

Critical control points in the delivery of improved animal welfare

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Abstract

This paper describes the implementation and simultaneous promotion of an action plan designed to ensure animal welfare standards on-farm that exceed the requirements for acceptability in law. The approach is based on two action cycles, the producer and retailer cycles. The producer cycle, involving welfare audit and the implementation of an action plan for welfare has four stages: self-assessment; independent audit; creation of an action plan based on identification of principal hazards and critical control points; review; and revision of the action plan depending upon assessment of outcomes. The retailer cycle is designed to set quality standards for animal welfare, demonstrate compliance, promote proven high welfare products and reward producers. The paper reviews some incentives and constraints to action for both farmers and retailers and presents encouraging examples of the extent to which both producers and retailers have responded to increased public demand for high welfare products.

Keywords: animal welfare, farmer motivation and reward, quality assurance, self-assessment, Virtuous Bicycle, Welfare quality[®]

Introduction

Increasing public demand for high standards of farm animal welfare and quality assurance (QA) in matters of farm animal welfare has stimulated the development of a number of QA schemes that are based on independent audit of farm standards and increasingly well-founded in science and humanity — at least in theory. In practice, however, there is, as yet, little evidence that QA schemes are operating as well as they might either at ‘farm’ or ‘fork’ level, which is disappointing for consumers, farmers and the animals themselves. Complaints from farmers, who are presented with direct welfare issues on a daily basis, include ‘too much inspection, too little action, too little reward, too few signs of improvement’. Consumers (a very heterogeneous population) vary greatly in their concerns for farm animal welfare, the value they place on their concerns (the price they are willing to pay), the extent to which their concerns are reinforced by information (of varying provenance and quality) and finally, the extent to which their concepts of good animal welfare match those of the animals themselves. Those directly involved in the business of animal husbandry, whether farmers, researchers, advisors or administrators of the law and welfare have a primary duty to promote good welfare standards for as many animals as possible. For this to happen, both producers and consumers must be encouraged to examine and adapt their patterns of behaviour. This paper develops the concept of a protocol,

the ‘Virtuous Bicycle’ (Webster 2009), for the parallel delivery of improved animal welfare on the farm and increased consumer demand for high welfare food within the supermarket, shop or restaurant. It reviews the strengths, weaknesses, opportunities and threats attached to the implementation of this protocol and proposes ways to address them. Finally, it examines, by way of examples, the progress we have made so far and offers some promising prospects for the future.

What is animal welfare?

The aim of the exercise is to promote improved standards of farm animal welfare both in the minds of the consumers (because that is what sells) and in the minds of the animals themselves (because that is what matters). The first step is to define clearly what is meant by animal welfare as perceived by the animals themselves. There is now broad agreement amongst academics and real people that the welfare of a sentient animal is defined by how well it feels; how well it is able to cope with the physical and emotional challenges to which it is exposed. We recognise that circumstances can shift welfare state in both directions: either towards positive welfare, where the animal is ‘healthy and happy’ or in a negative direction of increased environmental challenge towards a state of suffering where the animal is unable to cope, or has great difficulty in coping, because the challenges are too severe, too complex or too prolonged (Fraser & Broom 1990; Webster 2005).

It is also necessary to recognise (and act upon) a distinctly separate concept of farm animal welfare, namely how humans feel when we buy, or choose not to buy, food of animal origin. In most cases, too, this is based on sentience rather than cognition. Our feelings that some practices (eg the battery cage for laying hens) are undesirable or unacceptable arise more from images than evidence. We feel that alternatives, such as free-range, are better and we are prepared to trust our feelings. It is unproductive to criticise this aspect of human behaviour on the basis that it is uninformed. We are all ignorant: different people are more or less ignorant about different things. We cannot expect to be fully informed about everything. We all have to take most things on trust if we are to stay sane. The key responsibility of those of us who are directly concerned with the husbandry and welfare of farm animals is to seek the best match between animal welfare as perceived by the consumer and the consumed. Those of us who are actively concerned with the promotion of improved farm animal welfare cannot expect to achieve this by a programme of mass education in the physiology, health and behaviour of farm animals. What we can do is establish a basis of trust in high welfare systems based on sound and transparent systems of quality control that set high standards and provide the evidence that these standards are being met. We, the consumers, are not obliged to examine this evidence but it should be available whenever we, or our trusted representatives, wish to do so.

