

**Mental states, feelings,
emotions in chickens:
What science can tell us**

Ian J.H. Duncan

Professor Emeritus

Emeritus Chair in Animal Welfare

University of Guelph

What are “Feelings”?

Sentience n. The condition or quality of being sentient, consciousness, susceptibility to sensation.

Sentient adj. A. That which feels or is capable of feeling; having the power or function of sensation or of perception by the senses. B. That which has sensation or feeling.

The Oxford English Dictionary

Clarification of terms in this talk:

EMOTIONS = FEELINGS

**= MOTIVATIONAL
AFFECTIVE STATES
(MASs)**

Question

Why are feelings important?

Answer

Feelings are important because that is what welfare is all about.

A short history

Although the lay public have always thought that animals are sentient, there is a clear line of argument for non-sentience from early philosophers :

Aristotle (384-322 BC)

Thomas Aquinas (1224-1274)

René Descartes (1596-1650)

Immanuel Kant (1724-1804)

René Descartes (1596-1650)



Rationality distinguishes humans from animals.

Language (a unique human attribute!) is the only real test of rationality.

Blamed for introducing idea of animals as “automata”.

René Descartes (1596-1650)

- **A lot of debate about what Descartes really believed.**
- **He certainly did not treat animals as if they were sentient.**
- **He was a vivisectionist.**
- **Many of his contemporaries believed that animals were sentient and that his cruelty to them was unacceptable.**

And then came the Enlightenment...

David Hume (1711-1776)



Hume disputed these previous views about rationality:

“Is it not experience, which renders a dog apprehensive of pain, when you menace him, or lift up the whip to beat him?”

Jeremy Bentham (1748-1832)



Rejected the claims of Aristotle, Aquinas, Descartes and Kant outright. He said that rationality is not the relevant matter:

“The question is not, Can they *reason*? nor, Can they *talk*? But, Can they *suffer*?”

William Youatt (1776-1847)

Influential English veterinarian (who embarked on a veterinary career at the age of 35!).

1830. *Canine Madness.*

1831. *The Horse. With a Treatise on Draught.*

1834. *Cattle. Their Breeds, Management and Diseases.*

1837. *Sheep.*

1845. *The Dog.*

1847. *The Pig.*

1828–1847 Editor of *The Veterinarian*

William Youatt (1776-1847)

***1839. The Obligation and Extent of
Humanity to Brutes, Principally Considered
with Reference to the Domesticated Animals.***

**Republished in 2004. Edited, introduced and
annotated by Rod Preece.**

Edwin Mellen Press, Lewiston, N.Y.

William Youatt (1776-1847)

Youatt writes of animals' senses, emotions, consciousness, attention, memory, sagacity, docility, association of ideas, imagination, reason, instinct, social affections, the moral qualities, friendship and loyalty.

So he, most definitely knew that animals were sentient!

William Youatt (1776-1847)

He wrote :-

“We are operating on animals that have, probably, as keen feelings of pleasure and of pain as ourselves”

William Youatt (1776-1847)

He condemned :-

- Too early training of race horses
- Steeple-chasing
- Transport methods for newly-born calves
- Raising of veal calves
- Slaughter-house management
- Too early shearing of sheep
- Tail-docking and ear-cropping of dogs
- **Force-feeding poultry**
- Using live bait for fishing
- Dissection of living animals

William Youatt (1776-1847)

“I will not disgust the reader with an account of the confinement of capons and turkeys in small coops, and for a full fortnight before they are sold - cramming them morning and night with treacle and suet, and many other things disgusting to the fowl, - a fortnight of beastliness and misery.”

Note: Many campaigns currently underway against *foie gras* – which uses exactly these methods.

**Darwin, C., 1872. *The Expression of the Emotions in Man and Animals.*
John Murray, London.**

Darwin was mainly interested in the **EXPRESSION** of the emotions:

- Underlying anatomy and physiology
- Signal value of the expression
- The evolution of the emotions
- He seemed to accept the **SUBJECTIVE EXPERIENCE** associated with the emotions, but this was not explored in any depth

George John Romanes (1848-1894)

“Pleasures and Pains must have been evolved as the subjective accompaniment of processes which are respectively beneficial or injurious to the organism, and so evolved for the purpose or to the end that the organism should seek the one and shun the other.”

