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## CHAPTER 2

# THE ROLE OF SOCIAL, RELIGIOUS AND MEDICAL PRACTICES IN THE NEGLECT, ABUSE, ABANDONMENT AND KILLING OF INFANTS

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## INTRODUCTION

Each society has its own set of norms for the behavior of parents toward infants, and infant rearing practices vary dramatically from one society to another; a behavior which might be labelled as abuse in one society might not be considered to be abuse in another society. There is no optimum strategy for rearing infants (Korbin, 1987), and it is not my intention to be critical of parents who have raised or are currently raising an infant using socially accepted infant-rearing practices. However, parents sometimes engage in behaviors toward infants which appear to be detrimental to the wellbeing of their infants and thus maladaptive. This raises questions as to the factors, both in prior times and today, which have interfered with the development of parent-infant relationships to the detriment, and even death, of infants; the focus of this review will be on the beginning of infancy when an infant is most dependent on parents or other caregivers. I will discuss evidence that many medically accepted infant-rearing practices, policies of governments and corporations, and social and religious customs have increased (both in prior times and today) the likelihood of neglect, abuse, abandonment and killing of infants by parents in Western societies.

The degree to which parents were nurturing and protective of their offspring in Western societies over the last twenty-five hundred years is controversial, and there are arguments among historians as to whether an attachment between parents and infants, which most people assume to be "normal" today, was common prior to the twentieth century in Western societies. One view is that the history of the interaction between parents and children in Western societies is a nightmare from which we have only begun to awaken in the twentieth century (Johansson, 1987). In contemporary Western societies there is a general presumption that most parents want to provide the foundation for a better life, with greater opportunities for success, for all of their children. Lister (1986, p. 1403) has proposed that "a society such as ours, which encourages the birth of new members, has in fact committed itself to their well-being". This optimistic view of parent-infant interaction is supported by evidence that there has been a recent increase in nurturing of infants by fathers over the last few decades in Europe and the United States (Hewlett, 1992a). However, the general assumption that in Western societies today the typical parent is protective, caring, and nurturing of all offspring contrasts sharply with estimates that millions of children are being abandoned, neglected or physically and sexually abused by their parents (Gelles and Cornell, 1983; Lynch, 1985; Gelles, 1987; Creighton, 1988; Green, 1988). Some experts believe that reported child abuse is "just the tip of the iceberg", with the actual incidence of abuse being much higher. For example, Green (1988) estimates that there may be 1,500,000 cases of child abuse in the United States annually. Child abuse and neglect are used here to describe situations in which a child suffers identifiable harm that can be attributed to a caregiver (Gelles, 1987; Korbin, 1987).

#### **EFFECT OF WET NURSES AND FORMULAS ON INFANT MORTALITY**

While many parents in prior times may have been concerned for the welfare of their offspring, the parenting strategy adopted often reduced the chances of the infant surviving and competing in society. For example, throughout recorded history surrogate mothers, referred to as wet nurses, have provided milk for babies when natural mothers were unable or unwilling to nurse their infants. A wet nurse is certainly capable of providing care and nutrition for an infant which is as good as that which the natural mother might have provided. The critical issue is whether it is likely that the care provided by a wet nurse would be commensurate with that

provided by the biological mother (Daly and Wilson; Hrdy; Wilson and Daly, this volume); this is particularly true in cases in which the infant is reared by a wet nurse outside of the home of the natural parent, which, by today's standards would be considered temporary abandonment (the temporary abrogation of parental responsibility for the infant). In fact, it has been estimated that by the time of the industrial revolution, infant mortality associated with the use of wet nurses was extremely high (Hrdy, this volume). Given that this must have been generally known at the time (Cadogan, 1750), it is not unreasonable to consider a practice which had a high probability of leading to the death of an infant as being a form of socially sanctioned infanticide rather than temporary abandonment. An additional issue is that the normal contact between parents and a newborn infant, which has been proposed to contribute to the development of a bond between the parents and infant, would not occur when wet nurses are hired to care for and feed an infant (Bowlby, 1969; Herbert, *et al.*, 1982; Wilson and Daly, this volume).

By the end of the nineteenth century, an increased effort was being made to develop substitutes for breastmilk as an alternative to the use of wet nurses (due to the high mortality of infants reared by wet nurses); this led to the growth of the infant formula industry. For centuries, wealthy families had engaged in the common practice of supplementing breastmilk with mixtures of butter, sugar, spices and other foods (Hardyment, 1983, p. 3). The eighteenth century British physician, William Cadogan (1750) observed that babies receiving these supplements were not as healthy as those only fed breastmilk, which led to the recommendation that infants should only be fed breastmilk; this advice undoubtedly saved the lives of many infants.

During the twentieth century the infant formula industry was highly effective in promoting the use of bottles over breastfeeding in Western societies. Middle-class parents were taught how to properly prepare the formulas, and infants fed formulas were thus not constantly sick, which occurs when unsterile water is used to make the formulas. However, even when commercial formulas are prepared using sterile procedures, problems with infant health have occurred due to a lack of regulation of the nutritional content of the formulas (Palmer, 1988, pp. 209-214). Only recently have attempts been made at regulating the nutritional content of infant formulas in the United States. For example, most parents are probably unaware that soy (commonly used in formulas for infants with lactose intolerance) contains estrogenic chemicals, referred to as phytoestrogens (Whitten and Naftolin, 1991, P. Whitten, personal communication); exposure to estrogenic chemicals during early life can have a profound effect on the course

of fetal and infant development (vom Saal, *et al.*, 1992). Most child-care "experts" in Western societies during the first two-thirds of the twentieth century promoted bottle feeding. It was not until 1978 that the American Pediatrics Association finally officially acknowledged the benefits of breastfeeding.

