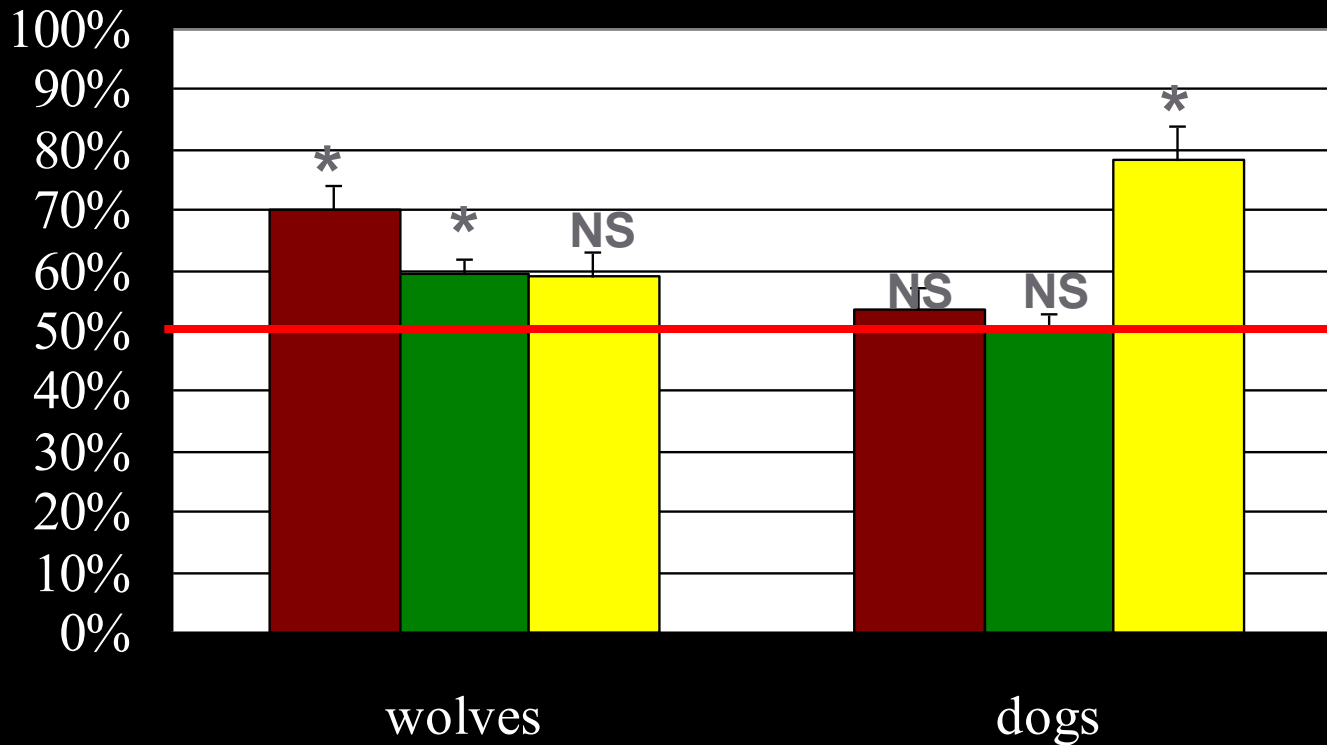
One-sample t-test corrected for multiple comparisons



# Results

choice based on cue (mean+SE)

