A Review of Animal Welfare Policy and Assessment Frameworks

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Foreword

This project was conducted to examine the contemporary definitions of animal welfare, and to analyse the contemporary frameworks or paradigms that have emerged to underline assessments of animal welfare.

This report is an addition to Australian Eggs Limited's range of peer reviewed research publications and an output of our R&D program, which aims to support improved efficiency, sustainability, product quality, education and technology transfer in the Australian egg industry.

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1 Purpose

This paper looks at accepted contemporary definitions of animal welfare, and analyses the contemporary frameworks or paradigms that have emerged to underline assessments of animal welfare with respect to their roles and limitations, in providing a basis for informing animal welfare considerations and underpinning policy structures. A sound understanding of the available paradigms for animal welfare assessment may assist in driving more informed public debate.

To provide further context, this paper presents some high level analysis of current animal welfare policy in key jurisdictions such as the EU, New Zealand, Canada and the USA, with particular reference to hen welfare where possible. It acknowledges, but does not seek to summarise, key recent and potentially influential scientific reviews concerning the welfare of animals with reference to laying hens. The intention of the analysis presented in this paper is to assist the egg industry in driving informed public debate on animal welfare, and provide an insight into policy structures that could be applied to drive balanced consideration of animal welfare outcomes in the egg industry.

2 Background

The meaning of animal welfare and the policy frameworks underpinning welfare assessment have evolved considerably as farm animal production systems have intensified and housing systems increasingly have taken animals from an outdoor environment into higher density housing systems.

For many years, policies around animal welfare were centred on cruelty and its prevention. The earliest legislation, and indeed the earliest organisations which formed to advocate for animal welfare, were focused on the prevention of cruelty to animals. Cruelty was generally defined in terms of actions by people which cause unreasonable pain and suffering, and could be considered to be mostly about preventing or responding to animal abuse. These defined (and legislated) actions (offences) were couched in terms such as 'wounds, mutilates, tortures, overrides, overdrives, overworks, abuses, beats, worries, torments or terrifies, loads, crowds or confines, drives, conveys, carries or packs, works, rides, drives or uses an animal when it is unfit for the purpose', etc. There was no national approach or policy position on the prevention of cruelty to animals, and there were significant differences between states in legislation and enforcement.

Prevention of cruelty has more recently broadened into the more subjective notion of protecting and enhancing the welfare of animals. This changing approach was in large part associated with the growing intensification of animal production, and growing debate (in industrialised countries) about the confinement of farm animals.

Public policy on farm animal welfare became focused on voluntary codes of practice that endeavoured to set out acceptable minimum practices and requirements for the husbandry and management of animals used in agriculture. While not legally mandatory, the codes did provide a basis for animal owners and industries to defend farming practices from allegations of cruelty when complied with. Put in more contemporary terms, they assisted livestock producers to demonstrate they were meeting their duty of care to the animals they managed. Nonetheless the overall framework within which animal welfare was assessed still tended to focus on negative welfare states and the prevention/avoidance of suffering.

Voluntary codes of practice have given way to minimum acceptable welfare standards, which are mandatory, together with welfare guidelines that reflect good or best practice and assist to define pathways for ongoing improvement. In the current public and industry policy environment, the *Australian Animal Welfare Standards and Guidelines* aim to harmonise and streamline livestock welfare legislation in Australia, minimise risks to animal welfare and be practical for industry. They are to be based on available scientific knowledge, but also attempt to reflect current practice and community expectations. Whilst a sound basis for setting public policy, this approach (setting standards <u>and</u> guidelines) sets up a tension between what should be a requirement of minimum acceptable standards and what should be set out as a guideline for best practice.

A simultaneous trend has been the increasing urbanisation of society, meaning that most people are not well informed about farming or farming practices, primarily gleaning their understandings from mass media and vocal advocacy groups. The community has become more vocal and influential concerning animal welfare, and formal processes to support national animal welfare standards development necessarily canvass community views, and provide a focus for advocacy.

These changes in the policy structures and approaches have been accompanied by an evolving range of principles, paradigms or frameworks for assessing animal welfare. Earliest assessments involved the relatively simplistic determination of the presence or absence of cruelty (or of those actions that were defined as cruel). In 1979 in Britain the 'Five Freedoms' principles were developed. Four of the

principles reflected the largely accepted need to assess freedom from poor welfare conditions such as hunger/thirst, discomfort, pain/injury/disease, and fear/distress. What was new was the fifth 'freedom' being freedom to express normal behaviour. This in one sense introduced a whole new dimension to what acceptable animal welfare means and how it can or should be assessed.

