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**Updating Animal Welfare Thinking:
Freedoms, Provisions, Aligned Animals Welfare Aims
and Lives Worth Living**

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Areas considered

- *Science-based* animal care began with *problem-solving*
- The '*Five Freedoms*' – strengths and weaknesses
- The '*Five Domains Model*' for animal welfare assessment
- The '*Five Provisions/Welfare Aims*' paradigm
- Lives '*Not Worth Living*', '*Worth Avoiding*', '*Worth Living*' and '*Good Lives*'
- **Conclusions**

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- *Science-based* animal care began with *problem-solving*
- *‘Three Orientations’* towards animal welfare
- The *‘Five Freedoms’* – strengths and weaknesses
- The *‘Five Domains Model’* for animal welfare assessment
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Science-based animal care began with *problem solving*

- 80-100 years ago we really did not *understand*:
 - How to keep animals *alive* by meeting their *basic survival needs*
 - Nor how to keep them *healthily productive*
- Husbandry was mostly *traditional, opinion-based, subjective*
- Huge *nutritional, environmental* and *health* problems existed

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- Huge *nutritional, environmental and health* problems existed
- **Decades of *problem-focused* research made *huge contributions***
- **Generally there were *three linked aims*:**
 - *Identify* the problem
 - *Understand* the underlying body functions
 - *Manipulate* those body functions to solve the problem

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- Generally there were *three linked aims*:
 - *Identify* the problem
 - *Understand* the underlying body functions
 - *Manipulate* those body functions to solve the problem
- **SURVIVAL and HEALTHY PRODUCTIVITY were the aims, NOT improved animal welfare – welfare was not considered then**
- **BUT these advances did improve welfare *incidentally***

Science-based animal care began with problem solving

Examples of science-based *animal care solutions*

- *Nutrition:*
 - *Lifecycle changes in nutrient requirements were defined*
 - *Deficiencies and excesses can now be detected*
 - *Much improved nutritional management is the result*

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 - *Animal-environment (in)compatibilities are better understood*
 - *Ways of improving the ‘genetic fit’ were developed*

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 - *Animal-environment (in)compatibilities are better understood*
 - *Ways of improving the ‘genetic fit’ were developed*
- *Health:*
 - *At least 70 vaccines were developed for animals*
 - *Importance of hygiene was recognised – use of antiseptics*
 - *Anaesthetics, analgesics, antibiotics, anthelmintics developed*
 - *Surgical techniques were vastly improved.*

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- **The ‘Five Freedoms’ – strengths and weaknesses**
- The ‘*Five Domains Model*’ for animal welfare assessment
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The ‘*Five Freedoms*’ – strengths and weaknesses

Freedoms	Provisions
1. Freedom <i>from</i> thirst, hunger and malnutrition	By providing ready access to fresh water and a diet to maintain full health and vigour
2. Freedom <i>from</i> discomfort and exposure	By providing an appropriate environment including shelter and a comfortable resting area
3. Freedom <i>from</i> pain, injury and disease	By prevention or rapid diagnosis and treatment
4. Freedom <i>from</i> fear and distress	By ensuring conditions and treatment which avoid mental suffering
5. Freedom <i>to</i> express normal behaviour	By providing sufficient space, proper facilities and the company of the animal’s own kind

The '*Five Freedoms*' – strengths and weaknesses

Strengths:

- A *paradigm* for considering *animal welfare* and *its management*
- Widely adopted since 1993/94 because it:
 - Scoped the wider dimensions of animal welfare
 - Specified areas of welfare concern
 - Identified five targets for welfare improvement – the *Freedoms*
 - Detailed practical ways to meet these targets – the *Provisions*
- NOTE ALSO, the *Five Freedoms* drew attention to the need to *understand, identify* and *minimise* negative welfare states.
- The major focus of the *last two decades* of animal welfare research
- ALSO RECALL the problem-solving ethos – being free of problems

The '*Five Freedoms*' – strengths and weaknesses

Weaknesses:

- Our current knowledge shows that the *Freedoms as stated* are *conceptually and biologically inaccurate and misleading*:
 - As *ideal or aspirational states* they are *impossible* to achieve
 - **THUS** as *principles* they are *unsound* and *illogical*
 - **AND** they do *not* provide a *convincing basis* for animal welfare assessment and management
- **ALSO**, expressed as '*freedom from*' they cannot be used to grade *AW compromise*
- The meaning of '*degrees of impaired freedom*' is *obscure* and lacks utility

The ‘*Five Freedoms*’ – strengths and weaknesses

- **THUS**, the Freedoms are *problematic*
- **BUT**, the PROVISIONS are still *practically useful* in some ways

Domain/category	Provisions
1. Nutrition	Provide ready access to fresh water and a diet to maintain full health and vigour
2. Environment	Provide an appropriate environment including shelter and a comfortable resting area
3. Health	Prevent or rapidly diagnose and treat injury and disease
4. Behaviour	Provide sufficient space, proper facilities and the company of the animal’s own kind
5. Mental experiences	Ensure conditions and treatment which avoid mental suffering

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The '*Five Domains Model*' for animal welfare assessment

Update on how animal welfare is currently understood

- It is a *state within the animal* – it is *not* animal care
- It relates to subjective experiences [*feelings, emotions or affects*]
- Brain structure/function must be sophisticated enough to support these experiences

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- It relates to subjective experiences [*feelings, emotions or affects*]
- Brain structure/function must be sophisticated enough to support these experiences
- *The subjective experiences arise via brain processing of two main types of sensory inputs:*
 - Inputs that reflect the animal's internal functional state
 - Inputs from the *animal's environment* that contribute to the its perception of its external circumstances

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Examples of *negative experiences* now include [$>$ Five Freedoms list]:

- *Internally focussed*: **Breathlessness, thirst, hunger, pain, nausea, dizziness, debility, weakness and sickness**
- *Externally focussed*: **Anxiety, fear, panic, frustration, anger, helplessness, loneliness, boredom and depression**

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Key features of the Model:

- It is *NOT* a definition of animal welfare. It is a facilitatory device.
- Systematic, structured and comprehensive assessment of animal welfare
- Its initial focus was on the sources, types and grading of AW compromise