### **ROLE OF PHYSICIANS AND OTHER "EXPERTS" IN CHILD ABUSE AND NEGLECT**

An eighteenth century physician, William Cadogan (1750), proposed that newborn babies be fed at regular intervals during the day (no more than two feedings per day were recommended), and not at all during the night, rather than "on demand". Cadogan, and subsequent "experts" such as Dr. Frederick Truby King, whose ideas were influential during the early twentieth century, confused the diseases associated with serving infants contaminated supplementary foods with "overfeeding"; the one positive aspect of this erroneous advice was that breastfeeding of infants was promoted as leading to a healthier infant than formulas or other foods. It was thought that an infant's stomach needed to be rested between feedings to clear out microorganisms responsible for causing diarrhea. Second, King could not comprehend why a busy mother would want to waste her time with feedings more frequent than at 4-hour intervals. The benefits of a 3 to 4-hour interval between daytime feedings continued to be accepted by physicians into the latter part of the twentieth century (Hardyment, 1983, pp. 176-181, 214-265).

The expectation that all newborn infants should rapidly adjust to a long-interval feeding schedule during the day and sleeping throughout the night is now known to have been unrealistic. The complexity of the ontogeny of biological rhythms in infants is reflected in considerable individual variability in the establishment of a period of prolonged sleep during the night (Konner, 1991). For example, the development of biological rhythms in infants appears to be influenced by the interaction between the mother and the infant both during pregnancy and after birth (Davis, 1981). Environmental factors also markedly influence the ontogeny of the sleep-wake cycle. In some hospital maternity wards newborn infants have been subjected to continuous bright lights. This may interfere with the normal establishment of the biological rhythms required for eventual adjustment to the demands of diurnal feeding at timed intervals and prolonged nocturnal sleep. For example, there is evidence that for babies kept in nurseries after birth, there was more crying, overall activity, and a delayed establish-

ment of a sleep-wake cycle in which a prolonged period of sleep occurred during the night (Reppert and Rivkees, 1989). Degree of maturity, rather than age from birth, also appears to be an important factor in the onset of biological rhythms, since premature infants develop rhythms later than do infants who were not prematurely delivered (Davis, 1981).

Observations of infant feeding patterns in nonindustrialized societies, as well as a comparative look at feeding schedules in great apes, shows that feeding at 3 to 5 hour intervals is not typical. For example, the interval between feeding bouts in the !Kung who inhabit the Kalahari Desert is approximately 15 minutes during the time that an infant is awake; infants have constant access to the breast (Konner, 1982; Short, 1976, 1984). The use of long intervals between feeding can result in an infant crying prior to the time at which the next feeding is scheduled, since the stomach is empty approximately 1.5 hours after drinking breastmilk (human milk is very dilute). An infant is thus likely to be hungry for hours prior to each meal when fed at intervals as long as 4 hours. Crying can hardly be considered to be an abnormal or unexpected response to a prolonged period without food; in fact, infants exhibit a hunger cry which can be distinguished by mothers from crying for other reasons (Chateau, 1980; Ostwald and Murry, 1985). For some reason William Cadogan (1750) believed that infants only cry when they are sick, never as a result of being hungry. In a situation in which a parent (mother or father) and infant are in almost continuous contact (for example, in some hunter-gatherer societies), infant distress due to an empty stomach is not common (Katz and Konner, 1981; Hurtado and Hill, 1992).

The normal response of a parent when an infant cries should be to alleviate the distress by picking up the infant and, if required, feeding it. In fact, this is the common practice in nonindustrialized societies, such as the Usino in Papua New Guinea (Palmer 1988, p. 115) and the !Kung (Konner, 1991, p. 112). De Meer (1988) also reported that an Aymara mother in Peru would be considered incompetent if her infant showed signs of distress and she did not respond to the infant to stop the distress. In a comparison of middle-class mothers in the United States and Japan, Japanese mothers were reported to find the practice of leaving an infant alone in a cot to cry itself to sleep to be shocking (Elkin and Handel, 1989, p. 39).

With regard to other factors which might lead to crying in infants, in humans and other great apes, infants will hold the breast with their hand or will place the breast in their mouth (without sucking) during times of increased stress, such as the presence of strangers; this is referred to as non-nutritive suckling (Wolff, 1968). Any contact of an infant with the

breast (whether with the hand or mouth) pacifies an infant (Kessen and Leutzendorff, 1963; Palmer, 1988, p. 115). In addition, stimulation of the breast causes the release of prolactin, which stimulates the synthesis of milk (Tucker, 1988; Wakerley, *et al.*, 1988). The inability of many women in Western societies to provide enough milk for their infants using interval feeding (together with wearing clothing which prevents "non-nutritive suckling" breast stimulation) is likely the result of a decrement in prolactin secretion due to inadequate breast stimulation. Also, the contraceptive effect of almost continuous stimulation of the breast is lost and ovulation occurs (Konner, 1982; Short, 1976, 1984). Moreover, it is possible that the physical, verbal and visual interaction between mother and infant during breastfeeding is important for the development of other psychological systems and an attachment between mother and infant, although this is controversial (Svejda, *et al.*, 1982; Kopp, 1989).

The unfortunate and misguided idea that parents should let infants cry and not pick them up or nurture them, which has contributed to problems associated with rearing of infants who could not accommodate to interval feeding, prolonged periods of nocturnal sleep, or were just fussy (Boukydis, 1985), came from physicians and behavioral psychologists. This idea was, until relatively recently, generally accepted by "experts" on child rearing. What is more, some "experts" still believe that infants should be left alone at night rather than sleep with the parents, due to fears that the child would be overprotected or spoiled; the 1985 edition of Dr. Spock's *Baby and Child Care* continued to promote this practice so as not to spoil an infant. At the beginning of his book *Children* (1991, p. 9), Mel Konner identified a number of recent major changes in dogma about child-rearing practices, including the observation that: "having a need for dependency indulged early in life has remarkably little impact, either way, on the likelihood of being overdependent later on."

