Issues of Declining Livestock and Eroding Animal Breeds

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The Grassroots Institute Summer School
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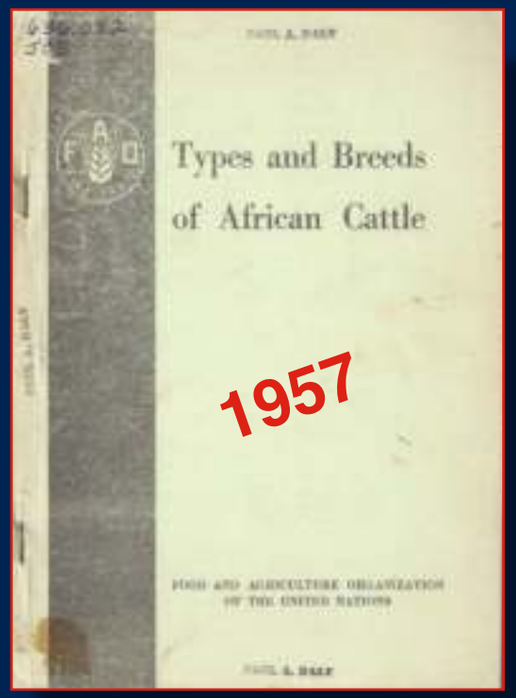
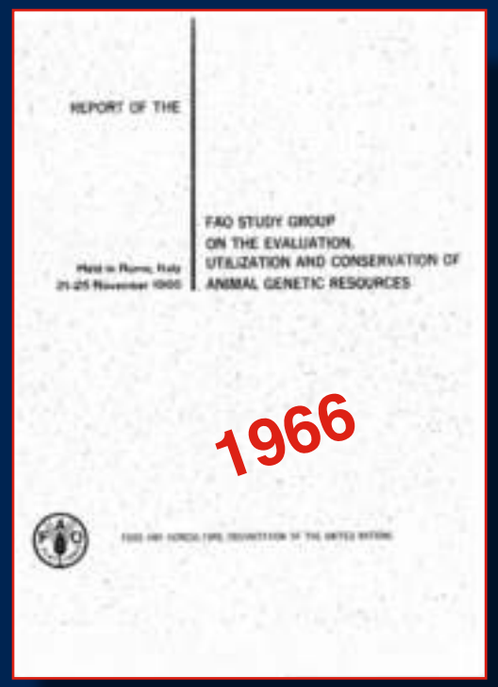
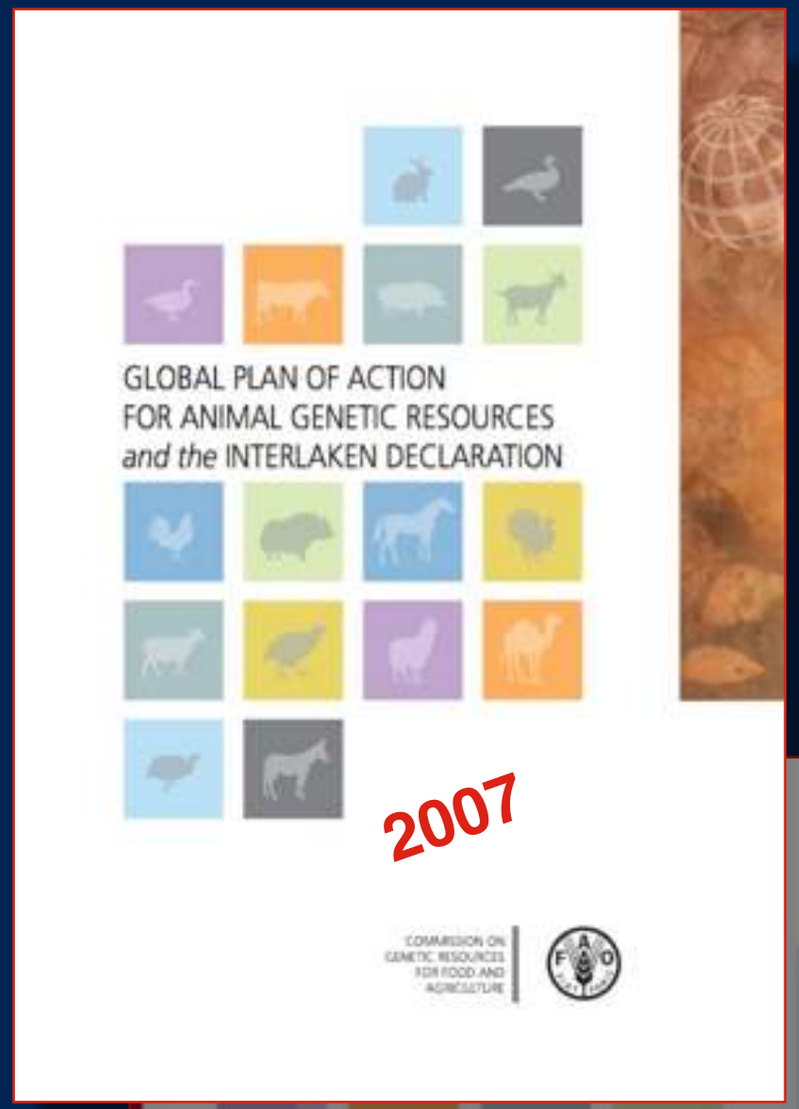
CONTEXT