On-farm assessment of animal welfare

A welfare-based QA scheme should be able to provide evidence to demonstrate that standards of husbandry and welfare on participating farms are consistent with the assurances it claims. The protocols developed as the basis of welfare assessment must therefore incorporate both measures of the elements of good husbandry: resources, management and records (Webster 2009) *and* direct animal-based assessment of welfare outcomes, based on sound foundations of animal welfare science (Bartussek 1999; Algers & Berg 2001; Whay *et al* 2003a; Webster *et al* 2004). The Royal Society for the Protection of Cruelty to Animals (RSPCA) contracted the Welfare and Behaviour group at the University of Bristol to develop and test welfare-outcome-based protocols for dairy cattle, laying hens and pigs, for incorporation into their 'Freedom Foods' scheme (Whay *et al* 2003a, 2007a,b). A similar approach has been greatly developed and expanded within the pan-European Welfare Quality® programme (www.welfarequality.net). The project focused primarily on animal-based indicators that could be monitored and used during inspection to assess current levels of welfare (Blokhuys *et al* 2003; Botreau *et al* 2007). The resulting protocols for cattle, pigs and poultry have been designed with the aim that they can be carried out on a single farm visit by an independent observer.

Welfare Quality® (WQ) proposed four welfare principles based on 12 criteria for good welfare (Botreau *et al* 2007). The four principles are essentially the same as the Five

Freedom (FAWC 1993). Specific, largely animal-based measures are described for assessment of each of the 12 criteria. The Animal Health and Welfare Panel (AHAW) of the European Food Safety Authority (EFSA) are currently reviewing the use of indicators to assess the welfare of farm animals. The panel acknowledge the strength of the WQ approach but recognise certain limitations. It places great emphasis on the direct impact of housing and management on important animal-based indicators of pain, injury and abnormal behaviour (eg lameness, skin lesions, abnormal behaviour). However, it does not give much attention to equally important issues of health and welfare such as improper nutrition, breeding and disease control, where the relevant information is more likely to be obtained from inspection of resources and records.

Table 1 lists the four principles of WQ: good feeding, good housing, good health and appropriate behaviour and the 12 criteria by which they can be assessed. The final column in Table 1 presents examples of measures that can be used in connection with each of the 12 criteria. In nearly every case the criteria are assessed both from measures of husbandry inputs and welfare outcomes.

Implementation and promotion of farm animal welfare

Farm assurance schemes have been developed for most livestock sectors in the UK and Europe (eg Defra, Assured Dairy Farms, RSPCA Freedom Foods, Soil Association). Different QA schemes place different emphasis on food safety, animal welfare and the environment. The primary purpose of a QA assessment is to ensure compliance with the standards of the scheme. As a minimum, any QA scheme must include all legislation that is relevant to the stated objectives of the scheme. However, the public appeal of a 'high welfare' scheme will depend on the extent to which it is perceived to improve on minimal standards. A scheme whose standards are designed to admit any farmer that does not actually break the law is not likely to appeal to the discerning consumer.

There have been two basic approaches to the implementation and promotion of 'high welfare' standards. The RSPCA 'Freedom Foods' approach defines standards for husbandry and welfare that are considerably higher than the legal minimum, independently monitors compliance with these standards and promotes them on the basis of trust in the organisation. The alternative approach proposed for Europe by Welfare Quality® is to rank farms according to the score attained during welfare assessment as 'unclassified', 'basal', 'good' and 'excellent'. A similar ranking approach, the '5-Step Animal Welfare Standards' has been developed in North America by the Global Animal Partnership (Duncan 2012). The attraction of these welfare-labelling schemes is that they allow for (and encourage) continuous improvement. They are fundamentally sound in so far as the standards of animal welfare required for compliance are based on sound principles of science and good husbandry. Their success will depend upon their impact on consumer

Table 1 The four principles and twelve criteria used to define welfare state according to Welfare Quality®, together with input (i) and output (o) measures appropriate to each of the welfare criteria.

