

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

POSTHUMANISM, ANIMAL AGENCY AND THE DEVELOPMENT OF MILKING TECHNOLOGIES

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POSTHUMANISM

- Two separate focuses:
 1. Other organic entities such as non-human animals, plants, and nature
 2. Inorganic objects such as machines and digital technologies
- Animals/nature approach: scientific research shows that non-human animals have many capabilities that have traditionally been understood as exclusively human
 - Language skills, self-consciousness, aesthetics, playfulness...
 - Questioning speciesism
- Technological approach: boundaries between bodies and computer simulations and cybernetic mechanisms or biological organisms and robotic technologies are crumbling

PREMISES OF HUMAN-ANIMAL STUDIES (HAS)

- Also: anthrozoology, animal studies, animals and society studies
 - Critical animal studies
- Started to become more common in the 1990's, discussion on the “animal turn” in the 2000's
- Background: changing attitudes towards animals → increasing discussion on the treatment of animals, animal ethics and animal rights
 - Current environmental crisis, the sixth wave of extinctions → growing interest in human-animal relationships

PREMISES OF HUMAN-ANIMAL STUDIES

- Seeing the animals as co-constructors of multispecies societies
- “Human and animal lives have always been entangled and [...] animals are omnipresent in human society on both metaphorical and practical, material levels” (Andersson Cederholm et al. 2014, 5)
- Investigating human-animal relationships and interaction, in both material and representational levels
 - The meaning of animals in different social, cultural and historical processes
- Inter- and multidisciplinary field
 - Utilizes also the results of natural sciences

ANIMAL AGENCY

- Agency as always constructed in relationships that may also include non-human actors
- Barad: agency is “doing” or “being” rather than an individual attribute
- Animal agency comes in many forms
 - They may affect their environment by allowing or restraining historical processes
 - Acting with a degree of intentionality
- Agency may be seen as a continuum of actions, on which both human and non-human beings move

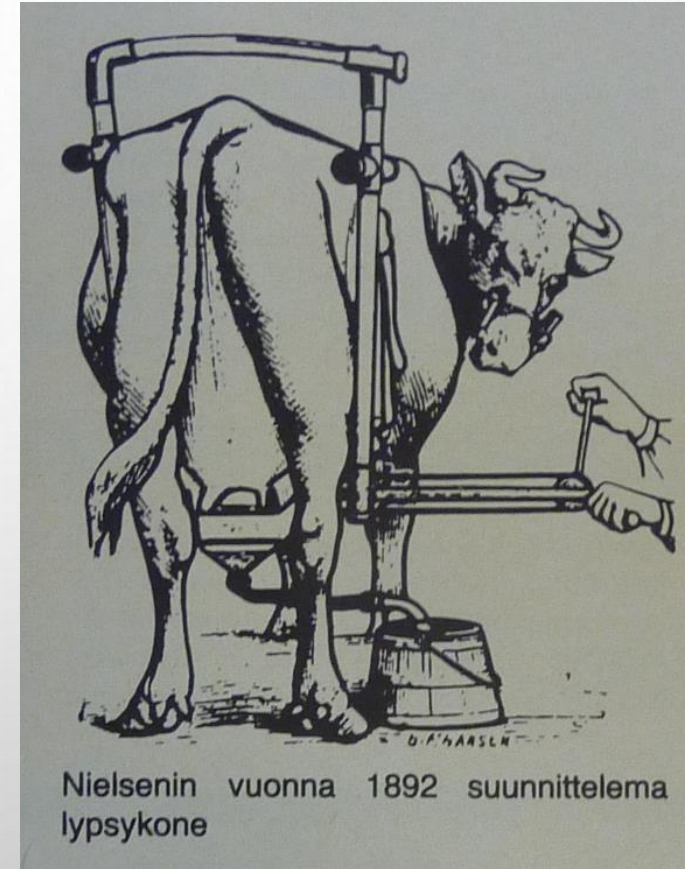
ANIMAL AGENCY

- Animal agency becomes visible primarily when animals resist what humans want them to do or what is done to them?
- Despret 2013: the agency of animals often remains invisible in situations in which animals do what is expected of them
 - Requires active investment and consent from the animals
 - Animals as “secret agents”
 - Agency is formed in relationships and it manifests itself in capabilities to incite and inspire other beings to act and be activated
 - Agency emerges in “a flow of forces” comprised of multidirectional relations of effect
 - Parties are interlinked and they enable each other to become agents in their mutual relationships, interagencies

THE (SURPRISINGLY LONG) HISTORY OF MILKING MACHINES

- Development started in the 1900th century
 - Three principles were tried:
 - Milk tubes
 - Pressure
 - Continuous suction
- } unusable in the long run
- First intermittent suction or 'pulsator' machines in 1895
 - The same principle still in use
 - Designed to simulate nature, the suction of the calf
 - Taking bovine physiology into account was unavoidable

(Nimmo 2019)



Source: *Nautakarja* 5/1975
(professional magazine)

MILKING MACHINES AND COWS

- The cow has an active role in successful milking
 - “letting down” or “holding back” the milk
- The biological body of the cow had to be taken into consideration as an agentic force
- Cows as part of industrial milk production
- Human-animal-machine-hybrid
- Milking machines and bovine bodies in constant dialogue