Mental Evolution in Animals (1883)

20th century ethologists, from Konrad Lorenz onwards, were quick to recognize the usefulness of Darwin's observations.

But whereas Romanes speculated on the **SUBJECTIVE EXPERIENCE, they restricted themselves to studying the **EXPRESSION** of the emotions.**

And the reason why scientists did not consider **SUBJECTIVE EXPERIENCES**, was because of the rise of

BEHAVIORISM

J.B. Watson (1878-1958)

“The behaviorist sweeps aside all medieval conceptions. He drops from his scientific vocabulary all subjective terms such as sensation, perception, image, desire and even thinking and emotion.”



B.F. Skinner (1904-1990)

“We seem to have a kind of inside information about our behaviour – we have feelings about it. And what a diversion they have proved to be!



....Feelings have proved to be one of the most fascinating attractions along the path of dalliance.”

(1975)

- These were powerful scientists.
- Not surprising that the emergence of animal welfare science was delayed.
- **But the non-scientific community knew that animals had feelings - and it was feelings that mattered!**

For example,

**Harrison, R., 1964. *Animal Machines*.
Vincent Stuart, London.**

**Again and again in her book, Ruth
Harrison refers to the **SUFFERING** of
farm animals.**

“Welfare is 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.”**

Brambell Report (1965)

The first welfare scientists avoided any consideration of feelings.

Early assumption (made by me and other scientists exploring welfare):

- **Welfare (whatever it is) will be closely connected to the physiological stress response.**
- **Measuring welfare will simply be a matter of finding a reliable indicator of stress.**

Griffin, D., 1976. *The Question of Animal Awareness*. Rockefeller, New York.

Made it acceptable for ethologists to consider subjective experiences.

Dawkins, M.S., 1980. *Animal Suffering*. Chapman & Hall, London.

Explored the subjective experience of suffering in detail.

What is animal welfare?

- In physical and **mental** health
- In harmony with its environment
- Able to adapt to the given environment without **suffering**
- Somehow we should take account of the animals **feelings**

Duncan and Dawkins (1983)

What is animal welfare?

Suffering

A wide range of unpleasant **emotional** states

Duncan and Dawkins (1983)

What is animal welfare?

This broad working description of animal welfare worked quite well for a number of years, and then...

What is animal welfare?

What about cases in which animals are:

- **Normal but with sub-clinical disease?**
- **Showing stress symptoms because of participating in a rewarding activity (stallions mating)?**
- **Healthy, physiologically normal, producing well, but performing stereotyped movements (caged hens before laying an egg; broiler breeders on restricted ration)?**

What is animal welfare?

Debate among animal welfare scientists:

Which should take precedence?



Physical well-being?

Mental well-being?



(Biological functioning school)

(Feelings school)

All organisms have certain needs which have to be satisfied in order that the organism:

