

*The Critical Role of Parent-Infant Contact, Proximity and Breastfeeding For the Development of the Human Primate: Fostering Optimal Brain Growth*



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*The Critical Role of Parent-Infant Contact, Proximity and Breastfeeding For the Development of the Human Primate: Fostering Optimal Brain Growth ... is night different than day?*

"Don't sleep with your baby or put the baby down in an adult bed. The only safe place for a baby to sleep is in a crib that meets current safety standards and has a firm tight-fitting mattress."

Ann Brown September 29, 1999 to US Media Press Conference.

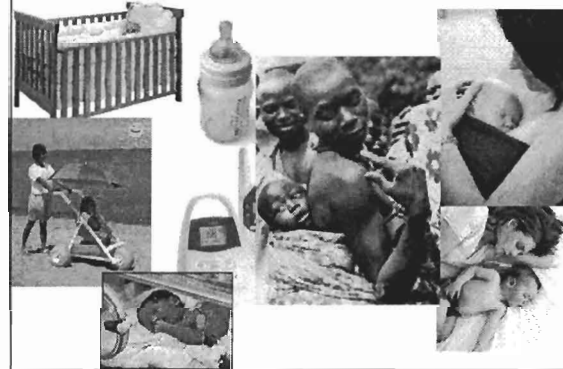


The western infant is disarticulated from the mother's body... What are the deleterious consequences? Does it help to explain SIDS?

- No touch;
- No smells;
- No sounds
- No movement;
- No body heat
- No breath exchange
- Less or no breastmilk
- No maternal physiological regulation



*Technology? or The Human Body?*



*And the most bizarre... disembodied..hands?*



*Maternal- Infant Micro-environment exchanging heat, touch, sound, movement, CO2, smells*



HERE  
MOTHER  
AND BABY  
FACE EACH  
OTHER  
(FEO), AS IS  
TYPICAL

Ventral-Ventral mother-infant contact: is not an example of unsafe sleep



Courtesy of Dr. Helen Ball

*The "dyad" IS the unit of study*

Human infant (parental) social care is synonymous with *physiological regulation*

*What is the context and conditions by which human brain growth flourishes?*

*the anthropological evidence (cross-cultural, cross-species, and evolutionary)*

"For species such as primates, the mother IS the environment."

Sarah Blaffer Hrdy, *Mother Nature* (1999)



Nothing an infant can or cannot do makes sense, except in light of mother's body

Babies Celebrated, Beatrice Fontanel and Claire D'Harcourt, © 1998 Harry N. Abrams, Inc.

***Biology of Mother's Milk Predicts Mothering Behavior***

- |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                          |
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| <ul style="list-style-type: none"> <li>• <b>Feed and Leave Species</b></li> <li>– (Ungulates)             <ul style="list-style-type: none"> <li>• High fat</li> <li>• High protein</li> <li>• Low carbohydrate</li> </ul> </li> <li>• High calorie = long feeding interval;</li> </ul> <p>(to avoid predators nested infants do not defecate or cry in mother's absence)</p> | <ul style="list-style-type: none"> <li>• <b>Contact, Co-sleeping, And Carry Species</b></li> <li>– (Primates—Humans)             <ul style="list-style-type: none"> <li>• Low fat</li> <li>• Low protein</li> <li>• High carbohydrate</li> </ul> </li> <li>• Low calorie = short feeding interval;</li> </ul> <p>(carried infants cry in mothers absence and defecate spontaneously)</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Consider the physical intimacy of the maternal-infant relationship



Balinese Mother and infant

...socially and medically obscured by western culture

## Breast Feeding Matters In All Areas Of Infant Mortality Especially Effecting African Americans

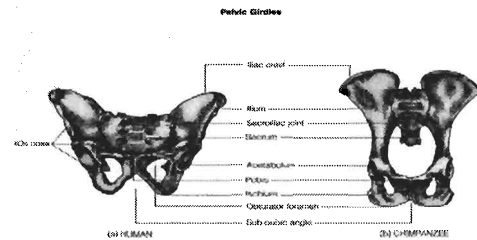
- "Breastfed infants are 80% less likely to die before age 1 year than those who never breast fed, even controlling for low birthweight";
  - For every 100 deaths in the formula-fed group, there were 20 deaths in the breast fed group
  - Using breast feeding as the normative behavior (20 deaths in the first year) the formula group with 100 deaths, had five times as many deaths or a 500% increase in mortality..
  - Forste et al 2001:108 291-296Pediatrics

Forste et al. 2001

**"Analysis of infant mortality indicated that breast feeding accounts for race difference in infant mortality in the United States at least as well as low birth weight does"**

**Pediatrics 2001;108:291-296**

At birth the human infant is the least neurologically mature primate of all, and the most reliant on physiological regulation by the caregiver for the longest period of time.