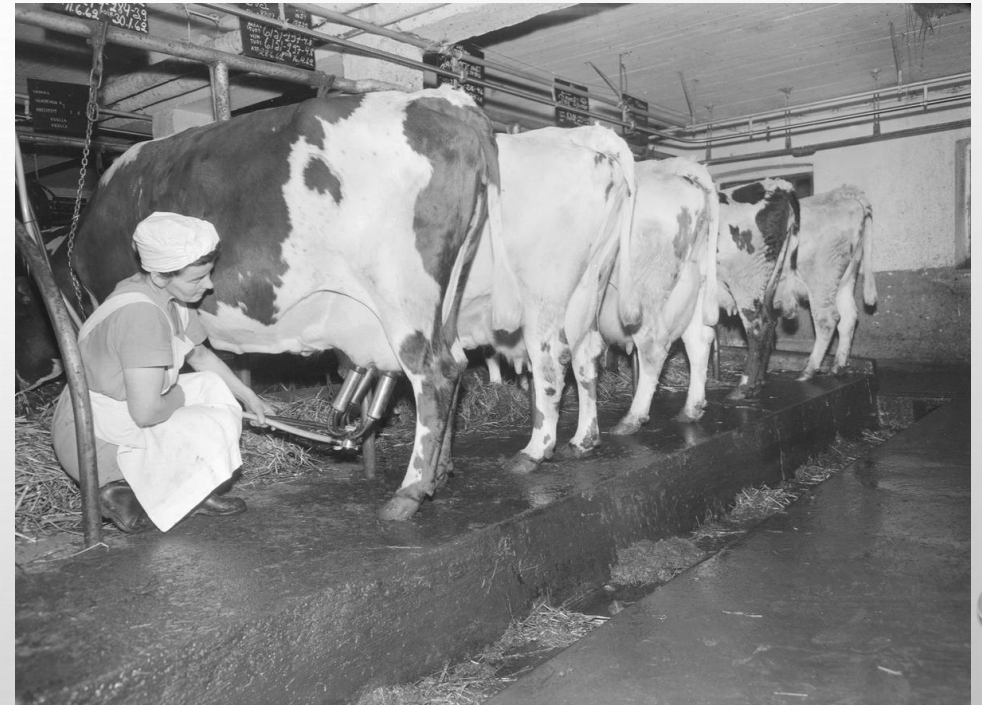


Photo by Erkki Voutilainen: Farm owned by the Central Hospital of Hämeenlinna, early 1960s; The Finnish Heritage Agency

AUTOMATED MILKING SYSTEMS (AMS)

- Milking without human labor (milking robots)
- Commercially available since the early 1990s, the first in Finland put into operation in 2000
- Currently apprx. 24 % of Finnish dairy farms use AMS
- Allows the cow to decide her own milking time, instead of being milked regularly e.g. twice a day
- The milking unit comprises a milking machine, a teat position sensor, a robotic arm for automatic teat-cup application and removal, and a gate system for controlling cow traffic



Photo: Sarka – the Finnish museum of agriculture

ANIMAL AGENCY IN AMS

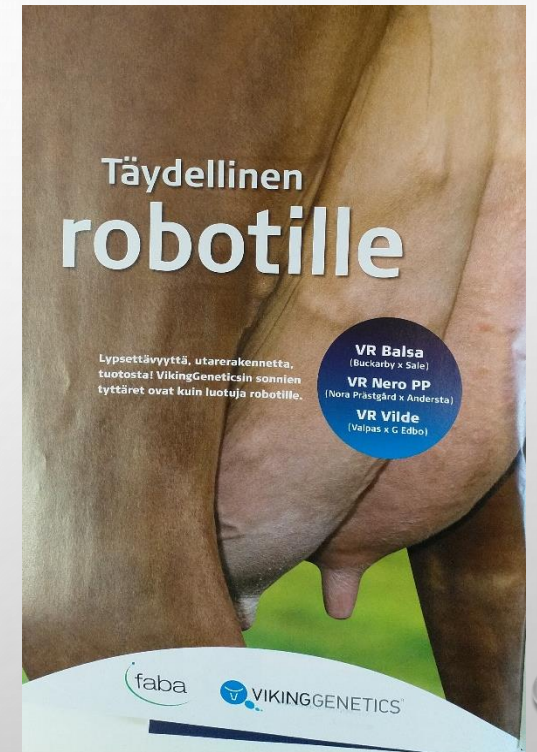


A cow queuing to the milking robot. Photo: Sarka – the Finnish museum of agriculture

- Active agency expected from the cows (compared to tie-stall systems)
 - Self-directedness
 - A good cow is described as unnoticeable, even invisible
- Freedom of choice?
 - The behaviour of the cows is monitored and regulated in a number of ways
 - The possibilities for choice for individual cows rest always on the actions of other cows and the material environment in the barn
 - The cows should not be too active or have too much initiative either
 - Cows that do not adapt to robotic milking in their bodily conformation or behaviour are culled

CONCLUDING THOUGHTS

- Throughout the history of development of milking technology, taking bovine physiology into account has been necessary
 - The machines have to be usable for humans and also economically cost-effective
- Limitations in what kind of udders and teats the milking machines or robots are able to milk → requirements for the udder structure of the cows and breeding
 - In a totally automated system the need for standardization of animal bodies is the most urgent
- Non-human animals are vital creatures who shape technologies and knowledge-practices related to them by their bodies and behavior



“Perfect for the robot.”
Advertisement of a breeding
co-op (Nauta 3/2014)

LITERATURE

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