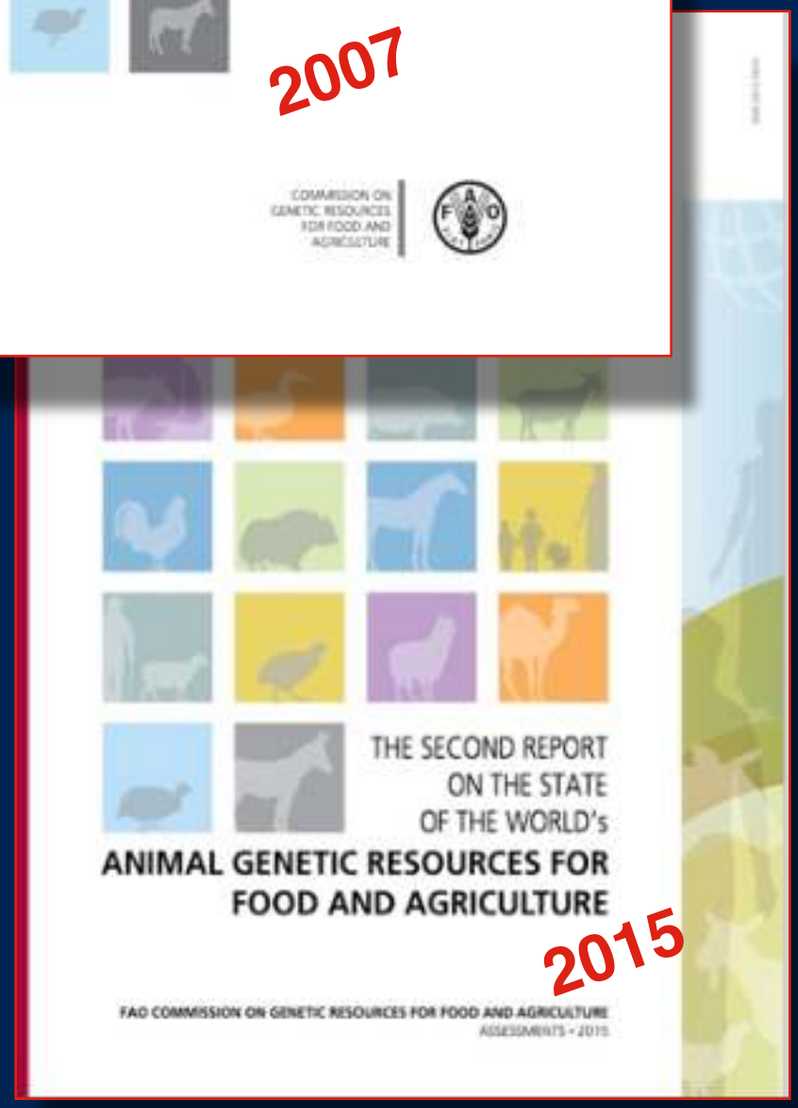
1992

CONVENTION ON BIOLOGICAL DIVERSITY

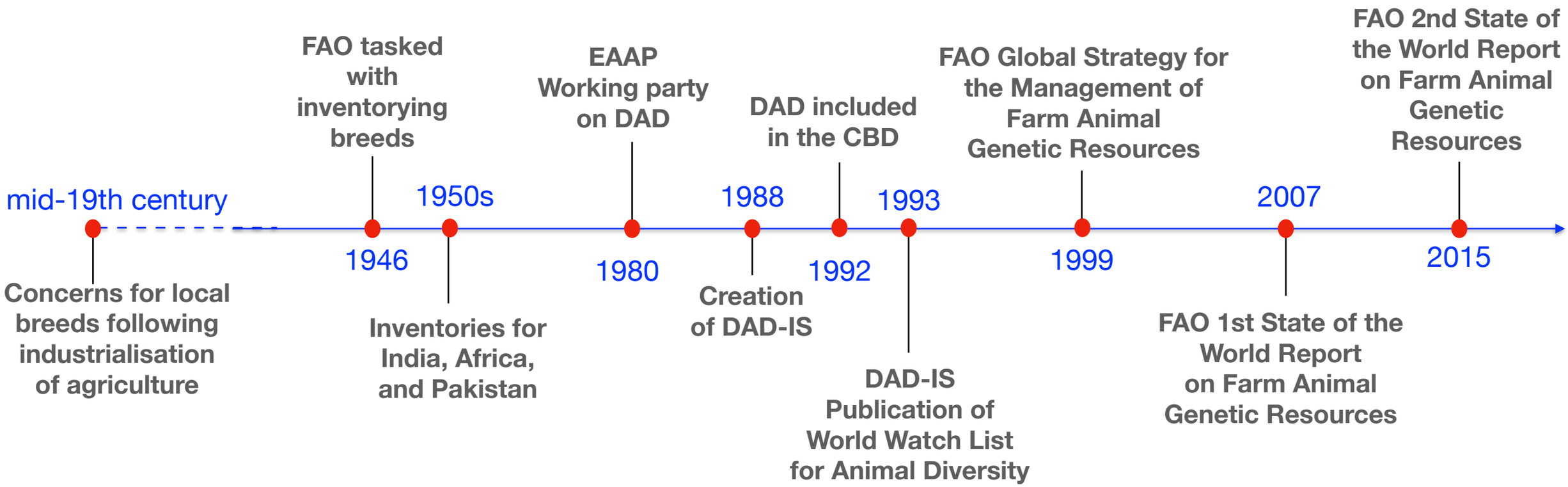