Adapted from Figure 4-61

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- Rotation of ilium (hip bones) forward and shortening of ischium to support bipedalism
- Concurrent with increased fetal head size to accommodate learning and social dependence
- Results in the human "obstetrical dilemma"

## Enter...**MORE** human biology...

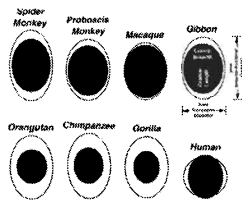


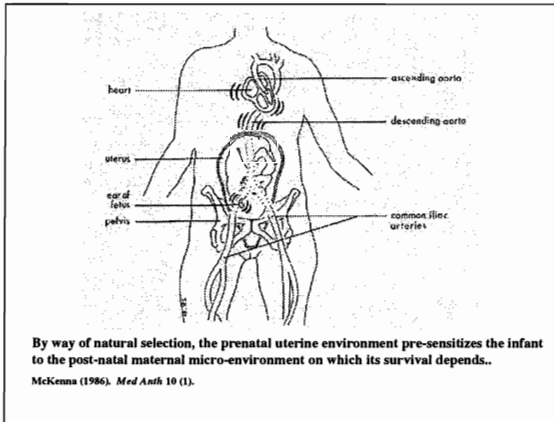
Figure 4-1. Proportionality of maternal pelvic (black) outlet and fetal head (white) outlet. (Adapted from Soligo, 1995)

- The human "obstetrical dilemma";
- Human Fetal Head Size Exceeds Outlet Dimensions *With Emergence of Bipedalism*

## Percentage of Adult Brain Size:

	Chimpanzee Infant	Human Infant
<b>At Birth</b>	45	25
3 months	50	35
6	60	45
9	65	50
1 year	70	60
2	75	70
4	85	80
8-9	100	95

\*(100% at 14-17 years)

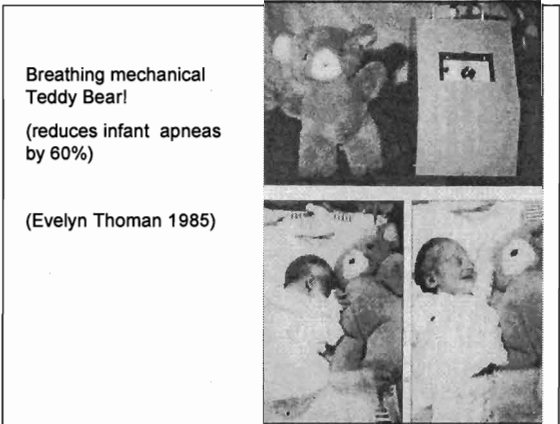


*in utero* maternal Zeitgebers:  
*hearing, feeling, moving,  
breathing..in relationship to..*

- Fetus "breathes" amniotic fluid, 45% of the time during last trimester, with reticular formation neurons firing;
- Against tidal pulsations of blood flow from maternal iliac artery, next to fetal left ear .10 of a second following ventricular contraction;
- Rehearsal -conditioning for intercostal muscles surrounding ribs-lungs, for first breath;

*learning to breathe..getting in  
shape before birth*

- "it is no longer appropriate to speak of the initiation of breathing at birth...postnatal breathing may instead be viewed as a continuation of the process begun in utero" (Jansen and Chernick 1883:460).



*Hidden regulatory mechanisms..  
calming a baby by "shhhhh..ing"  
A universal practice!*

- prenatal sensory experiences—fetus hears rhythmic "shhoosh-sha" as blood pulses by infant's ear every .10 of a second following maternal heart contraction..
  - "chamosh" (Urdu) "shuu" (Vietnamese)
  - chutee (Serbian), "soos" Armenian
  - Hush-silence (English), "stille" (German),
  - "hushket" (Arabic), "sheket" (Hebrew)
  - "Shuh-shuh" Chinese, "toosst" Swedish

(From H.Karp 2002)

**Massaged Babies**

- gained weight 47% faster (per day),
- were more alert,
- left hospital 6 days earlier than non-treated babies (Field et al 1987) ..
- touch stimulates the vagus nerve (to stimulate the gastro-intestinal tract making digestion more efficient;
- facilitates endorphin release reducing stress.. Stress cortisol levels