Automation systems for farm animals

Potential impacts on the human animal relationship and on animal welfare

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Outline

Background, Definition and Use of Automated Systems (AS)

Impact of AS on Human Animal Relationship and Consequences for Animal Welfare

Other impacts of AS on Animal Welfare, Farmers and Consumers
  ▪ Potential Positive impacts
  ▪ Potential Negative impacts

Conclusion
Background

Industrialization / Modern Production

Feed conveyors, Farrowing and Gestation crates (swine), Automated environment control etc.

Confinement, Large Units, Integration

Automation at the individual level

1st generation: electronic black boxes attached to neck collars

2nd: tiny electronic transponders

3rd: read/write possibilities and sensor technology for monitoring animal health and performance

Six men for 2,700 sows

Pig progress [2], 2006
Definition and Use of Automated Systems

Automated systems here refer to

Systems that collect information about individual animal using sensors or identification tags
Systems that collect information remotely

Use of AS

Collect, Transfer, Analyse information about specific individual or group of animals
Replace some of the traditional tasks of husbandry e.g. milking, weighing, detection of health disorders.
Improve productivity, reduce labor costs
Impacts of AS on Human Animal Relationship (1/4)

Increase in distance in human animal relationship
Result of remote monitoring

Consequences of less interaction
Reduce potential negative interactions
*Violence in e.g. sorting, weighing, moving animals*

**Positive impact**
- For the farmer (credibility)
- For animal welfare

**However:** more negative than positive interactions
*AS replaces opportunities for positive interactions: milking, feeding*
*While aversive tasks still necessary: castration, vaccination*
Impacts of AS on Human Animal Relationship (2/4)

... And further less interaction

AS assist / are implemented in larger groups
⇒ More space to avoid stockman

AS find alternative ways to attract animal

* e.g. use of music to attract cows to automatic milking parlour

**Negative impact**
- Increase stress and fear of human

“Another potential problem for animals that are deprived of human contact is the fact that, if any human contact is required, perhaps in an emergency situation, this interaction will be highly fear-provoking and aversive”

(Hemsworth and Coleman, 1998)
Impacts of AS on Human Animal Relationship (3/4)

Solutions suggested to improve Human Animal Relationship

- Promote more positive than negative interactions (Raussi, 2003)

- Educational initiatives to ensure positive attitude and behaviour of the stockperson (Raussi, 2003; Waiblinger, 2006)

  Direct effect on animal fear, welfare and productivity (Hemsworth, 2003)

- Completely automate (Hemsworth and Coleman, 1998)

  Not possible: e.g. vaccination, disease treatment

Improving human animal bond: farmer more familiar with animal’s disposition, needs, and behaviour, then improving animal welfare (Anthony, 2003)
Impacts of AS on Human Animal Relationship (4/4)

AS allow farmers to spent more time among the animals

Development of sensors: animal identity, weight, behaviour, physiological factors, body conformation and composition (Frost, 1997)

⇒ How to use the potential extra available time?

**And**

Is the already existing distance not necessary for animal farming?

“Just as we have to depersonalize human opponents in wartime to kill them with indifference, so we have to create a void between ourselves and the animals on which we inflict pain and misery”

(Rothschild, 1986)

⇒ How would the farmer respond if this distance is inherent to animal farming?

⇒ Will AS not further increase this void?
Other impacts of AS – Potential Positive Impacts

Improve animal welfare

- Automated monitoring of health status: better detection of diseases and earlier treatment
- AS allow new methods for assessing animal welfare
  
  Monitoring lameness inside of a milking robot (Pastell et al, 2006)

- Make routine tasks more homogeneous
  
  Avoid variations between stockman

- Assist development of more ‘welfare friendly’ systems
  
  Group housing

Improve work satisfaction of the stockman

e.g. Improve productivity results, work conditions

Consumers
Other impacts of AS – Potential Negative Impacts (1/3)

View upon the animal

Growing quantification / objectification
  ➔ Efforts oriented towards improvement of parameters
  ➔ Affect attitude / behaviour of stockman

Need to prioritize new tasks

Learn maintenance and management of the sensors
  ➔ growing dependence on computers, frustration

Modification of the traditional role of the farmer
  ➔ potential deskilling and decreasing need for husbandry specialists
Other impacts of AS – Potential Negative Impacts (2/3)

Response to alarms

Too much reliance of sensors
  ⇒ risk overlooking problems

Alarms vs. own eyes
  ⇒ reactivity / sensitivity?

Is no action due to lack sensitivity ethically worse than no action due to inattention or negligence?

Stockman use to focus on the average of the batch
  ⇒ how sick should an individual be before treatment?

Focus need to move from the batch level to individual level
Other impacts of AS – Potential Negative Impacts (3/3)

Control disfunctionality *within* a disfunctional system

Production diseases result of intensification / production methods
Most current AS help *detect* these diseases

*Case example: detecting outbreak of diarrhea* (Madsen et al. 2005)

"*Farmers can now be much more remote from their animals . . . [The] scientist and the vet between them can now show the farmer new ways to stress animals for profit without actually making them sick - or dysfunctional for the farmer’s purposes*" (Settle, 2000)

Focus on productivity: AS become control tools to maximise profit

⇒ Risk to trigger hostile public opinion
Conclusion

AS *a priori* benefit animal welfare: e.g. earlier detection health status, facilitate development of welfare-friendly systems

**But also**

1) Affect animal perception: product of parameters to monitor
2) Risks modifying farmers attitude and role, lose caring skills
3) Impair the already impoverished relationship between animal and farmer, and risk affecting farmer sensitivity and animal welfare

Important to focus on whether AS truly benefit animal welfare, the consumers and the farmers who use them

Becoming a machine monitored by a battery of sensors would be ethically undesirable for a *sentient being*
Thank you for your attention