

Sociology 20207
 Social and Cultural Organization of Non-Human Animals
 Instructor: John Levi Martin
 Fall 2012
 Tuesdays, Thursdays, 1:30 – 2:50 PM, 401 Social Sciences Research
 Office hours Tu 10:30-11:30 *and by appointment*, Room 319 Social Sciences Building
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In the past few decades, there has been an explosion of rigorous work in ethology regarding social organization, cultural patterns, and cognition in non-human animals. The results have fundamentally overturned previous assumptions about animals; they also challenge and inspire sociological theory to encompass formations observed in non-humans. This course builds on classic theoretical approaches (of Chicago sociology and philosophy, of evolutionary theorists) and examines the current state of knowledge about animal social organization, communication, and culture. Although there is a fair amount on primates, we will be examining work on a number of social species from ants to whales. Students will write a paper pursuing one theme (e.g., social organization, learning) of the course in one species (e.g., Ethiopian wolf, *Octopus vulgaris*).

Requirements: This will be conducted as an advanced seminar, which means that students are expected to come to class prepared to discuss the readings. In addition, a research paper will be written over the course of the semester. There are a few books ordered; the other readings will be articles or book excerpts that will be on electronic reserve. In general, articles will be in the Chalk documents section; book sections on electronic reserve. NOTE: there may be a very few additions to the readings for the days when there isn't much.

The **paper** can be based on library research or (in part) on observational research but observational research will need to be rigorous and approved in advance. You will need to discuss your ideas with me by the end of the third week and have a firm topic by the end of the fifth week. It is due one week after the last class. Your paper will need to be an original paper; we will discuss appropriate use of appropriate sources in class.

Grades will be based on attendance, participation, and the final paper. Excellence in all 3 leads to an A, excellence in 2 a B, in 1 a C, and in none a D (assuming all the areas sub-excellent are minimally satisfactory).

Required Books, available at the Seminary Coop:

- 1) *The Insect Societies*, by Edward O. Wilson. Harvard, 1974, paper, 26.95.
- 2) *Chimpanzee Politics*, by Frans de Waal. Johns Hopkins, second edition, paper.
- 3) *Baboon Metaphysics*, by Dorothy L. Cheney and Robert M. Seyfarth., Chicago 2008.
- 4) *The Alex Studies*, by Irene Pepperberg; Harvard 2002, \$19.00

The following are out of print but probably easily available on Amazon for cheap:

- 5) *Sex and Friendship in Baboons*, by Barbara Smuts, Harvard 1999. I know that's a lot on baboons in particular, but this is a very good and important book.
- 6) *Songs, Roars, and Rituals: Communication in Birds, Mammals, and Other Animals* by Lesley J. Rogers & Gisela Kaplan, 2002; this is recommended, not required.

I. THEORETICAL ORIENTATIONS

Class #1 -- Introduction to the course
Tuesday, October 2

I will discuss the overall logic of the course, the approach, the requirements, and so on.

Class #2 -- Animal Behavior
Thursday, October 4

Reading: Darwin, *Earthworms and the Formation of Vegetable Mould*, pp. 41-50 (using the 1967 from the appropriately named publisher: Bookworm); Watson, *Behaviorism*, Chapters 1 and 2 (pp. 3-41 in 1925 ed); Köhler, *The Mentality of Apes*, Introd; Keller and Marian Breland, "The Misbehavior of Organisms"; Lawrence Wishner, *Eastern Chipmunks: Secrets of their Solitary Lives*, pp. 9, 30-1, 46-54, 83-91.

I briefly discuss the main influences in studies of animals: the Darwinian revolution, Behaviorism, Ethology and cognitive science. We will be drawing on works that tend to come from ethological work or ethologically-inspired laboratory work. We will also discuss the problems with examinations of domesticated animals, the problems in interpreting laboratory work on behavior, and the challenges of naturalistic observation as a way of setting a context for our understanding of different results from different researchers.

Class #3 -- Symbolic Interactionism
Tuesday, October 9

Reading: Mead, *Mind, Self and Society*, 1-8, 13-18, 42-51, 68-82, 135-144 (Chicago 1962 ed: or Part I, secs 1, 3; Part II, secs 7, 10-11; Part 3, sec 18); Gordon Gallup, "Self-Recognition in Primates: A Comparative Approach to the Bidirectional Properties of Consciousness"; Wilson and Jackson, "Cognitive Abilities of Araneophagic Jumping Spiders" (from *Animal Cognition in Nature*).

We begin by using Mead's vocabulary to think about issues of cognition and communication in animals; I will also briefly discuss the work of Piaget in so far as it is relevant, as well as what is now called "theory of mind."