survives

grows

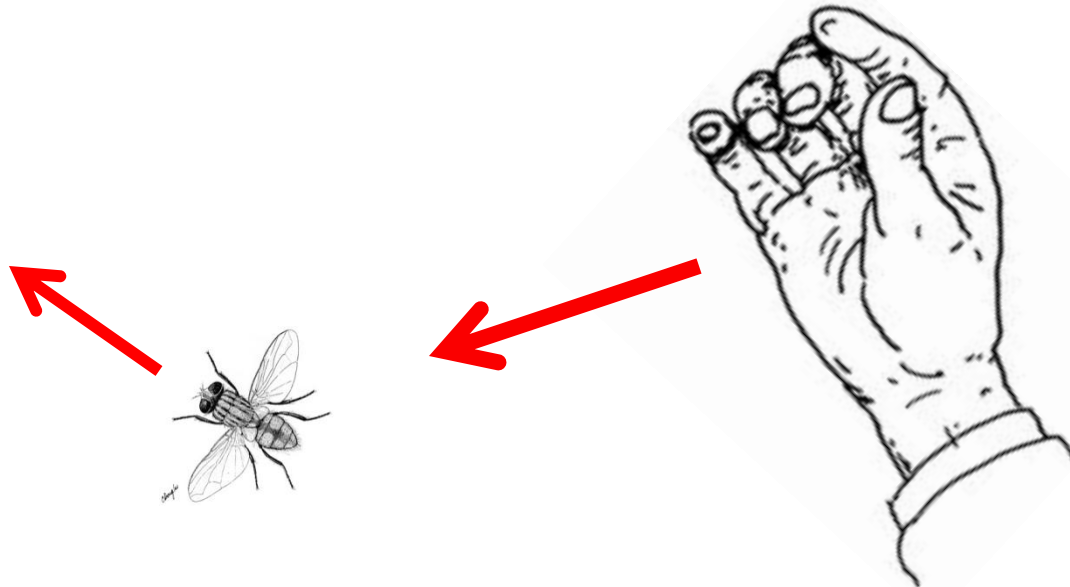
reproduces

As true for a birch tree as for a broiler

If needs not met, organism will show symptoms of atrophy, stress, ill health, and will die.

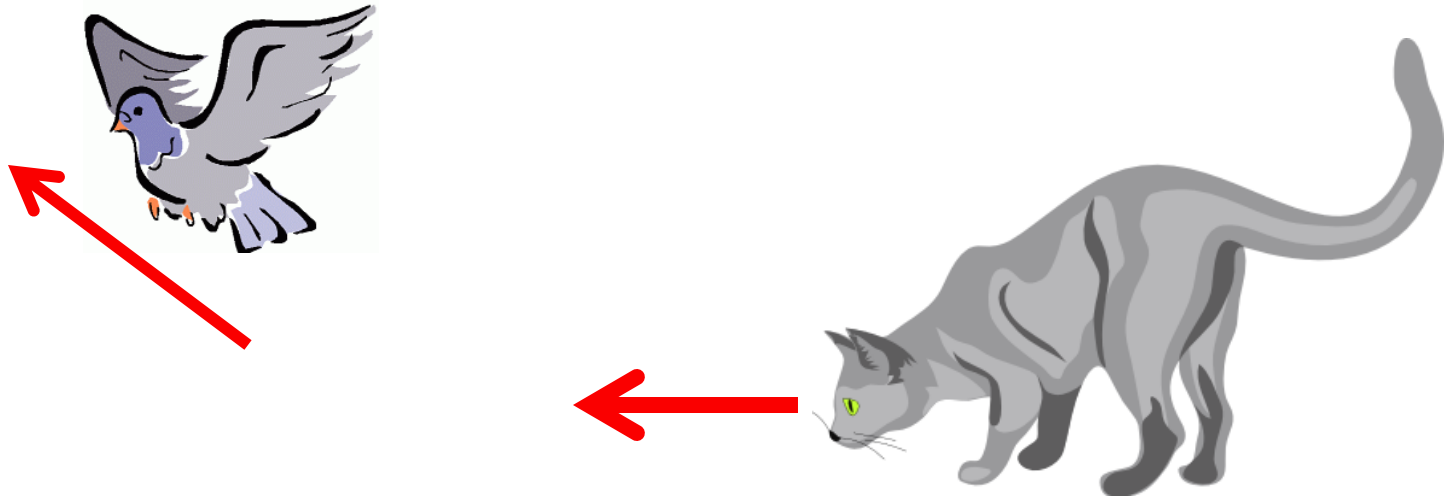
Lower invertebrate satisfies its needs by simple, hard-wired, stimulus-response behaviour.

(A fly avoids a large shape rushing towards it)



Higher organisms (vertebrates) have evolved 'feelings' (subjective affective states) to protect their needs in a flexible way.

(A bird avoids a cat moving towards it – but its avoidance is governed by fear)



Biological functioning school

**Welfare is principally to do with the satisfaction of the primary needs;
much less to do with the satisfaction of the secondary subjective feelings.**

Feelings school

**Welfare is ALL to do with the secondary subjective feelings;
with the absence of negative feelings,
with the presence of positive feelings.**

So, I am drawing a fine distinction between:

Primary need

Secondary feeling

having a nutrient
deficiency

feeling hungry

having a fluid
deficiency

feeling thirsty

avoiding predator

feeling frightened

being ill

feeling ill

being stressed

feeling stressed

being injured

feeling pain

Of course, usually there will be close correspondence between the **NEED** and the **FEELING** -

(after all, feelings evolved to protect needs)

- but not always, particularly in the case of domesticated animals.

WHY NOT?

