

LECTURE GOALS:

- Begin to understand how to measure behavior accurately, reliably and efficiently.
- Consider ethical issues in the study of animal behavior.
- Consider pros and cons to different types of animal behavior research.
- Explicitly think about the steps involved in studying animal behavior.
- Consider the impact of Anthropomorphism in Animal Behavior.

LECTURE OUTLINE:

1. Modern Animal Behavior merges, neuroscience, behavioral ecology and comparative cognition and physiology with rigorous quantifiable observation and experimentation.
2. Measuring behavior is not simply writing down what happens, it needs to be quantify it.
3. Experimental and Observational data can be used test hypotheses.
4. Ethograms should be objective, quantifiable, devoid of intent, devoid of anthropomorphism.
5. Good ethograms can be best accomplished by using structural, spatial and consequence oriented descriptions.
6. Behavior can be described by its structure, its spatial orientations or by its consequences.
7. Anthropomorphism: using human emotions and intentions as explanations for animals' action can impede understanding. (controversial)
8. Umwelt: remember that animals have different sensory modalities, motivation and priorities than humans and this influences behavior dramatically.
9. The "value" attached to the life or welfare of an animal is a social construct impossible to separate from anthropomorphic motivations.
10. The IACUC sets down laws, guidelines and recommendations largely focused on biomedical research. but it does not set "ethics".
11. The NC3Rs promotes
  - a. Refinement : better techniques and practices
  - b. Replacement : non animal models
  - c. Reduction : fewer animals
12. Is the field of Animal Behavior "special" with regard to its use of animals in research and concern for their "welfare"?
13. Adaptive Cost Gauging, provides a more ecologically relevant and species specific measure of animal welfare.
14. Martin and Bateson describe 10 steps to studying behavior. (I add one more).
  - a. Ask the question
  - b. Make preliminary observations
  - c. Identify the variables
  - d. Choose a recording method
  - e. Collect and analyze data
  - f. Formulate a hypothesis
  - g. Make predictions based on the hypothesis
  - h. Design experiments to test the hypothesis
  - i. Conduct the experimental tests
  - j. Consider alternate hypotheses
  - k. Share your findings

HELPFUL FIGURES & NOTES:

(All PowerPoint files will be available on the courses server after lecture. The subset of figures and notes here are meant to assist your note taking or studying.)

