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

Professor David J Mellor
BSc(Hons), PhD, HonAssocRCVS, ONZM

D.J.Mellor@massey.ac.nz
Animal Welfare Science and Bioethics Centre

Professor Kevin J Stafford – Co-Director
Professor Craig B Johnson – Co-Director
Dr Ngaio J Beausoleil – Deputy Director

Professor David J Mellor – Foundation Director

Collaborating Centre for Animal Welfare Science and Bioethical Analysis:
Founding Partner

http://animalwelfare.massey.ac.nz
Key Published Sources

Areas considered

• Science-based animal care began with problem-solving
• The ‘Five Freedoms’ – strengths and weaknesses
• Updating animal welfare thinking
• The ‘Five Provisions/Welfare Aims’ paradigm
• Lives ‘Not Worth Living’, ‘Worth Avoiding’, ‘Worth Living’ and ‘Good Lives’
• Conclusions
Areas considered

- Science-based animal care began with problem-solving
- The ‘Five Freedoms’ – strengths and weaknesses
- Updating animal welfare thinking
- The ‘Five Provisions/Welfare Aims’ paradigm
- Conclusions
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
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

• **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
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
- 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

- **SURVIVAL** and **HEALTHY PRODUCTIVITY** were the aims, not improved animal welfare – welfare was not considered then
- BUT these advances did improve welfare *incidentally*
Areas considered

• Science-based animal care began with problem-solving
• The ‘Five Freedoms’ – strengths and weaknesses
• Updating animal welfare thinking
• The ‘Five Provisions/Welfare Aims’ paradigm
• Lives ‘Not Worth Living’, ‘Worth Avoiding’, ‘Worth Living’ and ‘Good Lives’
• Conclusions
The ‘Five Freedoms’ – strengths and weaknesses

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

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

- *Science-based* animal care began with *problem-solving*
- The ‘Five Freedoms’ – strengths and weaknesses
- Updating animal welfare thinking
- The ‘Five Provisions/Welfare Aims’ paradigm
- Conclusions
Updating animal welfare thinking

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
Updating animal welfare thinking

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
• 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
Updating animal welfare thinking

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
• 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*

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
Updating animal welfare thinking

How animal welfare is currently understood:

• **Sources of negative subjective experiences:**
  – Internal physical/functional states - *disruptions or imbalances*
  – External circumstance – *behavioural restrictions, challenge, isolation*
Updating animal welfare thinking

How animal welfare is currently understood:

• **Sources of negative subjective experiences:**
  – Internal physical/functional states - *disruptions or imbalances*
  – External circumstance – *behavioural restrictions, challenge, isolation*

• **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
Updating animal welfare thinking

How animal welfare is currently understood:

• Now animal welfare *enhancement* is ALSO included:
  – It relates to animals experiencing various forms of:
    *Comfort, pleasure, interest, confidence and a sense of control*
Updating animal welfare thinking

How animal welfare is currently understood:

• Now animal welfare *enhancement* is ALSO included:
  – It relates to animals experiencing various forms of: *Comfort, pleasure, interest, confidence and a sense of control*

• *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*
Updating animal welfare thinking

How animal welfare is currently understood:

• Now animal welfare *enhancement* is ALSO included:
  – It relates to animals experiencing various forms of:
    *Comfort, pleasure, interest, confidence and a sense of control*

• **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**
  – **Domain 2. Environment: Auditory, olfactory, visual, thermal & physical comfort; variety-related comfort**
Updating animal welfare thinking

How animal welfare is currently understood:

• Now animal welfare *enhancement* is ALSO included:
  – It relates to animals experiencing various forms of:
    *Comfort, pleasure, interest, confidence and a sense of control*

• **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
  – **Domain 2. Environment:** Auditory, olfactory, visual, thermal & physical comfort; variety-related comfort
  – **Domain 3. Health:** Comfort of good health & high functional capacity; vitality of physical fitness
Updating animal welfare thinking

How animal welfare is currently understood:

• Now animal welfare *enhancement* is ALSO included:
  – It relates to animals experiencing various forms of:
    Comfort, pleasure, interest, confidence and a sense of control

• *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*
  – *Domain 2. Environment: Auditory, olfactory, visual, thermal & physical comfort; variety-related comfort*
  – *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*
Updating animal welfare thinking

How animal welfare is currently understood:

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

- *Science-based* animal care began with *problem-solving*
- The ‘Five Freedoms’ – strengths and weaknesses
- Updating animal welfare thinking
- The ‘Five Provisions/Welfare Aims’ paradigm
- Conclusions
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*.
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.

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

<table>
<thead>
<tr>
<th>Provision</th>
<th>Animal Welfare Aims</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Good nutrition:</strong> Provide ready access to fresh water and a diet to maintain full health and vigour</td>
<td>Minimise thirst and hunger and enable eating to be a pleasurable experience</td>
</tr>
</tbody>
</table>
The ‘Five Provisions/Welfare Aims’ paradigm

<table>
<thead>
<tr>
<th>Provision</th>
<th>Animal Welfare Aims</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Good nutrition: Provide ready access to fresh water and a diet to maintain full health and vigour</td>
<td>Minimise thirst and hunger and enable eating to be a pleasurable experience</td>
</tr>
<tr>
<td>2. Good environment: Provide shade/shelter or suitable housing, good air quality and comfortable resting areas</td>
<td>Minimise discomfort and exposure and promote thermal, physical and other comforts</td>
</tr>
</tbody>
</table>
The ‘Five Provisions/Welfare Aims’ paradigm