Principles	Welfare criteria	Measures (examples)
Good feeding	Absence of prolonged hunger	Body condition score (o) Feeding procedures (i)
	Absence of prolonged thirst	Water provision: function, cleanliness (i)
Good housing	Comfort around resting	Time needed to lie down (o) Cleanliness: udders, legs, flanks (o) Cubicle numbers and design (o)
	Thermal comfort	Panting, sweating, shivering (o) Air temperature, humidity, ventilation (i)
	Ease of movement	Building design (i) Access to outdoor loafing area or pasture (i)
Good health	Absence of injuries	Lameness, skin damage (o) Breeding strategy (i)
	Absence of disease	Coughing, nasal discharge dyspnoea, diarrhoea (o), Records of mortality, morbidity, treatments, preventive medicine (i)
	Absence of pain induced by management procedures	Disbudding/de-horning. Tail docking (i,o)
Appropriate behaviour	Expression of social behaviours	Agonistic behaviour (o)
	Expression of other behaviours	Access to pasture (i)
	Good human-animal relationship	Avoidance distance (o)
	Positive emotional state	Play, mutual grooming (o)

behaviour and first results are promising. Sales of 'Freedom Food' free-range eggs in the UK rose from under 10 to over 50% over the period 1996–2010.

The Virtuous Bicycle

Delivery of improved standards of farm animal welfare within the context of economic incentives and constraints (promoting the Five Freedoms in the Free Market; Webster 2001) depends on co-ordinated action on-farm and beyond the farm gate. My approach to this is based on two virtuous cycles of effective action: the 'Producer Cycle' and 'Retailer Cycle', which together make up a 'Virtuous Bicycle' (see Figure 1; Webster 2009).

The Producer cycle

The four steps in the producer (or 'farm') cycle are:

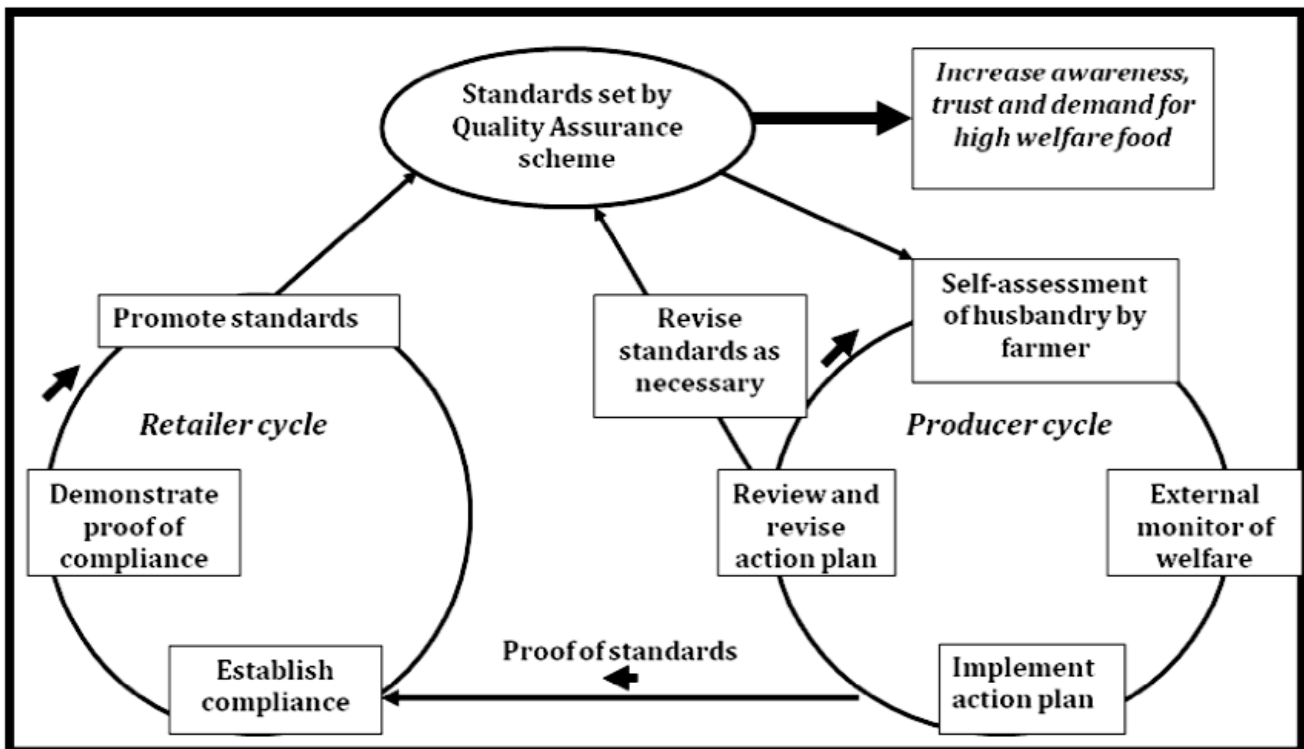
- Self-assessment by the farmer: based mostly on evaluation of resources, records, health plans etc;
- Independent audit: based on evaluation of self-assessment and observation of welfare outcomes;
- Action plan for welfare: prioritised to give attention to principal hazards to welfare and critical control points;