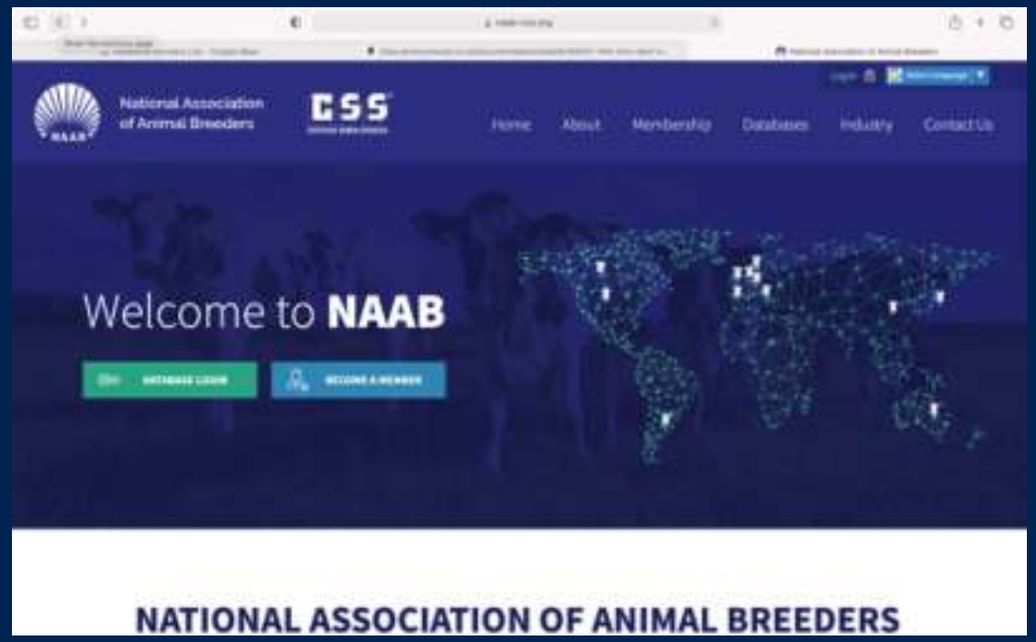
Domestic Animal Diversity (DAD)
A timeline of main events