The belief held by some psychologists that infants would be spoiled if they were attended to when they cry resulted from the inappropriate application of findings from conditioning experiments with adult pigeons and white rats to human infant-rearing practices. For example, since a white rat can be conditioned to press a lever by receiving a reward as a result of pressing the lever, it was proposed that feeding an infant when it cried would condition the infant to continue crying. In other words, one would spoil the infant. Specifically, John Watson, the founder of behaviorism, believed that the process of forming associations between previously unrelated events (for example, conditioning a rat to press a lever or a pigeon to peck at a light to obtain food) was relevant to a parent responding to infant crying by attending to the infant and alleviating the distress (Hardyment,

1983, pp. 169-175; O'Donnell, 1985). However, these events (crying by an infant and attending to the infant by a parent) are certainly not unrelated. Behaviorists rejected the idea that there are species-specific differences in the capacity to form associations which exist as a result of evolution. It is now understood that there are profound differences in the capacity for different species to be conditioned to associate events and that the processes involved in conditioning a rat to press a lever do not generalize to all forms of learning (Seligman, 1970; Rozin and Kalat, 1971).

Developmental changes also have to be considered with regard to the hypothesis that attending to a crying infant will result in a spoiled child. For example, it has been proposed that crying by a newborn infant and an older child serve different functions (Murray, 1985; Ostwald and Murry, 1985; Demos, 1986; Kopp, 1989). Furthermore, different types of cry have been identified in infants within the first few weeks after birth (Chateau, 1980; Ostwald and Murry, 1985). Sarah Hrdy (personal communication) identified that in langurs, a very young infant which was loudly crying as a result of being separated from its mother was very rapidly picked up by either the mother or another female; in contrast, crying by an older infant (for example, during weaning) was ignored by adults.

Crying by a newborn infant is an adaptive (evolved) response to distress (due to hunger, fear as a result of separation from the parent, pain or illness), and the adaptive or appropriate response by a parent would be to pick up the infant and alleviate the distress (Lamb and Campos, 1982, p. 179). This does not lead to an increase in crying, as predicted by models based on operant conditioning experiments with rats and pigeons, but instead alleviates the distress of the infant. It is now known that when parents respond to distressed infants, there is a decrease in crying at later stages of development and a general increase in positive interactions between mothers and infants (Chateau, 1980; Bronfenbrenner, 1986).

The physician, Frederick Truby King, and the psychologist, John Watson, proposed that children should be left alone and not overstimulated or overloved. This parenting strategy was promoted as "following the laws of nature" (Hardyment, 1983, pp. 174-178) and consisted of caching infants (hiding them in a safe place) and not touching them for hours; for example, parents in Western societies often leave an infant unattended in a playpen for prolonged periods during the day and completely alone throughout the night. The placing of human infants in swinging seats or playpens (often in front of a television) without much physical contact with other humans during the day and then completely isolating the infant at night should be considered as socially sanctioned neglect of infants.

Caching of infants is the parenting strategy used by the hare (the young remain hidden in a nest as a defense against predators). The hare has extremely concentrated milk and provides its young with the entire daily supply of milk in about one 5-minute feeding bout; there is, as expected, coevolution of a parenting strategy which provides only a few minutes of maternal contact with young each day, an extremely high nutritional content of milk, and the capacity for infants to digest the milk (Blurton Jones, 1972). In contrast, humans have dilute milk relative to the hare in terms of the concentration of nutrients, and as with other great apes, humans obviously evolved to have relatively short intervals between infant feedings (Short, 1976, 1984).

Caching of infants is dramatically different from the parenting strategy observed for great apes (Blurton Jones, 1972) and humans in nonindustrialized countries (Short, 1984; Konner, 1991). One is struck by the fact that mothers and infants are seldom separated in nonindustrialized countries in which the demands of work make this possible. For example, in some parts of Africa, mothers carry infants in slings on their back, and the infant can gain access to the breast virtually on demand (this is made easier in societies in which the breasts are not covered). The baby thus also gets rocking stimulation and physical contact with the mother. In hunter-gatherer societies infants are reported to have a greater amount of physical contact with both their mother and father (as well as other members of the extended family) during the first few years of life relative to agricultural or industrial societies (Katz and Konner, 1981; Hewlett, 1992b; Hurtado and Hill, 1992; MacDonald, 1988, pp. 177-181). The social organization in hunter-gatherer societies is presumed to be similar to that of humans throughout their evolution prior to the advent of agriculture. It may well be that with every cultural "advancement", from hunter-gatherer, to agricultural, urban, and, finally, industrial societies, the nurturing of children has steadily declined.

Most mothers in non-Western societies sleep with their babies rather than caching them throughout the night (Palmer, 1988, p. 115). During the nineteenth century overlaying (or accidental smothering) of infants was believed to be a serious problem (and it was reported to be a common cause of infant death). The accidental smothering of an infant due to a sleeping parent rolling onto the infant is generally considered to have been highly unlikely (Ober, 1986; Palmer, 1988, p. 83). Some infant deaths attributed to overlaying may have been due to sudden infant death syndrome (SIDS). It is likely, however, that overlaying was reported as the cause of death in situations in which the infant was smothered as an overt act of infanticide. For example, reports of suffocation due to overlaying increased by three-



fold relative to population growth between 1850–1880 in London, which most historians attribute to active infanticide (Forbes, 1986; Rose, 1986, pp. 177–181). Social concern about overlaying contributed to the idea that children should not sleep with parents. Keeping the infant isolated from the mother at night (in a separate bed or even another room) obviously was also motivated by other factors, such as the desire by parents to not have an infant interfere with the resumption of sexual relations.

Physicians such as Frederick Truby King saw no reason to expend the energy which demand feeding (during the day or night) required of mothers. Interval feeding during the day and no feeding during the night was intended to limit maternal-infant interactions so that rearing of infants would be more efficient; one objective was to allow the mother more time to care for the father rather than the infant (Hardyment, 1983, pp. 174, 181). Even in situations where a mother was able and willing to feed her infant on demand, in spite of the views of physicians such as King, social mores dictated that this not be done. For example, a problem which has dramatically impacted the choice of women to breastfeed, particularly on a demand schedule, has been the gradual development of proscriptions against public exposure of breasts. Demand breastfeeding is not possible in societies which regard the breasts as a source of sexual stimulation rather than nutrition for infants. An obsession with the breast as a source of erotic stimulation has occurred in the United States (but not all Western cultures) in recent years. This additional cultural factor will complicate any move toward changing the pattern of breastfeeding (at specified intervals) in the United States relative to other societies in which the breast is associated with nurturing infants.