- Reassessment and review of action plan.

The initial self-assessment by the farmer (based on a structured but not too rigid questionnaire) has several merits: it can reveal both farmer knowledge and attitude, it can provide more information on health, fertility and lifetime performance than will normally be acquired during a QA inspection, and *it saves time*.

The QA inspection by the independent, trained auditor is based largely upon welfare-outcome observations and measures as described by Welfare Quality®. However, it will include inspection and discussion of the self-assessment document. Following the first inspection of a farm seeking to join a high welfare scheme, the assessor will pronounce whether or not the farm is in compliance with the standards of a scheme such as Freedom Foods, or what ranking it has achieved within (eg) the 'Five-Step Scheme'. The assessor may wish to defer judgement in the event that one or more elements of welfare were considered sub-standard but capable of resolution. The farmer should have the right of appeal against this initial assessment. The assessor may also identify and prioritise areas for improvement (eg comfort, lameness prevalence).

Figure 1



The Virtuous Bicycle (from Webster 2009).

The design of the Virtuous Bicycle requires the producer to have a strategic action plan for animal health and welfare, backed up by sound records and evidence of effective action where action is necessary. The independent QA assessor may identify and prioritise needs for action although he/she should not be directly involved in drawing up the plan. Normally, this would be done by the farmer in association with his/her veterinary surgeon. In our experience it is likely to be more effective when the ownership of the plan is in the hands of the farmer than the veterinary surgeon (Bell *et al* 2009).

