

ASSESSING, MONITORING & LABELLING POULTRY WELFARE

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OVERVIEW

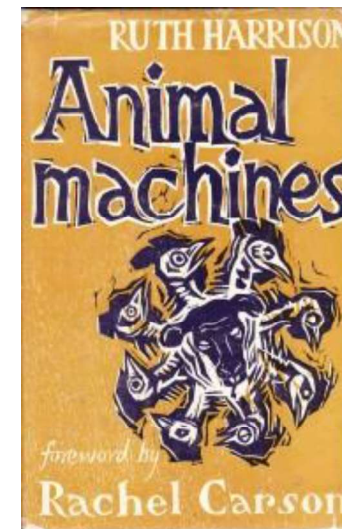
1. Evolution, Selection & Domestication
2. Cognition & Intelligence
3. Behavioral Systems
4. Abnormal Behaviour
5. Housing layers
6. Housing broilers
7. Human-Animal Relation
- 8. Assessing, Monitoring & Labelling Poultry Welfare**

8. ASSESSING, MONITORING & LABELLING POULTRY WELFARE

- a) Defining animal welfare
- b) Animal welfare indicators (practical week)
- c) Aggregating indicators & monitoring protocols
(Legmoni - Dr N. Van Noten)
- d) Poultry welfare labels

A. DEFINING ANIMAL WELFARE

Animal Machines (1964, Ruth Harrison)



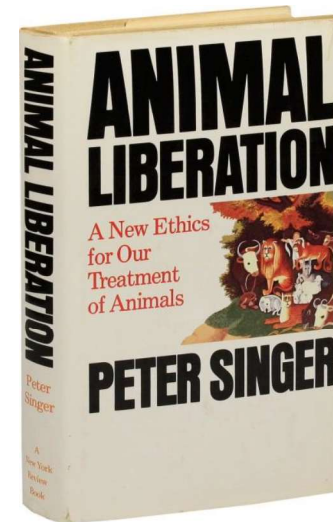
"How far have we the right to take our domination of the animal world? Have we the right to rob them of all pleasures in life simply to make more money more quickly out of their carcasses?"

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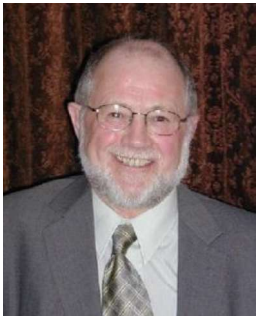
Affective states

Marian Dawkins (1988)

"To be concerned about animal welfare is to be concerned with the subjective feelings of animals, particularly the unpleasant subjective feelings of suffering and pain"

Ian Duncan (1993)

"...neither health nor lack of stress nor fitness is necessary and/or sufficient to conclude that an animal has good welfare. Welfare is dependent on what animals feel"



A. DEFINING ANIMAL WELFARE

Brambell (1965)

"In principle we disapprove of a degree of confinement of an animal which necessarily frustrates most of the major activities which make up its natural behaviour"

Naturalness

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Bernard Rollin (1993)



Naturalness

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Marthe Kiley-Worthington (1989)

For an animal not to suffer "It is necessary over a period of time for the animal to perform all the behaviours in its repertoire because it is all functional"

Susanne Waiblinger et al. (2004)

In many production systems "major elements of natural behaviour cannot be performed leading to welfare problems"

A. DEFINING ANIMAL WELFARE

Farmers & veterinarians

"... the standard of welfare among animals kept in the so called 'intensive' systems is higher. On balance I feel that the animal is better cared for; it is certainly much freer from disease and attack by its mates; it receives much better attention from the attendants, is sure of shelter and bedding and a reasonable amount of food and water." (Taylor 1972)

"Good health is the birthright of every animal that we rear, whether intensively or otherwise. If it becomes diseased we have failed in our duty to the animal and subjected it to a degree of suffering that cannot be readily estimated." (Sainsbury 1986)

Basic health & functioning

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Basic health & functioning

Donald Broom (1991)

"Poor welfare occurs in situations in which ... there is reduced fitness or clear indications that fitness will be reduced".

John McGlone (1993)

"An animal is in a poor state of welfare only when physiological systems are disturbed to the point that survival or reproduction are impaired"

A. DEFINING ANIMAL WELFARE

Basic health & functioning

- Fit & healthy?
- Normal growth & biological functioning?

Affective states

- Does animal feel well/happy?
- Mental satisfaction/stress?

Naturalness

- Natural life & normal behaviour?
- Environment ~ evolution & adaptations?

These 3 concerns are not mutually exclusive, often go **hand-in-hand**:

"more natural life makes animals more happy and healthy"

"unhealthy animals suffer"

..but still **sufficiently independent** (improvement of one concern does not necessarily lead to improvement of other concerns)

e.g. free-range: more natural, but more risk of predation, cold/heat, disease,...

e.g. battery cage: low disease pressure, but limited opportunities to express natural behaviour and therefore frustration

e.g. group housing sows: ↓ reproduction and health, but more natural

e.g. smoking: gives instantaneous pleasure, but not healthy in the long term

A. DEFINING ANIMAL WELFARE

Basic health & functioning

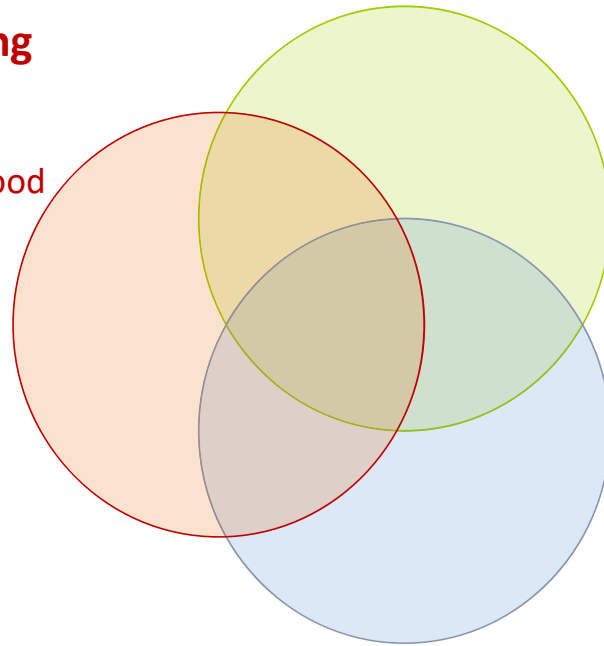
Is the animal fit and healthy?
Is the animal able to achieve
normal growth and function, good
health and to sustain fitness in
adult life?

Affective states / feelings

Is the animal happy / feeling good?
Is the animal experiencing a sense
of mental satisfaction or, at least,
freedom from mental distress?

Natural living

Is the animal living a natural life?
Is the animal living in an
environment consistent with that in
which the species has evolved and
to which it has adapted?