Regardless of whether a woman desires to breastfeed, since the industrial revolution breastfeeding often has not been possible due to constraints associated with work. One of the consequences of the industrial revolution is that women who worked in factories were unable to nurse their babies throughout the work day. Given the demands on women of living in urban environments in the industrial age, one can certainly understand why medically-approved alternatives to demand breastfeeding of infants was appealing. There have thus been numerous factors which have contributed to an interference in Western societies with the evolved pattern of parent-infant interaction, which is likely to be more accurately reflected in contemporary hunter-gatherer than in Western societies (Katz and Konner, 1981).

The striking failure of physicians to recognize the absurdity of some medical practices (such as prolonged intervals between feeding in a species with a relatively dilute and thus rapidly digested milk) has been due to a

lack of understanding that each species has constraints on its behavior and physiology as a result of evolution. The fact that so many infants could not adjust to interval feeding and a prolonged period of nocturnal sleep without waking up and crying due to hunger or, perhaps, fear of being left alone in the dark did not lead to a re-evaluation of these practices, but instead resulted in development of a medical industry devoted to promoting the strategy of caching infants. Mothers in Western societies whose infants were not able to adjust to these practices were considered to be lacking in mothering skills because they could not get their babies to conform to modern medical practice. Physicians need to appreciate the importance of a basic knowledge of evolution, comparative biology and anthropology to the practice of medicine or they will continue to make the same kinds of mistakes described above. Even a superficial exposure to the literature in comparative biology (Blurton Jones, 1972) and anthropology would have raised doubts about these practices among physicians; in a review of 173 societies in the anthropological record, no societies were found in which infants were placed in a separate room during the night (Konner, 1991, p. 113).

One of the most aversive experiences a person can have is to listen to his or her child crying in distress (Frodi, 1985; Murray, 1985). Sarah Hrdy (personal communication) reported that in her observations of langurs, crying by a very young infant as a result of being separated from its mother appeared to be very distressing to adults, and a crying infant was very rapidly picked up by either the mother or another female. However, Frederick Truby King could not understand why mothers should become distressed by an infant crying for only an hour or so, since he apparently did not find this aversive (Hardyment, 1983, p. 181). Among the Puritans, crying was considered to be an expression of anger by an infant, and parents were encouraged to beat their children to "nip this animosity in the bud" (Hardyment, 1983, p. 8). A socially sanctioned response by parents or other adults to infant distress, as a result of a long interval between feedings or to being left alone in a dark room at night, was thus to hit the infant.

The conflict between social mores dictating that parents not nurture an infant when it cries, and an emotional reaction to infant distress (which is biologically based; Bowlby, 1969; Konner, 1982) has likely resulted in high levels of stress for parents. Periods of high stress are associated with harsh treatment of infants, whereas a more nurturing parenting style is found when adequate resources (associated with low stress) are available (Belsky, *et al.*, 1991). It is not difficult to imagine situations in which parents, particularly those prone to violence or under stress, would hit a crying

infant only to have the infant cry louder, thus leading to an escalation of violence (in other words, child abuse; Frodi, 1985; Browne, 1988). An important issue relates to the factors which predict how parents in Western societies will respond to an infant when it begins crying and they are told by "experts" not to attempt to provide comfort or nutrition. There is no doubt that the likelihood of violence toward infants is increased in this situation (Frodi, 1985; Murray, 1985), particularly if the infant was unwanted (Roberts, 1988). The impact of parental violence is not just on their children, since child abuse tends to be perpetuated within families from one generation to the next, which is referred to as transgenerational child abuse (Ney, 1988; Widom, 1989).

In addition to medical advice and social mores, the social ecology of industrialized societies might contribute to maltreatment of infants. Humans are proposed to have been mildly polygynous throughout their evolutionary history (Alexander, 1979). In terms of parental violence toward infants, one problem which is particularly acute in urban societies is that individuals often do not have the opportunity to observe (as adolescents or young adults) interactions between parents and infants in an extended family or clan group prior to producing their own infants. It is likely that the isolation of urban family units from relatives and the absence of other support groups to assist with caring for an infant are reasons why parents respond with violence to the stress of having to cope with a distressed infant (Bronfenbrenner, 1986). In monkeys, the absence of observation of parenting severely impacts individuals when they have infants and places the infant at risk for neglect or harm (Harlow, *et al.*, 1966; Altmann, 1980). With regard to physicians giving mothers advice about child rearing, the typical medical student and resident who will become a practicing pediatrician has very likely had little or no first-hand experience with parenting and is thus totally dependent on textbooks ("experts") for advice concerning how to treat infants.

While many of the infant-rearing practices described above are no longer considered appropriate by authors of recent pediatrics textbooks and books on child care, any change in attitude among physicians (such as the recent change in physician's attitudes concerning the antimicrobial activity of breastmilk, demand feeding rather than fixed schedules, sleeping with an infant, and the contraceptive effectiveness of breastfeeding) may be countered by the perpetuation of ideas by grandparents when they are available. For example, a grandmother may pressure her children not to adopt infant-rearing practices which are unfamiliar to the grandmother. Unfortunately, this very issue has provided the basis for perpetuating the denigration of women with regard to the rearing of infants by each new

generation of physicians. For example, William Cadogan (1750, p. 2) began his essay on the management of children by stating:

It is with great pleasure that I see the preservation of children become the care of men of sense. ... In my opinion, this business has been too long fatally left to the management of women, who cannot be supposed to have proper knowledge to fit them for such a task. ... They may presume upon the examples and transmitted customs of their great grand-mothers, who were taught by the physicians of their unenlightened days; when physicians, as appears by late discoveries, were mistaken in many things.

The cycle of "experts" advising each new generation of mothers to ignore their own intuition or the ideas of their parents and follow the practices proposed by "modern experts" is unlikely to be easily broken, although organizations such as the La Leche League will certainly help in this process. Among other things, breaking this cycle will require a dramatic change in the attitude of male physicians toward women.

