

CHAPTER 3

WELFARE AND WELFARE ASSESSMENT

Welfare Definitions and Concepts

3.1 The task of defining animal welfare is extremely difficult and has taxed the abilities of numerous expert committees in a number of countries. It is a term which lacks precise definition because it is a multifaceted concept caught up in an ideological tangle. To that extent welfare is, as Carpenter has defined it:

... not unitary but is the algebraic sum of dozens of different parameters, most of which are relative rather than absolute.¹

3.2 The Technical Committee to Enquire into the Welfare of Animals kept under Intensive Livestock Husbandry Systems (the Brambell Committee) established in 1964 by the British Government² brought down a report which was a benchmark in the animal welfare debate.

3.3 The Technical Committee's deliberations were strongly influenced by contemporary behavioural ideas³ and it defined welfare as being:

... a wide term that embraces both the physical and mental well being of the animal. Any attempt to evaluate welfare therefore, must take into account the scientific evidence available concerning the feelings of animals that can be derived from their structure and functions and also from their behaviour.⁴

3.4 Submissions to this inquiry have mainly quoted other people when attempting to define the term animal welfare. The concept of physiological and behavioural (ethological) needs of animals is generally accepted in Australia. The debate today revolves around whether there are specific conditions that result in physiological or behavioural responses that are in themselves the result of undue suffering or are indications of such a state.⁵

3.5 Environmental design in animal housing has, until recently, been concerned mainly with climate control, labour-saving devices and hygiene. Little attention has been paid to the effects of housing on behaviour.⁶ The increasing public focus and stress aspects which have affected productivity have seen an increase in investigations of this kind.

3.6 Of course, what we want to know ultimately is whether or not animals are suffering. The term 'suffering' implies a particular type of mental experience; a subjective feeling. Subjective feelings are not accessible to scientific investigations but that does not mean that they do not exist.⁷

3.7 During this inquiry it was repeatedly stated that we can only advance our insight into concepts like animal welfare if we succeed in advancing our scientific knowledge of basic behaviour.

3.8 Professor A.R. Egan and Dr D.G. Hutson from the Animal Production Section of the School of Agriculture and Forestry, University of Melbourne have submitted to this Committee that:

Any environmental factor or practice which can be identified as a cause of suffering or stress should receive attention resulting in modification of management practices. The interests of production are served, since it is likely that stress is reflected in reduced productivity of the animals. There are some practices in production systems which appear to most observers to be undesirable. These require two kinds of research which are often linked. One is to evaluate the degree of suffering involved since it may be that while

to the observer the conditions are abhorrent, they do not offend against the needs of the animals. The other is to address the perceived or imputed causes of psychological and behavioural reactions around which welfare/suffering issues arise and find alternative ways of achieving the objectives of management.⁸

Welfare Assessment

3.9 All criteria used to assess welfare rely on showing some evidence of change. For example, changes associated with the stress response have been widely used as physiological indicators of welfare due to the belief that if stress increases, welfare decreases. Changes in behaviour, particularly the occurrence of abnormal behaviour have also been used as behavioural indicators of welfare. It was repeatedly stated in evidence to this Committee that it is important to recognise that change per-se is not an indication of a change in welfare; animals' behaviour and physiology are continually being adjusted to maintain equilibrium with the environment (homoeostasis) and animals are obviously not in a continual state of changing welfare because of these continued adjustments. The important question for welfare research in both physiology and behaviour is "at what level of change is welfare at risk?"⁹

3.10 Dr Barnett, Senior Research Scientist with the Victorian Department of Agriculture and Rural Affairs and Scientific Advisor to the Australian Pig Industry Policy Council, said in evidence that:

... Whatever measure we look at in trying to assess welfare all we are looking at is a change. It is a change in physiology or a change in behaviour and with physiology the question we are trying to come to grips with at the moment, and one has to come to grips with it first in what we are trying to do, is at what level of change is welfare at risk? So physiologically when we assess stress in animals we say that there is evidence that these animals are stressed from hormone measurements. But that does not mean their welfare is at risk. You then go and look at

the consequences to the animal of that change in hormone level. If you start finding consequences which can be indicative of nutritional problems or energy problems by going to energy deficit; it has effects on the immune system; it has effects on production. Once you start finding those effects of the consequence of stress you say, who is at risk? That is what we are trying to do physiologically. Behaviourally I do not think they are so far advanced.¹⁰

Vices and Stereotypic Behaviour

3.11 Several classes of abnormal behaviour have been recognised in intensive systems.

3.12 The following clarification and comment concerning pigs is from a conference paper by J.L. Barnett and G.D. Hutson and presented to the inaugural conference of the Australian Pig Science Association held in Albury in 1987.

(1) Vices, which are destructive behaviour patterns resulting in injury or damage to the performer or pen mates. These behaviour patterns may be originally derived from motivational systems concerning aggressive, feeding, grooming or exploratory behaviour. Obvious examples are ear-and tail-biting. There is universal agreement that these severe forms of abnormal behaviour are indicative of reduced welfare since they lead to physical injury, and on occasions, death.

(2) Stereotypies, which are usually defined as morphologically identical movements which are repeated regularly, are unusual, and have no apparent function (Odberg, 1986). Examples are bar biting, sham chewing (also referred to as vacuum chewing or champing), rhythmic snout rubbing, head weaving, etc. The well-being of animals performing stereotyped behaviour is open to dispute as some authors have argued that the animal is responding to a barren environment by creating its own stimulation or arousal. The aetiology of stereotypes is complex ...

(3) Apathetic behaviours such as motionless standing and sitting have been recognised as abnormal behaviour (Wiepkema, 1983; Broom, 1986).

Unlike the preciseness of the physiological concept of stress, the underlying causation of abnormal behaviour is complex and varied. Thus vices may develop as a response to boredom (van Putten, 1969), stereotypies may be a response to restraint by a tether (Cronin, 1985), frustration of feeding behaviour (Rushen, 1985), or boredom from understimulation in a barren environment (Kiley-Worthington, 1977), and apathetic behaviour may be a reflection of "learned helplessness". (Fox, 1984)

The occurrence of abnormal behaviour is generally acknowledged to indicate the presence of discord between animal and environment. This should alert us to the possibility that welfare may be at risk and that a more detailed examination is necessary.¹¹

3.13 A number of stereotypies have been identified in poultry. Fox has noted that:

Pacing behaviour in poultry can become a highly stereotyped action, occurring when the bird is frustrated or is attempting to avoid some threatening stimulus (Duncan and Wood-Gush, 1971). Duncan and Wood-Gush (1972b) studied the effects of thwarting of feeding behaviour in poultry and concluded that displacement preening is associated with mild and short-term frustration and stereotyped pacing movements with long-term and intense frustration. Intense frustration may be aversive and lead to escape movements, which develop into stereotyped pacing movements that are fixated in the bird's behavioural repertoire. ... Wood-Gush (1972) has demonstrated a greater susceptibility of one strain of laying hens to frustration pacing when confined in battery cages. His study shows that the husbandry system can create such behavioural abnormalities in genetically susceptible strains.¹²

3.14 Preening and redirected pecking are also recognised displacement behaviours in poultry and indicative of frustration. Fox has argued that the head-flick stereotypy in poultry has been interpreted:

... as a repetitive stereotypy caused by monotony, movement, restraint and social isolation, which individually or together lead to a reduction in sensory input.¹³

3.15 As with many stereotyped behaviours, the repetitive movements may be a compensatory action to increase sensory input.¹⁴

3.16 Although it might be argued that poultry are simple creatures whose essentially instinctive behaviour is governed largely automatically, Fox has argued that "there is sufficient evidence to support the probability that, under reduced levels of stimulation and environmental complexity, poultry may suffer from boredom. This could lead to such "vices" as feather pecking".¹⁵

