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

...

MANAGEMENT

Six men for 2,700 sows

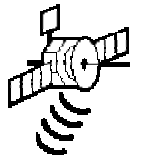
Pig progress [2], 2006

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 *ethicaly 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