BEHAVIORAL ECOLOGY and the TRANSITION to AGRICULTURE
ORIGINS OF HUMAN BEHAVIOR AND CULTURE

Edited by Monique Borgerhoff Mulder and Joe Henrich

1. Behavioral Ecology and the Transition to Agriculture, Douglas J. Kennett and Bruce Winterhalder, editors
BEHAVIORAL ECOLOGY and the TRANSITION to AGRICULTURE

Edited by Douglas J. Kennett and Bruce Winterhalder

UNIVERSITY OF CALIFORNIA PRESS
Berkeley  Los Angeles  London
FOR OUR ACADEMIC AND SOCIAL FAMILIES
CONTENTS

List of Contributors / ix
Foreword / xi
William F. Keegan
Preface / xiii

1 • BEHAVIORAL ECOLOGY AND THE TRANSITION FROM HUNTING AND GATHERING TO AGRICULTURE / 1
Bruce Winterhalder and Douglas J. Kennett

2 • A FUTURE DISCOUNTING EXPLANATION FOR THE PERSISTENCE OF A MIXED FORAGING-HORTICULTURE STRATEGY AMONG THE MIKEA OF MADAGASCAR / 22
Bram Tucker

3 • CENTRAL PLACE FORAGING AND FOOD PRODUCTION ON THE CUMBERLAND PLATEAU, EASTERN KENTUCKY / 41
Kristen J. Gremillion

4 • ASPECTS OF OPTIMIZATION AND RISK DURING THE EARLY AGRICULTURAL PERIOD IN SOUTHEASTERN ARIZONA / 63
Michael W. Diehl and Jennifer A. Waters

5 • A FORMAL MODEL FOR PREDICTING AGRICULTURE AMONG THE FREMONT / 87
K. Renee Barlow

6 • AN ECOLOGICAL MODEL FOR THE ORIGINS OF MAIZE-BASED FOOD PRODUCTION ON THE PACIFIC COAST OF SOUTHERN MEXICO / 103
Douglas J. Kennett, Barbara Voorhies, and Dean Martorana

7 • THE ORIGINS OF PLANT CULTIVATION AND DOMESTICATION IN THE NEOTROPICS: A BEHAVIORAL ECOLOGICAL PERSPECTIVE / 137
Dolores R. Piperno

8 • COSTLY SIGNALING, THE SEXUAL DIVISION OF LABOR, AND ANIMAL DOMESTICATION IN THE ANDEAN HIGHLANDS / 167
Mark Aldenderfer

9 • HUMAN BEHAVIORAL ECOLOGY, DOMESTIC ANIMALS, AND LAND USE DURING THE TRANSITION TO AGRICULTURE IN VALENCIA, EASTERN SPAIN / 197
Sarah B. McClure, Michael A. Jochim, and C. Michael Barton

10 • BREAKING THE RAIN BARRIER AND THE TROPICAL SPREAD OF NEAR EASTERN AGRICULTURE INTO SOUTHERN ARABIA / 217
Joy McCorriston

11 • THE EMERGENCE OF AGRICULTURE IN NEW GUINEA: A MODEL OF CONTINUITY FROM PRE-EXISTING FORAGING PRACTICES / 237
Tim Denham and Huw Barton

12 • THE IDEAL FREE DISTRIBUTION, FOOD PRODUCTION AND THE COLONIZATION OF OCEANIA / 265
Douglas Kennett, Atholl Anderson, and Bruce Winterhalder

13 • HUMAN BEHAVIORAL ECOLOGY AND THE TRANSITION TO FOOD PRODUCTION / 289
Bruce D. Smith

14 • AGRICULTURE, ARCHAEOLOGY, AND HUMAN BEHAVIORAL ECOLOGY / 304
Robert Bettinger

References / 323
Index / 381
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The evolution of human subsistence economies has always been a major topic of anthropological interest. Within this domain the transition from foraging to farming and the emergence of horticultural/agricultural economies has occupied a central place. One of the most intriguing issues concerns the relative simultaneity with which different crops were first cultivated around the world; a situation that produced the view that the adoption of agriculture was a revolution. So significant was this “Neolithic Revolution” that it came to embody the foundations of civilization.