II. PRINCIPLES OF SOCIAL ORGANIZATION AND THEIR COGNITIVE CORRELATES

Class #4 -- Self organization Thursday, October 11

Reading: Michele Ballerini et al., “Empirical Investigation of Starling Flocks,” *Animal Behavior* 76: 201-215; “The Chorus-Line Hypothesis of Manoeuvre Coordination in Avian Flocks,” Wayne K. Potts *Nature* 309[1984]: 344-5; “Máte Nagy, Zsuzsa Ákos, Dora Biro and Tamás Vicsek, “Hierarchical Group Dynamics in Pigeon Flocks,” *Nature* 464: 890-893; Eric Bonabeau et al., “A model for the emergence of pillars, walls and royal chambers in termite nests,” *Phil. Trans. R. Soc. Lond. B* (1998) 353, 1561-1576 [you may skim the math here if you wish].

Some organization of animals takes place as they move or go about their daily activities. A great deal of work in self-organization has turned to explore the ways that physical order can emerge among animals who seem to have no understanding of an overall plan.

Class #5 -- Phenotypic Diversity Tuesday, October 16

Reading: *The Insect Societies*, by Edward O. Wilson, Ch 1-2 (p. 1-6) [you may also want to skim 7–12, 18-21], Ch 4 (27-32, 35-65 [can skim]), Chapter 5 (94-98), Chapter 7 (130-134), Chapter 8 (136-139, 146-153, 156-160), Chapter 9 (170-173), Chapter 11 (215-219).

The first animals to be seen as social were the bees. And by golly, they are interesting, as are ants. We read a classic to get oriented to the possibility of social organization divorced from anything we would recognize as consciousness. I then lay out some of the principle divisions that we will use to study birds and mammals. In essence, there are distinctions between species that have breeding pairs, and those that do not. The latter are frequently divided into single-male and multi-male species.

Vocabulary: Allometry (Allo=different; metry=measures): when two organisms of the same species vary not only in size, but in their relative proportions, so that the ratio of one part of the body to another is different.

Class #6 -- Kin based and territoriality Thursday, October 18

Reading: *The Amboseli Elephants: A Long-Term Perspective on a Long-Lived Mammal* edited by Cynthia J. Moss, Chaps 10 and 15; *Wolves: Behavior, Ecology, and Conservation* by L. David Mech, Chs 1 and 2; and finally, we will return to the work on chipmunks.

The two simplest forms of permanent animal organization that are not based on phenotypic diversity are the kin-group and the solitary. They can be seen as polar positions on a dimension. Even in solitary mammals like the Orangutan or Chipmunk, there is a time when the mother associates with offspring. (Some amphibia, reptiles, and bugs are so solitary that we don't study them here). Others have families, consisting of a breeding pair and their offspring at different stages of development (e.g., wolves). And then some have multiple generations, such as the elephant matriarchy. Solitary animals may be territorial; the spatial organization compensates for the lack of social organization, mayhaps.

- You need to discuss a paper topic with me by today!

Class #7 -- Matrilines and Fission-Fusion Societies
Tuesday, October 23

Reading: Cheney and Seyfarth, *Baboon Metaphysics*, Ch 5; Connor, Wells, Mann and Read, "The Bottlenose Dolphin: Social Relationships in a Fission-Fusion Society," (from *Cetacean Societies*, edited by Mann, Connor, Tyack and Whitehead).

We go on to explore two common forms of organization of primate social life, namely matrilines (females and their offspring), which may or may not be ranked, and fission-fusion societies, where small clusters (sometimes oriented around a male, sometimes not) come together for periods of time and then separate. Recommended: Cheney and Seyfarth, *How Monkeys See the World*, 19-42.

Class #8 -- Dominance Orders
Thursday, October 25

Reading: Schjelderup-Ebbe, "Contributions to the Social Psychology of the Domestic Chicken," translated version in *Social Hierarchy and Dominance*, edited by Martin Schein; DeWaal, *Chimpanzee Politics*, Intro, Chapters 1-3; Hrdy, *The Langurs of Abu*, Pp. 144-197 (Ch 6).

We examine dominance orders, the vertical stratification of animals whereby some animal can exact ritualized submission from another. We are especially attentive to the structure of such orders, and to the social interaction involved.

Note: *Chimpanzee Politics* is related to a film (*The Family of Chimps*). Perhaps if there is interest we can find it? I did not assign anything from Jane Goodall's truly magnificent *The Chimpanzees of Gombe*, in part because it doesn't photocopy well. It is one of the best works on anything ever, with wonderful innovations in the visual display of information. It is highly recommended.

