So-called Cultural Mechanisms of Population Regulation

- infanticide
- abortion
- post-partum sex taboos
- abstinence
- senilicide or gerontocide
- invalidicide
- offspring neglect
- sexual operations (infibulation, subincision)
- warfare
Population Regulation: opposing views in group and individual selection models of infanticide

**Cultural Ecology**
**Goal:** to achieve balance or equilibrium with the environment through individual reproductive restraint for the good of the group. There exist group goals such that individuals may altruistically sacrifice or subordinate the survivorship of their children or reproduction.

**Behavioral Ecology**
**Goal:** maximize reproductive success through quantity or quality of offspring. These are individualistic or selfish goals. Therefore, a focus on an individual's (wife & husband) ability to successfully rear and support offspring and dependents regardless of effect on the group.
Using evolutionary theory, Daly & Wilson predicted that infanticide would occur under three general conditions:

1. uncertain paternity
2. defects in offspring
3. lack of parental resources to successfully rear the child
Data collection and methods

From the HRAF Daly & Wilson analyzed the 60 societies in the probability sample. They found that 39 societies (65%) practiced infanticide. Of these, 35 gave reasons for infanticide with a total of 112 reasons for infanticide (many societies gave multiple reasons for infanticide).
These reasons were placed into four categories: the three deduced from evolutionary theory by the researchers and a fourth was a collection of reasons that could not be classified from an evolutionary perspective by Daly & Wilson.

Of the 112 reasons, 97 or 86% fell into the evolutionary explanations posited by Daly & Wilson.
Evolutionary Reasons for Infanticide in a Representative Cross-Cultural Sample of Societies

Reason 1: Is the infant the offspring of the mother's current husband?

Number of instances 20 (17%)

- Adulterous conception 15
- Non-tribal sire 3
- Sired by mother's first husband 2
Evolutionary Predictions

Reason 2: What is the infant’s quality, and hence its ability to convert parental assistance into eventual fitness?

- Number of Instances 21 (19%)
- Infant deformed or very ill 21
Evolutionary Reasons

Reason 3:  Are present circumstances favorable for child rearing?

- Number of Instances: 56 (50%)
  - Twins: 14
  - Birth too soon or too many children: 11
  - No male support: 6
  - Quarrel with husband: 1
  - Mother died: 6
  - Mother unwed: 14
  - Economic hardship: 3
  - Wrong season: 1
Non-evolutionary reasons

- Number of Societies 15 (14%)
  - Female infant 4
  - Eliminating claimants to throne 2
  - Ritual purposes 3
  - By maternal grandfather
    - out of enmity with son-in-law 1
  - By matrilateral male kin to avoid
    - obligation to “sister's sons” 1
  - To avoid lactational sex taboo 1

Modified from Daly and Wilson, 1984
The Effect of Birth Intervals on Infant Survival

Percent Chance of Survival of Next Child

Age in years of preceding child
What does this all mean?

* The degree to which a woman is willing to invest in a child is conditional. Three of these conditions are documented in the Daly & Wilson model of infanticide.
* The above point is extensively made in Hrdy’s *Mother Nature*. She demonstrates that the nature of motherly love is contingent.
* If, for example, a child is born deformed then the mother will have an emotional reaction (depression or inability to bond) to the child that will diminish her willingness to care for the child.
* However, these reactions may be mediated by social factors. For example, twin killing is sharply decreased when a mother has alternative caretakers (sisters & mothers) who can assist her in child care.
What has evolved?

- A mother’s reaction to her newborn is dependent on factors relevant to her ability to successfully rear the infant and the quality of the infant.
- This is not to suppose that a mother is making a rational cost-benefit analysis.
- Rather a mother has a range of emotional reactions that affect her behavior towards the infant.
- These reactions are most likely culturally mediated (i.e., reaction affected by cultural knowledge of the acceptability of infanticide).
- The behavior itself is not adaptive rather the contingently variable emotional reaction that motivates the behavior is.
The Case of Twin Infanticide

- **Granzberg's research on twin infanticide**: using a large HRAF data set he found 70 societies with information on the killing of twins. He cross-classified the killing of twins with amount of maternal support from relatives such as sisters and mothers. He found out that twin killing occurred in 16 of 37 societies where mothers had little or no support but only 2 of 33 cases where mothers had considerable support.

- It should be noted that in the 14 cases of killing because of twinning, only in 2 cases were both twins killed. The one killed is the weaker, smaller, or female.
Sex Preferential Infanticide and Subsistence

Male contribution to diet versus sex ratio

From Hewlett, B. "Demography and Childcare"
Sex preferential infanticide and warfare

Juvenile Sex Ratio and Homicide Rates in Band Societies

Differential investment by sex

- The last two slides on juvenile sex ratios demonstrate differential investment by sex is linked to the value of a boy or girl.
- This suggests that one sex or the other receives more investment (more food or care when ill) leading to differential mortality and a sex ratio that favors the more valuable sex.
Mixed Families

- Stepparent invest less in their stepchildren than in their biological children.
- Stepparents are more likely to engage in sexual activity with stepchildren and abuse and neglect them than their biological children.
- Children will cooperate less with half- and stepsiblings than with full siblings.
- Stepfamilies are inherently less stable than biologically intact families:
  - children more likely to leave home earlier and
  - parents more likely to divorce.
Hadza: A forager example of differential investment by fathers and step-fathers

In their interactions with children biological fathers greater than step-fathers in

- time spent near
- play
- communication
- nurturing

Marlowe “Show-offs or providers?” *Evolution and Human Behavior*. 20: 391-404
Ayoreo Infanticide

![Bar chart showing infanticides per hundred or per million births for Ayoreo and Canadian populations. The x-axis represents age of mother in years, with categories: <20, 20-24, 25-29, 30-34, >34. The y-axis represents infanticides per hundred or per million births. The chart compares Ayoreo infanticides in hundreds and Canadian infanticides in millions.][1]
“Benign” Neglect