

Clinical Medicine I  
VETM\*3430

Principles of Large  
Animal Handling

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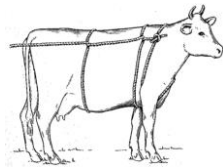
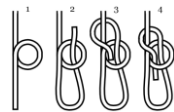
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Large animal restraint



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## Learning objectives

1. Describe key behavioural principles of handling herd animals
2. Compile recommendations to improve livestock handling, including key factors to consider with respect to the design of handling facilities
3. Draw and explain the model of human-animal interactions

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## Animal handling involves risk

Risk of injury to the humans who can be:

- kicked
- knocked down
- stepped on
- pinned against a wall or gate
- bitten (horses)

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## Cows can be aggressive after calving

### “Cow defending its baby”

<https://www.youtube.com/watch?v=Lnp1s5IY4VQ>




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### Animal handling involves risk

Risk of injury to the humans who can be:

- kicked
- knocked down
- stepped on
- pinned against a wall or gate
- bitten (horses)

But also - the risk of injury for the animals

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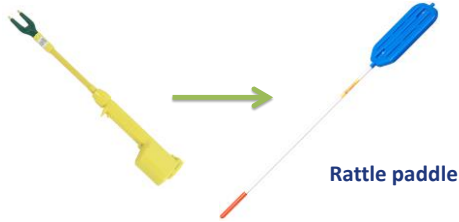
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### Moving animals with finesse, not force

Electric prod / goad / hot shot



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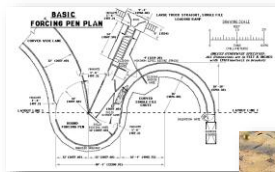
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### Also finesse in terms of facility design



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### Importance of 'low-stress' handling

1. Human safety: farm workers, their families, and vets. Impact job satisfaction?
2. Animal productivity: both short-term (e.g., bruising, DFD & PSE meat) and long-term (e.g., ADG, milk yield – see work by Dr. Paul Hemsworth)
3. Animal welfare (+ve or -ve): during handling events but also potentially having, longer-lasting impacts

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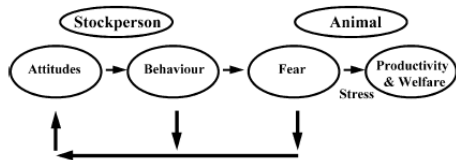
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### Model of human-animal interactions



(Developed by Paul Hemsworth & Graham Coleman, 2003)

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### Model of human-animal interactions

- Stockpeople on farms vary in how they handle, and behave towards, their animals (tone of voice, speed of movement, physical interactions with the animals)
- Farms vary in their productivity
- A significant proportion of the variation in productivity is explained by the behaviour of the handler ("good" vs "bad behaviour")
- Handler attitudes regarding animals is predictive of how handlers behave towards the animals

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### Model of human-animal interactions

- Stockpeople who described animals as "dumb" or "stubborn" - more likely to engage in "negative" behaviour (e.g., shouting fast movement, hitting, slapping, )
- On farms where handler behaviour is negative the animals keep further away from humans, have a longer latency to approach humans – suggesting some level of fear of the handler; negative impact on animal welfare




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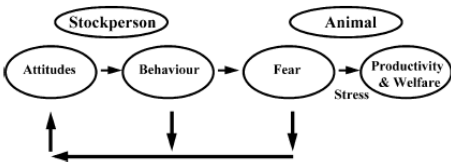
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### Model of human-animal interactions



Human-animal interactions can have **reciprocal effects on each other** (both +ve and -ve)

(Developed by Hemsworth & Coleman, 2003)

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## Behavioural biology important to handling

- Our common food animals are **gregarious / social** species (e.g., cattle, sheep, goats, pigs, elk)
- They are **prey species**, not predators / hunters
- Anatomically, their eyes are set wide on their head, for a wider field of view; detection of predators by sight over hearing
- These shared characteristics mean that the same behaviour principles apply to handling and moving the major farm animal species

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## Key principles of large animal handling