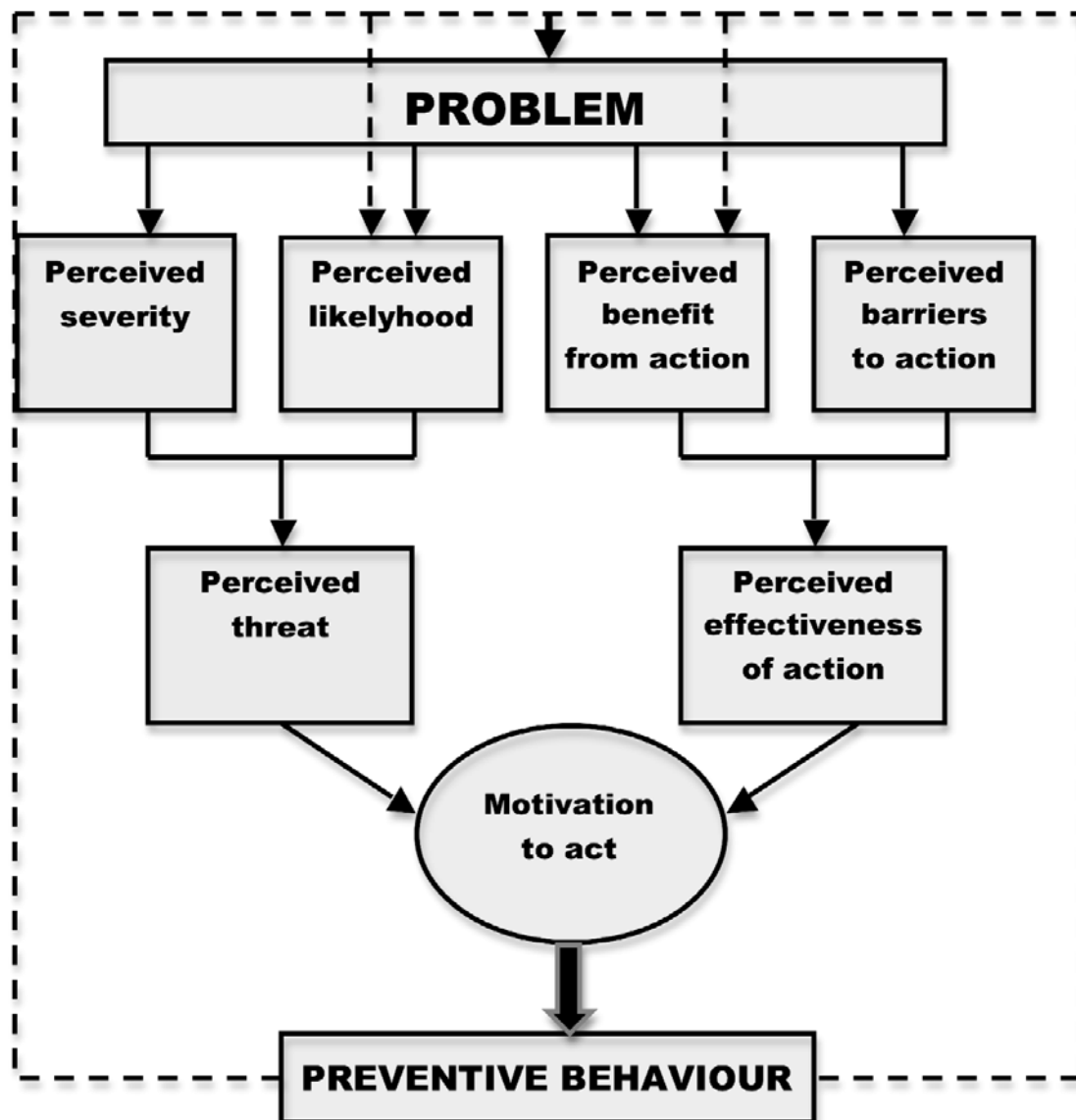
The final step in each circuit of the producer cycle is to review welfare after further self-assessment and independent audit at a suitable interval (eg one year). At this time, the auditor can confirm compliance (or not), or alter the ranking of the unit within a multi-step scheme. The auditor can also assess progress in dealing with prioritised welfare issues (eg lameness). As a general rule, a farmer should not be disqualified from a high welfare scheme on the basis of a problem identified from a single 'snap-shot' inspection but for failure to take effective action when a problem has been identified. In successive revolutions of the producer cycle the independent auditor should not need to assess in detail all 12 welfare criteria as set out in Table 1. The aim should be to develop and sustain a strategy that assesses relative risks, identifies critical control points and concentrate on priorities for action identified from previous audits.

The main attractions of this approach to on-farm assessment are that it should involve much less repetitive 'box ticking' than most current QA protocols. It generates a farmer-driven strategic health and welfare plan that focuses on major issues, and calls for evidence of effective action at critical control points. The major concerns and criticisms of this approach are:

- 'Where are the rewards?' (money, praise, pride);
- 'Will it create real improvements in welfare?'; and
- 'Will you ever concede that I am good enough?'

All these are valid concerns. Clearly, no farmer will be keen to enter a voluntary high welfare scheme that loses money or makes him less competitive. However, it would be insulting to suggest that the only motivation for farmers to enter a high welfare scheme is likely to be increased financial return. Pride in work has always been at the core of good animal husbandry but this pride needs reward in the form of praise or, at least, overt recognition that the farmer is doing a good job. Reward, therefore, depends on a fair price for high welfare food, sustained by a lasting contract. However, this can be reinforced by recognition, display and promotion of these high standards wherever such food is sold: whether in the supermarket, the specialist butcher, restaurant or pub. The display should include both the logo of the scheme (eg Freedom Food) and the prove-

Figure 2



Farmer motivation: incentives and constraints.

nance of the food, wherever possible, identified at the level of the individual farm. There is perhaps no better way of instilling trust in provenance than displaying the name and address of the provider.