A. DEFINING ANIMAL WELFARE

Basic health & functioning

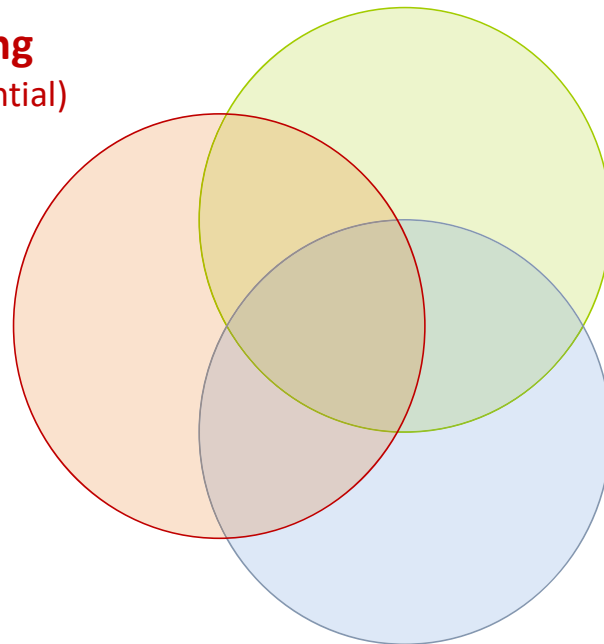
Growth & reproduction (~potential)
Longevity
Injuries & illness
Immune resistance
Stress hormones
Body condition

Affective states / feelings

Preference & motivation tests
(choose/work for environment they like)
Abnormal behaviour as an indicator of
frustration
Vocalisations and grimace (pain)
Stress hormones
Cognitive bias

Natural living

Ethogram & behaviour (~wild)
Natural environment



A. DEFINING ANIMAL WELFARE: WHY RELEVANT?

Individual stalls (gestating sows)



EU: ban on individual boxes

EU (SVC 1997)

"Some serious welfare problems for sows persist even in the best stall-housing systems"

- Biological functioning: health, immunology, injuries, growth,...
- Affective state intrinsically relevant: fear, frustration, suffering,...
- Natural behaviour intrinsically relevant: exploration & foraging behaviour, abnormal behaviour,...

US: no law. basis for ban

AUS (Barnett et al 2001)

"Both individual (i.e. stalls) and group housing can meet the welfare requirements of pigs"

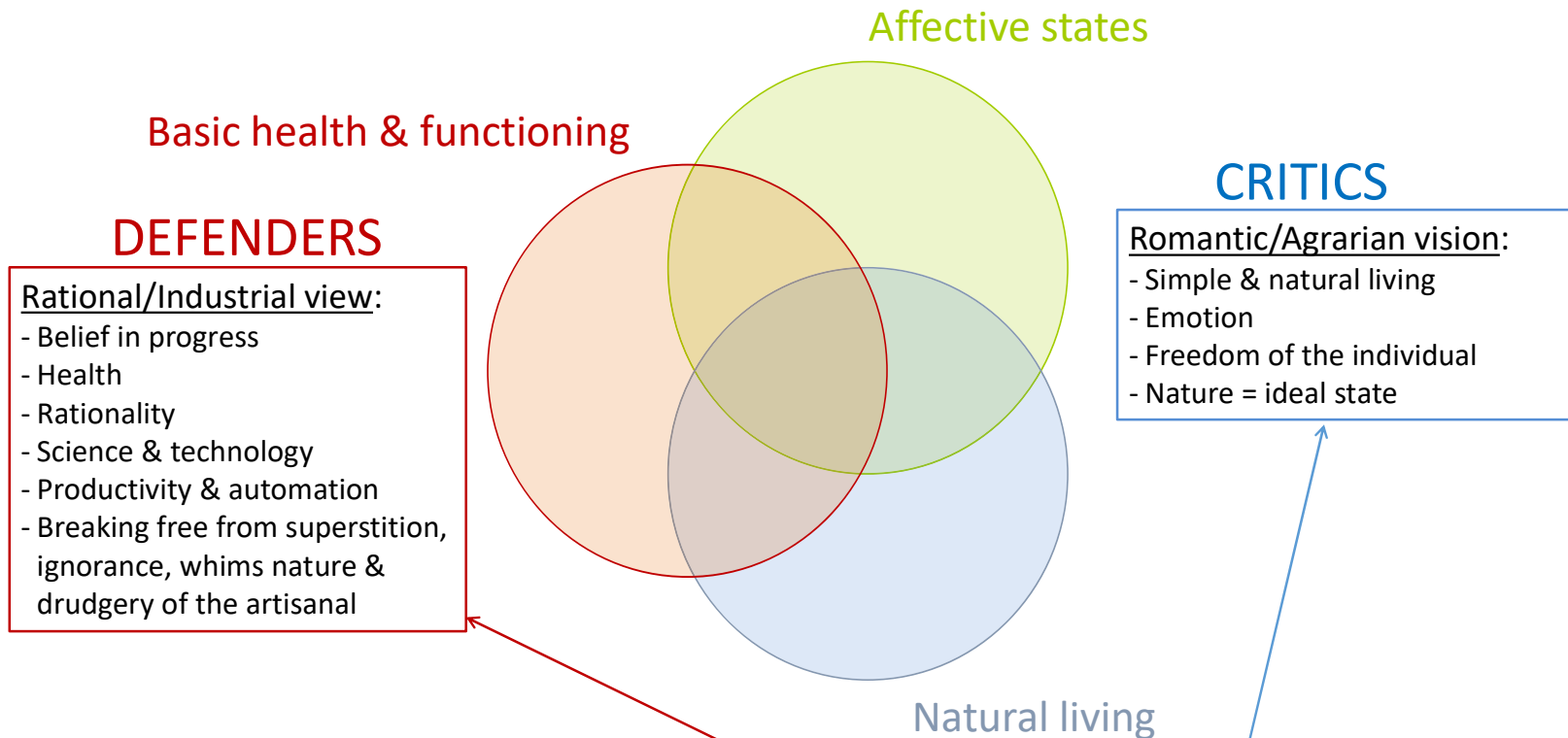
- Biological functioning: health, immunology, lesions, growth,... → ↗ OBJECTIVE
- (Affective state: only relevant if effect on biological functioning) → ↘ OBJECTIVE
- (Natural behaviour: only relevant if effect on biological functioning)

Ethicists, ethologists, citizens...

Farmers, (farm-) veterinarians...