1. Visual perception and field of view
2. Flight zone
3. Point of balance
4. Facility use and design

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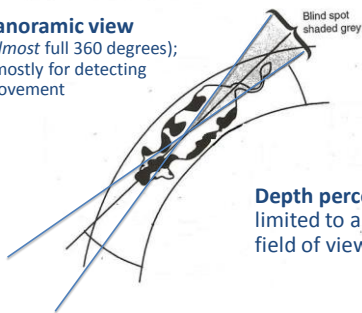


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## 1. Visual perception and field of view

(Prince, 1977)

**Panoramic view**  
(almost full 360 degrees);  
- mostly for detecting  
movement



**Depth perception** is  
limited to a very narrow  
field of view.

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### Visual perception: Applications

Long-standing use, to contain livestock



"Cattle trap", "Texas gate", etc, for confining livestock

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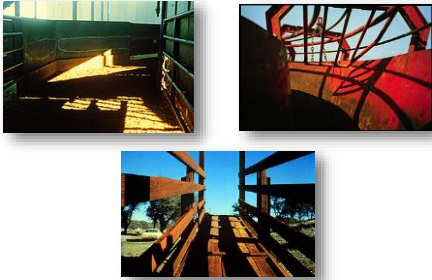
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### Visual perception: Implications for handling

Shadows and other visual contrasts can impede movement



Causes balking; hesitation, stopping, refusal to pass

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### Solution to visual perception problems:

Solid chute sides can help reduce shadows



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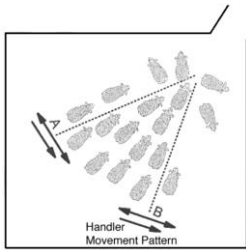
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### Field of view: Implications for handling

Animals will tend to circle / turn back / not walk away in a straight line



Trying to empty a pen from behind the group.

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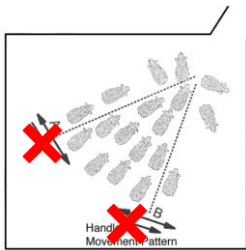
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### Solution to field of view problems:

Do not move groups of animals from behind!



They want to keep you in view (see other methods).

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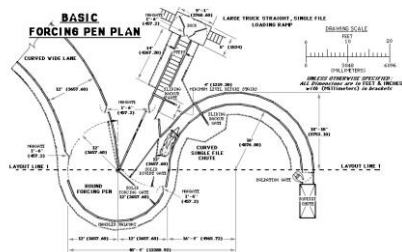
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### Solution to field of view problems:

Curved-chute designs



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### Key principles of large animal handling

- 1. Visual perception and field of view
- 2. Flight zone

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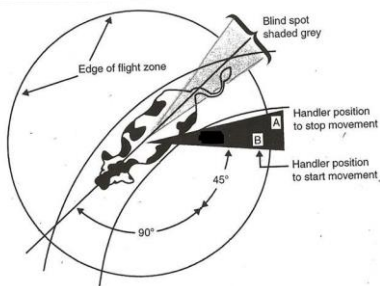
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### 2. Flight zone: 'personal' space

(Hedigar, 1968)



'The gas pedal' & 'the brakes'

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### Flight zone: Applications

Entering zone causes movement away (the gas pedal)



Retreating from the flight zone slows or stops movement

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### Flight zone: Implications for handling

Animals hesitant to enter the squeeze chute



Expecting an animal to walk directly towards you... !?

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### Solutions to flight zone problems:

Louvres to hide handlers, chuteside



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### The flight zone is dynamic

Key factors influencing size of the flight zone:

1. \*Isolating animals vs handing with a companion  
(Alone = bigger zone)
2. \*Speed of movement of the approaching handler  
(Faster speed = bigger zone)
3. \*State of arousal, how 'agitated' or 'worked-up' they are  
(Excited = bigger zone)
4. Novelty and expanse of the environment: Complex, and may interact with individual temperament (In general, novelty enviros, and expansive enviros = larger zone)

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### Novelty and expanse of environment



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### Novelty and expanse of environment



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### Key principles of large animal handling

1. Visual perception and field of view
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3. Point of balance

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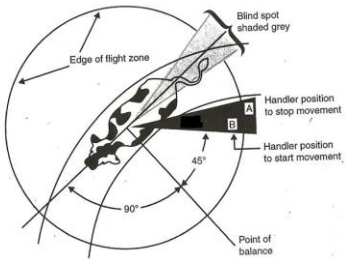
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### 3. Point of balance

(Kilgour & Dalton, 1984)



Handler movement across the point of balance - is what is key.

