

HAWKES, KRISTEN & RICHARD R. PAINE (eds).  
*The evolution of human life history*. xiii, 505  
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This is an important and authoritative book, pioneering a new disciplinary field and in the process overturning much conventional wisdom. Some will view its conclusions as highly controversial, but the contributors are major and respected figures in their fields. *The evolution of human life history* is the published outcome of a seminar sponsored by the School of American Research in 2002. Unlike other multi-authored volumes of this kind, it is impressively coherent and tightly edited.

The volume consists of eleven chapters, including an introduction and three somewhat technical appendices. One of the two editors – Kristen Hawkes – co-authored chapters 1 and 2 and singly authored 3 and 4; clearly, she is the dominant influence throughout. This reviewer found her chapter 4 ('Slow life histories and human evolution') a *tour de force*. Subsequent titles include 'Primate life histories and the role of brains' (Carel van Schaik and colleagues), 'Lactation, complementary feeding and human life history' (Daniel Sellen), 'Modern human life history' (Barry Bogin), 'Contemporary hunter-gatherers and human life history evolution' (Nicholas Blurton Jones), and 'The osteological evidence for human longevity in the recent past' (Lyle Konigsberg and Nicholas Herrmann). Of more than specialist interest, the volume is the latest instalment in a bold project to restructure the science of human evolution as a whole.

Humans develop more slowly than the other great apes; we are the only living higher primate to have childhood and adolescent growth phases. Children depend on parents or other carers for subsistence longer than do the offspring of any other mammal, yet we wean our babies earlier than do most other apes. We have a higher survival rate, begin our reproductive effort later, and have shorter inter-birth intervals. We have the longest lifespan of any terrestrial mammal, yet women stop bearing children in the middle of it.

This uniquely human combination of life history features has only recently been properly

recognized and described. Instead of seeking adaptive explanations for the components taken individually, conventional wisdom tended to attribute the overall pattern to a single factor (e.g. 'neoteny'), this in turn being attributed – at least in the original 'Man the hunter' narratives – to paternity certainty and the nuclear family as supposedly characteristic of hominins since the emergence of bipedalism.

This book offers quite different explanations. It carefully examines the 'Hunting hypothesis' in both traditional and updated versions, comparing it with what has come to be known as the 'Grandmother hypothesis'. 'Man the hunter' centred on male behaviour and especially on male paternal care as the central factor enabling lengthened juvenile development, an underlying assumption being that both sexes share the same productive and reproductive interests. The Grandmothering hypothesis makes no such assumptions. It attends explicitly to female life history trade-offs, proposing that slowed ageing is favoured by the contribution that older females can make to the survival and fertility of their junior kin. These fitness effects from grandmothering result in competitive advantages for lineages in which ageing is slower than in ancestral populations. This results in lower adult mortality. Longer life expectancy in turn tips the balance of costs and benefits in favour of a suite of further changes, including delayed first reproduction.

This book avoids the circularity of invoking 'special' principles to explain why humans are apparently 'special'. The authors concede that human evolution presents us with numerous theoretical problems. But we are unlikely to solve these if we make up the rules as we go along. Monogamy is difficult to enforce; any model that sets out from paternity certainty as its point of departure has some explaining to do. The Grandmother hypothesis avoids problems of this kind. Its basic methodological premise is that distinctively human life history details must be explained in terms of general life history theory – that is, explained by relying on models applicable to mammals including primates in general.

This means focusing on females. It is not that males do not count. Unlike males in most primate species, men expend substantial effort producing food destined to be consumed by females and juveniles. But the best way to explain this is to avoid special pleading, relying instead on models that have proved productive in explaining male-female arrangements among mammals more generally.

Life history questions such as when to stop growing and have the first baby, whether to have singletons, twins, or more offspring per pregnancy, and when to wean and move on to the next baby are questions about female life histories. As females make their choices in these respects, males are presented with correspondingly changed trade-offs. If hunter-gatherer men are generous, energetic hunters – which in general they are – it is because hunter-gatherer women ensure that they are kept on their toes. For mammals in general, female strategies act as ultimate determinants. Humans may be 'special' in significant respects, but human evolution is unlikely to have run contrary to Darwinian law.

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