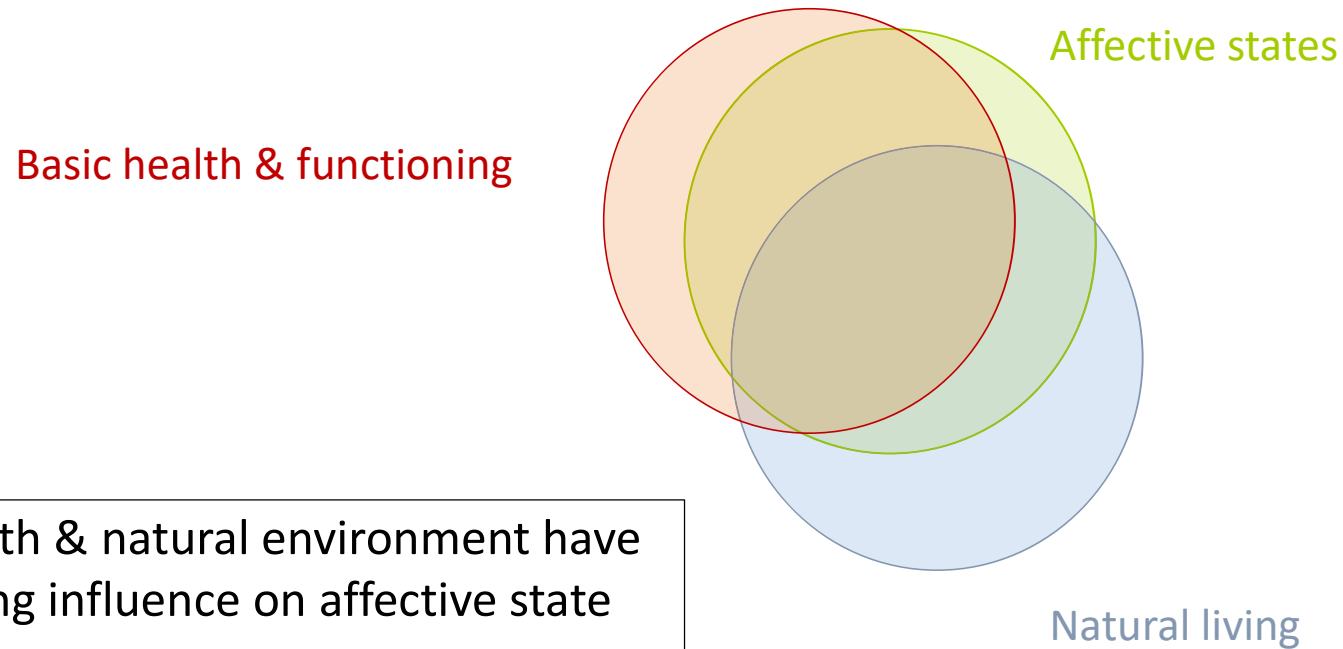
↳ AW is a *social* (not scientific) concept...

A. DEFINING ANIMAL WELFARE: INDUSTRIAL REVOLUTION



Why do people attach different importance to these concerns?
~ Industrial Revolution: are 'factories' **good** or **bad** for humans?
(factory ≈ intensive farming)

A. DEFINING ANIMAL WELFARE: PERSONAL OPINION



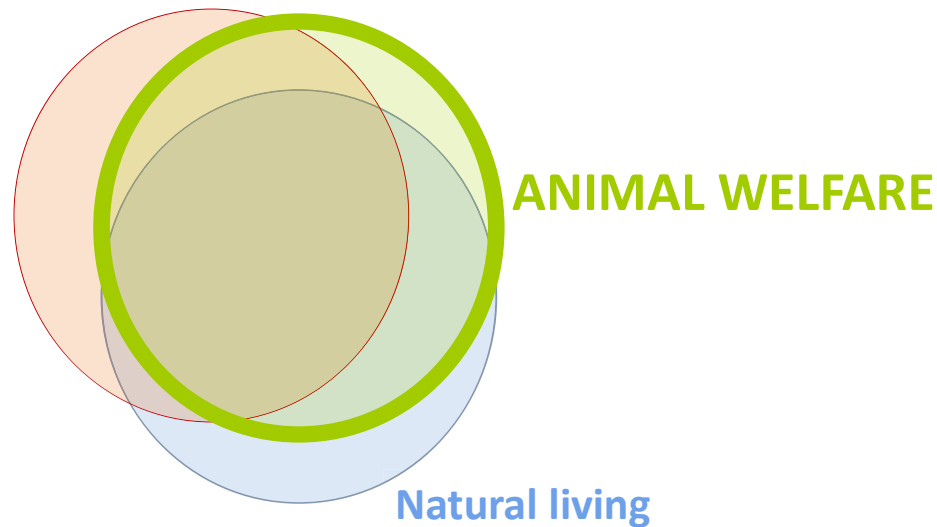
Health & natural environment have strong influence on affective state