NATURAL SELECTION

keeps needs and feelings linked

ARTIFICIAL SELECTION

allows needs and feelings to separate



**Fighting Cocks are extremely aggressive.
They could not survive in the wild.**



Broiler breeders have huge appetites

If allowed to satisfy these appetites, they become obese, 'unfit', and they suffer.

If feed-restricted, they function well, their nutritional needs are met, and they appear to be 'fitter'.

BUT their welfare is severely compromised by the feed restriction.

THEY FEEL HUNGRY ALL THE TIME!

What is animal welfare?

There is now gradual acceptance that it is feelings that govern welfare

.... and therefore feelings that should be measured when assessing welfare.

(With some resistance from stress physiologists!)

What is animal welfare?

- **Animal welfare is all to do with what the animal feels :-**
- **With the absence of negative emotional states (suffering)**
- **With the presence of positive emotional states (pleasure) (probably)**

What negative states can chickens experience?

The common states of suffering are:

- **Pain (and discomfort)**
- **Frustration**
- **Fear**
- **Malaise (feeling ill)**
- **Separation anxiety**

These states have been well studied and symptoms are fairly easy to recognise.

What negative states can chickens experience?

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- ~~➤ Separation anxiety~~

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What negative states can chickens experience?

Pain (and discomfort)

- **Beak trimming***
- **De-toeing***
- **De-spurring***
- **Dubbing**
- **Shackling pain**
- **Skeletal problems**
- **Bone breakage at de-population**

What negative states can chickens experience?

Frustration

- **Frustrated nesting in cages**
- **Frustrated roosting in cages**
- **Frustrated foraging in cages**
- **Frustrated social spacing in cages**
- **Frustrated feeding (broiler breeders)**
- **Frustrated sexual behaviour (some strains of broiler breeders)**

What negative states can chickens experience?

Fear

- **Sudden stimulation**
- **Intense stimulation**
- **Novel stimulation**
- **Anything predator-like**
- **De-population**
- **Hysteria?**

What negative states can chickens experience?

Malaise (feeling ill)

- **Not such solid evidence**
- **Birds look miserable**
- **Argument based on analogy and homology**

What negative states can chickens experience?

There are other states of suffering that some species may experience:

- Loneliness**
- Sadness**
- Boredom**

These have not been investigated in any detail – but unlikely they are experienced by poultry species.

What negative states can chickens experience?

There may even be states of suffering that are not experienced by human beings. E.g. fish in poor quality water probably suffer.

We should keep an open mind, but it seems unlikely that poultry species will experience these.

What positive states can chickens experience?

We do not know nearly as much about states of pleasure, in any species, let alone poultry.

However, there is increasing interest in this area.

What positive states can chickens experience?

The reason why there is interest:

- It may not be possible to eliminate ALL suffering.
- We may be able to counteract unavoidable suffering by promoting pleasure.
- “A spoonful of sugar to make the medicine go down”

What positive states can chickens experience?



**Some evidence that dustbathing is
pleasurable in chickens**

(Widowski & Duncan, 2000)

Remember, we are talking about:

SUBJECTIVE FEELINGS

Only / can know what *my* subjective feelings are.

Only / can know what / experience when / see the colour red.

Only / can know what / experience when / feel hungry.

Only / can know what / experience when / feel toothache

The Problem

Feelings are subjective i.e. *not* directly available for scientific investigation.

The Problem

Feelings are subjective i.e. *not* directly available for scientific investigation.

The Solution

We do not need to know *exactly* how the animal feels.

An indication of how positive or negative it feels would be very useful.

It is possible to gain that information indirectly.

Asking the Animal

It is possible to investigate feelings by indirect methods.

- Preference testing
- Motivational testing
- Understanding communication

Asking the Animal

The pioneers of preference testing:

Barry Hughes

Marian Dawkins

In a series of experiments 1973-1978 with domestic fowl, they established a technique that has proved to be invaluable in welfare research.

Asking the Animal

Danbury *et al.*, 2000. Self-selection of the analgesic drug carprofen by lame broiler chickens.

***Vet. Rec.* 146: 307-311.**

This is very exciting research!

