

The Evolutionary Anthropology of the Family

Professor Ruth Mace FBA argues that evolutionary influences on human family patterns cannot be ignored.

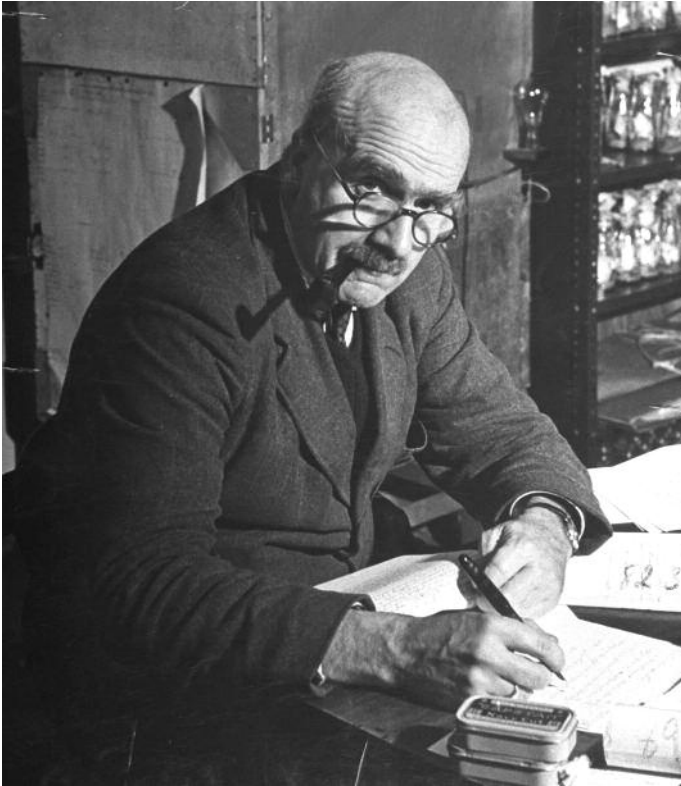


Figure 1. Professor J.B.S. Haldane.
Photo: Hans Wild/Time Life Pictures/Getty Images.

exacted by children are more than can easily be met by one parent, or even two. There is an increasing realisation that the extended family has been an important part of human child-rearing throughout our evolutionary history. Several studies have now shown that grandmothers improve the survival chances of children in high-mortality environments, as is evident from studies examining historical European demographic records or more contemporary data from high-mortality populations in Africa. This effect may have been so important in our evolutionary history that it explains the evolution of menopause – we give up reproducing our own offspring to help our adult daughters reproduce. Our life history differs markedly from that of other primates, due to a long childhood, and a long post-reproductive life, with a period of rapid reproduction in between. The explanation may be that three generations have co-operated as the unit of human reproduction throughout human evolution. Our long childhood ends at about the time our mother reaches menopause, and as we reach menopause, our mother dies. The three generations do not reproduce at the same time, thus avoiding competing with each other over resources for offspring; in fact they appear to help each other like communal breeders. This kind of life history could only evolve in a species with long life expectancy, and a complicated subsistence system that requires skills that children take time to learn. Our life history and our social structures have all been shaped by the need to recruit help from kin in the successful raising of these expensive offspring.

Stepchildren

A Darwinian perspective on families not only gives us insights into love, care and co-operation, but also into conflict and violence. When two Canadian biologists (Martin Daly and the recently deceased Margo Wilson) examined homicide prosecution records, they found that young children were 40 times more likely to be murdered by their mother's partner if he was unrelated to the child versus if he was the child's father. The study was met with nothing short of hostility. Twenty years since it was published, this study is still being dismissed by many as relating to the extreme behaviour of psychopathic individuals, which does not tell us much about normal people.¹ But this ignores the fact that this finding has now been replicated in many countries. Only in Sweden, with a long history of abortion on demand and very active social services, is child murder so rare that the effect is no longer observed.