However, advances in animal welfare science since these principles were first expressed almost 40 years ago have exposed their limitations, which have become particularly evident when trying to use them as the basis to determine whether or not farming practices are acceptable for the purposes of developing standards.

A number of contemporary conceptual frameworks or paradigms have developed and are in current use to assess animal welfare. However, like the Five Freedoms principles, each has a role, but also limitations, as a basis for informing animal welfare outcomes.

A final introductory point. Our understanding of animal welfare is necessarily both science-based and values-based. In that sense, animal welfare is like some other difficult public policy areas charged by often vocal individual and collective opinions – such as environmental sustainability – where *the tools of science are used within a framework of values*.

In other words, animal welfare, though quite amenable to scientific study, is also founded in values-based ideas about what people believe to be more or less desirable. There is no 'absolute truth'.

3 Defining animal welfare

The most widely accepted definition of animal welfare currently in use stems from an approach espoused by Cambridge University's Professor Donald Broom in 1986, who stated that "the welfare of an individual (animal) is its state as regards its attempts to cope with its environment".

Australian Animal Welfare Standards and Guidelines borrow from Broom and define animal welfare as: "The state of an animal and how well it is coping with the conditions in which it lives".

The World Animal Health Organisation (OIE) Animal Health Code also defines animal welfare as meaning "how an animal is coping with the conditions in which it lives". The Code goes on to explain "an animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment."

As a 'state', animal welfare can thus be good or bad, acceptable or unacceptable. In that sense it is not appropriate to talk about 'protecting' animal welfare or 'ensuring' animal welfare.

4 Contemporary frameworks for assessment of animal welfare

There are three main conceptual frameworks that are currently in use as a basis to assess animal welfare, namely biological functioning, affective state and natural living. These frameworks are each quite different, provide for a science/evidence base to different degrees, and their preferential application one over another partly explains how differing views can be expressed or assessments can be made in the face of a single body of science. However, as explained below, they are not mutually exclusive and they do overlap.

4.1 Biological functioning

The biological functioning approach considers basic health and normal body function, stress responses, and a variety of behavioural responses as indicators of animal welfare. The rationale is that difficult or inadequate adaption by an animal to its environment will generate welfare problems. In essence, how well an animal may be coping with the challenges it faces will be reflected in the normality of its biological functioning and fitness, with the more severe risks to welfare associated with the more extreme coping attempts. In that sense, by reflecting an individual animal's ability to cope with the conditions in which it lives, this assessment framework aligns closely with the common definition of animal welfare.

This approach has the capacity to be largely evidence-based and objectively measurable, as there is a good scientific understanding of, and accepted methods for the measurement of, biological function and physiological responses to stress. Biological function may be measured by behavioural changes (for example redirected behaviours, aggression and displacement activities), and physiological stress responses, including the increased synthesis of catecholamines and glucocorticoids.

This framework is useful for <u>assessing risks</u> to an animal's welfare, and is most closely aligned with the early but still somewhat enduring public policy focus on ensuring *protection* from risks – avoiding pain and stress, providing shelter, warmth, nutritious food, water, etc. – to maintain health and normal biological function.

There is a sound argument that, as this biological functioning assessment framework is most useful in assessing <u>risks</u> to animal welfare and has the propensity to be strongly evidence-based, it is the more appropriate framework to support the development of acceptable minimum welfare standards, particularly those mandated under legislation. Indeed the majority of farm animal welfare research studies have employed this framework to infer poor or compromised welfare on the basis of suboptimal biological functioning.

While being a necessary part of animal welfare assessment, an emerging debate is whether a focus on biological function alone is sufficient to assess animal welfare now and into the future, given the growing acceptance in public policy and community views that animals are sentient, capable of experiencing both 'pain' and 'pleasure'.

4.2 Affective state

This second conceptual framework is based on the notion that an animal's welfare is derived from its capacity for, and experience of, positive and negative states, experiences and/or emotions. Negative states include pain, fear, frustration, thirst, and hunger, and positive states include experiences such

as comfort and contentment. Thus, this framework embraces the notion of positive and negative (affective) states, and emphasises that the welfare state of an animal is a balance between positive and negative experiences, with the welfare state being negative when the predominant affects are negative (unpleasant) – and vice versa. This paradigm thus moves away from the notion of animal welfare being (only) about the protection from negative states (and before that, protection from cruelty). This framework more thoroughly encompasses animal behaviours, including the notion that positive affective states result from an animal's ability to carry out a range of innate or normal behaviours, and/or that denial of an opportunity to carry out some behaviours may lead to negative affective states such as fear or frustration.