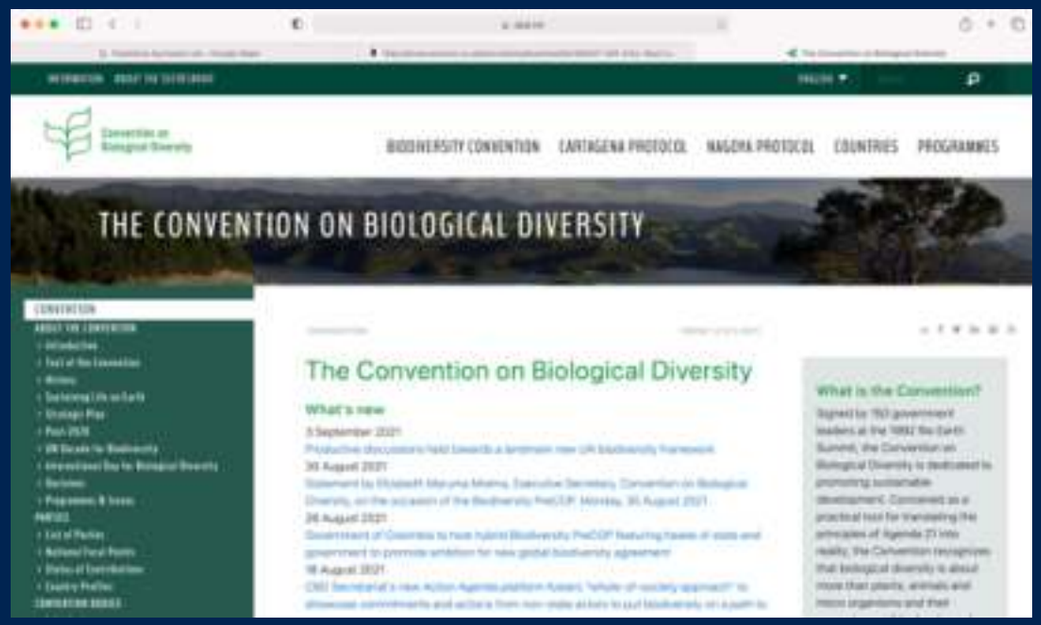


CBD: Commission on Biological Diversity
EAAP: European Association of Animal Production

What is ‘domestic animal diversity’?

‘breeds’?





‘biodiversity’?

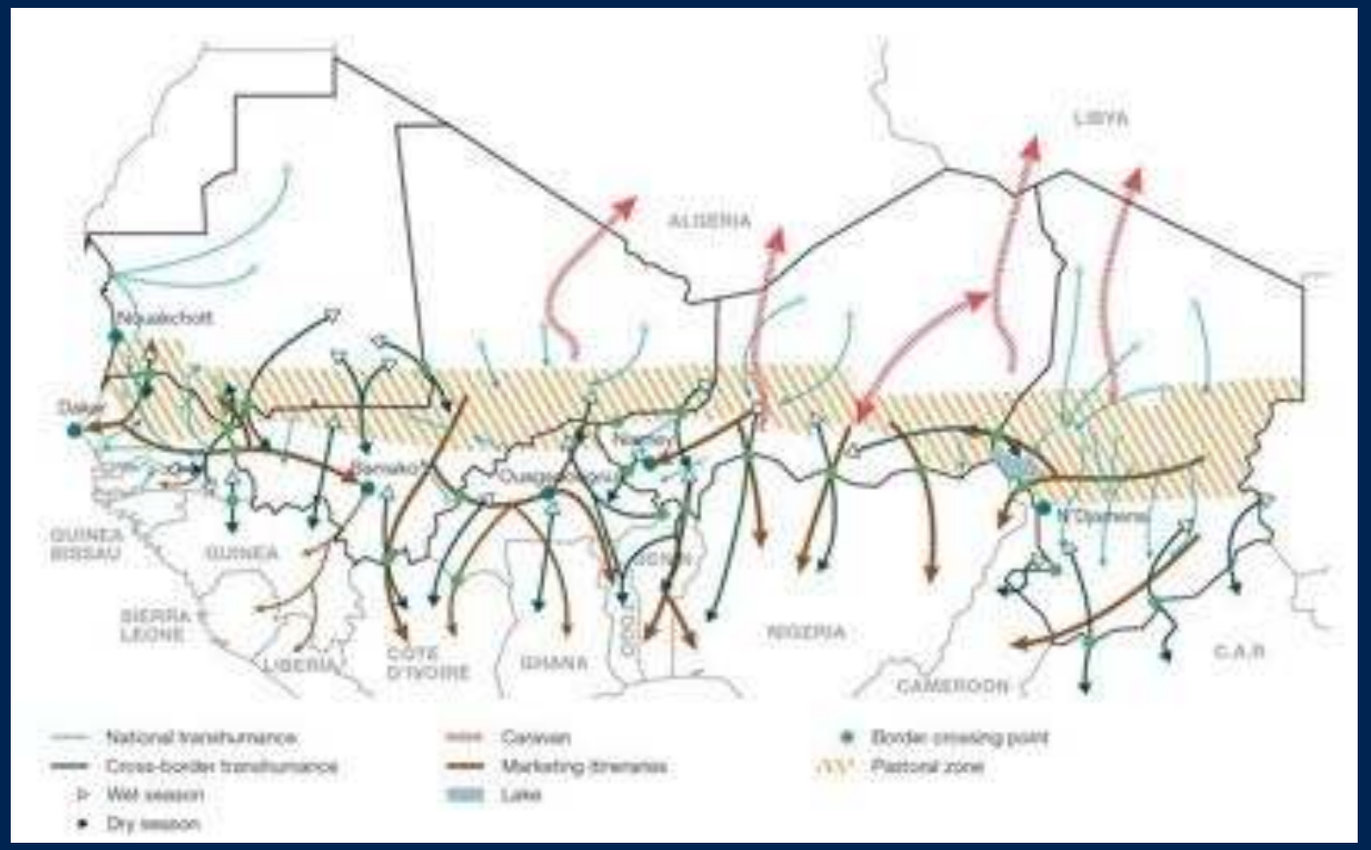
‘genetic resources’?