### **GOVERNMENT AND CORPORATE POLICIES AND INFANT MORTALITY**

Of considerable importance to the health and welfare of children are laws and policies pursued by governments and corporations. A recent documented example of a corporate policy which has clearly lead to dramatic increases in infant disease and death concerns the aggressive marketing (through advertising and the use of free samples) of infant formulas in undeveloped countries. For example, Nestle, a Swiss food company, has for years aggressively promoted the use of infant formulas and bottle feeding in undeveloped countries where it is often not possible for parents to sterilize contaminated water used to prepare the formulas (Palmer, 1988, p. 201). Infant formula manufacturers (the Nestle company is the largest) distribute free samples through hospitals and health officials to women after delivery; just enough formula is provided free to ensure that resumption of lactation is unlikely. The mother thus has no option other than continuing to use the formula, which must then be purchased. Bacteria in contaminated water used to prepare the formulas can lead to the death of infants through dehydration (typically very slowly with tremendous suffering). Newborn infants do not yet have the ability to produce antibodies to fight diseases which result from drinking contaminated water (antibodies which attack microorganisms in the gut are produced by the mother and transported to the infant via her breastmilk; Victoria, *et al.*, 1987).

The governments of many undeveloped countries have encouraged the Western practice of bottle feeding, since it is viewed as a sign of modernization; it also has freed women with infants to participate in the workforce (see Palmer, 1988, p. 119 for an example of this with slaves). A dramatic increase in infant mortality due to gastro-intestinal diseases resulted from this practice; this eventually led to the WHO/UNICEF code of Marketing of Breastmilk Substitutes, which was passed at the World Health Assembly in 1981. There was broad international recognition that it was essential to ban the aggressive marketing practices of companies selling infant formulas in undeveloped countries.

The United States was the only UN member to vote against adoption of the WHO/UNICEF code under pressure from companies producing formulas. Nestle executives also managed to have a discussion of the infant formula issue cancelled at a symposium on bioethics hosted by the National Institutes of Health in 1983 (Marshall, 1983). Officials of the Nestle company agreed to abide by the guidelines contained in the UN resolution after the company suffered substantial losses due to a worldwide boycott of Nestle's products. But, promotion of formula use in undeveloped countries continued and is the subject of yet another UN initiative to stop this practice. The International Association of Infant Food Manufacturers has now promised to stop distributing free formula samples by the end of 1992.

The catastrophic effect of these policies on infant mortality in undeveloped countries (due to lack of training and facilities for the proper preparation of infant formulas) had been documented at the time the decision to aggressively market infant formulas was being made by corporate officials (Campbell, 1984; Habicht, *et al.*, 1986; Victoria, *et al.*, 1987; Palmer, 1988, pp. 198-244). These corporate management policies (leading to the slogan "bottles kill babies"), and the acceptance of these policies by government and health officials, should thus be considered as corporate- and government-sponsored infanticide.

Breastfeeding is highly effective (greater than 95%) as a contraceptive when the infant is allowed continuous access to the breast. When demand suckling occurs, which is typical of the nursing pattern exhibited by great apes, including humans in hunter-gatherer societies, the typical birth interval is between 3.5 to 4 years. This contrasts with the 1.5-year interval between births found in urban societies where there is widespread use of formulas either as the sole source of nutrition or as a supplement to breastmilk; a long interval between feeding may require supplements due to inadequate stimulation of the breast (Konner, 1982; Short, 1976, 1984). Thus, in addition to infant health, of considerable interest to representa-

tives at the World Health Assembly in 1981 was the impact of the shortened birth interval due to the widespread use of infant formulas on population growth. The statistics on the proportion of women in undeveloped countries, particularly in urban areas of Latin America, who breastfeed their babies beyond a few months, if at all, are disheartening (less than 30%; Popkin, *et al.*, 1982). The widespread use of formulas in undeveloped countries has thus led to a loss of the contraceptive effect of lactation, resulting in a short birth interval (Short, 1984), and has also had a devastating effect on infant health and survival.

The abnormally short interval of 1.5 years between babies observed in urban areas denies infants of the normal period of intensive interaction with the mother. An increased birth rate leads to a decrease in the investment of time and resources by parents in each child (Trivers, 1974). Decreased parental investment and stressful conditions are likely to lead to parenting styles that produce psychological characteristics such as high aggressiveness (MacDonald, 1988, pp. 183-235), which can be detrimental to success in an industrialized society. In other words, these practices have led to an increase in the number of individuals who are psychologically unsuited for the demands of an industrialized society. There is a correlation between a short interval between the birth of babies and infant abuse and infanticide. In general, increased family size (a low ratio of parents to children, which includes single parent households) and birth of twins increase the risk of child abuse and infanticide (Lithell, 1981; Nelson and Martin, 1985; Lester, 1986; Leventhal and Midelfort, 1986).

The issue of infant health and nutrition in undeveloped countries is quite complex. While the evidence for the devastating effects of the use of improperly prepared formulas is clear and convincing, evidence is also accumulating that pesticides and numerous industrial waste products contain chemicals that are concentrated in breastmilk (the chemicals are lipophilic) and thus pose a serious threat to infant health in contaminated environments (Jensen and Slorach, 1991; Thomas and Colborn, 1992). Many of these chemicals, such as DDT and a host of other chlorinated compounds, profoundly disturb development in embryos and infants (Colborn and Clement, 1992; Colborn, *et al.*, in preparation). It is illegal to produce or use DDT in the United States due to the known danger posed by this compound. However, American and non-American companies are producing and promoting the use of DDT and other dangerous chemicals in the same undeveloped countries targeted by the infant formula industry for aggressive marketing; this is possible since there is a general lack of understanding of the dangers posed by the use of many of these chemicals, and thus there are no restrictions on their use by governments in undevel-

oped countries. There is now compelling evidence that these pollutants are being transported around the globe via the atmosphere, and efforts are being made within the United States and other developed nations to have a world-wide ban on the production and use of the chemicals which are already known to pose a danger to human health (and the health of all other animals; Clement and Colborn, 1992).