Affective experiences, including emotions, are subjective states and cannot be measured directly in animals, but there are informative indirect physiological and behavioural indices that can be used cautiously to attempt interpretation of such experiences. Methods that have been used to assess affective states include measures of behavioural preferences/motivation, cognitive bias, and physiological responses. As some negative states are likely to have an impact on biological functioning, they may be indirectly measurable through the scientific methods mentioned above, which highlights the overlapping of these frameworks. However, scientific methods for measurement of some positive affective states are elusive and additional methods are still being sought.

The affective states framework for animal welfare introduces more values-based elements, as against evidence-based elements, compared to the biological functioning approach. However, it should be noted that animal welfare scientists are working towards improving the evidence base within this framework. Whether or to what extent positive affective states or emotions (for example contentment) are a necessary component to acceptable animal welfare is very much a values-based consideration. As a more values-based framework, it also risks an unacceptable degree of anthropomorphism – for example, happiness, contentment, anger, frustration, and helplessness are well understood human emotions (affective states), but their existence and/or significance in animals is currently a highly subjective matter.

There does appear to be increasing societal interest in providing animals used by society with the opportunity for positive affective experiences. Indeed it is clear that, while often not well informed, consumer choices/decisions are increasingly reflecting this trend.

4.3 Natural living

This conceptual framework encompasses the notion that an acceptable state of welfare requires the expression of natural behaviours, with animals living in a 'natural' environment behaving in 'natural' ways. This approach may have some direct application to the keeping of wild or un-domesticated animals – for instance in zoos – but suffers from the concept of 'natural' being too poorly defined and too subjective, or too difficult to apply meaningfully to domesticated animals long bred for domesticated animal management and production in agriculture. Many production animals have been selectively bred for many years and many 'natural' behaviours may no longer be strongly expressed or innate, and by inference, their 'denial' in a husbandry system of little consequence to the animals' welfare.

The 'natural living' conceptual framework is not considered helpful as a framework for assessment of animal welfare, particularly in domesticated animals managed in agricultural animal husbandry systems, and particularly not suitable for the purposes of underpinning minimum acceptable welfare standards.

For this reason, there is now a shift towards measuring 'highly motivated behaviours' as opposed to

'natural behaviours' for domestic animals. The thinking is that we should shift from making assumptions about 'natural behaviours' towards testing how much the animal actually favours a behaviour by measuring how hard it is willing to work for it.

4.4 Integration of the biological functioning and affective states frameworks

Although initially seen as competing, the biological functioning and affective state frameworks effectively overlap in a spectrum or continuum. Biological functioning includes affective experiences, and affective experiences are products of biological functioning.

However, while the criteria for each framework overlap considerably, they are sufficiently independent that the single-minded pursuit of one criterion may lead to poor welfare as judged by the other. Examples in the egg industry would include a single-minded pursuit of a free range environment to maximise opportunities for behavioural expression at the expense of good disease management, protection from smothering, injuries and associated mortality. Put another way, a focus on housing systems allowing for a wider range of behaviours (positive affective states) must not be at the expense of normal biological function and health, food safety and environmental protection, or vice versa.

This also introduces the important notion of balance – some housing systems for instance may restrict some behaviours on one hand, but allow for better health and freedom from aggression, better shelter and bedding on the other. The better system will be the product of a balanced approach to welfare outcomes, and important community outcomes such as food safety. The challenge for the egg industry is achieving a balance that meets these sometimes competing aims.

4.5 Value/Ethical judgements

Are, and if so how are, ethical judgements embedded into these frameworks or paradigms?

The Oxford dictionary defines ethics as:

- The discipline dealing with what is good and bad and with moral duty and obligation.
- A set of moral principles: a theory or system of moral values.
- A consciousness of moral importance; a guiding philosophy.

At one level, the now generally accepted universal 'duty of care' to keep the welfare of animals used by society at acceptable levels, is an ethical duty. The spectrum of community views on what constitutes acceptable animal welfare is a reflection of the range of ethical values held by individuals, or by collectives of individuals, for example animal welfare or animal rights groups. It is also a function of how well or ill-informed people are to make rational assessments of animal husbandry systems in the context of their ethical values. These are a product of a range of factors, including personal values, demographics, beliefs, personal experiences, and education. Social media would appear to be a highly influential factor currently.