→ Greater overlap needed

A. DEFINING ANIMAL WELFARE: PERSONAL OPINION

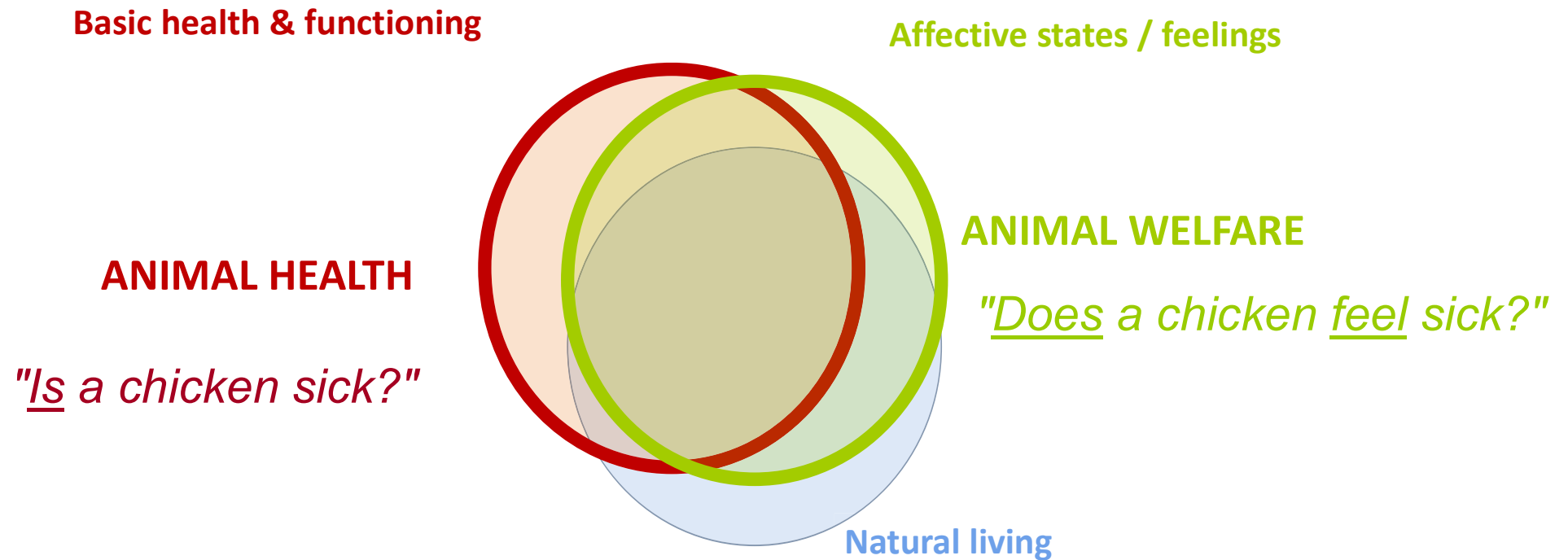
Basic health & functioning

Affective states / feelings



→ AW is exclusively about **sentient beings**

A. DEFINING ANIMAL WELFARE: PERSONAL OPINION

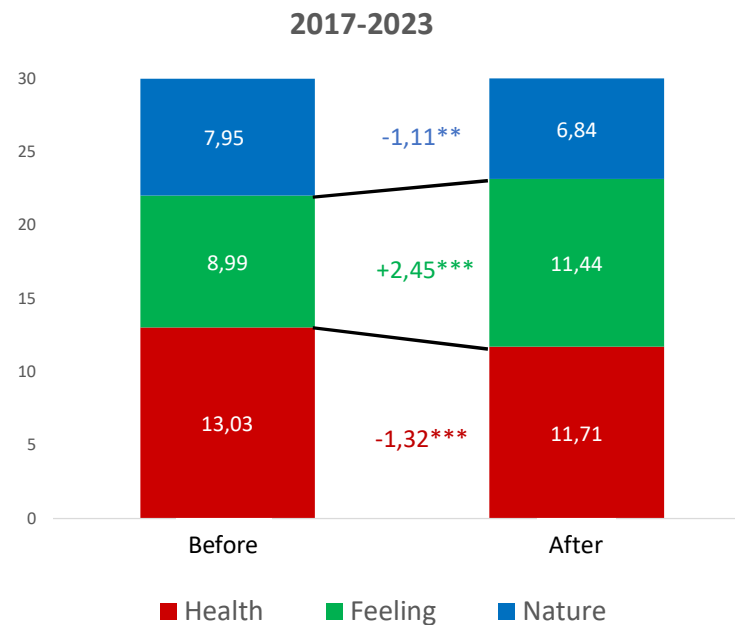


If a chicken is sick but does not feel sick, to me it is a health problem but not an animal welfare problem (and vice versa)

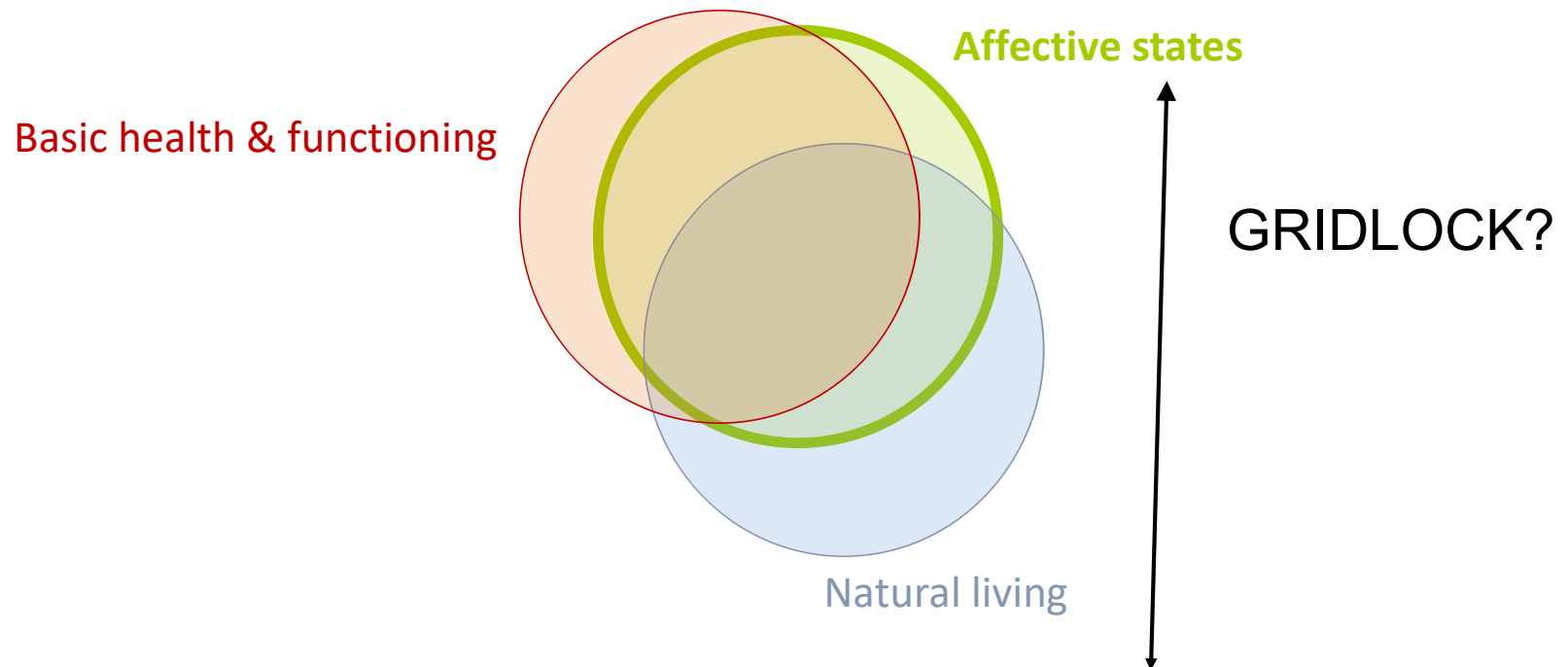
A. DEFINING ANIMAL WELFARE: 97 VET STUDENTS (UGENT)

EFFECT OF CLASS PRACTICAL ABOUT DEFINING ANIMAL WELFARE

Divide 30 points among the three concerns



A. DEFINING ANIMAL WELFARE: PERSONAL OPINION, BUT...



↔ **Behaviorism** (1900-1970): *subjective states* cannot be the subject of scientific enquiry (James 1904; Watson 1928; Skinner 1974); are only knowable to the subject who experiences them ("*the other's mind problem*")

A. DEFINING ANIMAL WELFARE

WAY out of gridlock:

- Direct examination of exactly what animal feels when it experiences pain, frustration, fear, joy is not necessary
- Suffices to figure out how negative (and positive) an animal feels when we think it is experiencing pain, frustration, fear (and pleasure/joy)
- HOW?
 - Trying to interpret signals that animals use to communicate among themselves about their affective state
 - Degree of attraction to / dislike of certain situations, environments
 - Behavioural tests (e.g. fear tests, rebound effect, motivation test, judgement bias,....)

A. DEFINING ANIMAL WELFARE: WQ®

Since animal welfare is a **multidimensional & societal** concept, the operational definition must:

- cover the various dimensions (health, comfort, expression of behaviour, nutrition, etc.).
- address the concerns of society and interest groups

→ Welfare Quality® has defined **12 criteria** for good welfare (grouped into **4 principles**)