As indicated earlier, one of the major concerns about current high-welfare QA schemes is that there is, as yet, little evidence to suggest that they are delivering what they claim: ie significantly higher standards of welfare than on farms not participating in the scheme (Main *et al* 2003). One perfectly acceptable reason for this is that animal welfare is satisfactory on many non-participating farms. A second reason, that gives more cause for concern, is that current schemes do little more than audit farms for all welfare criteria on an annual basis and confirm compliance (or not). Both auditor and farmer can

then forget about it until next year. The virtuous cycle differs in that it calls for and monitors the effectiveness of action at a realistically limited number of control points. However, this too is easier said than done. If we are to succeed in implementing improved standards of farm animal welfare, it is not sufficient to define and demand these standards, we need to explore the incentives and constraints to getting these things done on the farm.

These are illustrated in Figure 2, which explores the motivation of an individual to take effective action to promote his own health, or a farmer to take effective preventive action to promote the health of his animals. In the first analysis, this motivation is defined by the perceived magnitude of the threat and perceived effectiveness of possible actions to remove or reduce the threat.

To illustrate the elements of farmer motivation, as outlined in Figure 2, consider the major welfare problem of lameness in dairy cows. The farmer has first to acknowledge the threat, measured in terms of severity and likelihood (prevalence). This can present a major obstacle as many dairy farmers seriously underestimate both the severity and prevalence of lameness in their herds (Whay *et al* 2003b). Cows that are hopping lame are likely to be recognised, though not necessarily treated. However, the cow with a slow, hesitant gait has, on many dairy farms, come to be seen as normal.

The perceived effectiveness of action depends on the balance between the perceived benefits of action and the perceived constraints to action. All dairy farmers, I am sure, would like to see less lameness in their dairy cows. However, many are likely to be discouraged by the perceived constraints to effective action such as radical reconstruction or rebuilding of the cow accommodation. There is, however, an increasing body of evidence to indicate that the most important hazards for dairy cow lameness relate not to housing or nutrition but to standards of foot care (Manske 2002; Bell *et al* 2009). Foot care takes time, and time is a scarce commodity for dairy farmers. However, there are no major capital costs so that increased attention to foot care can yield returns measured both in terms of pride and profit.

The Retailer cycle

The components of the retailer (or 'fork') cycle are:

- Setting quality standards for animal welfare: either absolute or ranked;
- Demonstration of compliance with standards;
- Promotion of products that demonstrably meet quality standards;
- Review of standards and audit procedures in the light of experience; and
- Rewards for producers in compliance with quality standards.

As indicated earlier, quality standards for all farmers within the UK or the European Community are defined by law and reinforced by welfare codes (eg Defra, www.defra.gov.uk/food-farm/animals/welfare). It is right that all farmers should comply with this legislation and these codes and it is necessary that it is enforced by audit from trained inspectors who have the backing of the law. However, it should be obvious that food that can be marketed only on the basis that it is compliant with legislation can never be classified as any higher than *acceptable*. High welfare products, whether defined by a specific retailer, or an NGO such as the RSPCA, can only expect to command a premium if they can define and demonstrate standards higher than the legal minimum.

The demonstration of compliance with standards should emerge from the output of the producer wheel of the Virtuous Bicycle. This will depend on effective interaction between the retailers and the auditors, both to keep the audit

procedures under continuous review and to ensure transparency in making these procedures available to consumers. I repeat: concerned consumers have no moral obligation to study the fine print relating to production methods for everything we eat. However, the information should be available on demand. That way builds trust.

It is self evident that sales of high welfare foods, offered in competition with least-cost commodities in high turnover supermarkets, or featured exclusively in specialist retailers, restaurants and gastro-pubs, will depend on how effectively they are promoted. In the UK and many regions of the developed world, there are clear signs of increased promotion and purchase of high welfare foods. In the UK, the most dramatic change in purchasing behaviour has been the increased consumption of free-range eggs: (< 5% to > 50% in 15 years). Realistically, one has to concede that this has been influenced far more by promotion of the image of the battered hen in the battery cage than by any considered evaluation of the welfare pros and cons of alternative husbandry systems. However, we have good evidence that the welfare of most laying hens in large, commercial free-range systems, operating to Freedom Food standards, can be very good (Whay *et al* 2007b).