As a rule, regulation requires an evidence base and deals with a 'minimum community standard', explaining in part why legislation, for example mandatory animal welfare standards, often (and necessarily) falls short of meeting collective community (values-based) expectations. The degree to which values-based (as against evidence-based) considerations underpin public policies or industry policies will in part be a reflection of the strength of prevailing community values.

Ethical judgements, or the scope for them, are imbedded to various degrees in the paradigms or

frameworks for animal welfare described above. Indeed the frameworks can be seen as representing a spectrum, from a strongly science/evidence-based approach (biological functioning) to a currently more values-based approach (affective states), in which ethical judgements (moral values) will be increasingly brought into play. Perhaps a good example related to the affective state paradigm is the consideration of whether or to what extent certain <u>positive</u> affective states or emotions (for example contentment) are a necessary part of acceptable animal welfare, being very much a values-based consideration or ethical judgement.

While it is likely that considerations of affective states or emotions in animals will become more evidence-based with time as new scientific assessment methods are developed, values-based or ethical considerations will still be a feature of animal welfare assessments and considerations into the future. In this sense there appears to be room for studies that will explore ethical answers as well as the more conventional empirical answers. Gaining a better understanding of the nature and role of values-based or ethical judgements within the context of the affective states paradigm forms an important and legitimate focus area for investment by the egg industry, under its science program. Such studies would complement or run in parallel with the biological and animal behaviour-based research that has been the sole focus to date.

It is important that community views and attitudes are appropriately informed. Given Australia's highly urbanised society, all too often public attitudes about farm animal welfare are based on poor (and sometimes erroneous) knowledge, of farm animal production and management practices, gleaned from mass media and vocal interest groups. Indeed using hen welfare as the example, there is evidence that the majority of the community is under/ill-informed about some (negative) health and welfare aspects of some free range or barn systems of husbandry. Industry transparency in farming techniques and practices, and good communications including through independent voices, are essential to foster more informed views held in the community. This needs to include clear explanation of the implications for food safety and quality on one hand, and animal welfare on the other.

A better future approach is one where there is a greater partnership approach between the farming community, the general community and special interest groups in informing future animal welfare policy.

5 Animal welfare policy internationally

A general consideration of the animal welfare policies of key industrialised jurisdictions is useful to put the Australian situation in perspective. There may be insights into policy structures and approaches that may be useful to consider in Australia.

5.1 European Union

While animal welfare has been reflected in EU Directives for over 40 years, a critical event was the EU Lisbon Treaty in 2009, which defined animals as 'sentient beings', capable of feeling pleasure and pain. Since then, European animal welfare policies have been considered 'progressive' compared to many western countries, reflected in EU Council Directives setting out requirements for, in particular, transport of animals, humane slaughter of animals, rearing of broiler and layer chickens, the use of animals in experimentation and research, and keeping of animals in zoos. However, many commonly farmed species have not yet been the subject of specific legislation, including sheep, cattle, goats, ducks, turkeys and farmed fish.

Consistent compliance with EU Council Directives by all member countries is a significant issue. The EU Animal Welfare Strategy 2012-2015 aimed not only to improve welfare standards but also to better ensure that the standards set out in Council Directives were applied and enforced in all EU member countries.

EU animal welfare strategies and policies have for some time been based on the definition of animal welfare presented by Professor Broom in 1986, that "the welfare of an individual is its state as regards its attempts to cope with its environment". EU policy documents consistently state that animal welfare legislation and policy should be based on science. However, it is also clear that data from investigations of public opinion are of major importance when policies and legislation are formulated. *Eurobarometer* conducts official surveys to monitor the evolution of public opinion in all 28 EU member states. The stated aim is "to assess EU citizens' awareness of and support for the European Union's activities. Tracing public opinion trends helps the preparation of policy, decision-making, and the evaluation of the EU's work".

With respect to hen welfare, an early Council Directive was Directive 99/74/EC of July 1999, which set down minimum standards for the protection of laying hens. The Directive, which set out a 13 year transition period and came into full force in 2012, introduced a phased ban on conventional cages while setting out requirements for enriched cages for laying hens, essentially requiring that cages provide for hen behaviours such as nesting, perching/roosting, pecking and scratching.