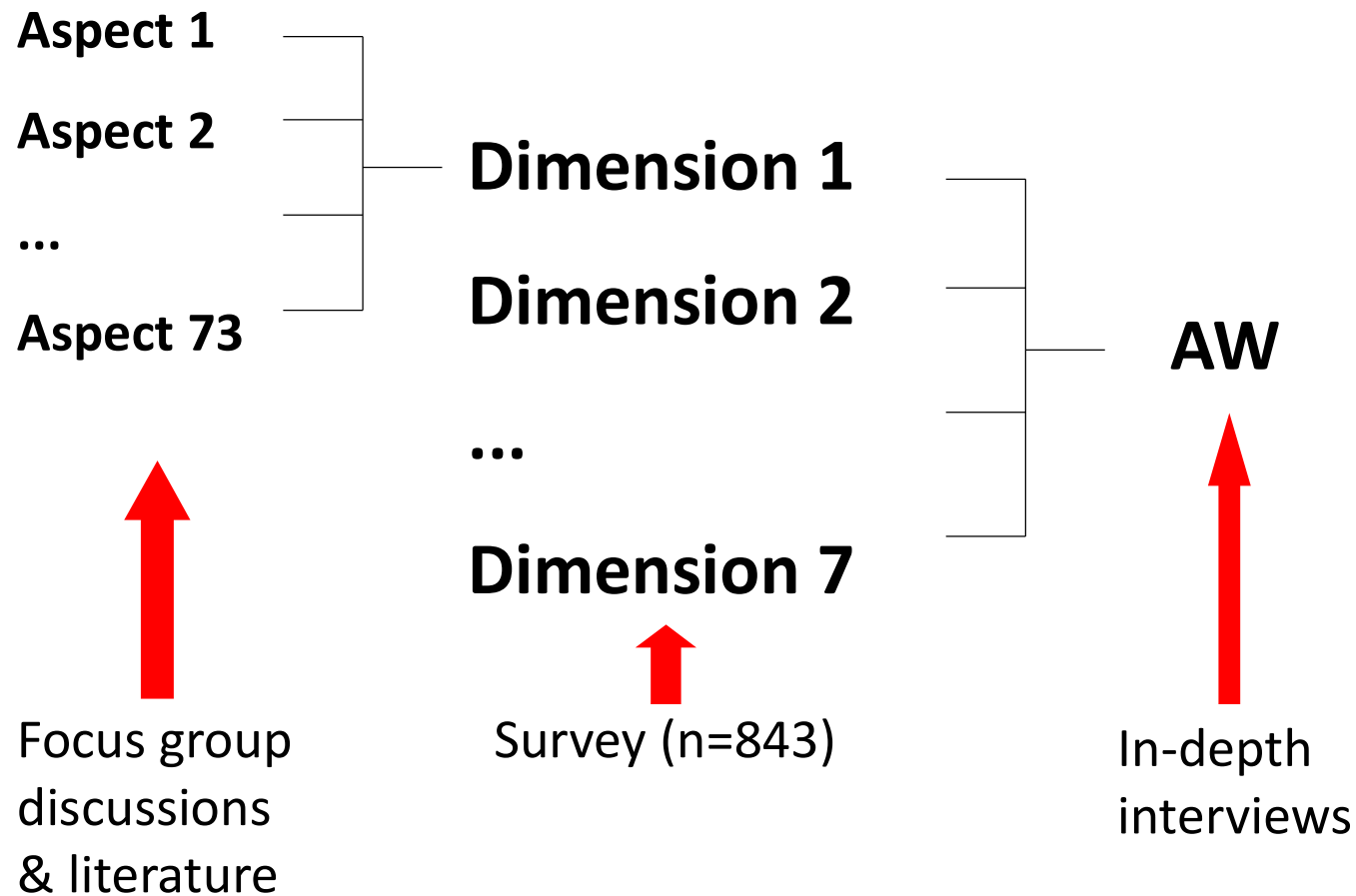
A. DEFINING ANIMAL WELFARE: WQ®

WQ® protocol (all species)

Principles	Criteria	
Good feeding	1.	Absence of prolonged hunger
	2.	Absence of prolonged thirst
Good housing	3.	Comfort around resting
	4.	Thermal comfort
	5.	Ease of movement
Good health	6.	Absence of injuries
	7.	Absence of disease
	8.	Absence of pain induced by management procedures
Appropriate behaviour	9.	Expression of social behaviour
	10.	Expression of other behaviours
	11.	Good human-animal relationship
	12.	Positive emotional state

A. DEFINING ANIMAL WELFARE

Survey: opinion Flemish citizens



PI=Perceived Importance
EB=Evaluatieve Belief
C=GAP (PI-EB)