3.17 Cannibalism and feather pecking have been identified as two of the major vices in poultry. Cannibalistic pecking is directed toward blood, bleeding tissue (skin or muscle), or internal organs and occurs in both uncrowded floor pens and multiple-hen cages. As Craig has noted:

It usually resembles feeding behaviour and when several hens are attracted to any injured bird, the results can be deadly within a day or two. The vent or cloacal area is particularly vulnerable for hens kept in cages without nest areas as the uterus is everted during egg laying and is an attractive target. However, pecking of other areas can also be fatal; the tail region is frequently involved and areas where feathers have been lost, so that bare skin is exposed and may be scratched, causing bleeding to begin ... although heavy feather loss may make birds more susceptible to the vice, it is not a necessary condition.¹⁶

3.18 Basically then the welfare of managed animals relates to the degree to which they can adapt without suffering to the environments designed by man.

Research and Scientific Assessment

3.19 Much of the research done internationally in the field of animal welfare assessment is quite divergent in purpose and methodology. To attempt to summarise, let alone critically analyse and compose the findings of such research, is beyond this Committee's brief and area of expertise.

3.20 Intensive industries and animal welfare researchers in these industries around the world have influenced each other considerably. Global changes in approaches to research - especially the return to an "extensive approach" in some countries - have had an important effect on attitudes towards animal welfare in intensive industries. This influence has been paramount in raising national and worldwide awareness of welfare considerations especially amongst intensive industry and industry support providers.

3.21 Welfare research in Australia is highly regarded internationally. Australian researchers not only make an important written contribution to this field but they have established a high international reputation as lecturers on welfare assessment. Their work is used in many countries as an indicator for evaluating other welfare research. Their participation in welfare assessment studies overseas is further proof of Australia's high global standing in animal welfare research.

3.22 Yet Australian welfare assessment studies are by no means well advanced. By the standards of agricultural science, animal welfare research in this country is comparatively new and relatively peripheral. Its chief assessment criteria include behaviour, physiological factors, health status and production. However, as the Australian Veterinary Association (AVA) pointed out in its submission to the Committee, there are certain areas in which considerable progress has been made through new approaches, for example, in the pig industry.

3.23 According to the AVA, in the past, Australian pig industry projects have generally sought to establish objective measurements of "stress" in housed pigs, particularly in systems of confinement. In addition, research on methodology which might be used to "improve" the housing conditions of pigs was undertaken. Community concern has recently led to a concentration of research effort on objectively quantifying the alleged stressful effects of confinement housing. Research sponsored by the industry through the Australian Pig Research Council, in relation to the industry's size, is quite extensive by world standards.¹⁷

3.24 In his evidence to the Committee, Professor A.R. Egan, from the School of Agriculture and Forestry, at the University of Melbourne, raised three issues of particular importance regarding animal welfare research and assessment. He referred to the mass of opinion surrounding what constitutes stressful or damaging elements in intensive animal production. While conceding that trauma is recognisable in some circumstances, he emphasised that in other areas a more objective measure than opinion is required:

... Behavioural research particularly will allow us to determine whether or not practices - or, alternatively, the deprivations that might be perceived to be present in a system - are truly contradictory to the welfare of the animal; whether or not the animal recognises them as such; and also, to some degree, whether the animal is being placed in a position where it does not even have the opportunity to determine whether or not these things are in its best interest. Those are the philosophical questions that are being addressed in some of the behavioural research being undertaken. ... The assessment of suffering is one area that is important.¹⁸

3.25 The second issue raised by Professor Egan relates to the necessity (or otherwise) of animals undertaking "particular innate behaviours". If they are prevented from doing so, a stress is induced which is difficult to attribute to any factor other than their absence from their ancestral environment.