■ dog gazing ■ human gazing ■ distal pointing



LMM: cue x species interaction

One-sample t-test corrected for multiple comparisons



# Is it a developmental difference?

Repeating the same experiments

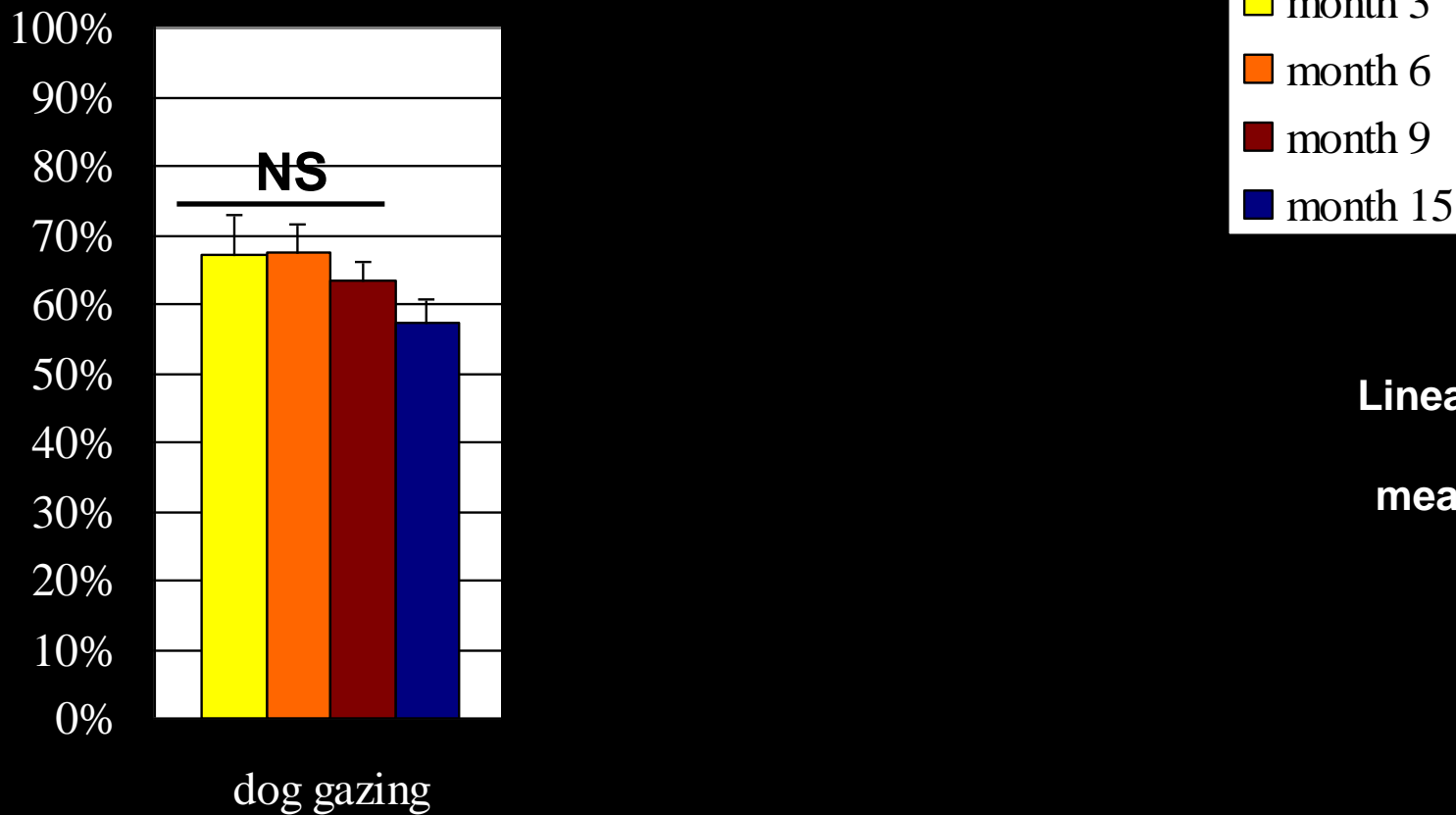


With 9 wolves in the age of 6, 9 and 15 months



# Results

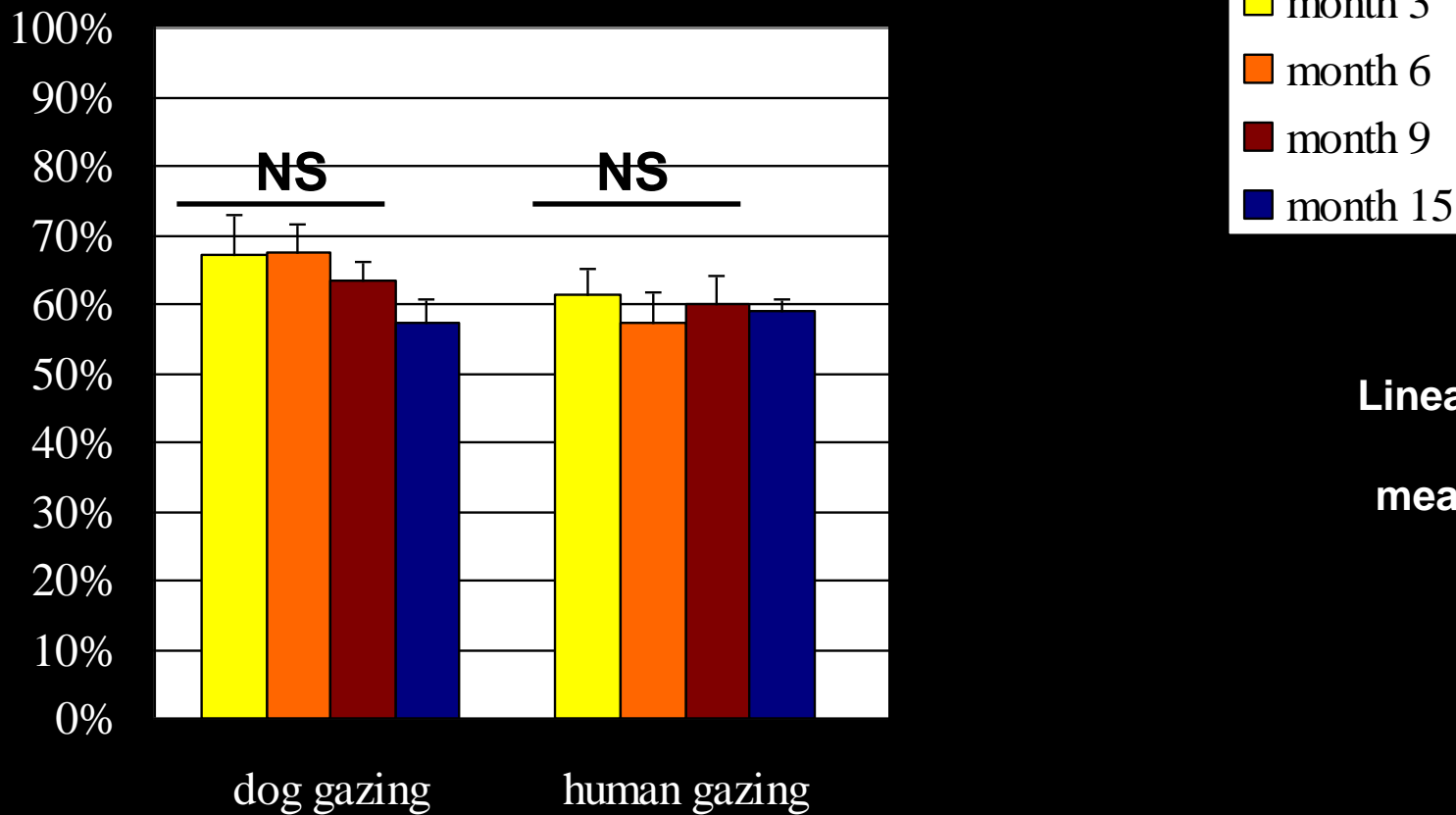