	PI	EB	C		PI	EB	C
Stocking density	4.28 (0.74)	2.11 (1.03)	2.17 (1.58)	Mortality	4.04 (0.91)	2.86 (0.94)	1.18 (1.50)
Stress	4.15 (0.86)	2.22 (0.99)	1.93 (1.57)	Attention for animals	4.25 (0.74)	3.08 (1.02)	1.17 (1.35)
Slaughter without pain or stress	4.30 (0.86)	2.36 (1.09)	1.94 (1.66)	Natural birth	3.81 (1.00)	2.66 (1.08)	1.16 (1.77)
Available space	4.16 (0.75)	2.29 (1.07)	1.88 (1.61)	Maternal behaviour	3.80 (0.96)	2.66 (1.03)	1.14 (1.74)
Pain by human intervention	4.23 (0.87)	2.43 (1.04)	1.81 (1.56)	Variation in feed	3.90 (0.89)	2.75 (1.03)	1.14 (1.63)
Handling of animals	4.07 (0.84)	2.28 (0.99)	1.78 (1.63)	Shelter	3.94 (0.90)	2.82 (0.99)	1.12 (1.64)
Natural growth rate	4.04 (0.90)	2.29 (1.09)	1.75 (1.75)	Frustration	3.66 (0.96)	2.57 (1.02)	1.09 (1.73)
Thirst during transport	4.10 (0.89)	2.37 (0.96)	1.73 (1.59)	Number of transports	3.79 (0.93)	2.71 (1.04)	1.08 (1.73)
Space during transport	3.97 (0.86)	2.24 (1.01)	1.73 (1.69)	Growth hormones	3.26 (1.55)	2.18 (1.16)	1.07 (2.08)
Air quality	4.16 (0.73)	2.52 (0.94)	1.64 (1.40)	Lairage time	3.72 (0.97)	2.68 (0.98)	1.04 (1.68)
Duration of transport	4.03 (0.86)	2.46 (1.03)	1.57 (1.70)	Boredom	3.50 (1.02)	2.47 (1.05)	1.03 (1.85)
Outdoor access	4.02 (0.96)	2.46 (1.08)	1.56 (1.80)	Having fun	3.67 (1.04)	2.66 (1.04)	1.01 (1.88)
Natural behaviour	4.00 (0.88)	2.45 (1.05)	1.55 (1.71)	Sexual behaviour	3.72 (0.94)	2.72 (0.97)	1.00 (1.65)
Disease	4.37 (0.71)	2.82 (1.03)	1.55 (1.36)	Hunger during transport	3.66 (0.99)	2.67 (0.94)	1.00 (1.74)
Daylight	4.08 (0.85)	2.54 (1.01)	1.54 (1.61)	Light regime	3.74 (0.88)	2.77 (0.97)	0.97 (1.57)
Natural environment	3.88 (0.96)	2.38 (1.08)	1.50 (1.81)	Foraging behaviour	3.64 (1.00)	2.66 (1.03)	0.97 (1.74)
Skilled animal handlers	4.29 (0.70)	2.79 (1.03)	1.50 (1.40)	Availability of feed	4.23 (0.68)	3.28 (0.97)	0.95 (1.31)
Fear	4.04 (0.85)	2.55 (0.97)	1.49 (1.53)	Group housing	3.71 (0.85)	2.77 (0.99)	0.94 (1.58)
Respect for animals	4.39 (0.71)	2.92 (1.09)	1.48 (1.44)	Play behaviour	3.58 (1.03)	2.66 (1.06)	0.93 (1.88)
Procedure of (un)loading	3.97 (0.80)	2.51 (0.99)	1.46 (1.57)	Design of slaughterhouse	3.61 (0.96)	2.70 (0.98)	0.91 (1.70)
Body care	3.89 (0.97)	2.43 (1.06)	1.46 (1.80)	Group size	3.63 (0.94)	2.72 (1.01)	0.91 (1.72)
Transport of living animals	3.93 (0.89)	2.47 (1.03)	1.46 (1.69)	Functional areas in barn	3.53 (0.97)	2.67 (1.01)	0.87 (1.68)
Shockproof and calm transport	3.90 (0.86)	2.44 (1.00)	1.46 (1.66)	Life span	3.64 (1.02)	2.83 (1.05)	0.81 (1.79)
Exploratory behaviour	3.86 (0.92)	2.43 (1.05)	1.44 (1.78)	Flooring type	3.67 (0.89)	2.91 (0.98)	0.77 (1.63)
Hygiene in the barn	4.29 (0.68)	2.91 (0.98)	1.38 (1.30)	Barn temperature	3.84 (0.82)	3.10 (0.93)	0.75 (1.41)
Comfort	3.99 (0.93)	2.63 (1.01)	1.36 (1.47)	Frequency of visual inspection	3.68 (0.86)	3.07 (0.92)	0.62 (1.45)
Stunning	4.01 (1.08)	2.66 (1.10)	1.35 (1.90)	Farmer-animal bond	3.59 (1.05)	2.97 (1.01)	0.62 (1.67)
Availability of water	4.56 (0.62)	3.27 (1.02)	1.29 (1.25)	Mixture of groups during t/s	3.38 (1.09)	2.77 (1.00)	0.61 (1.84)
Ability to rest	4.05 (0.75)	2.77 (1.00)	1.28 (1.50)	Size of livestock herd on farm	3.40 (1.11)	2.80 (1.09)	0.60 (1.97)
Natural feed	3.88 (1.01)	2.61 (1.07)	1.27 (1.83)	Preventive medication	3.36 (1.08)	2.85 (1.04)	0.51 (1.55)
Pain by conspecifics	3.96 (0.79)	2.69 (0.94)	1.27 (1.47)	Taste of feed	3.59 (0.90)	3.11 (0.93)	0.48 (1.56)
Balanced feed	4.17 (0.71)	2.92 (1.06)	1.26 (1.45)	Stable groups	3.43 (0.90)	3.00 (0.88)	0.42 (1.49)
Curative medication	4.23 (0.66)	2.98 (1.00)	1.25 (1.27)	Genetic selection	3.30 (1.13)	2.92 (1.04)	0.38 (1.71)
Climate during transport	3.81 (0.88)	2.58 (1.02)	1.24 (1.69)	Feed on fixed moments	3.69 (0.89)	3.34 (0.94)	0.35 (1.47)
Social behaviour	3.84 (0.90)	2.62 (1.02)	1.22 (1.71)	Distraction material	3.14 (1.06)	2.82 (1.08)	0.33 (1.94)
Freshness of feed	4.24 (0.73)	3.03 (1.01)	1.21 (1.37)	Technical noise	3.22 (0.97)	2.91 (0.96)	0.31 (1.72)

A. DEFINING ANIMAL WELFARE

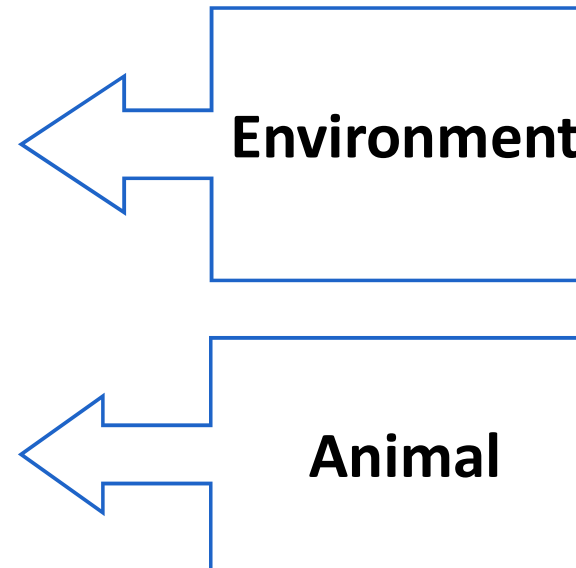
Factor 1: Housing & climate (14)

Being able to rest	0.67
Comfort	0.65
Outdoor access	0.63
Housing in group	0.63
Lighting regime	0.61
Air quality	0.61
Group size	0.59
Shelter	0.59
Available space	0.59
Mechanical noises	0.59
Flock density	0.58
Zones with different functions	0.58
Fixed living groups	0.57
Floor type	0.55