Class #9 – Alliance
Tuesday, October 30

Reading: DeWaal, *Chimpanzee Politics*, Chapter 5, Conclusion, Epilogue; R.C. Connor, “Two levels of alliance formation among male bottlenose dolphins,” *Proc. Natl. Acad. Sci. USA* Vol. 89, pp. 987-990, February 1992, and “Superalliances of Bottlenose Dolphins” *Nature* Vol 397 18 February 1999.

Within formal dominance structures, and in other situations too, animals can introduce structure in the form of alliances of mutual support.

Class #10 – Friendship
Thursday, November 1

Reading: Smuts, *Sex and Friendship*, pp. 3-9, 36-48, 203-232 (Introduction, Ch 4[most], 9); Reinhardt and Reinhardt, “Cohesive Relationships in a Cattle Herd (*Bos Indicus*),” *Behaviour* 76(1981):121-151.

But vertical stratification is not all there is, even in rather nasty species such as most baboons. We explore horizontal relationships of friendship in baboons, chimpanzees, and cows.

- You need to be decided on your paper topic by this week! Which means that you must hand in by **today at the LATEST** a one paragraph statement of what you want to do.

Class #11 -- Self and Triadic Awareness
Tuesday, November 6

Reading: Jennifer A Mather, “Cephalopod Consciousness”; DeWaal, *Chimpanzee Politics*, review; Cheney and Seyfarth, *Baboon Metaphysics*, Chs 6-9; Hans Kummer, “Tripartite Relations in Hamadryas Baboons” (from *Social Communication among Primates* edited by Stuart A. Altmann).

Other readings drawn on:

Ivan D. Chase, Craig Tovey, Debra Spangler-Martin and Michael Manfredonia, “Individual differences versus social dynamics in the formation of animal dominance hierarchies,” *Proc. Natl. Acad. Sci. USA*, Vol. 99, Issue 8, 5744-5749;

Although the possession of a “self” might seem far afield from issues of social and cultural organization, it is often pivotal for our understanding of either of these. We return to Mead and then review work that explores whether different types of animals seem to possess selves. We then see how this is related to social formations: Both reconciliation and conflict benefit from the main two protagonists being aware of what others (“third parties”) think or are likely to do.

III. CULTURE AND SYMBOLIC THOUGHT

Class #12 -- Ritual Actions
Thursday, November 8

Reading: Lesley Rogers and Gisela Kaplan, *Songs, Roars and Rituals*, Chapters 1-2; Darwin, *Expression of Emotions in Man and Animals*, chapters 1, 2, 4, 5; Susan Perry, *Manipulative Monkeys*, Ch 11.

Some animals communicate meaning through actions that are symbolic, in that they have no instrumental utility other than their communicative function. (Here we recall Mead's arguments.) These actions are often considered "ritualized." If animals understand their ritual and communicative nature, they must have a "theory of mind."

Class #13 -- Communication
Tuesday, November 13

Reading: Lesley Rogers and Gisela Kaplan, *Songs, Roars and Rituals*, Chapters 4, 6; Allison Jolly, *The Evolution of Primate Behavior*, pp. 142-168 (ch 9); K. Von Frisch, and M. Lindauer, "The 'Language' and Orientation of the Honey Bee," *Annual Review of Entomology* 1(1956): 45-58; Wilson, *Sociobiology*, 224-241; Cheney and Seyfarth, *Baboon Metaphysics*, Ch 10.

There is no doubt that animals communicate, but what does this imply about social life? We explore a teeny corner of the range of communicative behavior of animals.

Class #14 -- Interspecific Communication and Symbiosis / Play / Imitation
Thursday, November 15

Reading: Wilson, *Insect Societies*, Chapters 19 and 20; Allison Jolly, *The Evolution of Primate Behavior*, pp. 77-84 (ch 5); On play, Hayaki, "Social Play of Juvenile and Adolescent Chimpanzees in the Mahale Mountains National Park, Tanzania," *Primates*, 26(1985): 343-360, October 1985); and then for next time, but read it now, "Out of Our Minds: The Neuroethology of Primate Strategic Behavior" Pp. 570-586 in *Primate Neuroethology*, edited by Michael L Platt and Asif A Ghazanfar.

Here we look at two clusters of behaviors that are related to communication (last week's topic) and culture (which we're getting to...). One is the extent to which different species can communicate with one another. Another is play.