Within-breed diversity

'within-breed variation provides the flexibility that breeds need to have if they are to respond to changing conditions' (Hall 2004)

Domestic animal diversity and pastoralism

What is pastoralism?



PASTORALISM

Working **with** the natural environment:
managing livestock grazing itineraries
so that animals feed better
than without the herder

Cattle breeding amongst the pastoralist Wodaabe in Niger

Precipitations

0-400 mm in one unpredictable season (2-3 months)

Temperature

10°C-52°C - (cold dry season, hot dry s., rainy s.)

Pasture

cattle feed on > 60 varieties (grasses, bushes, trees)

Watering regime

every second day at pick of hot dry season
(camp on pasture, but up to 30km from watering point)

Variable concentrations of nutrients

across scales

macro

micro

over time

- across W/D seasons
- stages in plant's life cycle
- time of the day...

over space

- across eco-zones
- patches
- plant species
- individual plants (same species)
- parts of a plant

Are the Wodaabe breeding their animals?

- cattle genealogies are memorised
- > 90% of selective mating
- non-productive animals are sold
- sale of productive animals is avoided (exchanges)
- learned complex behaviours are part of selection
- DAD and resilience are part of selection
- cross breeding is part of the breeding system

Breeding for functional traits

- feeding selectivity (skills and knowledge)
- skill in managing heat pressure
- skills in managing difficult terrain
- attachment to herders and selective docility
- responsiveness to herder
- …

Functional learned behaviour

- ***NEFO*** **:** feeding only on the fresh part of the plant.
- ***NOPPINA*****:** feeding on new grass when it is still short, pinching it with the muzzle.
- ***GEETI*** **:** being very attached to the herders and ferociously mistrustful of strangers and unfamiliar practices.
- ***DIKKU, HALHONGE*** **:** to have ‘**character; i**t is difficult to make them do something they do not want to do, to be more prone to react than to give up when exhausted.


