

Preface

In Valkenburg, in the hilly southern part of the Netherlands, above limestone caves in which fossils like the Mosasaurus bear witness to a former marine environment, a conference, organised by the European Sociobiological Society and the Dutch Association of Physical Anthropology, was held in August 1987. Its aim was to evaluate the pros and cons of Sir Alister Hardy's daring idea about the Aquatic Ape, a presumed early ancestor of humans.

The number of fossil data relating to our evolutionary origins is increasing all the time; molecular studies further extend our understanding of hominid phylogeny. Hence the uncertainties and controversies surrounding reconstructed pictures of our early progenitors are decreasing. Though various interpretations of the fossil data exist, there is a growing consensus that about 5 million years ago there was a split of the lineages that finally led, on the one hand, to man, and on the other, to the chimpanzee. Humans are in various aspects so different from other mammals – including other primates – that, according to Darwinian theory, we could only have evolved when our earliest hominid ancestors occupied a specific niche, quite different from that of the other contemporary primates. Accordingly, there has been much discussion about our Miocene ancestors. Unfortunately, very few fossil data are available for that period, and so the dawn of mankind remains wrapped in mist.

Yet it is generally accepted that during that period the proto-hominids abandoned living in the trees and started to move, with the first steps of a primitive bipedalism, into a new environment. At the Valkenburg meeting the question of whether this was the savannah or, rather, an aquatic environment was raised.

Raymond Dart was among the first to suggest a transition from an arboreal into a savannah niche. The latter was the environment where later, about 3.5 million years ago, 'Lucy' (*Australopithecus afarensis*) and her australopithecine mates kindly left sufficient fossilised traces to enable us today to make statements about their morphological and physiological features, as well as about their behaviour. Dart's idea has been taken for granted ever since, and its acceptability has hardly ever been tested in the light of our knowledge of our physiological and motor development capabilities. Hitherto, possible scenarios for evolutionary paths have been

proposed almost exclusively by experts on bones, few of whom are acquainted, for instance, with the specific demands on the bone-muscle apparatus involved in the specific skills and behaviours of a decreasingly quadrupedal creature, or with the special physiological demands posed by living in hot, open plains.

In accordance with the rule that the human mind is inclined to select from among new facts only those which fit into the pattern of concepts already shaped, and with our resistance to new, strongly deviating facts, the idea that hominid speciation was initiated during a (semi-)aquatic period has been ignored or played down. This occurred despite the fact that this new idea gave rise to various quite reasonable explanations, some more acceptable than those that have arisen from the Savannah Theory.

The aim of the present volume is to compare the traditional savannah scenario with the alternative aquatic one, and by so doing to attempt to reconstruct our very first hominid ancestors. Arguments both in favour of and against the savannah and the aquatic theories will be presented. One of the values of the present approach lies in the fact that in comparing the pros and cons, soft tissue such as fat and hair, and also tears, as well as skeletal structure, have been taken into account. Moreover, hypotheses have been tested in the light of current understanding of respiratory and other physiological processes, and particularly of behaviour. There is also a chapter on the underlying mechanism whereby an alternative idea such as the Aquatic Ape Theory tends to be rebuffed and rebuked.

This volume mainly offers the contributions presented at the Valkenburg meeting; but it is more than simply a collection of proceedings. The speakers were asked to write out their contributions, incorporating the discussions held during the conference. Other scientists were also asked to contribute, and it was decided to include presentations by young scientists as well as some by more senior scholars, all of quite diverse backgrounds.

The contents of the book are organised into three main parts. Part I starts with a survey of the history of Sir Alister Hardy's idea and an elaboration of the concept by Elaine Morgan. This is followed by a suggestion for the most likely place of origin of our presumed aquatic progenitors – the Danakil Alps – by Leon P. LaLumiere, an evaluation of the ecological wetlands conditions by Derek Ellis, and a survey of fossil material by Marc Verhaegen. Part II starts with a discussion by Graham Richards of why the Aquatic Ape Theory has encountered so much resistance. Then follow essays written from different angles, both protagonist and antagonist. Martin Pickford comments on the lack of geological and palaeontological evidence, and Alan Turner refers to the current debate in evolutionary biology about the significance of apparent

adaptations. At particular points the debate concentrates on physiological characteristics such as thermoregulation in relation to water balance (Verhaegen), fat distribution (Caroline Pond), and hair pattern and hairlessness (Peter Wheeler, Paul Leyhausen). John Patrick and Erika Schagatay discuss respiratory adaptations for swimming and diving; Holger and Signe Preuschoft, and Joseph Ghesquiere and Helene Bunkens concentrate on buoyancy and locomotion. Jan Wind also discusses swimming, and provides evolutionary explanations of the human proneness to drowning. Shorter contributions cover comparisons of humans and apes (Karl-Erich Fichtelius) and of humans and sea mammals (Cornelis van Nie and Roede), and a proposal by Sarah B. M. Kraak that the Aquatic and Savannah Theories should be combined, while Schagatay offers some original speculations on breastfeeding, and suggests why the presumed aquatic niche was abandoned. Machteld Roede surveys the relations between man and the sea today. Part III comprises a concluding essay by Vernon Reynolds and an epilogue by the editors.

We wish our readers as much enjoyment and interest as we ourselves felt during the very stimulating meeting at Valkenburg, and while preparing this book.

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