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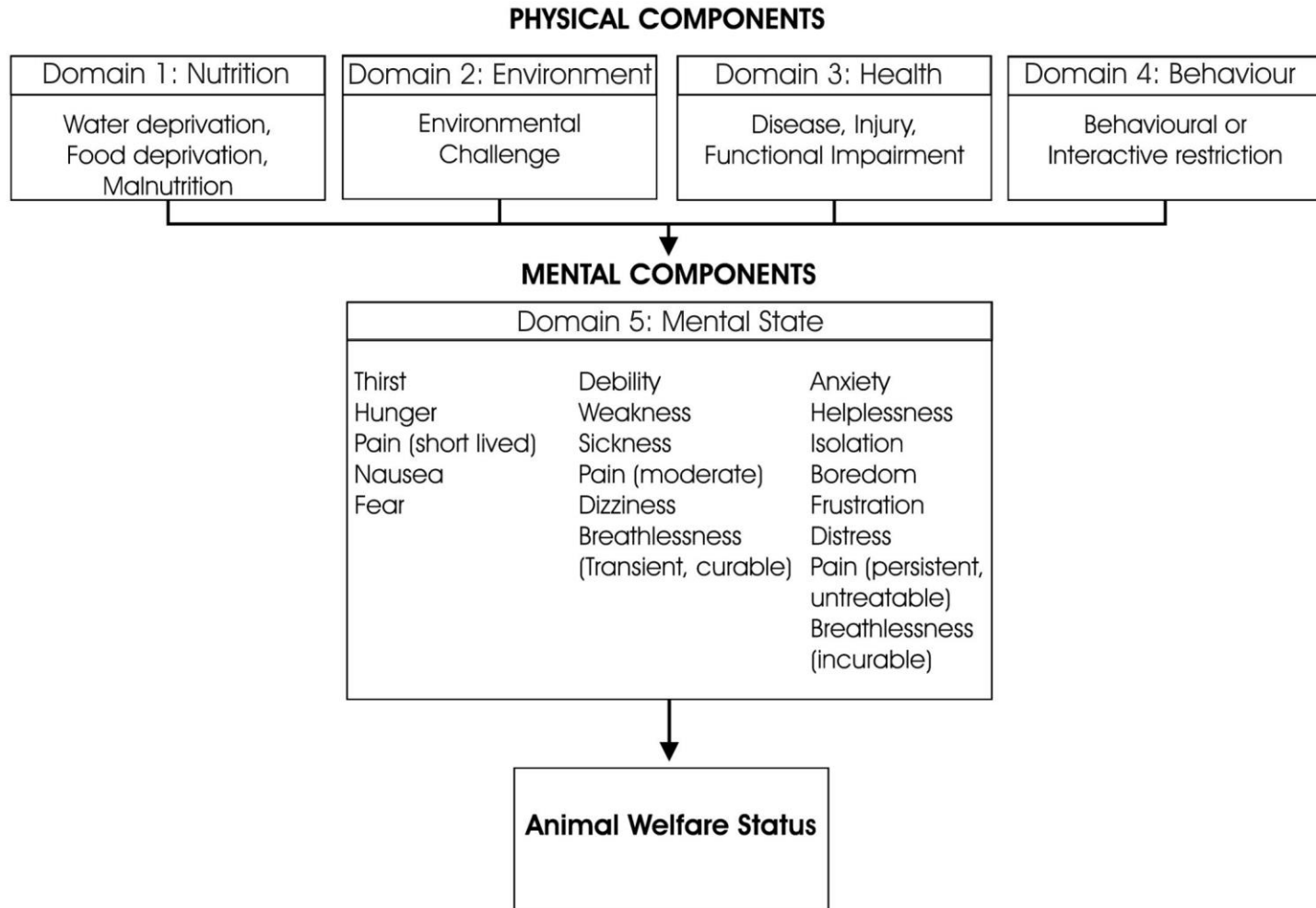
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- **Sources:**
 - Internal physical/functional states - *disruptions or imbalances*
 - External circumstance - *restrictions on behavioural expression*
- **Types:**
 - Internal focus: Impeded breathing/breathlessness; dehydration/thirst; nutrient shortage/hunger; injury/pain; GI infection/nausea; other infections/sickness, weakness
 - External focus: Isolation/loneliness, depression; threat/anxiety, fear, panic; barren conditions/boredom, helplessness, frustration, anger

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 - External focus: Isolation/*loneliness, depression*; threat/*anxiety, fear, panic*; barren conditions/*boredom, helplessness, frustration, anger*
- **Grading:**
 - A 5-tier compromise scale from *A (none; very low)* to *E (very severe)*
Based on validated *physical/functional and behavioural indices*

The *'Five Domains Model'* for animal welfare assessment – 2009



The '*Five Domains Model*' for animal welfare assessment

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- This involves the same systematic, structured and comprehensive approach
- AW enhancement relates to animals experiencing various forms of:
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- Domain 5. Mental State: positive experiences that contribute to welfare enhancement:
 - Domain 1. Nutrition: Drinking pleasures; pleasant smells, tastes & textures from a variety of foods; satiety

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 - *Domain 3. Health: Comfort of good health & high functional capacity; vitality of physical fitness*

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 - *Domain 3. Health: Comfort of good health & high functional capacity; vitality of physical fitness*
 - *Domain 4. Behaviour: goal-directed exploration & foraging/hunting; affectionately bonded; maternally rewarded; excitedly playful; sexually gratified; calmness, in control; feeling safe; exercising choice*

The '*Five Domains Model*' for animal welfare assessment

Key features:

Grading enhancement:

- The grading of AW enhancement employs a 4-tier scale
- The scale [0, +, ++, +++] focuses on apparently rewarding behaviours
- Specifically, the animals' use of opportunities to engage in such behaviours

It is important to understand key interactions between negative and positive experiences

