sponses as varied as caregiving and, in rare cases, infanticide. Laughter is an equally potent stimulus, although its power is often underestimated in our feel-good, be-happy culture, with its false assumption that laughter is a response to humor. (Only 10–15% of adult, pre-laugh conversation is remotely joke-like.) The ancients lived in a less politically correct time and witnessed first-hand that laughter is, at best, a two-edged sword. Plato, for example, thought that laughter could undermine authority and threaten the state. While laughing *with* others can be a joyous communal experience, contemporary news reports remind us that laughing *at* others (jeering or ridicule) can lead to violence ranging from ethnic cleansing to homicide.

The contrasts between crying and laughing are so plentiful and informative on so many levels that students of one of these signals can benefit from considering the other. This comparative analysis prevents researchers from settling into the sometimes artificial conventions that occur when these vocalizations are studied by themselves.

Crying and tears mimic the neonate

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Abstract: This commentator has no argument with the explanations given by Soltis. Yet a different approach to the phenomenon of crying might be fruitful. Neonates elicit care. It is hypothesized that non-neonates evolved to mimic, when in need, the appearance of the neonate by crying and by shedding tears, thus inducing helping behavior by the spectator.

I presume that answers quite similar to the ones Soltis gives for the crying behavior of human infants would satisfactorily explain aspects of the behavior of infants belonging to other species; for example, sparrows, whose young noisily and conspicuously "beg" for food.

There are, however, several differences between the "begging" behavior of sparrows and humans crying. A sparrow will not show the "begging" behavior again once adult, but humans, by contrast, retain the capacity to cry throughout their lives. And several weeks or months after birth humans add a spectacular feature to their crying repertoire: *tears,* a word remarkably absent in Soltis' article. But Soltis does write (sect. 6.1, para. 2): "During the first three months of life, disagreements over the flow of resources should be lowest. As the period of investment proceeds, however, and the production of a new child becomes increasingly advantageous for the mother, then parent-offspring conflict should increase." If parent-offspring conflict indeed increases about three months after birth, and if the shedding of tears indeed emerges at around the same time, one cannot help but speculate about a causal relation.

At this point I cannot resist the temptation to inform the readers about a general explanation of crying and tears that I conceived of some twenty years ago. Here are two citations out of the *Human Ethology Newsletter* (now renamed the *Human Ethology Bulletin*).

> In many species of animals, the stimuli emitted by newborns bring about parental care. In fact, the newborns of many species require parental care. Because a newborn has little else to offer than its own appearance and behaviour, it is logical that it is exactly these factors that elicit the parental care.
>
> The crying behaviour of humans is favoured by natural selection because the behaviour resembles or causes resemblance to some of the stimuli emitted by newborns and, therefore, induces helping behaviour.

Some aspects of this resemblance are as follows:

1. The wetting of the face with tears – compared to the face of the newborn, which is wet with amniotic fluid.
2. The jerking, almost spasmodic respiration of a crying person – compared to the first respiratory efforts of a newborn.
3. The screaming of a crying person – compared to the first screams of a newborn.
4. The closed eyes, the wrinkled skin around the eyes, the spotted coloration of the facial skin, and the open mouth – all are very much alike in a newborn and in a nonneonate who cries. (Roes 1989)

What I argued is that humans who cry mimic the appearance of neonates. A neonate by definition sends out honest signals of being in need. I speculate that natural selection favoured individuals in need who mimicked the neonate, because individuals able to mimic these signals would get more help.

Presumably, the ability to cry spread through the species, as well as the ability to recognise this signal. The sight of a crying individual is instantly and universally recognised by the human spectator.

The fact that babies don't shed tears until several weeks or months after birth can now also be explained: The mimicry is perfected with tears only when this perfection is needed, that is, when parent-offspring conflict increases.

I still like this general idea of crying and tears as a mimic of neonates. Can it be disproved?

The development of parent-infant attachment through dynamic and interactive signaling loops of care and cry

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Abstract: In addition to the infant cry being a signal for attention, it may also be a critical component of the early formation of attachments with caregivers. We consider the complex development of that attachment, which involves reciprocal interactive signaling and a host of evolutionarily conserved caregiver factors.

From an infant's point of view, a cry may be considered a signal of vigor and need for attention, food, and protection – each critical to the infant's survival. But the cry may also have a critical role in the formation of attachments with caregivers. Infant-caregiver attachment requires a system of reciprocal communication, with feedback from caregivers being critical to the interpretation of the infant's cry. Caregiver-infant attachment is a complex process requiring both the signaling of the infant through cry and other behaviors, as well as "feedback" from caregiver behaviors. Both participants in this dyad may be seen as "receiving" and "transmitting" over certain ranges under the influence of a range of factors. Many features of the infant side of caregiver-infant signaling are emphasized in the review by Soltis, but further consideration of the parental side is warranted. Caregiver "input-output" cry-response behaviors may range from neglect and abuse, to appropriate care, to the potential for over-care according to various interacting factors, including the caregivers' perceptual hardware, psychology, and preparation for caregiving, and immediate social environment.

A considerable literature has recently emerged regarding the neurobiological and genetic substrate that apparently regulates the initiation of parenting across mammalian species. In humans, the initiation of parental caregiving includes a set of highly conserved set of behaviors and mental states that are crucial for reproductive success and may reflect both an individual's genetic endowment and the early experience of being cared for as a child. In humans, the initiation of maternal behavior is associated with intense parental preoccupations (Leckman & Mayes 1999; Leckman et al 1999; Leckman et al. 2004). The content of these pre-

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