3.26 Finally, Professor Egan asks, do these issues mean much in terms of animal welfare assessment? Do animals bred and reared over generations in certain conditions really suffer from a sense of deprivation about other ways of living denied them?¹⁹

3.27 The scientific assessment of animal suffering is a central element in animal welfare research. The Australian and New Zealand Federation of Animal Societies (ANZFAS) acknowledges this in its submissions to the committee and refers at length to the conclusions reached by Marian Stamp Dawkins in her book Animal Suffering.²⁰ Dawkins evaluated several approaches to the investigation of suffering in animals and found each one on its own to have shortcomings. She concluded that all must be considered in conjunction with the others. According to ANZFAS, evidence gathered using several of the approaches described by Dawkins points to the conclusion that animals suffer in intensive systems.²¹

3.28 Another factor in animal welfare research concerns the question of proof - how accurately is it possible to determine and prove if animals are suffering? Dr Hugh Wirth, President of the Royal Society for the Prevention of Cruelty to Animals Australia (RSPCA) told the Committee that, in his opinion, "you will [never] get to that idyllic state where you apply a simple test or a series of tests and are able to prove this, that, or the other thing".²² The difficulties involved in defining stress and evaluating its effect on animals cannot be overstated. 'Objective' measures of the impact of stress should be treated with caution.

3.29 In this context Professor Peter Singer, Vice-President of ANZFAS would discount the interests of some parties who are involved in the production side, either directly as producers or indirectly, for example, as employees of departments of agriculture or government and university scientists receiving research moneys from producers. He believes that most credence can be given to those with a background in observing and assessing animal behaviour, rather than to those coming from a production standpoint.²³

3.30 It is generally acknowledged that in the intensive livestock production industry, welfare has in the past been primarily linked to production, and that this is too narrow a focus. Much production research is related to industry problems - as Professor Egan has noted in relation to pigs²⁴ - and therefore has, in animal welfare terms, an even more concentrated focus.²⁵ Professor A.R. Egan has stated that the Australian Pig Research Council's research projects, like those in many other industries, reflect too strong an emphasis on biotechnology at the expense of inquiry into "behaviour and behaviour physiology relationships".²⁶

3.31 This important issue was also referred to in evidence by Dr John Barnett, a Senior Research Scientist with the Victorian Department of Agriculture and Rural Affairs who stated he had:

... more confidence ... in interpreting the physiological data than I have in some of the behavioural data. Whatever measure we look at in trying to assess welfare all we are looking at is a change. It is a change in physiology or a change in behaviour and with physiology the question we are trying to come to grips with ... is at what level of change is welfare at risk? So physiologically when we assess stress in animals we say that there is evidence that these animals are stressed from hormone measurements. But that does not mean their welfare is at risk.²⁷

3.32 Increasingly, broader community concerns about animal welfare - rather than just those of the production industries - are being reflected in the activities of the Australian Pig Research Council which was reconstituted in the mid-1980s to take greater account of non-industry research requirements (see Chapter 11 for detail on welfare related projects). However, though change is occurring, a significant problem remains: as Dr John Holder, representing the Pig Research Council has pointed out, it will take some time to broaden the present, long-established research emphasis on projects related to nutrition, health and genetics.²⁸

3.33 Though such developments are encouraging, the research approach must be widened further. As the Australian Federation for the Welfare of Animals has argued in relation to "Stress, Behaviour and Welfare":

Because of the role of behavioural change in animals' adaptation processes, scientists have considered behaviour as a sensitive indicator of animal stress. However, while behavioural change alone may indicate that adaptation mechanisms have been evoked, behavioural change does not tell us whether the animal is successfully adapting, because behaviour is only part of the adaptive response.