Key Animal Welfare-Related Experiences

Negative – **Neutral** – **Positive**

Mellor & Beausoleil (2015); Mellor (2016a)

Negative ← ↔ → Neutral ← ↔ → Positive

Survival-critical negative experiences ||

[Internal imbalances or disruptions]

Breathlessness, Thirst, Hunger, Pain	→	→→→→→→→	↓↓↓
Nausea, Dizziness, Debility	→	→ INHIBIT →	↓↓↓
Weakness, Sickness	→	→→→→→	↓↓↓

Situation-related negative experiences ← → **Situation-related positive experiences**

External circumstances

Threatening; Barren; Restricted; Isolated

Safe; Stimulus-rich; Spacious; Companions

*Anxiety, Fear, Panic, Helplessness
Loneliness, Boredom, Depression
Frustration, Anger*

*Calm, Secure, Protected, Confident
Engaged, interested, in control
Affectionately sociable, bonded
Rewarded maternally, paternally, or as a group
Excitedly playful; Sexually gratified*

Areas considered

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The '*Five Provisions/Welfare Aims*' paradigm

Three key issues regarding the '*Five Freedoms*':

1. The *Provisions* more influential than the '*Freedoms*' because they provide *practical advice on animal welfare management*
1. Most *negative experiences* listed in the '*Five Freedoms*' can only be *minimised, NOT eliminated*
1. The '*Freedoms*' mostly focussed on *negative experiences*, BUT now we must ALSO include *positive experiences*.

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1. The '*Freedoms*' mostly focussed on *negative experiences*, BUT now we must ALSO include *positive experiences*.

Three steps are therefore recommended:

1. *Avoid reference to the 'Five Freedoms' to reduce misconceptions and confusion*
1. *Emphasise the 'Provisions', BUT update them to give attention both to negative and positive experiences or states*
1. *Align each Provision with salient Animal Welfare Aims that emphasise animals' experiences that most affect their welfare'.*

The '*Five Provisions/Welfare Aims*' paradigm

Provision	Animal Welfare Aims
1. Good nutrition: Provide ready access to fresh water and a diet to maintain full health and vigour	<u>Minimise</u> thirst and hunger and <u>enable</u> eating to be a pleasurable experience

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<p>3. <i>Good health:</i> Prevent or rapidly diagnose and treat disease and injury, and foster good muscle tone, posture and cardiorespiratory function</p>	<p><u>Minimise</u> breathlessness, nausea, pain and other aversive experiences and <u>promote</u> the pleasures of robustness, vigour, strength and well coordinated physical activity</p>

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4. Appropriate behaviour: Provide sufficient space, proper facilities, congenial company and appropriately varied conditions	<u>Minimise</u> threats and unpleasant restrictions on behaviour and <u>promote</u> engagement in rewarding activities

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4. Appropriate behaviour: Provide sufficient space, proper facilities, congenial company and appropriately varied conditions	<u>Minimise</u> threats and unpleasant restrictions on behaviour and <u>promote</u> engagement in rewarding activities
5. Positive mental experiences: Provide safe, congenial and species-appropriate opportunities to have pleasurable experiences	<u>Promote</u> various forms of comfort, pleasure, interest, confidence and a sense of control

The '*Five Provisions/Welfare Aims*' paradigm

Integrated elements of other Conceptual Frameworks:

1. The names of the Five Provisions parallel those of the Five Domains – 'nutrition', 'environment', 'health', 'behaviour' and 'mental state' – 1994-2015.
1. The first four names are the same as the four European Welfare Quality (WQ[®]) principles – 'good nutrition', 'good environment', 'good health' and 'appropriate behaviour' – 2007-2011.

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1. The first four names are the same as the four European Welfare Quality (WQ[®]) principles – 'good nutrition', 'good environment', 'good health' and 'appropriate behaviour' – 2007-2011.
1. Both frameworks note that negative experiences and states must be minimised and ALSO that positive experiences and states must be promoted.
1. Provision No. 5 is directed at the now accepted objective of giving greater attention to the promotion of positive welfare states.