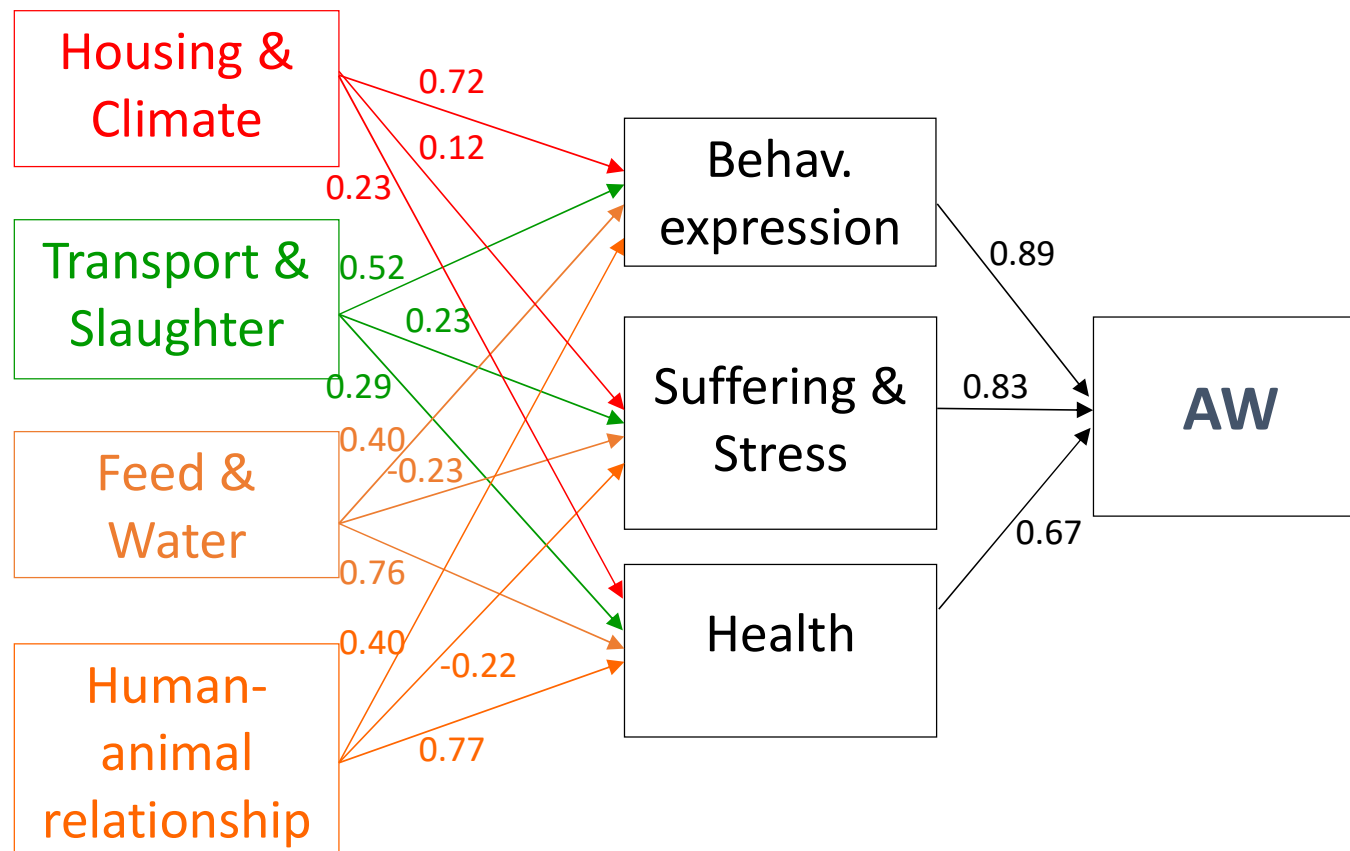
A. DEFINING ANIMAL WELFARE

Factor analyses: 7 Dimensions

- 1. Housing & Climate*
- 2. Transport & Slaughter*
- 3. Feed & Water*
- 4. Human-Animal relationship*
- 5. Expression of behaviour*
- 6. Suffering & Stress*
- 7. Health*

