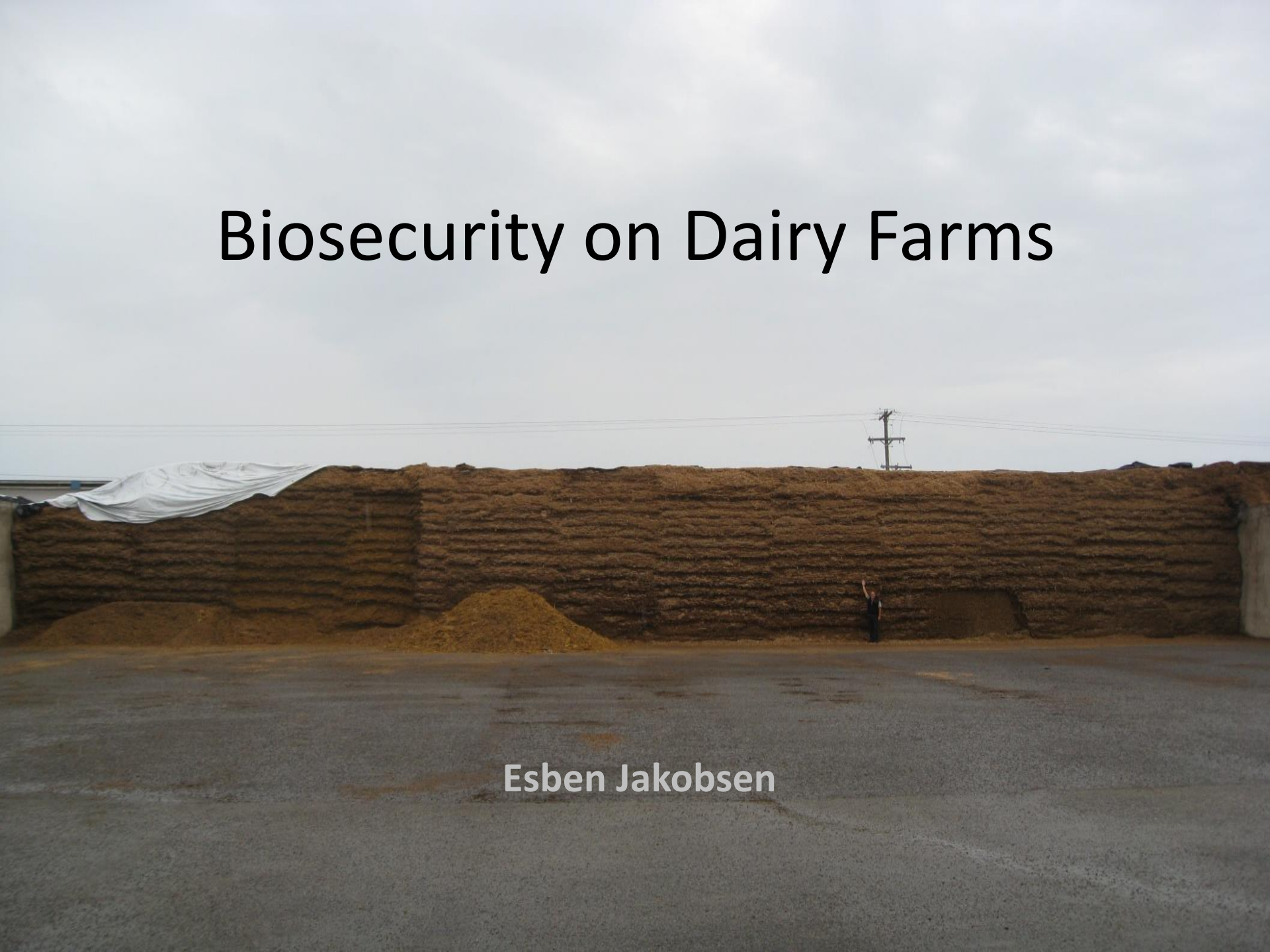