### **SOCIAL AND RELIGIOUS CUSTOMS AND INFANT MORTALITY**

There are dramatic differences between conditions faced by infants born today into middle class families in developed countries when compared to infants born into poor families in developed countries, infants born in undeveloped countries, and infants born in prior centuries. Children who survived in Greek and Roman antiquity and Medieval Europe are thought to have been treated very harshly by parents. It may have been that only the oldest male child, who would inherit property and carry on the family name, received any significant investment of time and resources by parents (Flandrin, 1979, p. 205; Boswell, 1988, p. 36). Trivers (1974) proposed that the level and type of parental investment varies as a function of the ecological conditions which are encountered.

Throughout recorded history the issue of whether newborn infants are somewhat less than human has been debated (Moseley, 1986). This was particularly true in cases where there was some clear physical deformity or obvious mental defect (Viljoen, 1959). The Athenians in ancient Greece solved this dilemma by not considering a child as a full human being until a ceremony called Amphiromia was performed (Montag and Montag, 1979). Romans were not legally required to raise their children. In general, unlike the situation after the adoption of Christianity as the state religion in the fourth century A.D., the pre-Christian Roman government did not seek to legislate morality. The father (paterfamilias) was the head of the Roman family, over which he exercised absolute authority; this included the right to kill or abandon his offspring or an infant which he presumed to be illegitimate (Boswell, 1988, p. 57).

### **Quality of life vs. sanctity of life: the debate over life and death of deformed infants**

There are those who view human life as sacred, regardless of the quality of the life. An issue that is the subject of considerable debate concerns the humanist vs. religious views on the use of heroic measures to save the

lives of terminally ill or severely deformed infants when it is clear that to do so will result in suffering by the infant (in many of these cases lifespan is, at best, only a few months). The issue concerning quality of life is not considered relevant by those with the religious view that one can never take any life, regardless of the circumstances. In contrast, humanists view the quality of one's life as a primary issue. There is thus no real basis for a dialogue. The sanctity of all life, whether of the infant or aged, is an integral part of Judeo-Christian theology, and the argument between the humanist and religious philosophies has been fought on many fronts over many issues. This is one more area where the social costs (referred to as social utilitarianism) and the "will of God" (as divined by theologians) are in direct and unresolvable conflict (Long, 1988). This same issue was debated thousands of years ago in Greece by the great philosophers (Viljoen, 1959), and it will likely be debated a thousand-years hence.

Throughout history the quality of an infant has been used as a basis for decisions concerning infanticide, abandonment and neglect, and, in fact, social and religious customs have promoted the killing or abandonment of deformed infants. For example, in ancient Greece the mother of a deformed child may have been ostracized or even killed, since the production of a deformed infant was taken as an omen that the mother was a witch. The mother would thus have been compelled to kill the infant to hide its deformity from the community (Moseley, 1986). In Medieval Europe during the thirteenth century, the production of a deformed infant was thought to reflect a mother's sins, which must have increased the likelihood of infanticide to avoid the social consequence of producing a deformed child (Bloch, 1988; Boswell, 1988, p. 338). Today, among the Aymara Indians in Kimamo in Southern Peru, very few children with congenital malformations are observed, suggesting that they are killed. This would not be surprising as it appears that killing of healthy infants also occurs as a means of controlling family size (de Meer, 1988).

In recent times the position of the Catholic Church on the use of extraordinary measures to save deformed children was addressed by Pope Pius XII in 1957 in an essay entitled "The Prolongation of Life" (cited in Lister, 1986). The Pope stated that only ordinary means should be used to prolong life, with the burden on others of continued life of deformed infants being considered when determining what course of action to take. Thus, a recent Pope has acknowledged the importance of quality of life in decisions concerning the life or death of an infant. In contrast, others have argued that whether or not the parents might suffer hardship cannot be the determining factor in decisions concerning letting defective infants die, since this represents infanticide and is thus morally wrong.



Currently, it is legal for severely deformed children to be allowed to die passively from starvation or dehydration, although any direct action which leads to death is illegal (Meade and Brissie, 1985; Lister, 1986). The public silence about the involvement of physicians in decisions to allow deformed infants to die was broken by Duff and Campbell (1973); they acknowledged participating in the decision to withdraw treatment in cases in which infants died. The issue of whether this should be allowed has generated considerable debate (Kuhse and Singer, 1987; Long, 1988), and opposition to this practice on ethical grounds again pits religious ideology vs. humanistic philosophy.

### **Gender-biased infanticide**

The rise of agricultural societies increased the value of sons; among other factors, males are bigger and stronger than women. In contrast, in savanna hunter-gatherer societies, women and men play a more equal role in acquiring food and providing for the tribal group. (For a review of sex-biased parental investment in mammals see Hrdy, 1987.) Christian (Patristic) writers of the third to fifth centuries A.D. had an extremely negative view of women, which has also influenced attitudes toward women in Western societies from Medieval times up to today; they proposed that women were the source of lust and were thus evil, an idea which was considered to be radical at the time it was proposed but was incorporated into Canon law during the twelfth century (Brundage, 1987, pp. 62, 173, 184). As discussed above, an extremely condescending attitude toward women has been evident in the writings of physicians (Cadogan, 1750; Hardyment, 1983, p. 181) and still persists today.

The lower value of women than men in agricultural societies, since men were more suited for agricultural work, is generally considered to have increased the likelihood that female infants would be abandoned or killed (Boswell, 1988, pp. 58-60). For example, throughout Greek and Roman antiquity abandonment and infanticide were more common for females than males (Viljoen, 1959; Golden, 1981; Harris, 1982); one's obligation to the state during the Roman empire was to produce male heirs. The markedly higher number of males than females during the early Middle Ages suggests that the practice of female infanticide continued to be prevalent due to the low value and low status of women as well as the custom of dowry. These factors also are implicated in the killing of female infants today in some social groups in India (Saxena, 1975; Miller, 1981; Jeffery, *et al.*, 1984). Similarly, in rural China there have been recent reports of widespread killing of female infants in response to the Chinese

government's policy of penalizing families that have more than one child (Bongaarts and Greenhaigh, 1985).