Stress is frequently viewed as the sum of a number of (behavioural and physiological) responses to environmental change and consequently stress should be viewed as a multi-faceted phenomenon: A phenomenon that requires a multi-disciplinary approach for its elucidation, involving assessment of both behaviour and physiology.²⁹

3.34 Care must be taken in applying the results of animal welfare research overseas to Australian conditions. Not only are industries organised differently but several other factors come into play, for example, significant differences in climate and thus in energy costs between Europe and Australia.³⁰

3.35 Central to the whole research debate is the question: how do we determine what constitutes 'objective' inquiry in this field? In Professor Peter Singer's opinion the objectivity of animal welfare researchers can certainly be impaired when their involvement is funded by production industries themselves.³¹ Dr John Auty, Honorary Technical Adviser to ANZFAS, told the Committee even more forcefully that, "the test of ... objectivity [is] whether the scientists are prepared to show you the real picture, not some put together one ... Let us be objective ... Let us all be objective".³²

3.36 As Dr Auty intimated to the Committee, mixed motives and insufficient practical knowledge of what is happening "in the field" undoubtedly have an adverse effect on the findings of animal welfare researchers.

3.37 But the degree of objectivity attainable in any scientific and social scientific investigation rests very much on the assumptions made and the models assumed and constructed. An equally important factor is that rational thinking and a preoccupation with the scientific approach to solving problems has come to assume an overly inflated position in our high technology, post-industrial society. The Western obsession with rationality, the urge to measure, quantify and predict to an inordinate degree, has often resulted in an inadequate understanding of behaviour. Overt behaviour is too often taken to represent all or practically all, of the criteria needed to arrive at a social scientific conclusion and basis for action.

3.38 The Committee has noted that the majority of submissions presented to it appeared to place undue weight in their assessments of animal welfare on this scientific approach to the resolution of animal welfare problems. Evidence to the Committee also seemed to reflect too heavy a reliance on the scientific method at the expense of more experimental, intuitive approaches to data gathering and formulating recommendations.

3.39 The question to be considered are wider ethical ones which must be resolved, not only by particular industries or groups of scientists, but through political decision-making in the wider society. The Committee endorses the conclusions reached by Professor A.R. Egan and Dr C.D. Hutson, that the principal philosophical issues surrounding animal welfare assessment are those relating to the environment and the animals' reaction to it; those relating to specific management issues; and those relating to animal/human interactions.³³ The Committee believes that these central issues of "ethics and morality of animal utilisation"³⁴ can only be successfully addressed if animal welfare assessment and research takes into account ethical considerations; scientific evidence; and the hitherto largely neglected aspects of animal feelings and reactions which are not easily susceptible to quantification and measurement. As I.J.H. Duncan has argued:

Agriculture is the exploitation of plants and animals for man's benefit. The decisions as to whether or not we exploit animals and, if we do, to what extent we exploit them, are, in the final analysis, ethical decisions. They are therefore decisions that should be made by society at large and not by any one small sector of it. However, society should not be expected to make these decisions without knowing the facts, and the facts, or scientific evidence, can be provided by scientific research. Scientists should be expected to produce evidence on such things as the disease risk, the amount of fear, the degree of frustration and the severity of pain or discomfort that will be experienced by animals under particular systems or during specific procedures. These are facts. It is possible to be objective about them.³⁵

3.40 Duncan's main contention is based on the conviction that "what we want to know ultimately is whether or not animals are suffering". He continues:

The term "suffering" implies a particular type of mental experience, a subjective feeling ... Subjective feelings are not directly accessible to scientific investigation but that does not mean that they do not exist. Other human beings are generally accepted to have subjective feelings and mental experiences although, strictly speaking, we cannot prove it ... Evidence from animal orientation and navigation studies and from animal communication studies suggests that animals do have mental images, subjective feelings and intentions. Although objectivity is usually assumed to be the first principle of ethology, nevertheless even its founders have occasionally speculated on subjective feelings.³⁶

Conclusion

3.41 The Committee agrees with Duncan's conclusion that more emphasis must be given to obtaining knowledge, through experimentation, of animals' subjective feelings and to determining whether, or not, they are suffering mentally. The Committee is convinced that, only through a more integrated approach to animal welfare assessment and research, can

substantial progress be made in this complex field. This would entail consideration of ethical principles; behavioural science continuing to provide evidence on aspects such as fear, frustration, conflict, pain and discomfort; and a fresh approach, through new forms of experimentation, to arrive at a deeper knowledge of animals' overall well-being or suffering.