5.2 The World Organisation for Animal Health (OIE)

The long established role of the OIE, representing 180 member countries, was in setting global standards for animal health, dissemination of animal health information, and helping member countries with the development of veterinary services. This role was extended to include animal welfare in 2001. In 2017, the OIE Global Animal Welfare Strategy was published. The Strategy acknowledges that "animal welfare is a complex, multi-faceted, international and domestic public policy issue with scientific, ethical, economic, legal religious and cultural dimensions plus important trade policy implications". The Strategy recognises as legitimate the use of animals for production of food and fibre, for companion animals, for scientific purposes and in international trade, while carrying an ethical responsibility to ensure any such use is humane. The Strategy acknowledges that the ethical and economic drivers for animal welfare are complementary, and that both are legitimate

considerations, and should be taken into account in determining conditions of animal use in any specific context.

OIE standards recognise the sentience of animals. A key pillar of the OIE Strategy is the development of animal welfare standards, based on scientific research and taking account of ethical considerations and practical experience. OIE standards aim to achieve good animal welfare outcomes rather than to prescribe design criteria – i.e. they are outcomes-based.

5.3 New Zealand

New Zealand published an animal welfare strategy 'Animal Welfare Matters' in 2013. The strategy recognises that "animals are sentient – they can feel pain and distress". The Strategy builds on the animal welfare system that has been in place for many years in New Zealand, which includes animal welfare (minimum) standards, legislation that places an animal welfare obligation or duty of care on all people in charge of animals, a stated strong science base, and the use of independent committees to provide expert advice on animal welfare and related research needs.

The NZ Strategy recognises a spectrum of animal welfare from bad welfare (cruelty, neglect, suffering, harsh and unkind treatment), through good welfare standards, to high standards of care and welfare, and that the respective roles and responsibilities of government and industry change along that spectrum. It recognises that animal welfare standards set out <u>minimum acceptable</u> <u>standards and behaviours to prevent poor welfare outcomes</u>, with government and sector or industry groups collaborating as necessary to foster higher standards of welfare outside the standards framework where this adds value (e.g. greater economic value and/or market opportunities). In my opinion this forms a sound policy structure or approach to support balanced consideration of animal welfare outcomes. A key attribute of this policy approach is that it transparently articulates the positioning of minimum acceptable standards along the animal welfare spectrum, and their role to minimise risks to animal welfare.

With respect to hen welfare, New Zealand has adopted minimum acceptable standards for hen welfare that, amongst other things, require hens to be provided with "the opportunity to express a range of normal behaviours, including but not limited to nesting, perching, scratching, ground pecking and dustbathing." While not specifying design parameters or specifications, the *Animal Welfare (Layer Hens) Code of Welfare 2012* requires (in a specified series of timelines) that by 2022, all conventional cages must be replaced with a housing system that provides for the opportunity for hens to express those normal behaviours.

5.4 Canada

Canada appears not to have published a national animal welfare policy or strategy. Most animal welfare regulation is provided by the provinces/territories, where legislation is focused on animal protection/protection from cruelty. Codes of Practice for the care and handling of farm animals are developed by the National Farm Animal Care Council, a coalition of government, industry (whole of supply chain) and animal welfare associations. The Codes are 'science and consensus based'. They are not mandated by law, but are intended to promote sound animal management and welfare through 'Requirements' (some of which may be enforceable under provincial legislation) and 'Recommended Practices' (aimed to promote producer education and encourage adoption of practices for continuous improvement in animal welfare outcomes). As such they are structured not unlike the Australian Animal Welfare Standards and Guidelines.

In 2017, the *Code of Practice for the Care and Handling of Pullets and Laying* Hens was published by

the National Farm Animal Welfare Council of Canada. The publication of the Code built on an <u>industry-led</u> initiative announced by Egg Farmers of Canada for the commencement of a coordinated, market-oriented transition away from the use of conventional cages to house laying hens. The Code of Practice prescribes the phasing out of conventional cages, requiring housing systems (cage and cage-free) to provide opportunities for hens to perch, nest, forage, and dust bathe, all of which are considered "natural behaviours that hens are strongly motivated to perform". The Code acknowledges that there are welfare trade-offs associated with each type of housing system. Hens raised in non-cage systems generally have greater freedom of movement and have more opportunity to engage in natural behaviours than cage-housed birds. However, non-cage systems need to be carefully managed to limit risks of disease, injuries, injurious pecking and mortality.

Comprehensive transitional arrangements are set out, culminating in a requirement that all hens will be housed in enriched cage or non-cage housing systems that meet the Code's requirements by July 2036.