### **Abandonment**

Abandonment does not involve actively harming one's infant. Abandonment may involve leaving an infant in a place which makes it either likely or unlikely to be found. But in either case the welfare of the infant which is abandoned becomes uncertain, since the parents are no longer responsible for the abandoned child's welfare. Abandonment may also involve directly turning over control of an infant to individuals or organizations, such as the state or the church. What behaviors qualify as abandonment? For example, did sending your child to almost certain death in the children's crusade in 1212 represent abandonment? Also, was the practice of oblation (the offering of one's child to a monastery to be raised in the service of God) during Medieval times a form of abandonment by parents (Boswell, 1988)? The motivation in either case above could have ranged from a desire to abrogate responsibility for the child to stoically performing a religious duty.

It is difficult to know whether abandonment and the Greek "exposure" are synonymous, and for some time there has been considerable controversy concerning whether exposure with the intent and the consequence of children dying was common in ancient Greece and Rome. Exposure is a term which appears to be the best translation from ancient Greek to describe the practice of placing infants in places where they would die of exposure or be killed by animals. Alternatively, exposed infants might be picked up and raised as slaves, prostitutes, beggars, or adopted and reared with the care expected of adoptive parents today.

One problem encountered when attempting to quantify abandonment, abuse and infanticide in ancient times or throughout the Christian era in Europe is that there are very few recorded data available which provide the type of information needed to accurately determine the degree to which these activities occurred (Scrimshaw, 1984). Indeed, even today trying to assess the real incidence of these behaviors is very difficult (Daly and Wilson, 1984; 1988). It is thus not surprising that there has been controversy concerning the likelihood that abandonment or infanticide involving healthy infants was common in ancient Greece and Rome (Harris, 1982). For example, the possibility that exposure of infants was common in ancient Athens is not accepted by all historians, even though it appears that there were fewer children in Athenian families than one might expect based on other contemporary societies (Bolkenstein, 1922; Engels, 1980;

Golden, 1981). In contrast, others have proposed that exposure of infants (both healthy and deformed) was quite common in antiquity, particularly after the fourth century B.C. (Viljoen, 1959; Harris, 1982). Viljoen (1959) cited a passage by Polybius in which the shortage of soldiers throughout Greece in the second century B.C. was attributed to the refusal to rear more than one child born into a family. Aristotle argued for limiting family size through the use of exposure or abortion, but there did appear to be public opinion opposing these practices.

Boswell (1988, p. 139) identified three aspects relating to parent-child interaction in the Old Testament which may have had an influence on attitudes of early Christians toward children: 1. child sacrifice, 2. selling of children, and 3. abandonment. One certainly is struck by the degree to which children were victimized in the Old Testament, with passages even involving the sacrifice of children. It is not suggested that Hebrews engaged in or condoned child sacrifice, but just that there were stories in the Old Testament in which there was violence toward children (some of these stories may have served as examples of the requirement to obey God).

The selling of children, particularly females, was apparently common in pre-Christian Jewish culture; presumably this was mainly done by the poor who needed money and could not afford to raise their children. Viljoen (1959) discusses Solon's law forbidding parents in Athens from selling their children, which suggests that this practice was also not uncommon in ancient Greece. It is generally assumed that the majority of abandoned infants were used as slaves. Many laws enacted in Medieval Europe related to the status of infants of free parents who were abandoned or sold and raised as slaves (Boswell, 1988, p. 205). Even if abandoned infants were adopted and reared by foster parents, they may not have fared as well as children that were reared by their biological parents. There is evidence that in contemporary society (and in prior times) step children have a higher likelihood of abuse and death, and for a variety of reasons have a lower reproductive fitness, than genetically related offspring within families (Flinn, 1988; Daly and Wilson; Hrdy; Wilson and Daly, this volume).

While there is still controversy about this subject, there is considerable evidence that abandonment was common throughout Greek and Roman antiquity, the early Christian era, the Middle Ages, and particularly during the industrial revolution in Western societies (Boswell, 1988). A review of the evidence concerning the fate of abandoned infants who did survive in Western societies in prior centuries leads to the conclusion that life was probably so harsh for many abandoned infants that they might have been

better off had they died. It is likely that since most abandoned infants were used as slaves, they were often maltreated. For example, during Roman antiquity Seneca (the elder) described a man who mutilated exposed children, since this would enhance their value as beggars; supposedly this also occurred in China during the Ming dynasty (Boswell, 1988, pp. 60, 113). In addition to physical abuse, slaves were used as prostitutes or otherwise sexually exploited (Boswell, 1988, p. 113). Until very recently there was very little understanding of the magnitude of the problem of sexual victimization of children (Cohen, 1985; Browne and Finkelhor, 1986). However, this problem needs to be viewed within the context of the Greco-Roman and Judeo-Christian tradition of selling and abandoning children and public awareness that they were sexually abused and used as prostitutes.

### **Abandonment of illegitimate infants as an alternative to contraception and abortion**

The practice of abandoning or killing infants suspected of being illegitimate dates back at least to ancient Greece, where a husband had the legal right to abandon or kill a newborn if there was reason to suspect that the child was not his (Radin, 1925; Viljoen, 1959). Factors relating to paternity predict infanticide, abuse and neglect of infants today (Daly and Wilson, 1988; this volume). Viljoen (1959) stated that in ancient Greece unwed mothers typically exposed (abandoned) their newborn infants, and the interest was in concealing the disgrace of becoming pregnant out of wedlock as opposed to having to conceal the act of abandonment, *per se*; as discussed above, abandonment appears to have been common during Greek and Roman antiquity and throughout the Christian era in Europe. Beginning in the fourth century A.D., the laws which were enacted throughout the Roman Empire reflected Christian doctrine, and as in previous times, the major concern was again with the production of illegitimate children, not with their disposition after birth. The major proscription in Greek, Roman and Christian cultures was thus against premarital sex, there did not appear to be widespread concern with child welfare. Women who became pregnant out of wedlock were harshly treated in Medieval Europe, and this may have resulted in the hiding of pregnancy and then abandonment or killing of the newborn infants to avoid prosecution for committing the sin of fornication; this would have been particularly true for nuns who became pregnant (Brundage, 1987, p. 151; Boswell, 1988, p. 210).

