

9.20 M.I.T. 2013

**Lecture #4**

**Ethology, continued**

**Konrad Lorenz' jackdaws**

# Konrad Lorenz' Ethology: The Jackdaws of Altenberg, Austria

- Reading: *King Solomon's Ring* (1952), Chapter 11, "The Perennial Retainers"

# Jackdaw



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# Jackdaws at their nest

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# **Jackdaw mother with baby reluctant to forage on its own**

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## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

1. Lorenz begins his story of jackdaws by describing a game these birds play. What is the adaptive function of play? Which animals do it?

# Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

1. Lorenz begins his story of jackdaws by describing a game these birds play. What is the adaptive function of play?  
Which animals do it?
- Which animals do it?
    - Younger animals > older animals,
    - "Higher" animals > "Lower animals."
  - Functions:
    - Maintain CNS circuitry for innate behaviors.
    - Learning of more refined, coordinated movements.
      - This often involves the linking of series of innate motor patterns
    - Experience in particular environments.



## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

2. What property of jackdaws made them such interesting pets for the young Konrad Lorenz, beginning in 1925 when he was 22 years old? What other species that people keep as pets are similar in this regard?

## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

2. What property of jackdaws made them such interesting pets for the young Konrad Lorenz, beginning in 1925 when he was 22 years old? What other species that people keep as pets are similar in this regard?

- 1) They are very social animals
- 2) They are very intelligent birds (*cf.* dogs)
- 3) They are adapted to living near humans

## Lorenz, *King Solomon's Ring, ch 11 (Jackdaws)*

3. “Like the stones of a mosaic, the inherited and acquired elements of a young bird’s behaviour are pieced together to produce a perfect pattern. But, in a bird that has been reared by hand, the natural harmony of this design is necessarily somewhat disturbed.” [p 132](#)

Describe examples of this. [p 132-136](#)

## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

3. “Like the stones of a mosaic, the inherited and acquired elements of a young bird’s behaviour are pieced together to produce a perfect pattern. But, in a bird that has been reared by hand, the natural harmony of this design is necessarily somewhat disturbed.” p 132

Describe examples of this. p 132-136

Disturbances are the results of early learning that can cause a fixation on the wrong species. Lorenz' examples were included in one of his scientific papers, "Companionship in bird life" (in German).

At sexual maturity a bird imprinted on humans may court only humans as potential mates. Example: a jackdaw “Jock” who courted only humans for mating, but flew with groups of crows, and slept and ate at Lorenz’ house.

## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

4. Why should we expect care of young (brood tending) to be largely innate in many animal species?

How could you look for learned components of this behavior?

## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

4. Why should we expect care of young (brood tending) to be largely innate in many animal species?
  - p 135: They must be able to do it the first time they are exposed to young. However, problems can occur, especially in humans and other large primates.      *With protracted early periods of learning.*

How could you look for learned components of this behavior?

Learned components: examples from studies of Syrian hamsters. E.g., first litters are not as well cared for as later litters, especially during the first few days after birth.

Observers can look for individual variations in brood tending.

Lorenz, *King Solomon's Ring, ch 11 (Jackdaws)*

5. How do young jackdaws come to recognize predators? Distinguish innate and acquired (learned) components.

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More depends on learning than in many other species.

One innate reaction discovered by K.L.

(You should know this story, p.140-142. Specific stimuli caused pet jackdaws to attack him.) Crows are similar.

Young ones learn from other birds (usually older birds).

"Traditions" develop in groups of Jackdaws. (How does this happen?)

Also in other corvids, like crows.



# Golden Eagles: enemies of Jackdaws

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## Lorenz, *King Solomon's Ring, ch 11 (Jackdaws)*

6. Describe evidence for individual recognition among jackdaws of a colony (flock). How do we know that they can recognize individual humans?

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- Visual recognition of mates
- Visual recognition of positions of individuals in dominance hierarchy (the “pecking order”)
- Recognition of specific friends and specific “enemies” within their colony.

Recognition of individual

- ▼ Humans: see Q5. Studied more formally in crows.

## Lorenz, *King Solomon's Ring, ch 11 (Jackdaws)*

7. The male jackdaw lacks the plumage of a peacock for displaying towards a female. When a young male jackdaw falls in love, how does he try to get the attention of his favorite female and win a positive response? (p 155f)

# Lorenz, *King Solomon's Ring, ch 11 (Jackdaws)*

7. The male jackdaw lacks the plumage of a peacock for displaying towards a female. When a young male jackdaw falls in love, how does he try to get the attention of his favorite female and win a positive response? (p 155f)

zick-zick ceremony

Male calling-to-nest ceremony, both visual and vocal.

Sex differences in eye direction (comparable to human behavior)

- “Coyness” behavior: attending to, but not staring directly at, a potential mate, like a human female responding to attention from a male.

## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

8. How does the female jackdaw respond in the way that signals an engagement? This happens 12 months before sexual maturity and actual mating. (p 157)

Lorenz refers to a pair as “betrothed” after this occurs.

Lorenz, *King Solomon's Ring, ch 11 (Jackdaws)*

8. How does the female jackdaw respond in the way that signals an engagement? This happens 12 months before sexual maturity and actual mating. (p 157)

Ritual mating invitation, used as greeting ceremony later, and throughout their subsequent life.

- See Lorenz' drawings in his book.

## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

9. Describe two behaviors that occur frequently between a betrothed or “married” pair of jackdaws. How long do such pairings last? (p 159)



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1. Male feeds female. Female preens male.
2. Infantile sounds.

Pairs usually remain together for life (and their lifetimes are long).

# Jackdaw pair

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## Lorenz, *King Solomon's Ring*, ch 11 (*Jackdaws*)

10. Most conflicts among jackdaws are settled by posturing – postures that display aggressive or defensive intent. Defense of a nest site is done this way with the accompaniment of loud calling (“zick, zick”) that becomes most intense and nearly continuous in a colony in February and March (in Altenberg, Germany).

What ensues if a defending jackdaw is actually attacked? (p 166-168)

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What ensues if a defending jackdaw is actually attacked? (p 166-168)

Zick-zick → a much louder Yip-yip → a congregation of yipping birds which becomes very loud and confusing. Even the instigator joins the noisy crowd! (This soon diminishes and all birds go back to normal, unaggressive behavior.)

Lorenz, *King Solomon's Ring, ch 11 (Jackdaws)*

11. Describe how an older jackdaw can entice a young one to return home. (p 168-169)

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The "fly with me" call (**Kia, Kiah**) becomes "Fly home with me" (**Kiaw, Kiaw**). This, plus the visual effect of flying away serve as "innate releasing stimuli."

- The stimuli trigger innate reactions in the young one, inducing it to follow.

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