On closer examination, it has become clear that this revolution did not happen quickly, and that centuries passed before the transition from foraging to farming was complete. Research in the Midwestern United States illustrates this point. In many parts of the world the original domesticates eventually became staples (e.g., wheat, rice, maize, potatoes), but in the American heartland the first plants cultivated were so inauspicious that scholars had a hard time believing that they really were cultigens. Moreover, after other crop plants were imported from outside the region (e.g., maize), the initial set was relegated to secondary status and never became true staples.

The lesson from the Midwestern United States is important, and I share Tom Riley’s sentiments regarding the adoption of cultigens. Riley understood that cultigens were added gradually to the diet and that the initial system of cultivation is better termed horticulture and not agriculture: “the connotation of horticulture is one that puts emphasis on the plant (Latin hortus), while that of agriculture is on the land (Latin ager)” (Riley 1987, 297). This may appear to be simply a semantic difference. However, in the same way that foraging theory tends to focus on the capture of individual food items, the initial view of farming will do well to focus on the capture of individual plants. From this perspective farming is gathering in a human-managed context.

Years ago I was inspired by Winterhalder and Smith (1981), and recognized that human behavioral ecology (HBE) provided an elegant set of formal models that could be used to examine subsistence behavior in horticultural societies (Keegan 1986). The models provided new and useful perspectives. Moreover, because the models can be used to study foragers and horticulturalists, they provide an important framework for evaluating the transition between them.

HBE focuses on decision making. It attempts to define the coordinates between humans and their subsistence resources as these...
coevolved through time. The main issue is not what people ate, but how and why they chose to exploit particular resources. In this regard the goal of HBE is to demonstrate how subsistence needs (practical reason) were expressed in social and cultural contexts. The papers in the book use this perspective to break important new ground that promises to redirect our efforts and explanatory potential in addressing the transition from foraging to farming.
For twenty-five years human behavioral ecology (HBE) has provided a general conceptual framework for the analysis and interpretation of hunter-gatherer subsistence behavior in living and prehistoric societies. Similar micro-economic models have received preliminary application in the study of pastoral and agroecological adaptations. This volume is the first collection to consistently apply this framework to one of the most fundamental economic shifts in human history—the evolutionary transition from foraging to farming through processes of plant and animal domestication and the emergence of agriculture. The chapter authors use a variety of geographically dispersed case studies and analytical approaches, including subsistence choice optimization, central place foraging, discounting, risk minimization, and costly signaling theory. Their contributions are novel in presenting regionally comprehensive case studies that address the transition to agriculture from a consistent conceptual framework informed by neo-Darwinian theory.

The volume is presented as fourteen chapters, organized by their setting in the New and Old Worlds, respectively. Following an introductory chapter by Winterhalder and Kennett, Tucker presents an ethnographic analysis of Mikea foraging and farming. The rest of the papers are archaeological and cover cases located in: Eastern Kentucky (Gremillion), southeastern Arizona (Diehl and Waters), the Fremont (Barlow), the Pacific coast of southern Mexico (Kennett, Voorhies, and Martorana), the neotropics (Piperno), the Andean Highlands (Aldenderfer), Valencia, Spain (McClure, Jochim, and Barton), Southern Arabia (McCorriston), New Guinea (Denham and Barton), and Oceania (Kennett, Anderson, Winterhalder). The last two chapters, by Smith and Bettinger, contain general commentaries on the application of HBE to the question of agricultural origins. In keeping with the exploratory nature of the volume, these chapters are eclectic in structure, part essay and part commentary, mixing discussion of relevant problems, approaches or applications not covered in the papers themselves, with the occasional dose of speculation. All of the papers of the volume are directed toward explaining the origin, spread and persistence of domesticates and food production, evolutionary gifts from our foraging ancestors.

We wish to thank the contributors to this volume for their perseverance through several editorial rounds. Blake Edgar, Scott Norton, Joanne Bowser, and the staff at the University of California Press have produced this book efficiently and effectively. The production of this volume also benefited greatly from the substantial and time-consuming copy editing by Sheryl Gerety—thank you.

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AND BRUCE WINTERHALDER
June 12, 2005