While today there continues to be a stigma associated with becoming pregnant out of wedlock, there is no stigma associated with abandonment (giving one's infant to a state or church agency) of an infant by a single

mother (or even married parents). Abandonment of the child by a parent who is unable or unwilling to provide care for an infant is, and has traditionally been, acceptable. Actual killing of an infant by a parent or abandonment with the intent of the infant dying has not been viewed as acceptable in Christian societies, but even today the killing of a newborn is considered to be quite different from the murder of an older child or an adult.

Leaders of many of the major Christian religions today (most notably the Catholic Church) continue to oppose both the use of contraceptives to avoid pregnancy and elective abortion after detection of an unwanted pregnancy. This represents a continuation of the policy of actively promoting carrying an unwanted fetus to term and then relinquishing control of the infant (i.e., abandonment) while strongly opposing any attempts at controlling reproduction. The obsession by the Catholic clergy with abstinence as opposed to controlling fertility is based on the equating of sex with sin, although this idea was not incorporated into Catholic theology until centuries after the death of Jesus (Brundage, 1987).

The Catholic Church has provided support to institutions (foundling homes) for abandoned infants since early Medieval times (Bloch, 1988; Boswell, 1988, p. 219). A fundamental assumption made by opponents of allowing women to choose whether or not to become pregnant (by using contraceptives) or continue an unwanted pregnancy (by elective abortion) is that any child produced will be cared for by foster parents, the Church or the State. However, the promotion by the Catholic Church of abandonment in prior times and today must be viewed within the context of the evidence reviewed above concerning the likelihood that, throughout recorded history, abandoned infants who survived have had a high risk of being neglected and abused. Pressuring a woman to keep an unwanted child is not always the optimum alternative strategy, since unwanted children who are not abandoned may face an increased likelihood of abuse by their parents (Roberts, 1988).

A major issue in the welfare of infants is whether the infant is a valued commodity. Because abortion is now legal in the United States, infants are a valued commodity (in the United States there are currently 2 million couples trying to adopt babies). Were abortion to become illegal, there would once again be a substantial surplus of infants relative to potential adoptive parents (which is why prior to legal abortions there were foundling homes for abandoned infants). A critical issue today is the fate of the children of women who are drug addicts (these children are often addicted to the drugs that their mothers used while pregnant). Should pregnant women who are addicted to drugs be encouraged to carry an unwanted

fetus to term? Who will provide and care for these children? During the eighteenth and nineteenth centuries children ceased to be a valued commodity, and foundling homes and wet nurses became agents of infanticide (Hrdy, this volume).

One tragic example of a situation today where the consequences of the opposition to the control of pregnancy by the Catholic Church has reached tragic proportions is in Brazil; there are tens of thousands of abandoned, homeless children living like wild animals on the streets of cities. While this was certainly not the consequence envisioned by the Church fathers of the policy opposing birth control and elective abortion, it is the reality which must be faced as we move into the twenty-first century while undergoing a staggering rate of population growth in undeveloped countries.

### CONCLUSION

A review of the treatment of infants in Greek and Roman antiquity and throughout the Christian era in Western societies suggests that abandonment and selling of infants was not uncommon. Most infants who were sold or abandoned and survived had a very harsh existence. Social and religious customs increased the likelihood of abandonment of infants. During Greek and Roman antiquity, but particularly during the Christian era, there was a much greater concern with regulating the sexual activity of women than with the welfare of infants, particularly those which were illegitimate. Christian leaders opposed to controlling reproduction (by using contraceptives or elective abortion) today continue to ignore the consequences for infants who are produced and then abandoned.

Corporate and government policies have also impacted the health and welfare of infants. Government officials have allowed corporations to aggressively market infant formulas in undeveloped countries. The giving away of free samples of infant formulas to mothers in undeveloped countries, where adequate preparation of the formulas with uncontaminated water is not possible, continues today despite decades of evidence that this greatly increases the likelihood of infant disease and death. The corporate and government officials who have continued to promote the use of infant formulas in undeveloped countries rather than decrease profits are responsible for the death of many infants.

In Western societies one finds infants being subjected to a variety of maladaptive medical practices. Some medical practices have directly led to an increase in infant distress. For example, mothers in Western societies

have been faced with physicians telling them to engage in feeding of infants at intervals of 3 to 5 hours, which may result in crying by an infant due to the lack of food in its stomach; infants allowed constant access to the breast feed at much shorter intervals. Mothers were also told of the advantages of using infant formulas either as the sole source of food or as a supplement to breastmilk; supplements may be needed due to inadequate milk production as a result of long intervals between nursing. Particularly in early infancy, the use of formulas or other foods increases the likelihood of introducing disease-causing bacteria into the digestive system at a time when infants rely on breastmilk to provide maternal antibodies with which to combat bacteria in the gut. The result is that the likelihood of having a crying infant has been greatly increased by these practices. Physicians and psychologists then insisted that infants should be left alone in a crib or playpen without being touched while crying in distress. This advice was based on the misguided and now discredited idea that attending to a crying infant would condition the infant to cry even more, thus leading to a spoiled child. The parents who acquiesced to these misguided infant-rearing practices have found themselves in a double bind. A crying infant is highly aversive, and it is very stressful for parents or other bystanders to listen to a crying infant. The natural response of most parents is to alleviate the infant's distress (thereby also alleviating the parent's distress). However, this requires attending to the infant, which parents have been told will lead to a spoiled child. While there are many factors involved in child abuse, there is no doubt that these infant-rearing practices have contributed to the abuse and death of infants by parents or other adults who responded to prolonged crying by an infant with violence.

For centuries parents have been bombarded with child-rearing advice by well-meaning "experts". Parents should not be afraid to reject advice and change strategies when it becomes obvious that either they or their infant are not responding well to the parenting strategy being used. No optimum parenting strategy could possibly exist given the tremendous individual differences among both parents and infants and the wide variety of environments inhabited by people.

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