Images, however, can be deceiving and, in the case of food from animals, they too often are. Images of smiling pigs waving sausages or pretty maids gathering eggs in a basket are probably harmless because they make no pretence at reality. However, the use of images of cows in fields, often accompanied by their calves, to promote dairy products is a seriously misleading form of advertising, not least because most urban consumers, informed only by images, are comfortable in the belief that all dairy cows spend their lives in green fields: worldwide and year-round the vast majority live in confinement, surrounded by concrete.

The delivery point of the Virtuous Bicycle is the growth and promotion of systems of animal husbandry that guarantee higher standards of welfare than those that can be enforced by legislation. These can only be achieved by mutual consent. If consumers are to change their behaviour in regard to the food they purchase and farmers are to change their behaviour in regard to the way they rear their animals then both must perceive (as in Figure 2) that the benefits outweigh the constraints. For consumers, the most obvious constraint is price. However, published figures from the RSPCA (www.politicalanimal.org.uk) show that the production of Freedom Foods has continued to increase during the current economic downturn. In the period 2005–2009 annual production numbers of Freedom Food chickens have risen from 23.6 to 60 million, laying hens from 11 to 15 million. It would be tempting to conclude that public demand for high standards of high welfare is more robust than demand for the perceived benefits of organic food. However, the price differential for high welfare foods tends to be much less than that for organic. At a recent visit to a major supermarket, I observed that the average price differential between free-range and cage eggs was less than 10%: ie the benefit:constraint ratio is more favourable for

high welfare than for organic food. This implies, of course, that the price differential that the farmer receives for free-range eggs has also become very small: in effect, the profit margin has been squeezed to the acceptable minimum for both systems. This is a fact of life. High welfare farmers have the right to the same gross profit margin as those practising conventional systems but there is no economic or moral reason why they should get more. It is sufficient that they should be able to practise better husbandry and remain competitive. Another paper at the UFAW conference (Guy 2012) compared the economics of three types of sow breeding units: intensive units with conventional farrowing crates, intensive unit with high welfare farrowing facilities, and units in which sows farrowed in out-of-doors with individual arc accommodation. The paper concluded with regret that the high welfare farrowing facilities in the intensive units were economically uncompetitive. However, for me, the most significant fact was that estimated net profit for the outdoor unit was higher than for both the intensive systems. For sows and hens, therefore, it appears that the cost of higher welfare does not have to be prohibitive. I am often told that many pig farmers could not reasonably expect to keep their sows out of doors because the land is too wet and they do not have access to cheap bedding. My answer to this is that they may own a pig factory but do not live on a pig farm.

In 1980, shortly after I joined the Farm Animal Welfare Advisory Committee (FAWAC, the predecessor to the Farm Animal Welfare Council), I began to advocate the principles of the Five Freedoms as paradigms to which livestock and poultry farmers should strive, if never attain. This provoked some virulent responses from the National Farmer's Union and major breeding companies, both in the media and in letters to Ministers recommending that I was a dangerous threat to the industry and should be expelled from FAWC. Thirty years later my views remain, in essence, the same. After fifteen years the most common response from producers was that they would love to improve welfare standards but the public would not buy it. However, in the last five years, the expansion of high welfare schemes has exceeded my most optimistic expectations. Free-range eggs are the most obvious expression of this but there are many other examples: outdoor-bred and outdoor-reared pork and bacon, dairy contracts based on independently audited QA for high welfare, Freedom Food-farmed salmon. These appear to have been driven by major retailers within all sectors of the market; from Waitrose to the Co-op to McDonalds, actively encouraged and acknowledged by NGOs such as the RSPCA and CIWF (Compassion in World Farming). In each of these examples, the improvements are real and verifiable: ie they can be trusted. Of course, the real drivers of change are not the supermarkets but the public. Big business recognises that success depends on its ability to recognise and be quick to respond to changes in public demand. We who are working to develop and promote improved standards of farm animal welfare need to recognise that we are currently pushing at an open door.

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