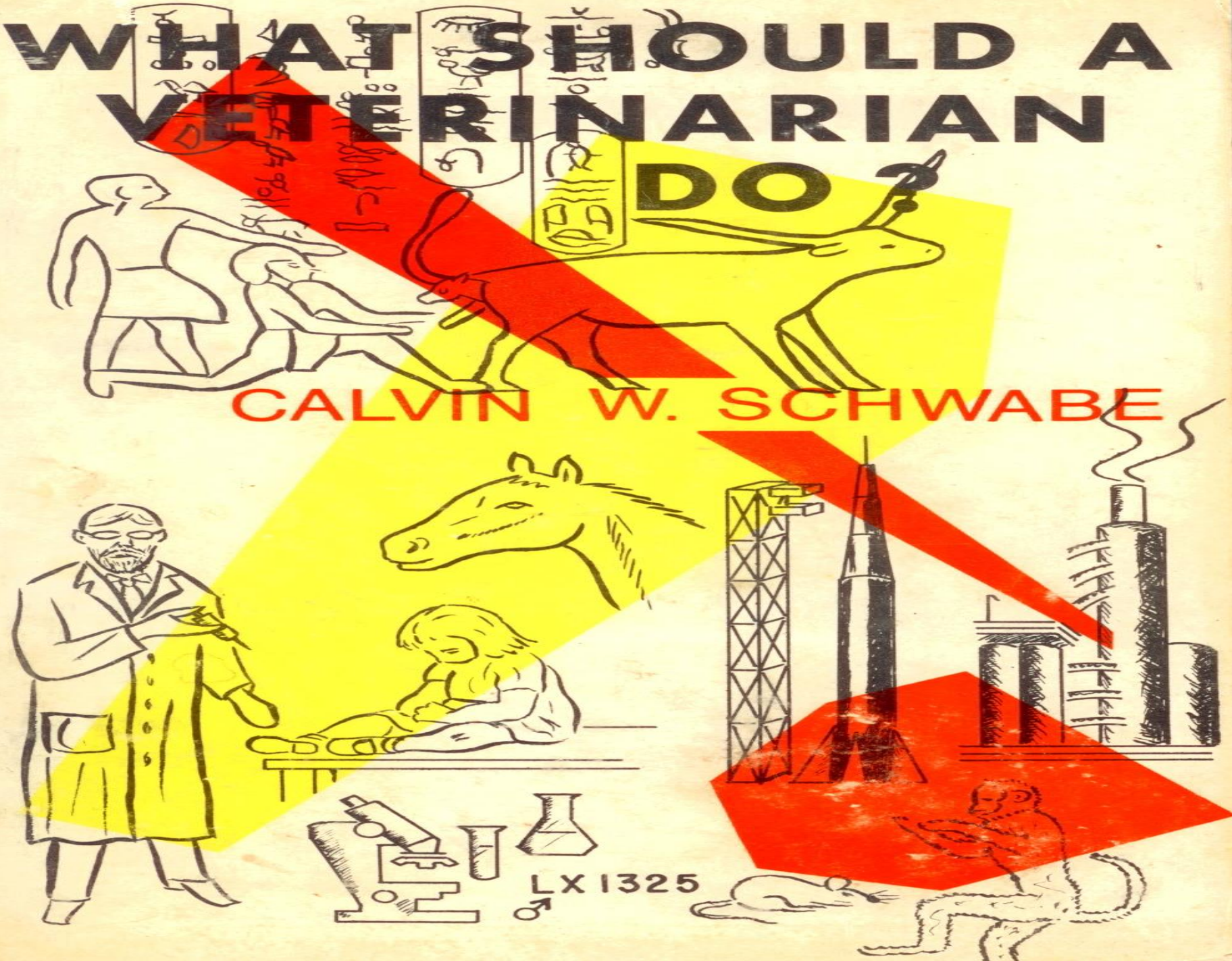
Biosecurity on Dairy Farms