3.42 The Committee recommends that research funding bodies ensure that all intensive livestock production studies and specific animal welfare related research methodologies take an integrated approach to problems addressed so that findings contain elements of matters relating to housing environment, animal reaction to it, specific management issues, and animal/human interaction.

ENDNOTES

1. Cited in Evidence, by the Australian Pig Industry Policy Council, p. S8801.
2. See Endnote No. 4 of Chapter 1 for details of this Committee and its report.
3. R. Ewbank, 'Animal Welfare' in Management and Welfare of Farm Animals the UFAW Handbook, Third Edition, Balliere Tindall, London, 1988, p. 4.
4. Brambell report, op. cit., p. 9.
5. Evidence, Professor A.R. Egan and Dr G.D. Hutson, Animal Production Section, School of Agriculture and Forestry, University of Melbourne, p. S8928.
6. I.J.H. Duncan, 'Animal Behaviour and Welfare' in J.A. Clark (Ed.) Environmental Aspects of Housing for Animal Production, Butterworths, London, 1981, p. 455.
7. *ibid.*, p. 456.
8. Evidence, p. S8926.
9. Evidence, Australian Federation for the Welfare of Animals, p. S8935.
10. Evidence, Australian Pig Industry Policy Council, p. 9420.
11. J.L. Barnett and G.D. Hutson, 'Objective Assessment of Welfare in the Pig: Contributions from Physiology and Behaviour' in Manipulating Pig Production, proceedings of the Inaugural Conference of the Australian Pig Science Association (APSA) held in Albury, New South Wales, on November 23 to 25, 1987, Edited by APSA Committee Werribee, Victoria, p. 3.

12. M.W. Fox, Farm Animals, University Park Press, Baltimore, 1984, p. 192.
13. *ibid.*
14. *ibid.*, p. 192-193.
15. *ibid.*, p. 193.
16. J.V. Craig, Domestic Animal Behaviour, Prentice Hall, New Jersey, 1981, p. 210.
17. Evidence, Australian Veterinary Association, p. S9026.
18. Evidence, Professor A.R. Egan, *op. cit.*, p. 9495.
19. *ibid.*, see pp. 9495-9496.
20. Marian Stamp Dawkins, Animal Suffering: The Science of Animal Welfare, Chapman and Hall, London, 1980.
21. Evidence, Australian and New Zealand Federation of Animal Societies, p. S8824.
22. Evidence, Dr H.J. Wirth, RSPCA Australia, pp. 9599-9600.
23. Evidence, Professor Peter Singer, Australian and New Zealand Federation of Animal Societies, pp. 9464-9465 and 9487.
24. Professor A.R. Egan, *op. cit.*, pp. 9494-9495.
25. *ibid.*, p. 9508.
26. *ibid.*, p. 9510.
27. Evidence, Dr John Barnett, Australian Pig Industry Policy Council, p. 9420.

28. Evidence, Dr John Holder, Pig Research Council, pp. 9614-9615.
29. Evidence, Australian Federation for the Welfare of Animals, pp. S8935-S8936.
30. Evidence, Dr Linda Murphy, Poultry Researcher, pp. 9550-9552.
31. Evidence, Professor Peter Singer, Australian and New Zealand Federation of Animal Societies, See Endnote 18.
32. Evidence, Dr John Auty, Australian and New Zealand Federation of Animal Societies, pp. 9471-9472.
33. Evidence, Professor A.R. Egan and Dr C.D. Hutson, pp. S8925-S8926.
34. *ibid.*, p. S8925.
35. Duncan, *op. cit.*, p. 456.
36. *ibid.*