The '*Five Provisions/Welfare Aims*' paradigm – Implications

- *Key animal care strategies:*
 - *Implement the Five Provisions in order to:*
 - *Minimise internally generated negative experiences*
 - *Minimise externally generated negative experiences AND/OR
Replace them with positive experiences*
 - *Monitor the welfare state using well-validated functional and behavioural indicators*

The '*Five Provisions/Welfare Aims*' paradigm – Implications

- **Key animal care strategies:**
 - Implement the *Five Provisions* in order to:
 - Minimise *internally generated negative experiences*
 - Minimise *externally generated negative experiences* AND/OR
Replace them with positive experiences
 - Monitor the welfare state using well-validated functional and behavioural indicators
- **Properly train animal care staff to ensure that they possess:**
 - Good *welfare-related* knowledge, skills and attitudes towards animals
 - Behave *empathetically* and, as appropriate, bond with the animals
 - The ability to recognise when welfare problems arise
 - The ability to implement remedies when required, if necessary with advice.

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Making QoL assessment is difficult:

Nevertheless, this progression acknowledges that:

- *Animal care* should be directed at *more than mere survival*
- THUS, it should aim at animals *thriving*
- *Animals can* and, given the opportunity, *do have positive experiences*
- An *overall positive balance* is possible *and should be mandatory*
- *Minimum code standards* should therefore be reviewed and *should aim to include validated enrichments*

Lives ‘*Not Worth Living*’, ‘*Worth Avoiding*’, ‘*Worth Living*’ and ‘*Good Lives*’

Quality of Life – *the balance between negative and positive affects:*

- *Notional Quality of Life Scale*
- Green & Mellor (2011) plus FAWC (2009) and Yeates (2011)

Category	Description
A good life	<i>Balance is strongly positive: full compliance with best practice recommendations well above minimum standards</i>
A life worth living	<i>Balance is positive, but less so: full compliance with minimum standards that <u>include significant enrichments</u></i>
Point of balance	<i>Neutral positive-negative affective balance</i>
A life worth avoiding	<i>Balance is negative: can be remedied rapidly by veterinary treatment or change in husbandry practice</i>
A life not worth living	<i>Balance is strongly negative: cannot be remedied rapidly so that euthanasia is the only humane alternative</i>

Lives '*Not Worth Living*', '*Worth Avoiding*', '*Worth Living*' and '*Good Lives*'

Questions that may assist this process [FAWC 2009; Green & Mellor 2011]:

- **Overall: What opportunities are provided for the animals' comfort, pleasure, interest, confidence and sense of being in control?**

Lives '*Not Worth Living*', '*Worth Avoiding*', '*Worth Living*' and '*Good Lives*'

Questions that may assist this process [FAWC 2009; Green & Mellor 2011]:

- **Overall:** What opportunities are provided for the animals' comfort, pleasure, interest, confidence and sense of being in control?
- **More specifically:**
 - What provisions have been made to ensure that eating the food provided will be an enjoyable experience?
 - How will expressions of normal behaviour be encouraged and harmless wants met?

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- **Overall:** What opportunities are provided for the animals’ comfort, pleasure, interest, confidence and sense of being in control?
- **More specifically:**
 - What provisions have been made to ensure that eating the food provided will be an enjoyable experience?
 - How will expressions of normal behaviour be encouraged and harmless wants met?
 - What environmental choices will be available that will encourage exploratory and food acquisition activities which are rewarding?
 - What provisions have been made to enable social species to engage in bonding and bond affirming activities, and, as appropriate, other affiliative interactions such as maternal, paternal or group care of young, play behaviour and sexual activity?

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Conclusions

- There is a clear need to *update the characterisation of animal welfare* to accommodate recent developments in understanding
- *Animal care needs to aim higher than mere survival via negative-to-neutral nutritional, environmental and health management*
- *Acceptable animal welfare management* should focus on **BOTH** the minimisation to negative experiences and the provision of opportunities to have positive experiences
- *Minimum code standards* should include *greater provision for validated enrichments – this is beginning to happen*
- My purpose here has been to *stimulate discussion and action*

Reminder of the areas considered

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