Esben Jakobsen

WHAT SHOULD A VETERINARIAN DO

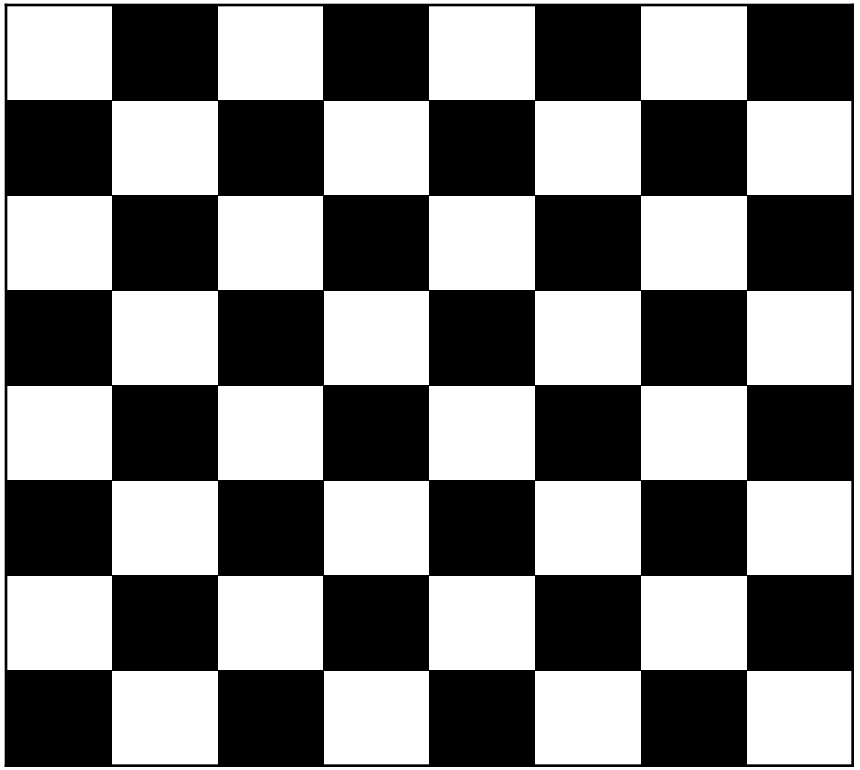
CALVIN W. SCHWABE



The field of veterinary medicine

General bio-environmental science

Agricultural science

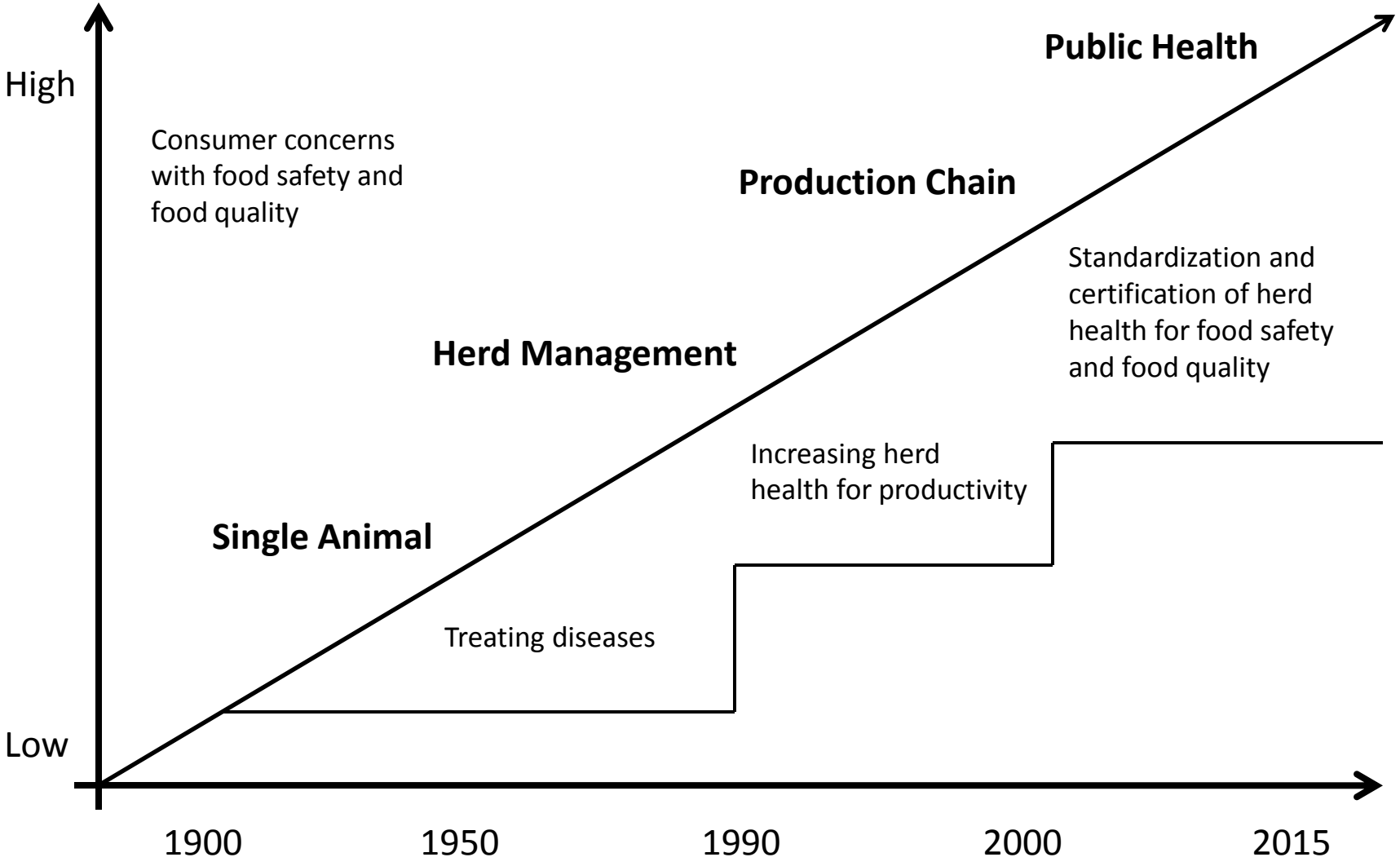


Health science

Private practice

Modified from Schwabe (1972)

Animal health management



Modified from Blaha (2009)

Biosecurity = old news

The aim of modern medicine is prevention.

We are earnestly endeavoring to make practical the old saying:

’An ounce of prevention is worth a pound of cure’

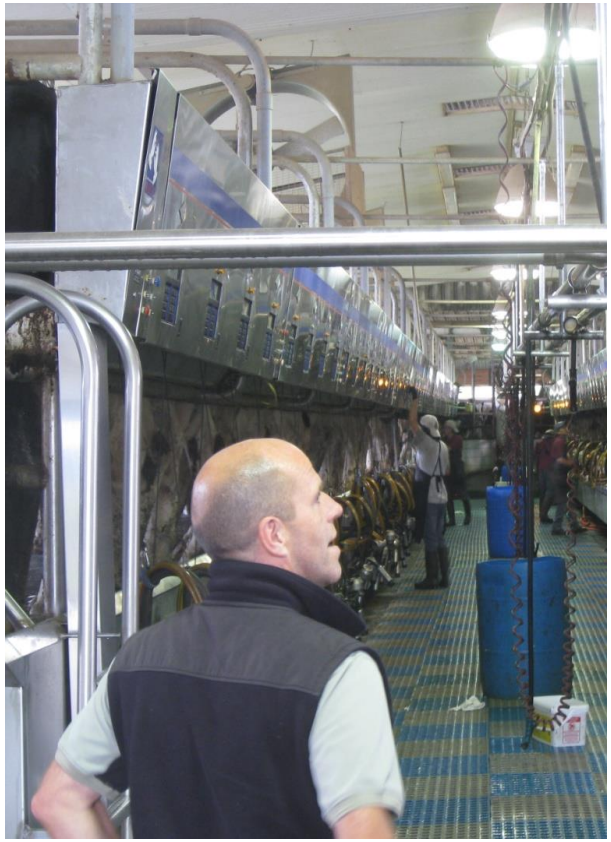
Billings (1884)

Biosecurity on dairy farms

1. Bringing new cattle to a herd
2. Failure to quarantine cattle
3. Failure to require testing before introducing cattle
4. Cattle returning from fairs and shows
5. Allowing animal contact with cows, feeds, or water
6. Spread through people, vehicles, or equipment

NMC (2009)

What are the farmer's priorities?