<table>
<thead>
<tr>
<th>Provision</th>
<th>Animal Welfare Aims</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Good nutrition:</strong></td>
<td>Minimise thirst and hunger and enable eating to be a pleasurable experience</td>
</tr>
<tr>
<td>Provide ready access to</td>
<td>Minimise discomfort and exposure and promote thermal, physical and other comforts</td>
</tr>
<tr>
<td>fresh water and a diet to</td>
<td></td>
</tr>
<tr>
<td>maintain full health</td>
<td></td>
</tr>
<tr>
<td>and vigour</td>
<td></td>
</tr>
<tr>
<td><strong>2. Good environment:</strong></td>
<td>Minimise breathlessness, nausea, pain and other aversive experiences and promote the</td>
</tr>
<tr>
<td>Provide shade/shelter or</td>
<td>pleasures of robustness, vigour, strength and well coordinated physical activity</td>
</tr>
<tr>
<td>suitable housing, good air</td>
<td></td>
</tr>
<tr>
<td>quality and comfortable</td>
<td></td>
</tr>
<tr>
<td>resting areas</td>
<td></td>
</tr>
<tr>
<td><strong>3. Good health:</strong></td>
<td>Minimise breathlessness, nausea, pain and other aversive experiences and promote the</td>
</tr>
<tr>
<td>Prevent or rapidly</td>
<td>pleasures of robustness, vigour, strength and well coordinated physical activity</td>
</tr>
<tr>
<td>diagnose and treat</td>
<td></td>
</tr>
<tr>
<td>disease and injury, and</td>
<td></td>
</tr>
<tr>
<td>foster good muscle tone,</td>
<td></td>
</tr>
<tr>
<td>posture and cardiorespira-</td>
<td></td>
</tr>
<tr>
<td>tory function</td>
<td></td>
</tr>
</tbody>
</table>
### The ‘Five Provisions/Welfare Aims’ paradigm

<table>
<thead>
<tr>
<th>Provision</th>
<th>Animal Welfare Aims</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Good nutrition: Provide ready access to fresh water and a diet to maintain full health and vigour</td>
<td>Minimise thirst and hunger and enable eating to be a pleasurable experience</td>
</tr>
<tr>
<td>2. Good environment: Provide shade/shelter or suitable housing, good air quality and comfortable resting areas</td>
<td>Minimise discomfort and exposure and promote thermal, physical and other comforts</td>
</tr>
<tr>
<td>3. Good health: Prevent or rapidly diagnose and treat disease and injury, and foster good muscle tone, posture and cardiorespiratory function</td>
<td>Minimise breathlessness, nausea, pain and other aversive experiences and promote the pleasures of robustness, vigour, strength and well coordinated physical activity</td>
</tr>
<tr>
<td>4. Appropriate behaviour: Provide sufficient space, proper facilities, congenial company and appropriately varied conditions</td>
<td>Minimise threats and unpleasant restrictions on behaviour and promote engagement in rewarding activities</td>
</tr>
</tbody>
</table>
## The ‘Five Provisions/Welfare Aims’ paradigm

<table>
<thead>
<tr>
<th>Provision</th>
<th>Animal Welfare Aims</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Good nutrition:</strong> Provide ready access to fresh water and a diet to maintain full health and vigour</td>
<td><em>Minimise</em> thirst and hunger and <em>enable</em> eating to be a pleasurable experience</td>
</tr>
<tr>
<td><strong>2. Good environment:</strong> Provide shade/shelter or suitable housing, good air quality and comfortable resting areas</td>
<td><em>Minimise</em> discomfort and exposure and <em>promote</em> thermal, physical and other comforts</td>
</tr>
<tr>
<td><strong>3. Good health:</strong> Prevent or rapidly diagnose and treat disease and injury, and foster good muscle tone, posture and cardiorespiratory function</td>
<td><em>Minimise</em> breathlessness, nausea, pain and other aversive experiences and <em>promote</em> the pleasures of robustness, vigour, strength and well coordinated physical activity</td>
</tr>
<tr>
<td><strong>4. Appropriate behaviour:</strong> Provide sufficient space, proper facilities, congenial company and appropriately varied conditions</td>
<td><em>Minimise</em> threats and unpleasant restrictions on behaviour and <em>promote</em> engagement in rewarding activities</td>
</tr>
<tr>
<td><strong>5. Positive mental experiences:</strong> Provide safe, congenial and species-appropriate opportunities to have pleasurable experiences</td>
<td><em>Promote</em> various forms of comfort, pleasure, interest, confidence and a sense of control</td>
</tr>
</tbody>
</table>
The ‘Five Provisions/Welfare Aims’ paradigm

Integrated elements of other Conceptual Frameworks:


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.
The ‘Five Provisions/Welfare Aims’ paradigm

Integrated elements of other Conceptual Frameworks:


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.
Areas considered

- Science-based animal care began with problem-solving
- The ‘Five Freedoms’ – strengths and weaknesses
- Updating animal welfare thinking
- The ‘Five Provisions/Welfare Aims’ paradigm
- Conclusions

Making QoL assessment is difficult:

Nevertheless, this QoL 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 promoted
- Minimum code standards should therefore be reviewed and should aim to include validated enrichments

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

- *Notional Quality of Life Scale*

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

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?

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?

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?
  – 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?
Areas considered

- *Science-based* animal care began with *problem-solving*
- The ‘*Five Freedoms*’ – strengths and weaknesses
- Updating animal welfare thinking
- The ‘*Five Provisions/Welfare Aims*’ paradigm
- Lives ‘*Not Worth Living*’, ‘*Worth Avoiding*’, ‘*Worth Living*’ and ‘*Good Lives*’
- Conclusions
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
Thank you