feeding on new grass
without ingesting sand

cows joining in
at the camp fire

herding
from
the front

Breeding for variability

'We have preferred lineages but do not maximise their number in the herd. If we did that, all the herd would be made of similar animals and we don't want that. We need different lineages with a variety of functional skills'

functionality is in diversity

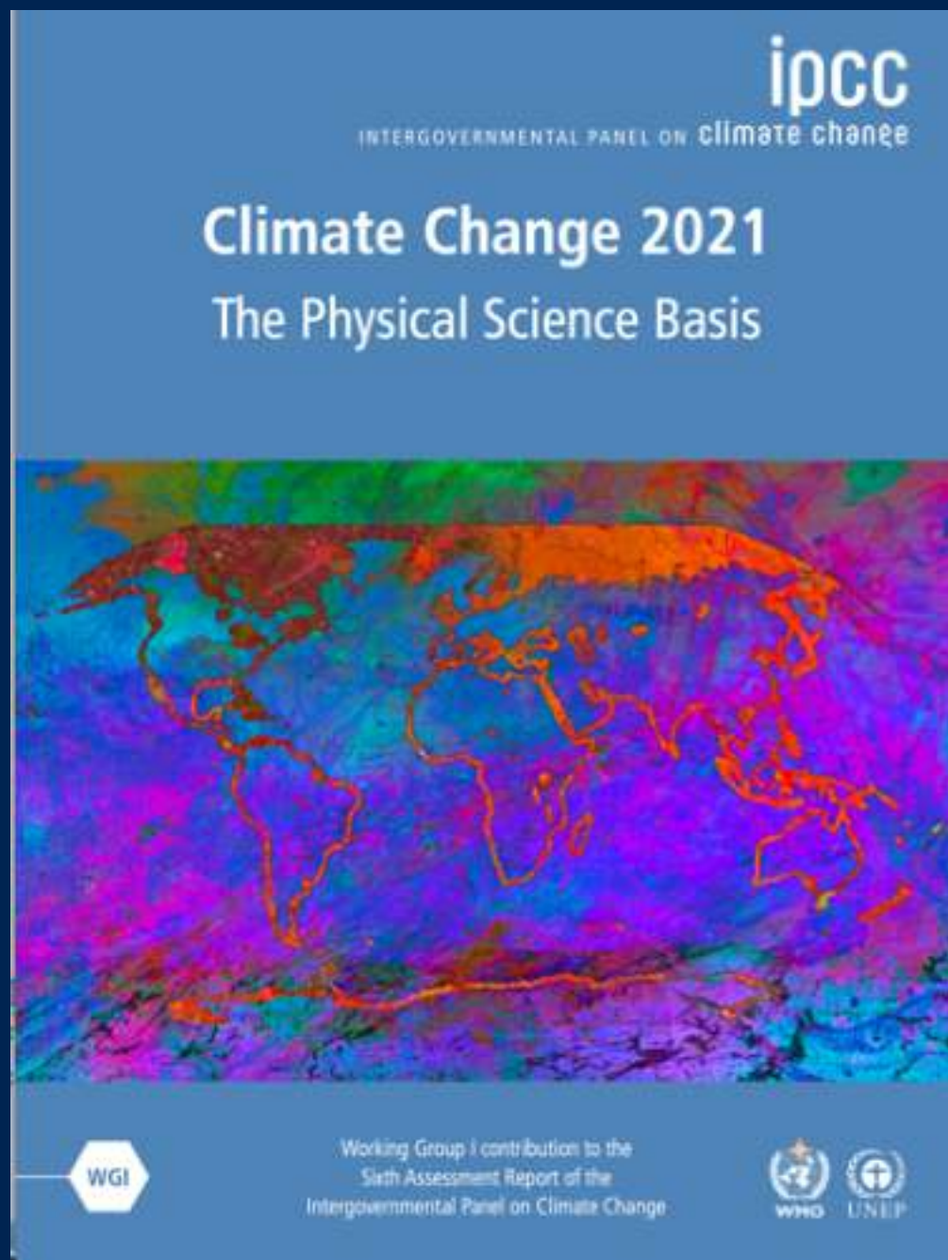
Breeding for variability

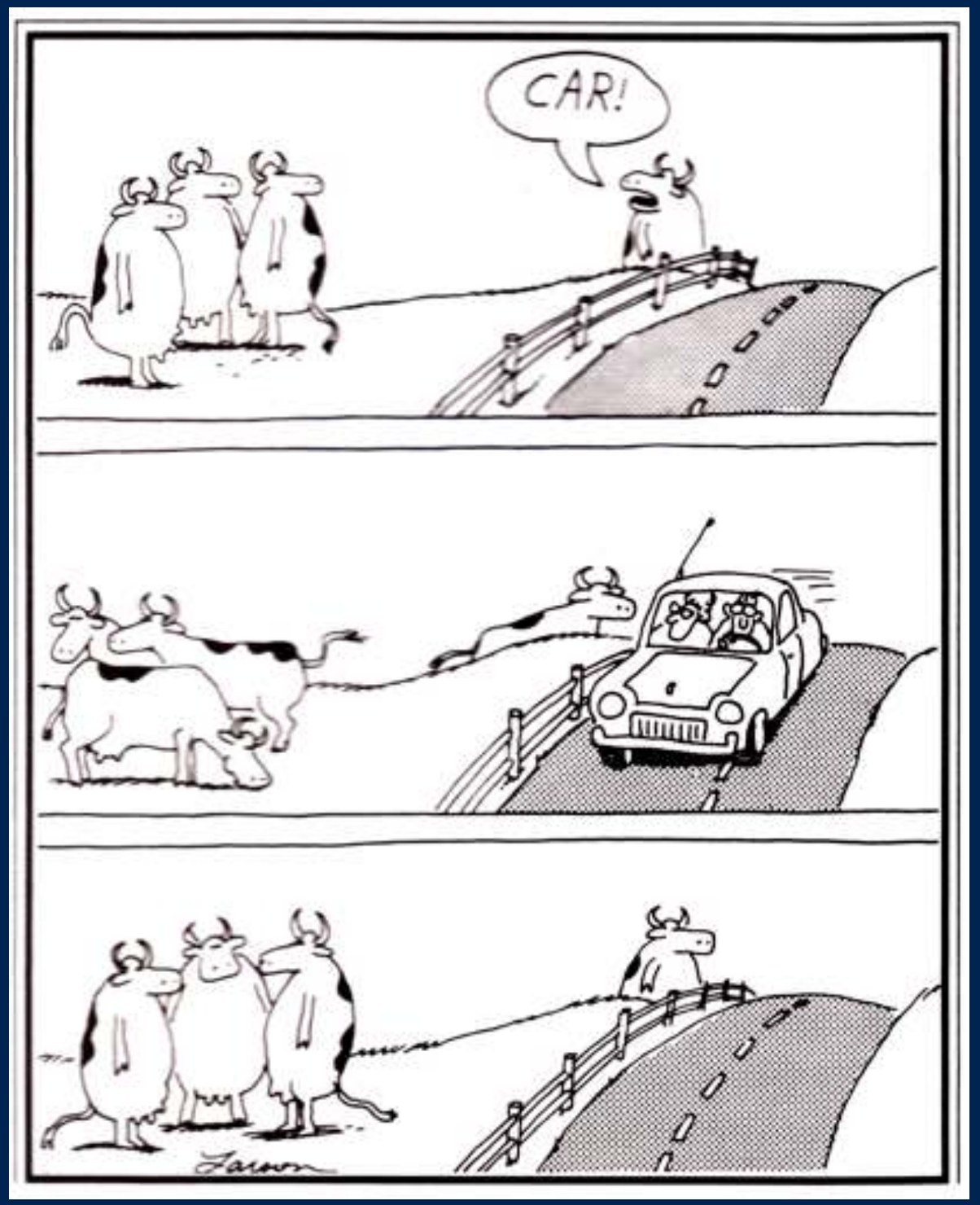
- animals are bred for their capacity to interact with a variable environment
- breeding follows the logic of opening up options and matching the variability in the environment
- epigenetic inheritance is crucial

Is 'DAD = AnGR' fit to represent breeding in pastoral systems?

Conclusions:

implications for DAD conservation in pastoral systems and in the face of climate change





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Production

- Intense and complex mobility
- sophisticated feeding selectivity
- challenging watering regimes
- pervasive human management
- extreme environmental conditions

what kind of herd can perform well under these conditions?

BREEDING FOR '*PRODUCING WITH VARIABILITY*'

Animals' skilled interaction with environmental variability *is key to productivity*