When handler is moving parallel to the animal, it will move in the opposite direction to the handler's direction of travel.

'Forward & reverse'

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### Point of balance: Implications for handling

Animals going back-and-forth in the chute



Backstops, or back-up-bars

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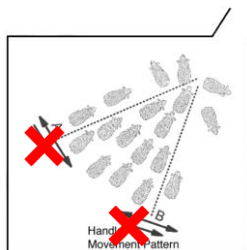
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### Solution to field of view problems:

Do not move groups of animals from behind!



They want to keep you in view (see other methods).

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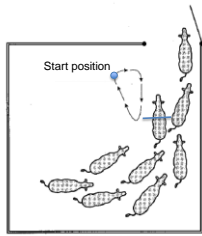
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### Applications of the point of balance:

Emptying a pen of animals



(Adapted from Grandin, 2007)

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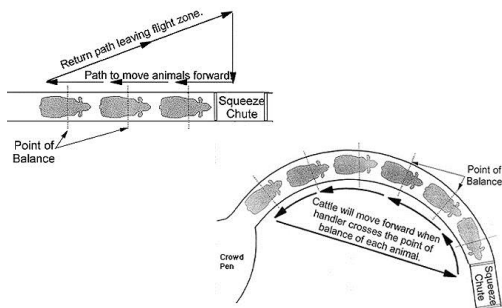
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### Applications of the point of balance:

Moving animals in a chute system




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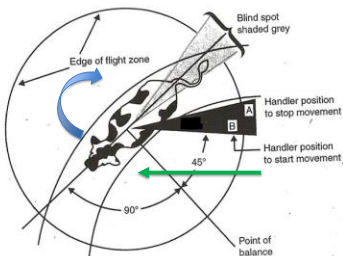
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### 3. Point of balance

(Kilgour & Dalton, 1984)



Walking across the point of balance, walk toward the animals head – to make it turn away from you.

For steering

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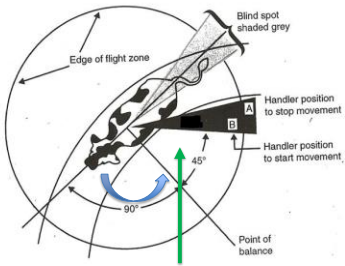
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### 3. Point of balance

(Kilgour & Dalton, 1984)



Walking across the point of balance, walk toward the animals rump – to make the animal turn 'into' you.

For steering

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### Key principles of large animal handling

1. Visual perception and field of view
2. Flight zone
3. Point of balance
4. Facility use and design

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### 4. Facility use and design:

Recommendations to improve animal movement

- Use the crowd tub area at much less than full capacity, for example, half full – give the animals room to move.




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### Take advantage of natural following behaviour




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### 4. Facility use and design:

Recommendations to improve animal movement

- Use the crowd tub area at much less than full capacity, for example, half full – give the animals room to move.
- Take advantage of the herding or flocking behaviour (i.e., their natural tendency to follow one another)
- Use the flight zone and point of balance to move the animal through the chute system
- Solid chute sides can help to eliminate areas of contrast caused by shadows

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### Further recommendations:

Recommendations to improve animal movement

- Move slowly and be patient: When you are having problems, give animals time to calm down
- Use the proper aids to initiate movement (keep the electric prod away from the handling chute, and then only use it as a last resort)
- Keep quiet! Studies with cattle show they are more agitated and have higher heart rates in response to the sound of human voice vs other handling-related noises (the banging and clanging of gates)

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### Cattle handling

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#### “Stockmanship” clinic

<https://www.youtube.com/watch?v=CDvD5e6RQ4>  
1805 to 1910



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### Lecture summary

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1. Understanding how to use the flight zone and the point of balance are key to handling animals without the use of force
2. Handling animals in small groups, moving at a slow, consistent pace, and being patient are all key attributes of good stockmanship
3. In addition to knowledge about biological principles that facilitate handling, the attitude of the handler towards the animals they are working with is key to good human-animal interactions

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