1. Financial problems
2. Harvest
3. BTSCC
4. Family
5. Mortality in herd
6. Salmonella Dublin
7. Expanding the herd
8. …

Dairy farmers' perception of biosecurity

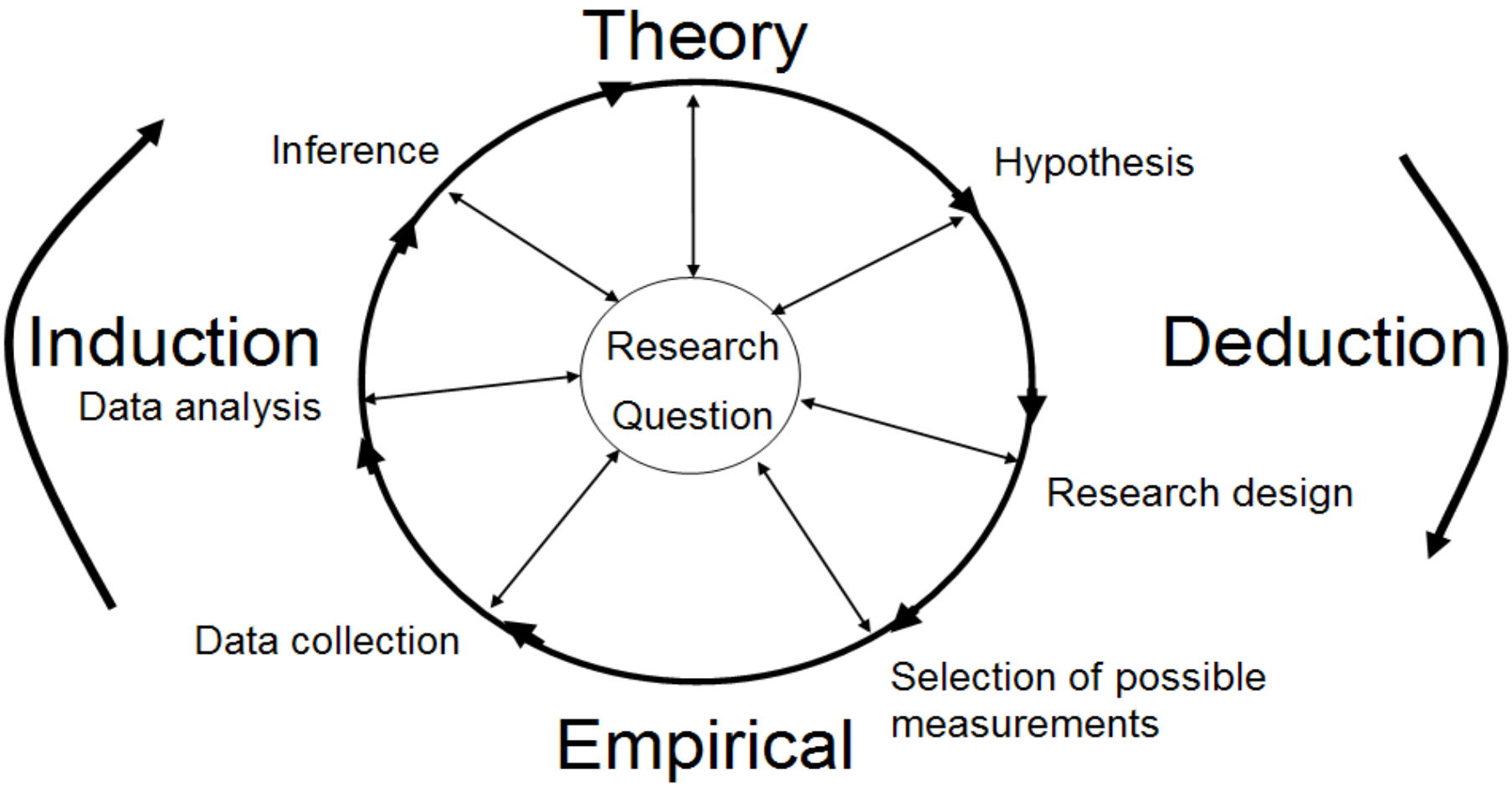
?