5.5 United States of America

There appears to be no national (federal) animal welfare strategy or similar document setting out a vision, objective or policy framework for animal welfare in the USA. The federal public policy position on animal welfare is framed around the federal Animal Welfare Act 1966, legislation that primarily focuses on companion animals, animals used for display, animals used in research, and animal transportation. While the subordinate Animal Welfare Regulations prescribe standards for the humane handling, care, treatment, and transportation of animals, farm animals are specifically excluded. There is no coordinated system in the US for the development of national minimum standards of animal welfare for farm livestock and poultry.

With respect to hen welfare, five States – California, Michigan, Oregon, Washington and Massachusetts – have prohibited conventional cages, and a sixth – Ohio – has enacted a moratorium against the construction of new conventional cage facilities.

In summary, this high level analysis of animal welfare policy in the EU, New Zealand, Canada and the USA identifies a number of common elements, namely that:

- animal welfare is defined or accepted as the ability of an animal to cope with its environment
- animals are accepted as sentient beings, capable of feeling pleasure and pain
- it is necessary to provide confined animals with opportunities to express a range of 'normal' behaviours that they are strongly motivated to perform
- minimum standards/regulations are necessary to define acceptable animal housing/husbandry systems and farming practices
- animal welfare policies and standards should be based on strong independent science, balanced with consideration of ethical and societal values in a consensus framework.

6 Recent scientific reviews

Several recent reviews have been undertaken of the peer reviewed scientific literature with respect to hen welfare. Two reviews were commissioned/undertaken in the context of the consultative process to draft the Australian Animal Welfare Standards and Guidelines for Poultry.

6.1 University of Bristol review

The most comprehensive of these was undertaken in 2017 by a team from the University of Bristol, led by Professor Christine Nichol. The report was entitled 'Farmed Bird Welfare Scientific Review' and was commissioned by the State of Victoria, in the context of debate following release of the first draft of the Australian Animal Welfare Standards and Guidelines for Poultry.

The review by Nichol covers the welfare of all poultry (not just layer hens) including broiler chickens and breeders, and other farmed bird species including game birds and ratites, and gave preference to peer-reviewed papers published in the period since 2000.

In addressing the welfare of layer hens, the review considered research findings for both cage – including colony or furnished cages – and non-cage systems. In considering the diverse range of approaches to scientific welfare assessment in the reviewed literature, the review gives recognition to the three animal welfare assessment frameworks described above in this paper.

The findings of the Nichol review are too diverse and numerous to detail in this paper. Of significance is that the authors defer at least in part to the affective states framework in proposing that attention needs to be given to both positive and negative experiences of the individual animal, albeit with a science/evidence base. In that context, a key finding is that scientific evidence supports the need to provide hens with opportunities to express certain behaviours that conventional cage systems deny them. The review identifies that while these behaviours in non-cage systems are not directly constrained, levels of problematic behaviours such as injurious pecking, collisions and smothering are often greater.

6.2 RSPCA Australia

The second recent review of hen welfare was published in 2016 by RSPCA Australia. The author/s are not identified in this paper, which was prepared in response to the release of the first draft of the Australian Animal Welfare Standards and Guidelines for Poultry in 2016. There is no evidence that the paper itself has been peer reviewed (by scientists).

This paper focuses only on hen housing systems, and directs its main findings against the cage housing system per se, in favour of cage-free housing systems.

The paper discusses the three conceptual frameworks for welfare assessment described above, but supports much of its analysis by reference to the mostly superseded 'Five Domains' model of welfare assessment and the 'Five Freedoms' concept. In identifying the three conceptual frameworks, the paper implies that the 'Natural Living' framework should be considered as relevant in assessing (hen) welfare, which differs from the published conclusions of many scientists.

The paper is arguably more of a policy position paper supported by references, than an objective and comprehensive review of the scientific literature.

7 Some conclusions

7.1 Assessment frameworks

The biological functioning and affective states paradigms both have relevance as frameworks to assess animal welfare outcomes in the egg industry. The biological functioning framework has particular application with respect to assessments that necessarily underpin the development of minimum acceptable standards of animal (hen) welfare, standards that aim to mitigate welfare risks.