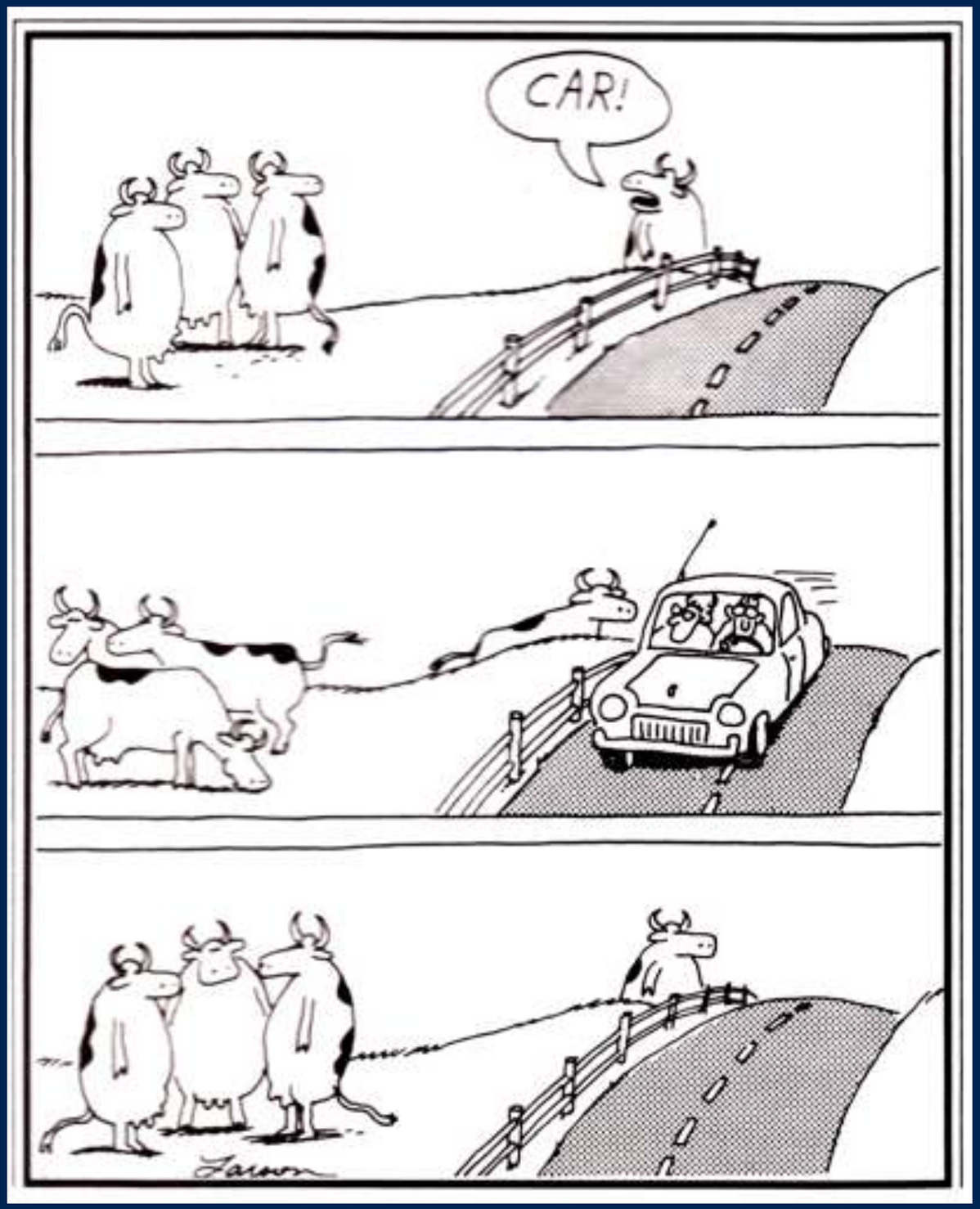
- **learned behaviour (e.g. selective feeding, heath management)**
- **transmission of 'competence' (e.g. physiological and cultural)**
- **management of stress (e.g. social organisation, handlers)**
- **herd variability (e.g. portfolio of lineages)**

grazing or browsing?

THE ANGR FRAME (HIGHLIGHTS)

- **livestock = DAD = AnGR**
- **focus on the *breeds* (objects), not on *breeding* (processes)**
- **focus on the individual animal (the 'carrier' of AnGR)**
- **DAD/AnGR is from adaptation to the natural environment (breeds are 'naturalised' by this frame — i.e. = natural resources)**
- **pastoralists are 'guardians' of DAD/AnGR**

PRELIMINARIES



BBC News

2010

African livestock offers 'untapped genetic resource'

Page last updated at
18:03 GMT, Thursday, 24 June 2010 19:03 UK

By Mark Kinver
Science and environment reporter, BBC News

Over the centuries, indigenous breeds have adapted to conditions in Africa

The genetic diversity of Africa's indigenous livestock needs to be tapped before it is lost forever, researchers have warned.

3

pastoral systems specialise in stabilising outputs by matching variability in inputs with variability integrated in the processes of production