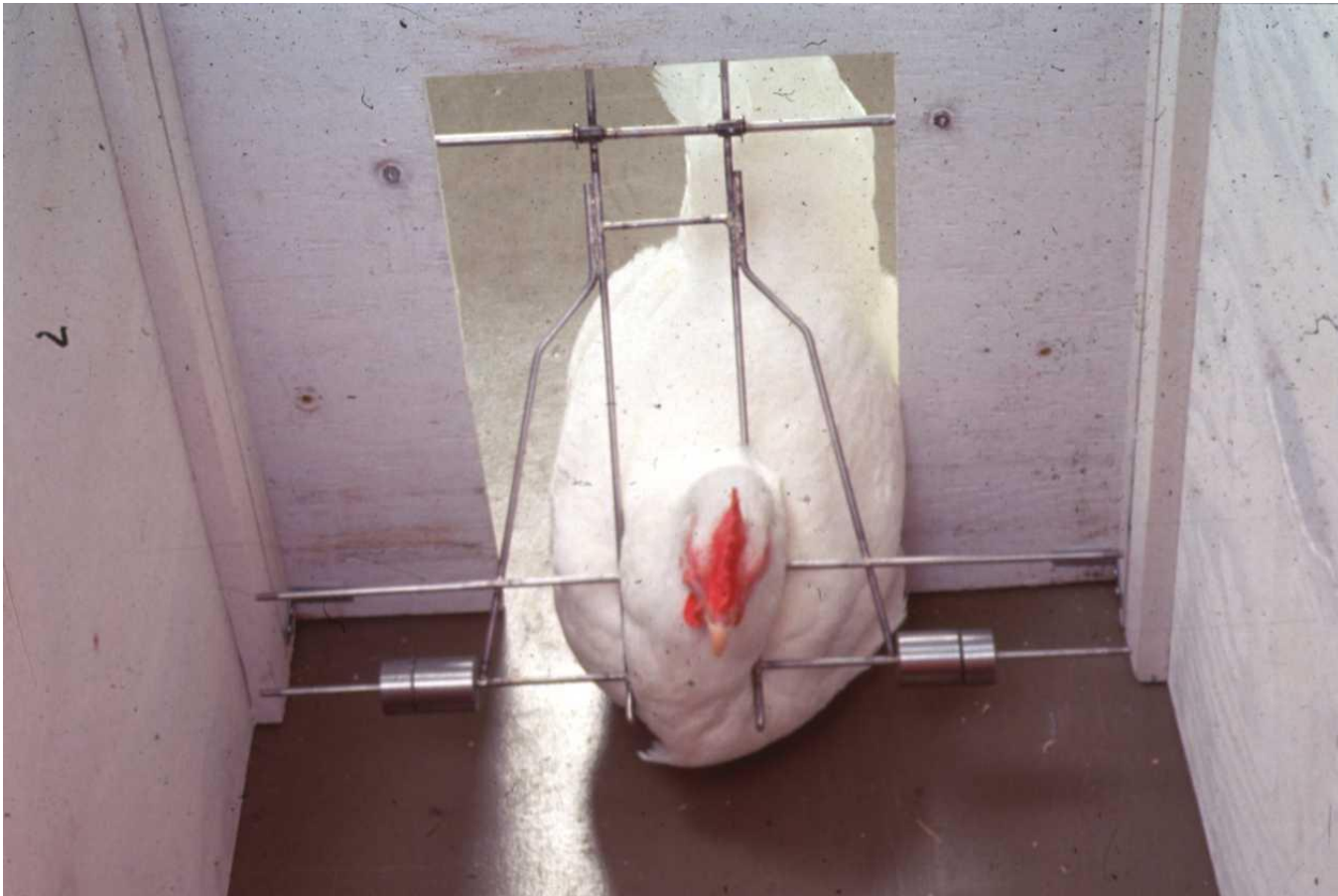
It has revealed that chickens can tell us what they feel about being in pain.

Asking the Animal

The pioneers of using motivational testing to interpret emotions:

Ian Duncan, Marian Dawkins *et al.*

Motivational test for nesting



This hen is working hard pushing open a weighted door in order to reach a nest-box.

In Conclusion

- **Emotions / feelings / mental states are extremely important because they are what welfare is all about.**
- **Although they are subjective states, we are developing techniques by which we can “ask” animals what they feel about the conditions under which they are kept and the procedures to which they are subjected.**
- **Experiments on poultry have led the way in this field and we now have a very good idea of what birds need to have good welfare.**