However, there is clearly increasing societal interest in providing animals used by society with the opportunity for positive affective experiences, not just to be protected from negative ones. Based on its recognition that welfare is the product of both negative and positive states/experiences, the affective states paradigm is clearly more appropriate as a framework to assess welfare in this context, noting however that there is considerable overlap between the two frameworks.
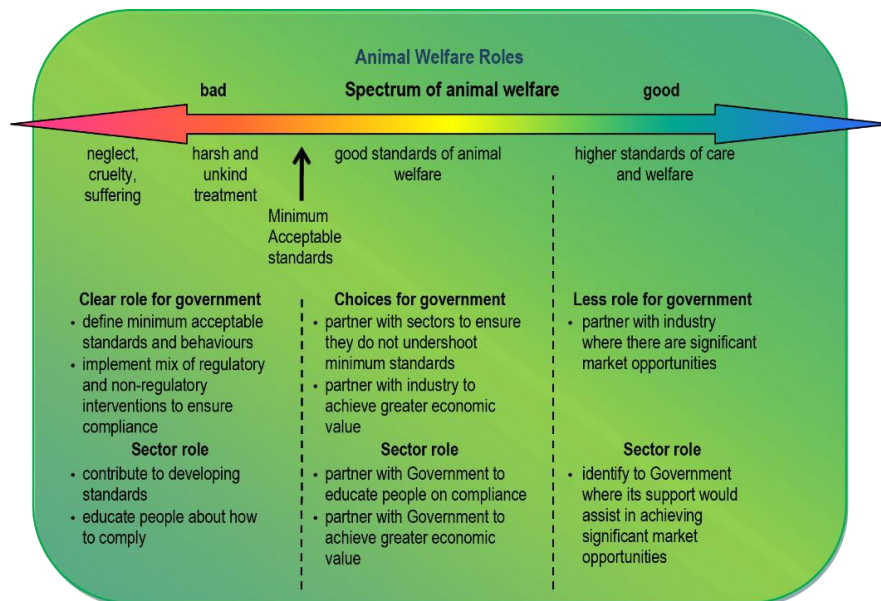
Undoubtedly the nub of the present hen welfare debate in Australia is about hen behaviours. Using the affected states paradigm, this can be couched in the notion that positive affective states result from an animal's ability to carry out a range of innate or highly motivated behaviours, and furthermore that denial of an opportunity to carry out some behaviours may lead to negative affective states such as fear or frustration.

In the context of minimum acceptable welfare standards, the question becomes, "which highly motivated behaviours should hens be accorded the opportunity to express, supported by the available scientific knowledge but also guided by community values and expectations?" While it is likely that considerations of affective states or emotions in hens will become more evidence-based with time as new scientific assessment methods are developed, values-based or ethical considerations will still be a feature of animal welfare assessments and considerations into the future.

In this sense there appears to be room for studies that will explore the place of ethical answers as well as the more conventional empirical answers to such questions. Such studies would complement or run in parallel with the biological and behavioural research that has been the main focus of industry research investment to date.

7.2 Policy approaches

The policy approach adopted by New Zealand, as espoused in its animal welfare Strategy, is worthy of consideration. This approach recognises that there is an animal welfare spectrum, with cruelty/ suffering/neglect and harsh treatment being at one end, and high standards of care and welfare at the other end of the spectrum, along which there are different intervention points. The positioning of minimum welfare standards is clearly set out on the welfare spectrum (being to mitigate risks of poor welfare), as are the relative and changing roles and responsibilities of governments and industry. This policy framework or approach is set out in the diagram below – the exact text is less important than the conceptual framework that the diagram represents.

Animal Welfare Roles

Spectrum of animal welfare

bad — good

neglect, cruelty, suffering | harsh and unkind treatment | good standards of animal welfare | higher standards of care and welfare

↑ Minimum Acceptable standards

Clear role for government
- define minimum acceptable standards and behaviours
- implement mix of regulatory and non-regulatory interventions to ensure compliance

Sector role
- contribute to developing standards
- educate people about how to comply

Choices for government
- partner with sectors to ensure they do not undershoot minimum standards
- partner with industry to achieve greater economic value

Sector role
- partner with Government to educate people on compliance
- partner with Government to achieve greater economic value

Less role for government
- partner with industry where there are significant market opportunities

Sector role
- identify to Government where its support would assist in achieving significant market opportunities

Extracted from the *New Zealand Animal Welfare Strategy* May 2013

Industry clearly must position itself at points along the spectrum with a variety of activities, such as supporting and engaging in standards setting processes; designing/implementing industry-driven compliance systems; educating producers and promoting higher standards of care; providing consumers with choices (of production systems) that meet their values; and providing for communication and transparency of industry practice to better inform consumers and the community.