## Wolves only



Linear mixed model  
and repeated  
measures ANOVAs

# Results

## Wolves only

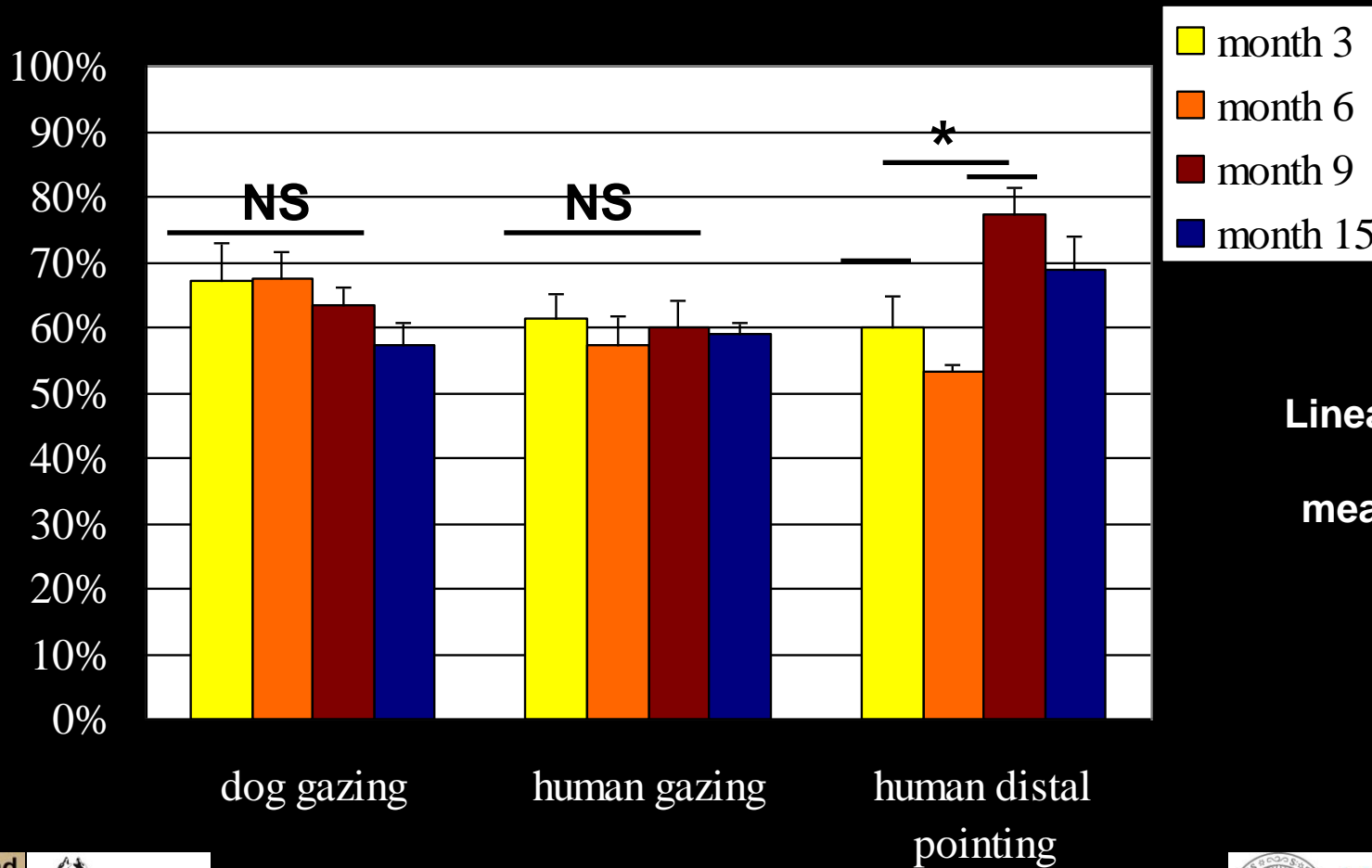


Linear mixed model  
and repeated  
measures ANOVAs



# Results

## Wolves only



Linear mixed model  
and repeated  
measures ANOVAs



# Conclusions ?

- Slower development of the skill to follow human pointing in wolves than in dogs
- However, wolves are better from early on in following human gaze
- Indicates that the human-like social abilities of dogs are actually a wolf heritage





# Inequity aversion: dogs sense unfair treatment



# Wolf Hund Mensch

Kurt Kotrschal

Die Geschichte einer  
jahrtausende alten Beziehung



 Brandstätter