Most police forces in the UK are well aware of the 'step parent risk' effect, and in criminal cases of children coming to harm, if an unrelated parent figure is present, they are likely to be the first suspect in the investigation. In cases where fathers live with genetic and non-genetic offspring, an increased likelihood of discrimination and

J.B.S. HALDANE WAS FAMOUS not only for his academic contributions to evolutionary biology and other fields, but for his witty quotations. Once, when asked if he would lay down his life for his brother, he responded, 'No, but I would for two brothers or eight cousins.' Here he was pre-empting his fellow evolutionary biologist William Hamilton's 'rule' for kin selection. This is a rule that essentially predicts that evolution has designed us to help others as a function of our relatedness to that person, multiplied by the relative benefit of the help we give them to the cost to ourselves. The currency of this unsentimental calculation is our ability to produce offspring that carry the same genes that we do. This selfish gene's eye view of human relationships may seem reductionist, but ignoring it would mean we miss one of the most powerful predictive forces about human social behaviour in general, and family life in particular.

Child-rearing

Children are very costly, in terms of the time and resources they demand, but natural selection has ensured we are willing to pay that price; indeed it is the central purpose of life to do just that. We are not surprised that parents will sometimes do almost anything for their children. We forgive our children their transgressions, and generally continue to support even the most unrewarding and unhelpful teenager into young adulthood if they are our offspring. But the costs

violence against the unrelated child can again be clearly detected in various data sources; mothers sometimes collude by choosing to ignore what new partners are doing to their child, 'disinvesting' in the offspring of a previous relationship in favour of the new partnership. Given the dismal roll call of child victims harmed by the hands of people they live with, which hit our news media so regularly, one wonders to what extent social services are aware of these findings.

Whilst child abuse might be considered unnatural and extreme, studies of non-physical conflict (such as arguments) do show the same pattern, with conflict reduced between genetic versus non-genetic father-figures. It is unusual in modern society that children live with stepmothers, but folklore tells us that the 'Cinderella effect' probably applies to women as much as men. Even in a study of accidental deaths in Australia (ranging from traffic accidents to falling into swimming pools, when no foul play is suspected), genetic parents, be they one single parent or two married parents, were less likely to lose their child to such an accident than if young children were living with one genetic parent and one non-genetic parent. Even height of children tells a similar tale. In our own study, using child height from over 14,000 children in the UK, we find children living with a single parent are slightly shorter than children living with two genetic parents; but children living with their mother plus an unrelated father figure were several millimetres shorter by the age of 10.² Height is an indicator of child health and stress during development. As with all the studies

listed above, these findings are statistical analyses rather than descriptions applicable in every case, but this result is most easily explained by an increased chance of elevated stress in a stepchild's life over years. The effect is more pronounced for sons than daughters. Perhaps parents know that boys are particularly badly affected by their father leaving, explaining a small but statistically significant effect of parents of sons being less likely to divorce than parents of daughters.

Life history theory tells us that reproductive life is about trade-offs, and a central trade-off throughout adulthood is how much time and energy to devote to mating effort (finding and keeping a mate or mates) and parenting effort (raising children). Parenting effort is hard work and not normally done for unrelated children unless for some explicit reward (one exception being in the case of formal adoption of young children in which a psychological state of parenthood can usually be achieved and these trends are then not observed). When parents form new relationships, they may be investing more time in their new partner than caring for their existing children (hence the heightened accident risk). On the positive side, clearly you are not likely to endear yourself to your new partner if you are hostile to his or her children, so kindness to and acceptance of new family members unrelated to you

Figure 2. *The birth of a new child, as depicted by Cecile Walton (1891-1956). 'Romance': self portrait with the artist's two sons, Edward and Gavril, 1920 (oil on canvas). Image: Scottish National Portrait Gallery, Edinburgh/ The Bridgeman Art Library.*



but related to your new partner can be attributed to mating effort, causing many step families to settle down into stable loving households.