7.3 National standards and guidelines

It is important – indeed essential for industry – that national minimum standards are set for farming practices that ensure consistent welfare outcomes across the industry, and which provide egg producers with clear criteria for demonstrably meeting their duty of care to the animals they manage. As standards are mandated by law in Australia they must, to the maximum extent possible, be evidence-based, supported by contemporary science relevant to Australian production systems and conditions. Furthermore, standards can dictate significant new investments in farm infrastructure, requiring appropriate timeframes for industry adjustment in order to avoid stranded assets and putting farmers at unreasonable financial risk. This necessitates that significant changes to standards governing infrastructure (e.g. housing) have appropriate transitional and adjustment provisions and timelines. Additionally, the standards need to be sufficiently flexible to accommodate newly developed production systems, hence outcomes-based where possible rather than overly prescriptive.

National welfare *guidelines*, while not mandated, provide the opportunity to encourage continuous improvement in animal welfare outcomes. Guidelines could identify practices/systems that in the future, as (or if) animal welfare science adds to the evidence base, may evolve into standards – providing a useful signal to industry participants and animal welfare scientists with respect to future directions. Guidelines also provide the opportunity to reflect more values-based concerns emerging from community consensus and to signal these to industry participants.

Given that there is a stronger evidence base to support the 'biological functioning' framework for welfare assessment, this is the more appropriate assessment framework to underpin national standards development. In addition, as previously discussed, this framework is best suited for assessment of risks to an animal's welfare, being consistent with the agreed objective of Australian Animal Welfare Standards and Guidelines 'to minimise risks to animal welfare'.

While achieving consensus is invariably challenging, the existence of accepted standards is essential, providing industry participants and industry groups with the best means of demonstrating they are meeting their animal welfare responsibilities. Furthermore, they provide a yardstick for an industry to demonstrably take a lead in articulating an 'industry and market oriented' pathway of improvement sensitive to changing community values. As discussed below, it is invariably better for industry to be leading a pathway of improvement or change, rather than being led.

It is important that there are industry systems in place, which demonstrate that compliance with standards is high across the industry. Robust, independently audited quality assurance systems provide a highly effective means for industry and industry participants to implement, and demonstrate compliance with, national welfare standards. Some jurisdictions, most notably Victoria, have legal mechanisms to recognise industry QA systems that adopt official standards (such as welfare standards), and modify government compliance/enforcement activities accordingly for participants. These co-regulatory arrangements are worthy of more formal consideration for wider application.

7.4 Industry taking the lead

It is always preferable for industries to take a lead in articulating pathways for improvement in industry systems and practices to which they are committed. Governments and many community stakeholders are favourably influenced when a demonstrated commitment to improve/change in line with community and public policy expectations is made by an industry. This can include a commitment not just to the nature of change but also the terms. Canada may provide a good contemporary example, where there is little doubt that industry taking a lead resulted in more 'market oriented' transitional provisions in the new Code of Practice.

Of real value would be for the egg industry to develop a National Egg Industry Animal Welfare Strategy to provide a blueprint for the industry's approach to animal welfare now and into the future.

7.5 Accommodating community values/ethics

The highly values-based elements of welfare sought by some in society, but which are not appropriate for mandatory standards, can at least in part be addressed through providing individual consumers with choice according to their personal values or ethics. In the egg industry, consumers can choose according to their own values, between cage systems, barn systems, and free range systems of husbandry. It is best, however, that these are informed choices as there is evidence that the majority in the community are under/ill-informed, or have poor understanding of farm systems and practices.

In recent years, the egg industry has been very responsive to changes in community values regarding animal welfare. The egg industry has undergone (invested in) significant change and restructure over the past decade in keeping with evolving welfare standards and in step with emerging community values around the housing of laying hens.

As suggested above, there does seem to be room for a stream of the industry's science program to consider studies that engage ethicists and social scientists, to gain a better understanding of the nature and role of values-based or ethical judgements within the context of the affective states paradigm.

7.6 Transparency and communication

People determine their attitudes to animal welfare standards within a framework of values, but it is preferable that these attitudes are the product of informed understanding of animal welfare science, farming systems and practices. Given Australia's highly urbanised society, all too often public attitudes and understandings are based on poor, sometimes erroneous, knowledge of farm animal production and management practices, gleaned from mass media and vocal interest groups. Industry transparency in farming techniques and practices, and good communication, including through independent voices, are essential to foster more informed views held in the community. This needs to include clear explanation of the implications for other important attributes such as food safety and quality on one hand, and animal welfare on the other.

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