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Welfare evaluation

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1. Needs, responses and welfare

When attempting to determine what is an appropriate environment for an animal, most scientists involved in welfare research would agree with Appleby (1997) that a range of components of that environment, each of which is to some extent variable, should be considered. The environment is appropriate if it allows the animal to satisfy its needs. These include needs for particular resources and needs to carry out actions whose function is to obtain an objective (Toates and Jensen, 1991; Broom, 1996). Needs can be identified by studies of motivation and by assessing the welfare of individuals whose needs are not satisfied (Hughes and Duncan, 1988a,b; Dawkins, 1990; Broom and Johnson, 1993). Unsatisfied needs are often, but not always, associated with bad feelings whilst satisfied needs may be associated with good feelings, all feelings being a part of biological control mechanisms (Broom, 1996).

In welfare studies, the interpretation of measurements of the responses of an animal to variations in its environment should involve a range of indicators of welfare. Single behavioural measurements can give some valid information but combinations of measures, for example those of behaviour, physiology, injury, disease and growth, are more likely to allow a true assessment of welfare (Smidt, 1983; Broom, 1988). When Appleby (1997) refers to responses it is not always clear whether the response is a single measure of behaviour, a set of measures of behaviour or a comprehensive range of responses. In some of his arguments and Figures the term responses might usefully be replaced by welfare and indeed he seems to use the words interchangeably in places. It is essential, if welfare is to be a usable scientific concept, that it should be considered to vary over a

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range from very good to very poor and hence, as Appleby states, many aspects of welfare are relative. However, if adequate measurements are made, it will always be possible to assess how good or poor the welfare of the individual is. Appleby is not correct in saying that much consideration of welfare is similar to preoccupation with discrete stimuli, e.g. assessing response to presence or absence of a stressor or effect of an injury or a possible parasite challenge. Many welfare studies involve complex situations such as housing systems or transport conditions and even in an investigation of a specific mutilation, measurements should be made of a range of different responses.

2. Costs and benefits in relation to welfare

If an animal's welfare is very poor any improvement in welfare is worthwhile to that individual animal and is also worthwhile, at a solely moral level, to people involved in interaction of any kind with that animal. This statement is made assuming that such people have a moral obligation to the animal. There may also be some other value to the people which is associated with an improvement in welfare. Possible values, which are described below, should be taken into account when considering costs associated with efforts towards welfare improvement.

The valuation of an improvement in animal welfare (Broom, 1994) is not just a matter of money but can also be expressed in terms of human time, energy or social costs. If the welfare of an animal used for food production is improved, there may be some direct financial benefit to the farmer in that production is increased. For example, a cow may produce more milk per unit input and a young calf, lamb or piglet may survive rather than die or grow fast rather than slowly. If the consumers perceive that welfare is improved in a system resulting in a distinguishable product, they may be prepared to pay extra for that product. Such consumers may also be prepared to travel further in order to purchase the welfare enhanced product. Other potential consumers may show their disapprobation for farming systems which they consider to result in welfare which is too poor, by devoting time and energy to activities designed to increase the chances of legislation forcing an improvement in welfare or to denigrating farmers. Such consumers may also refuse to purchase the product so that the overall market size declines. All of these actions will result in some cost to those farmers who are perceived to be taking too little account of the welfare of the animals which they keep.

The concept of cost mentioned by Appleby (1997) should be refined to take account of all factors and not just immediate monetary production costs. Where the environment is experimentally modified, 'response' should not be a simple measurement but a comprehensive set of welfare indicators. It may be that the optimum environment with respect to welfare is not financially attainable but it does exist.

In summary, the key to identifying an appropriate environment for animals is the use of an adequate range of indicators of welfare rather than simple responses. Experimental studies of the motivation of animals give information about the needs of animals, as do studies of welfare in animals whose needs are not satisfied. When welfare improvement is related to costs, a full range of costs rather than just immediate monetary costs should be used. Optimal environments may not be financially attainable but they do exist.

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