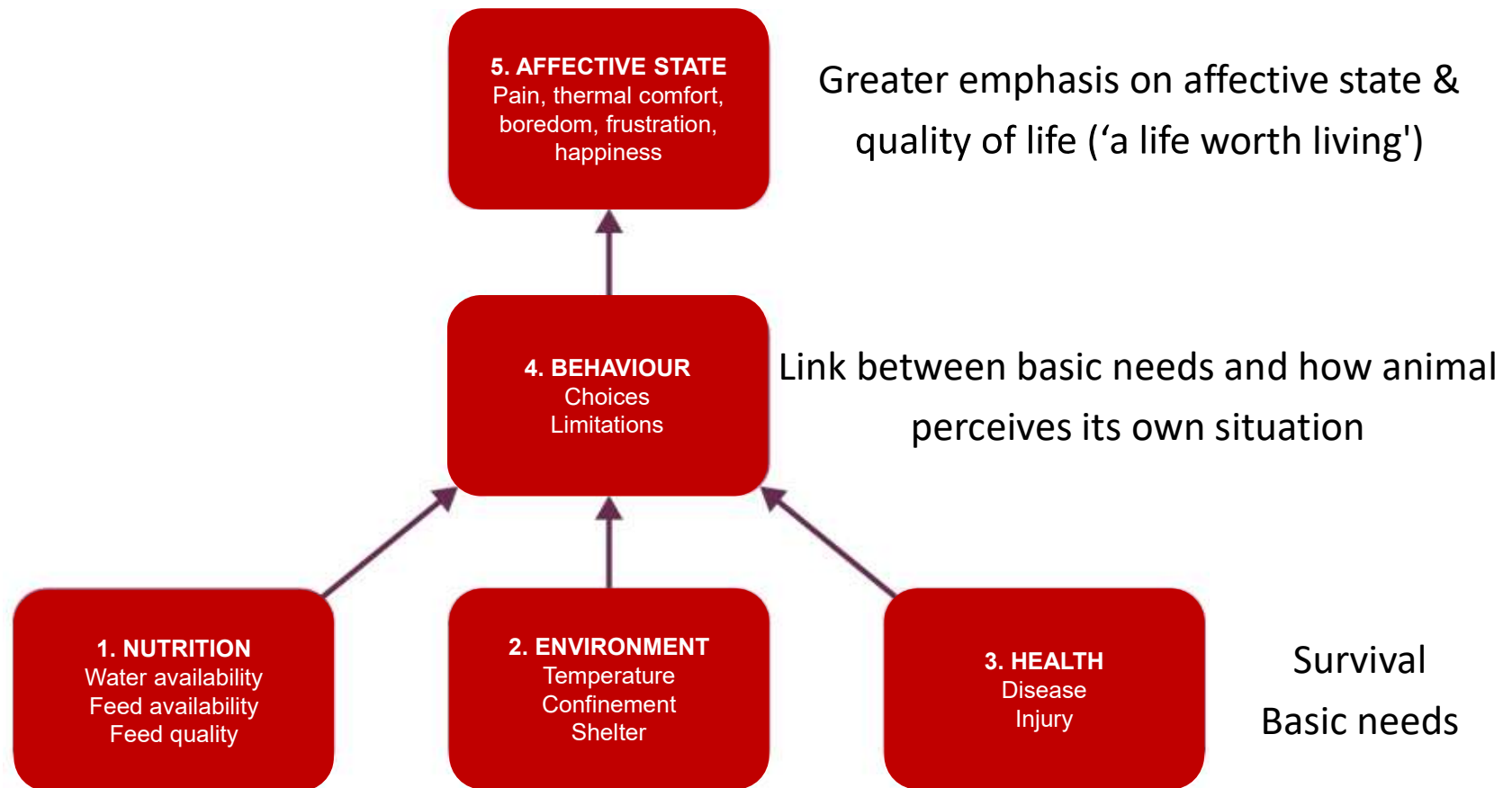


A. DEFINING ANIMAL WELFARE



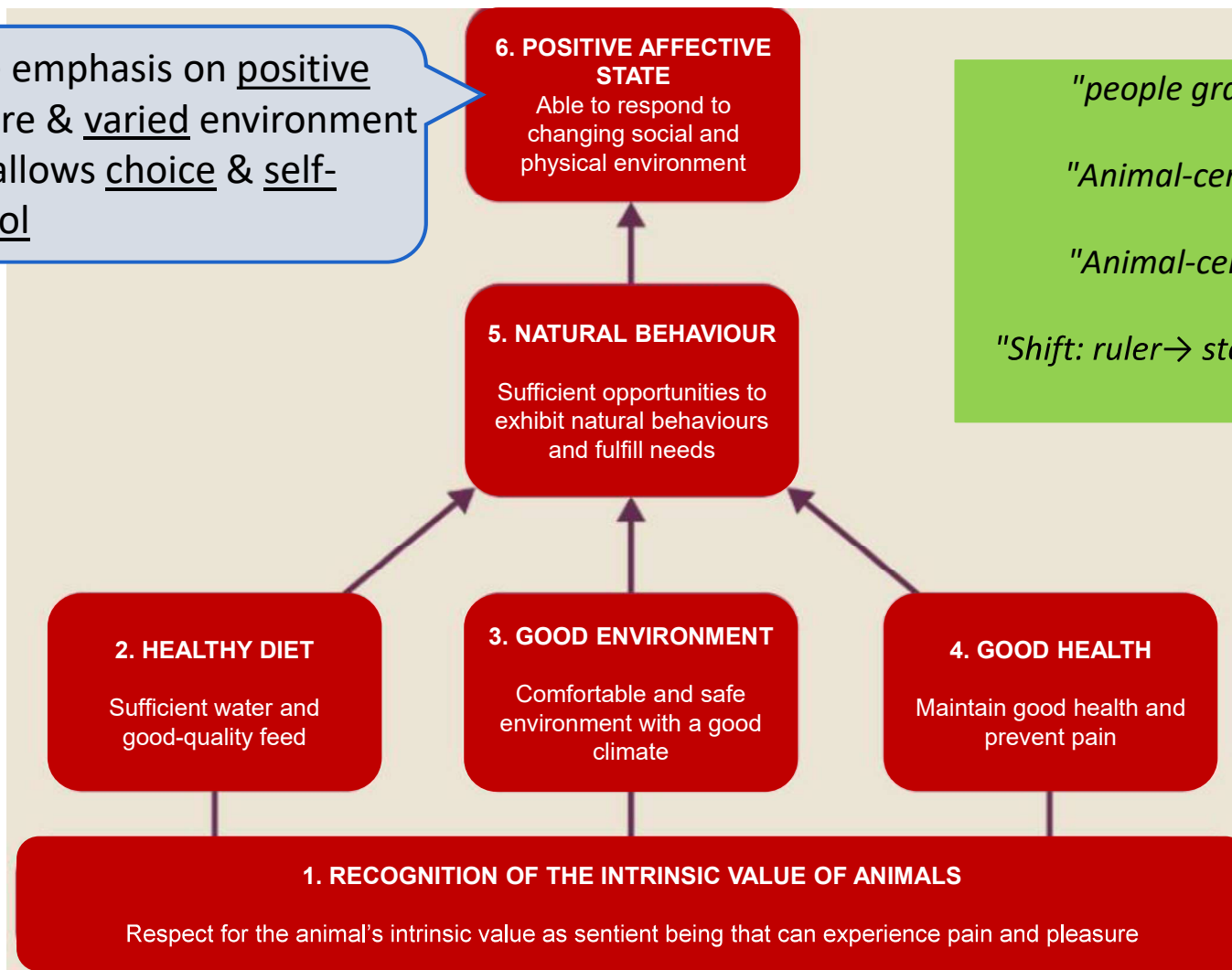
A. DEFINING ANIMAL WELFARE

Adapted 'Five Domains' model (after Mellor 2016)



A. DEFINING ANIMAL WELFARE DIGNITY

More emphasis on positive welfare & varied environment that allows choice & self-control



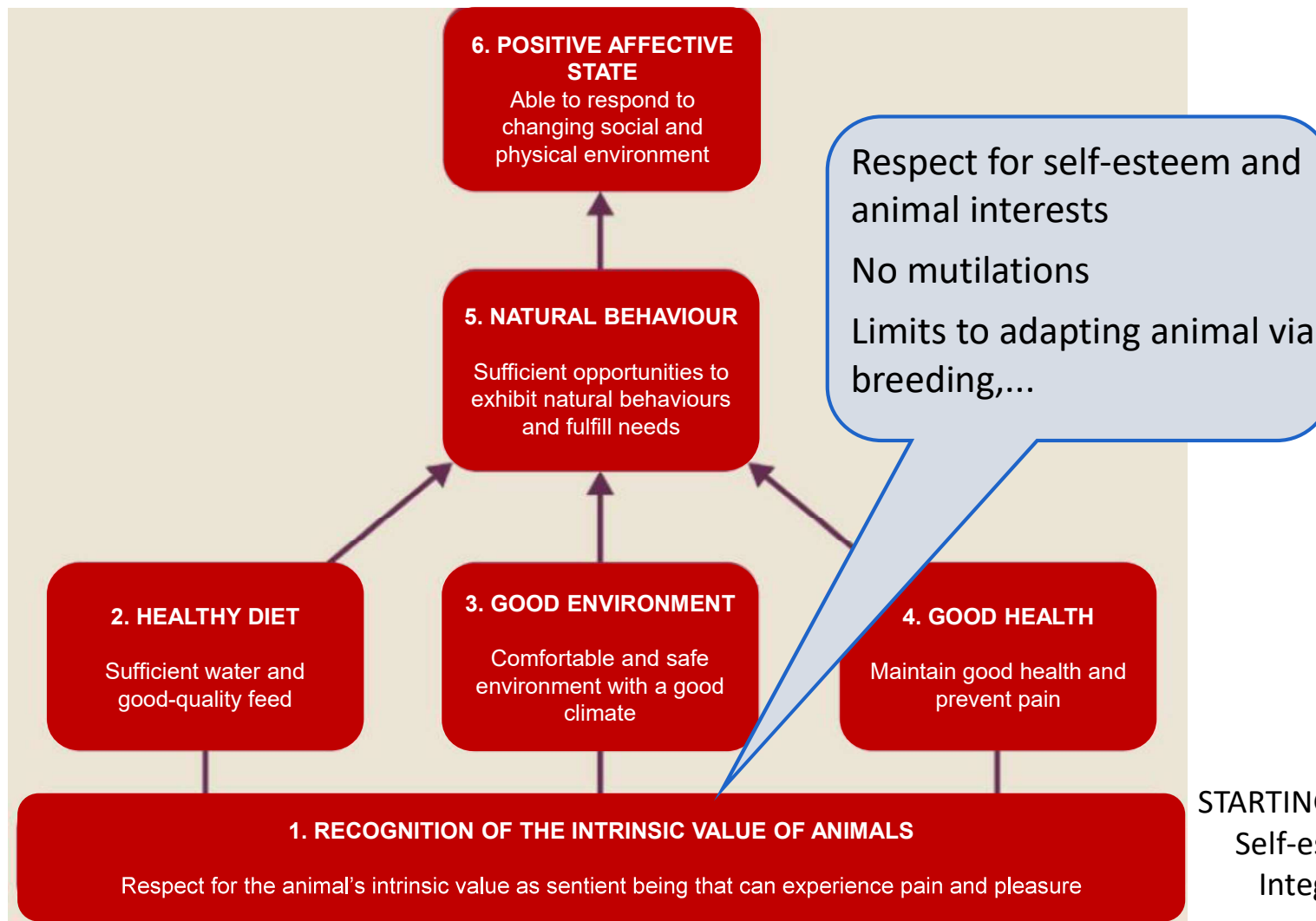
"people grant animals a good life"

"Animal-centred livestock farming"

"Animal-centred design of stables"

"Shift: ruler → steward → partner of animals"

A. DEFINING ANIMAL WELFARE DIGNITY



STARTING POINT:
Self-esteem
Integrity