---

Ethogram



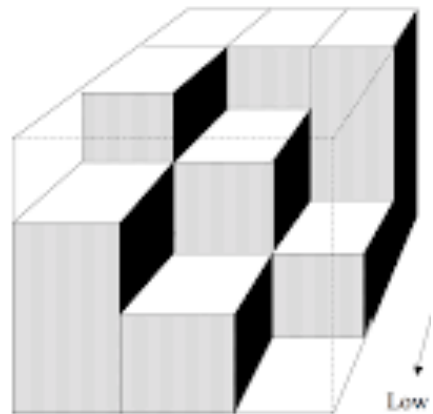
---

Decision Cube

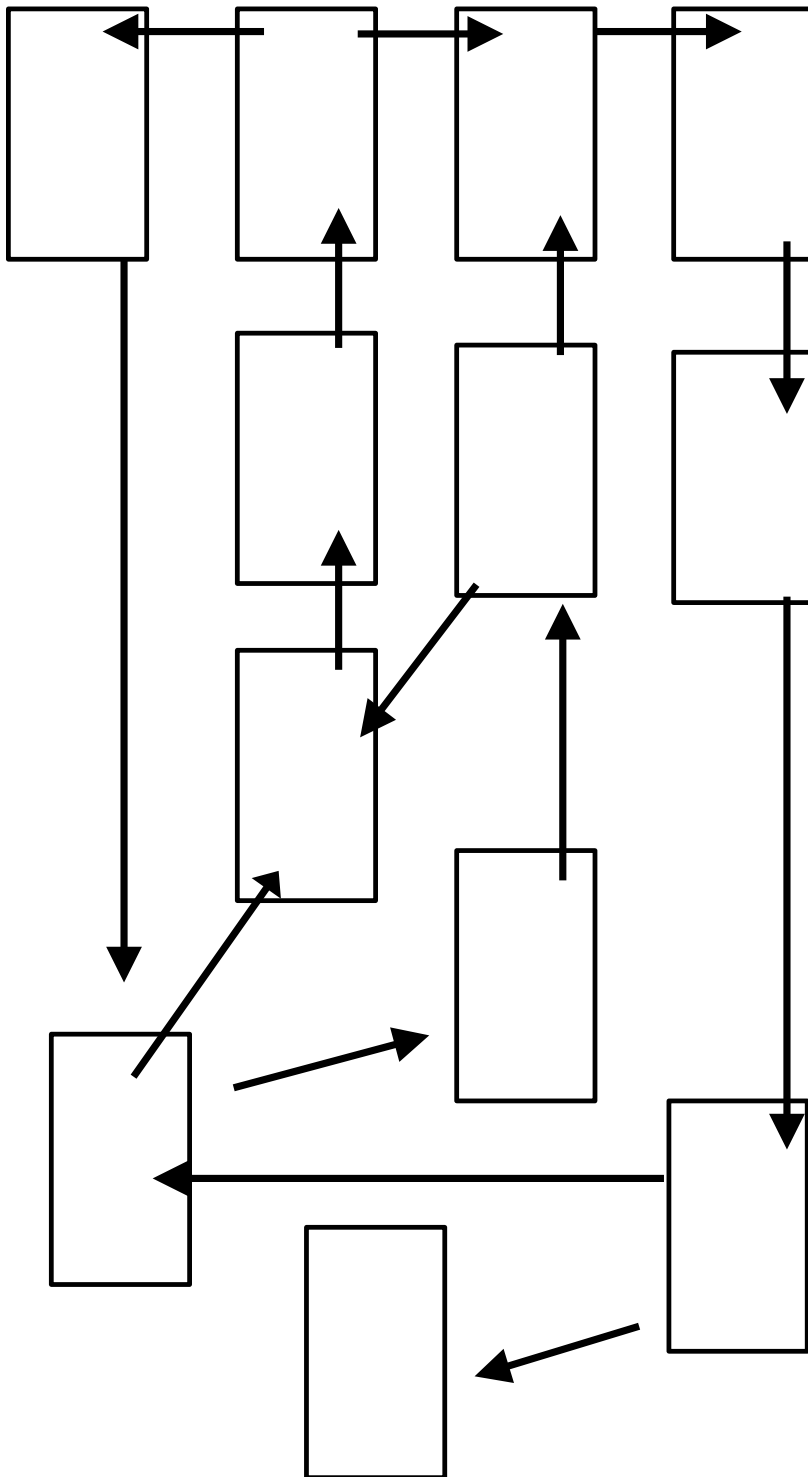
R

R

R



Steps in studying Animal Behavior (according to M&B or according to you).



VOCABULARY:

(Practice writing interesting, informative sentences that include, and capture the meaning of, 4-5 words from this list. To simply memorize a definition, is not sufficient.)

Measure	Animal Welfare	
Observational research	3Rs	Consider how to:
Experimental research	IACUC	•Choose the level of analysis
Empirical data	Ethical use	•Choose an appropriate species
Ethogram	Suffering	•Choose the study site
Anthropomorphism	Adaptive Cost Gauging	•Choose when to study
Umwelt	homeostasis	•Choose categories of behavior
Mentalism		•Choose a type of measure

PRACTICE EXAM QUESTIONS:

1. Think of at least 5 questions to consider when selecting a species to study and answer these for a behavior you'd be keen to study
2. What are the pros and cons of field vs. lab based research?
3. What can you do to contend with diurnal variation in animal behavior?
4. What is an argument in favor of Anthropomorphism, and do you agree?
5. Name a behavior that only humans do, go research this and decide if you still think only humans do it.
6. Are ethical considerations avoided by doing fieldwork? Explain.
7. Should the field of animal behavior hold to different ethical standards than biomedical research regarding the use of animals in research?
8. Why should you exclude your preliminary data from analysis?
9. How many categories of behavior should you include in your ethogram?
10. Give three reasons why it is important to conduct preliminary observations.

READING FOR TODAY:**Martin & Bateson Chapters 1, 2**

Wynne, C.D.L. (2007) What are Animals? Why anthropomorphism is still not a scientific approach to behavior. *Comp Cognition and Behavior Reviews* 2:125-135.

Franco, N.H. (2013) Animal Experiments in Biomedical Research: A historical perspective *Animals* 3(1):238-273.

READING FOR NEXT LECTURE:

Dewsbury D.A. (1992) On the problems studied in ethology comparative psychology and animal behavior. *Ethology* 89-107. (read only 98-102)

R&W Chapter 1 (for more see Tinbergen, N. (1963) On aims and methods of ethology. *Zeitschrift für Tierpsychologie*, 20, 410-433. Reprinted in *Animal Biology*, Vol. 55, No. 4, pp. 297-321 (2005))

Be prepared to discuss: Consider your favorite animal behavior, what types of studies would match each of the categories described by Dewsbury or by Tinbergen (in R&W). nothing due in class

READING FOR LAB

**Read the lab handout**

**Read Martin & Bateson chapter 3**