Lack of parental investment

This level of explanation does not assume decisions are necessarily conscious, nor does it address the proximate developmental, hormonal and emotional mechanisms that drive such behaviours; this approach simply addresses the kinds of patterns we would predict and do indeed find. If one accepts this admittedly rather unromantic account of the explanation of our child-rearing behaviour, then further puzzles present themselves. Why do parents sometimes not invest in their own offspring? The difficulties experienced by the Child Support Agency in extracting child support from absent fathers are testament to the ability of genetic parents to stop investing in offspring from failed relationships. This is understood through the mating/parenting trade-off I have already discussed. But why do parents commit infanticide, or give children away for adoption, or simply have so few children if they are what we are evolved to produce?

The trade-off invoked by life history theorists to explain these patterns are often referred to as the quantity/quality trade-off. Children do not contribute to parental reproductive success if they cannot survive, and cannot compete for resources to gain mates and raise their own children. Therefore it is not adaptive to have so many children that the children are compromised in their life chances by being short of resources. Sometimes children may be short-changed to enhance the success of their siblings. Historical accounts of Victorian children sent to work down the mines in darkness and penury while one child in the family is sent to school may be an extreme case. Primogeniture in inheritance of land and farms is another case in point. Ensuring that a few children have good prospects of success in the future could be a better parental strategy than having many children suffering from hunger or inability to find means of subsistence or marriage, unable to raise successful families of their own. A child born in extremely unfavourable circumstances may be abandoned by desperate parents if they feel the chances for future or previous births may be compromised by them. Historical demographic records from 17th-century Germany show us that young widows with children were far less likely to remarry and create new families than young widows who were childless – and that the babies of such young widows were subject to unusually high mortality rates. Parental care is not necessarily given unconditionally.

The cues we use to decide what is or isn't an adequate level of investment in a child are not fully understood, but parental investment is a scarce resource for which siblings compete. The suspicion with which a child views a new arrival in the family may reflect the different costs and benefits associated with siblings compared to offspring. What is clear is that siblings are both allies and competitors, with accounts of love and rivalry appearing in equal measure in literature, drama and real life. Big families are associated

with higher child mortality in the developing world, but even in wealthy societies there is evidence of competition between siblings for parental resources, not least the time we spend with each child. We strive to give children the best opportunities in life, and some will argue this process is running out of control. Perhaps irrationally we try to enable our children to achieve high exam results, to give them the best chance, and several studies have shown that with each additional child in the family, the average IQ or exam grades are slightly reduced. Are we responding to these cues when we limit our modern families to such a small size?

Cultural norms

Kin selection not only predicts patterns of individual behaviour but also our legal practices and cultural norms. We are so aware of nepotism that we are vigilant for its biasing effects in the hiring practices of firms and public bodies. If you wish to donate a kidney to someone who is not related to you, it will be viewed with suspicion by the health service as potentially a financially motivated transaction unless you can make a strong case to the contrary. If you die intestate, the law determines that an estranged relative, who may never have done anything for you, perhaps never even met you, may inherit all your wealth if they are your closest surviving genetic relative. If you father a child, in the UK at least, you are liable to contribute financially to the upbringing of that child even if you do not live with that child or indeed have never had any contact with them. We may be unaware of the evolutionary basis of these norms, but the fingerprints of kin selection are all over our social lives and social institutions. It is perhaps unconscious familiarity that has bred contempt and obscured the importance of an evolutionary perspective to so many social scientists.

Notes

- 1 For example, hear BBC Radio 4, 'Aping Evolution', November 2009 (www.bbc.co.uk/programmes/b00nk0wz).
- 2 D.W. Lawson & R. Mace, 'Sibling configuration and childhood growth in contemporary British families', *International Journal of Epidemiology*, 37 (2008), 1408–1421. D.W. Lawson & R. Mace, 'Trade-offs in modern parenting: a longitudinal study of sibling competition for parental care', *Evolution and Human Behavior*, 30 (2009), 170–183.

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She was elected a Fellow of the British Academy in 2008.

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