Class #15 -- Theory of Mind: Deceit
Tuesday, November 20

Reading: Savage-Rumbaugh, Sue and Kelly McDonald 1988. "Deception and Social Manipulation in Symbol-Using Apes." Pp. 224-237 in *Machiavellian Intelligence II*, edited by Richard W. Byrne and Andrew Whiten (Cambridge: Cambridge University Press); DeWaal "Deception in Chimpanzees," in R. W. Mitchell and N. S. Thompson, eds., *Deception: Perspectives on Human and Non-Human Deceit*, 221-244. Albany: State University of New York Press (1980); *brief selections from Menzel, "A Group of Young Monkeys in a 1-Acre Field," Pp. 83-153 in A. M. Schrier & F. Stollnitz, eds., Behavior of nonhuman primates*, New York: Academic Press; Brian Hare, Josep Call, and Michael Tomasello "Chimpanzees deceive a human competitor by hiding," *Cognition* 101 (2006) 495-514.

A "theory of mind" means an understanding of the subjectivity of **others**. Further evidence of a theory of mind comes from action that must be understood as an attempt to deceive another.

[**Thanksgiving break** rears its ugly head]

Class #16 -- Imitation, Instruction and Culture
Tuesday, November 27

Reading: Bennett G. Galef, "Tradition in Animals: Field Observations and Laboratory Analyses"; Dugatkin, Lee Alan. 1996. "Interface Between Culturally Based Preferences and Genetic Preferences: Female Mate Choice in *Poecilia reticulata*," *Proceedings of the National Academy of Sciences* 93: 2770-2773; Allison Jolly, *The Evolution of Primate Behavior*, pp. 342-352 (ch 19); W. C. McGrew, "Tools Compared" (from *Chimpanzee Cultures*, edited by Wrangham, McGrew, de Waal and Heltne); Huffman and Wrangham, "Diversity of Medicinal Plant Use by Chimpanzees in the Wild," (from *Chimpanzee Cultures*, edited by Wrangham, McGrew, de Waal and Heltne); Wilson, *Sociobiology*, 164-175; Ckritte M Sanz and David B. Morgan, "Chimpanzee Tool technology in the Goulougo Triangle, Republic of Congo." *Journal of Human Evolution* 52 (2007): 420-433; Westergaard, G.C. and Suomi, S.J. (1997a) 'Modification of Clay Forms by Tufted Capuchins (*Cebus apella*) *International Journal of Primatology* 18: 455-67.

A number of animals clearly learn through imitation of conspecifics. Recent work suggests that geographical isolation can lead to behavioral differences among chimpanzees within an extremely short period of time; these must be seen as "cultural" differences.

Other readings drawn upon: It seems that Mark Hauser's work on vervets wasn't quite up to our standards, but I have a hard time unlearning what I thought he taught us.

Class #17 -- Language and Symbolic Representations
Thursday, November 29

Reading: Pepperberg, *The Alex Studies*, pp. 1-35, 52-79, 197-248; Premack and Premack, "Teaching Language to an Ape"; Francine Patterson, "Conversations with a Gorilla," *Nat. Geog.* 154(1978)no.4; Duane Rumbaugh and Timothy Gill in Rumbaugh, ed, "Language Learning by a Chimpanzee: the Lana Project;" Duane M. Rumbaugh and Timothy V. Gill, "The mastery of language type skills by the chimpanzee (pan)", *Ann NY Acad Sci* 280(1976): 562-578[?]; Sue Savage-Rumbaugh and Roger Lewin, *Kanzi*, pp. 121-153.

Does symbolic representation combined with communication equal language? If so, how do we interpret the communicative ability of trained grey parrots? What about the calls of vervet monkeys? If you're interested in the latter, see Cheney and Seyfarth, *How Monkeys See the World*, 98-175. But since I assigned their other book, maybe that's enough....

IV. NORMATIVE ORIENTATIONS AND PEDAGOGICAL ACTIONS

Class #18 -- Expectations and their Violations and Repairs
Tuesday, December 4

Reading: DeWaal, *Good Natured: The Origins of Right and Wrong in Humans and Other Animals*, pp. 40-62, 133-162; DeWaal, *Peacemaking Among Primates*, pp. 143, 149-169; Marjolijn Das, "Conflict Management via Third Parties," from *Natural Conflict Resolution* edited by Aureli and de Waal; Sofia A. Wahaj, Kevin R. Guse & Kay E. Holekamp, "Reconciliation in the spotted hyena" *Ethology* 107(2001)1057-1074.

Dominance orders were generally explained as functional for group life by settling conflicts in advance. But how are conflicts settled after the fact? We explore new research on conflict resolution and reconciliation. Do animals have a sense of what is "right," so that they can express moral outrage when their expectations as to what would constitute reasonable action are violated? How can we tell? Would they, for instance, mark a paper down if it were not turned in a week from today? I would, 1/3 of a grade for every 24 hours.

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