Q-methodology

1. Construction of the concourse
2. Development of the Q-set
3. Selection of the P-set
4. Q-sorting
5. Q-factor analysis

Kristensen and Jakobsen

Methodological approach



Kristensen et al. (2008)

Topics from the Q-set

- Dairy farmers' knowledge on biosecurity
- Unclear procedures, manure handling
- Sharing machinery or equipment
- Various aspects of reproduction
- International trade of animals
- Legislation on biosecurity
- Claw-bath in use or not
- Feeding management
- Personal hygiene
- Rodents
- Visitors

Q-sorting

Rank the statements most correlated with risk of introducing a contagious disease into a dairy herd

-4	-3	-2	-1	0	1	2	3	4
16	9	10	1	25	24	12	20	5
22	7	14	26	11	3	2	6	27
		17	19	15	8	21		
			4	13	23			
				18				

Q-factor analysis

- Computes correlations among respondents
- Respondents with high correlation are considered to resemble a ’family of perspectives’ with respect to their ranking of statements

Results

1. **Proactive**
   - External biosecurity ↑
   - Systematic approach
   - Explained variance: 34

2. **Active-action**
   - Unsystematic approach
   - Difficult statements ↓
   - Explained variance: 12

3. **Active-reaction**
   - Unsystematic approach
   - Difficult statements ↓
   - Explained variance: 8

4. **Inactive**
   - Internal biosecurity ↑
   - External biosecurity ↓
   - *Others' responsibility* ↑
   - Explained variance: 7

Dairy farmers' perception of the highest risk

1. Import of animals
2. Failing reproduction

TRADE

- Half of the dairy farmers buy animals every year
- Farmers are willing to pay in order to continue their management practices

Farmers' risk perception

- 'Farmers perceive risks they face as being smaller than they actually are, resulting in low demand for risk-management tools'

- 'Events of low probability, which are associated with high potential losses (catastrophes), are very likely to be neglected in individual decision making'

- **European Commission, Directorate-General, Directorate A, Economic analyses, forward studies, evaluation, 2001. Risk Management Tools for EU Agriculture with special focus on insurance**

Application of herd health management

’Ever-better understanding of epidemiology and pathophysiology will not in itself reduce the incidence of disease. The ability to translate emerging knowledge into on-farm application and actual prevention of problems requires understanding of the farm as an integrated system, a major component of which is **educating and motivating humans** to implement well-designed practices’

LeBlanc et al. (2006)

The best of intentions…

Behavior changes are notoriously difficult to achieve and sustain, even when the suggested interventions are:

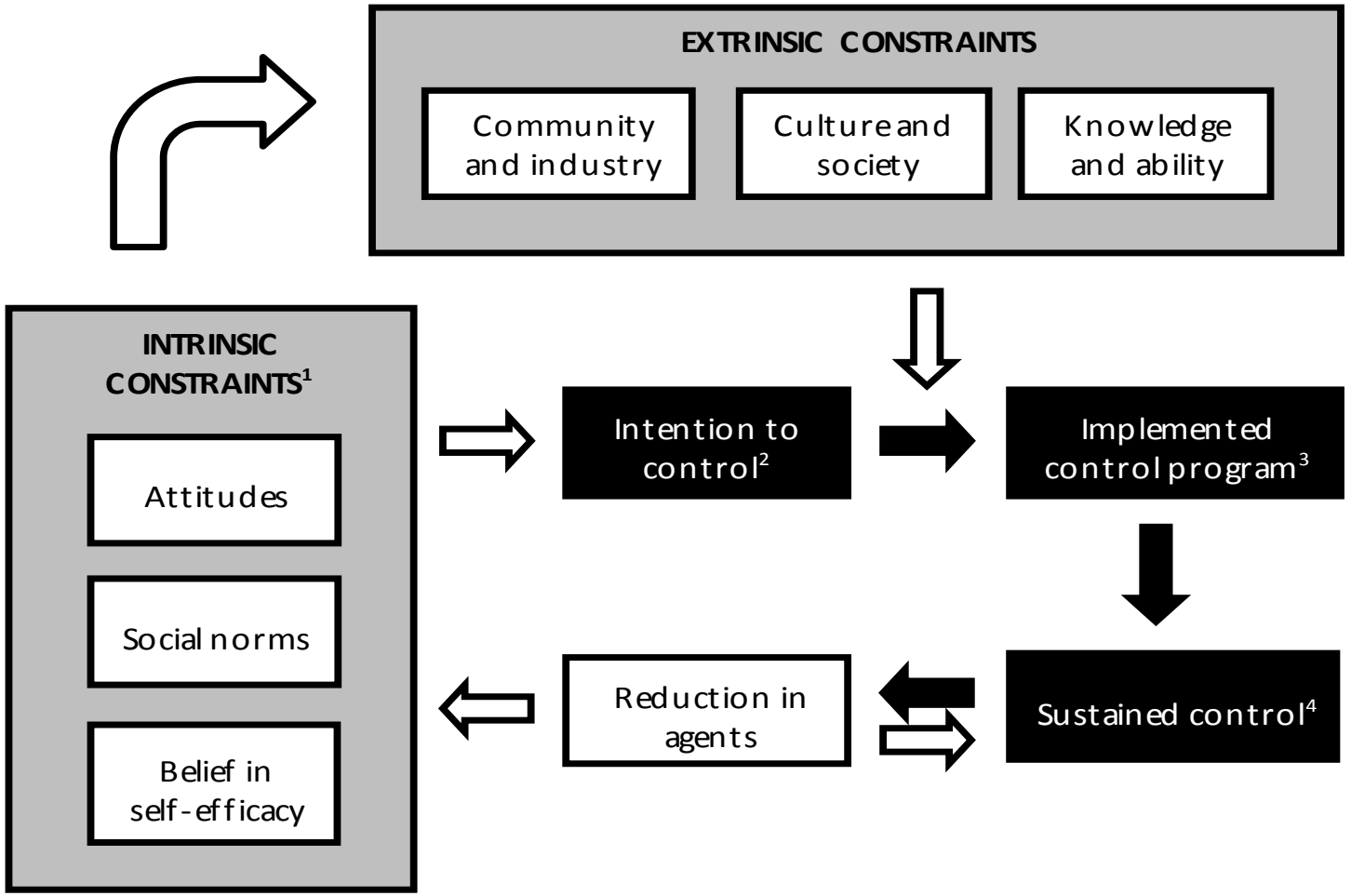
Evidence-based : Practical : Affordable : Acceptable

Grol and Grimshaw (2003)

Steps to change behavior

1. No intent to control disease
2. Intention to control disease
3. Implemented control program
4. Sustained control program

Pathway to disease control



Modified from Ellis-Iversen et al. (2009)

The challenges

1. To support the proactive farmers
2. To establish a communication strategy at a balanced level of abstraction (action-active)
3. Accept the need for biosecurity (action-reactive)
4. Focus and take action (inactive)
5. To empower farmers
6. To qualify herd veterinarians

Cornerstones in disease control

- Quarantine rules
- Laboratory back-up
- On-farm biosecurity
- Central traceability databases
- Surveillance - passive and active
- Obligation to notify suspicions of disease
- Obligation to deliver dead animals for rendering

Who is standing at the border? - the farmer!

’ …as a new pandemic emerges, too many epidemiologists might be sitting at their computer instead of being in the field investigating early events that drive prevention and control actions’

Murphy (2008)

Concluding remarks

- Legislation is only part of ’the pathway to disease control’
- Do not underestimate the intrinsic constraints
- Motivation is difficult…

  - **but even more difficult to sustain!**