



McDONALD INSTITUTE CONVERSATIONS

Towards a Broader View of Hunter-Gatherer Sharing

Edited by Noa Lavi & David E. Friesem



Towards a Broader View of Hunter-Gatherer Sharing



McDONALD INSTITUTE CONVERSATIONS

Towards a Broader View of Hunter-Gatherer Sharing

Edited by Noa Lavi & David E. Friesem

With contributions by

Olga Yu. Artemova, Ran Barkai, Nurit Bird-David, Adam H. Boyette,
Hillary N. Fouts, David E. Friesem, Peter M. Gardner, Barry S. Hewlett,
Robert K. Hitchcock, Emmanuelle Honoré, Jean Hudson, Robert L. Kelly,
Noa Lavi, Jerome Lewis, Sheina Lew-Levy, Alan J. Osborn, Spencer R. Pelton,
Magalie Quintal-Marineau, Erick Robinson, Kenneth Sillander, Penny Spikins,
Gilbert B. Tostevin, Bram Tucker, George Wenzel & Thomas Widlok



This book was funded by the EU 7th Framework Programme (7FP), TropicMicroArch 623293 Project (http://cordis.europa.eu/project/rcn/187754_en.html). The book will be Open Access, thanks to FP7 post-grant Open Access (<https://www.openaire.eu/postgrantoapilot>).

Published by:

McDonald Institute for Archaeological Research
University of Cambridge
Downing Street
Cambridge, UK
CB2 3ER
(0)(1223) 339327
eaj31@cam.ac.uk
www.mcdonald.cam.ac.uk



McDonald Institute for Archaeological Research, 2019

© 2019 McDonald Institute for Archaeological Research.
Towards a broader view of hunter-gatherer sharing is made available under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (International) Licence: <https://creativecommons.org/licenses/by-nc-nd/4.0/>

ISBN: 978-1-902937-92-2

Cover design by Dora Kemp and Ben Plumridge.
Typesetting and layout by Ben Plumridge.

On the cover: *Sharing space and selves among Nayaka people in South India.*
Image taken and processed by D.E. Friesem and N. Lavi.

Edited for the Institute by James Barrett (*Series Editor*).

CONTENTS

| | |
|---|------|
| Contributors | ix |
| Figures | xi |
| Tables | xi |
| Acknowledgements | xiii |
| Introduction NOA LAVI & DAVID E. FRIESEM | 1 |
| Why hunter-gatherers? Why sharing? | 1 |
| About the book | 4 |
| Innovative perspectives of sharing: chapters outline | 5 |
| Concluding remarks | 9 |
| Part I Intimacy, presence and shared-living | |
| Chapter 1 Where have all the kin gone? On hunter-gatherers' sharing, kinship and scale | 15 |
| NURIT BIRD DAVID | |
| The unscalability of kinship identities | 17 |
| Enter individuals | 18 |
| Kinship as a root metaphor | 19 |
| Demand-sharing constitutes social relations | 20 |
| Re-enter kinship, talk and presence | 21 |
| Conclusions | 22 |
| Chapter 2 Extending and limiting selves: a processual theory of sharing | 25 |
| THOMAS WIDLAK | |
| What is wrong with evolutionary models of sharing? | 25 |
| The problem of historical diversity | 26 |
| The problem of outcome | 27 |
| Extending the self | 28 |
| Limiting the self | 30 |
| The analytical purchase of the new theories of sharing | 32 |
| The opportunity to request | 32 |
| The opportunity to respond | 34 |
| The opportunity to renounce | 34 |
| Conclusions | 36 |
| Chapter 3 Intimate living: sharing space among Aka and other hunter-gatherers | 39 |
| BARRY S. HEWLETT, JEAN HUDSON, ADAM H. BOYETTE & HILLARY N. FOUTS | |
| Density of households: Sharing space in settlements | 40 |
| Sharing space in a home | 42 |
| Sharing space in a bed | 44 |
| Sharing interpersonal space: touching | 45 |
| Hypothetical implications of intimate living | 49 |
| Summary and conclusion | 52 |
| Chapter 4 Sharing and inclusion: generosity, trust and response to vulnerability in the distant past | 57 |
| PENNY SPIKINS | |
| Sharing in an evolutionary perspective | 58 |
| Sharing and care for injury and illness in the distant past | 60 |
| Sharing, tolerance and diversity | 61 |
| Contrasting emotional schemas – sharing through generosity and calculated collaboration | 64 |
| Conclusions | 66 |

| | | |
|-------------------|---|-----|
| <i>Chapter 5</i> | The demand for closeness: social incentives for sharing among hunter-gatherers and other groups | 71 |
| | KENNETH SILLANDER | |
| | Open aggregation | 72 |
| | Relatedness | 77 |
| | Conclusion | 81 |
| <i>Chapter 6</i> | An ethnoarchaeological view on hunter-gatherer sharing and its archaeological implications for the use of social space | 85 |
| | DAVID E. FRIESEM & NOA LAVI | |
| | Ethnoarchaeology of hunter-gatherer use of space | 86 |
| | Social dynamics and their archaeological implications | 86 |
| | Archaeological implications | 90 |
| | Concluding remarks | 93 |
| Part II | Senses of connectedness beyond the horizons of the local group | |
| <i>Chapter 7</i> | Sharing pleasures to share rare things: hunter-gatherers' dual distribution systems in Africa | 99 |
| | JEROME LEWIS | |
| | Pygmies today | 99 |
| | BaYaka cultural area | 100 |
| | BaYaka egalitarianism and demand sharing | 101 |
| | What is not shared on demand | 102 |
| | Economies of joy | 104 |
| | The regional economy and contemporary change | 105 |
| | A dual economy | 106 |
| | Hunter-gatherers' dual economic systems | 106 |
| | Conclusion | 108 |
| <i>Chapter 8</i> | The archaeology of sharing immaterial things: social gatherings and the making of collective identities amongst Eastern Saharan last hunter-gatherer groups | 113 |
| | EMMANUELLE HONORÉ | |
| | The concept and the practice of sharing in archaeology | 113 |
| | Sharing: an ambivalent concept | 113 |
| | Approaching the sharing of immaterial things in archaeology | 115 |
| | Interaction and the making of social existences by sharing performances | 115 |
| | Group cohesion and the different forms of sharing | 118 |
| | Conclusion | 119 |
| <i>Chapter 9</i> | Information sharing in times of scarcity: an ethnographic and archaeological examination of drought strategies in the Kalahari Desert and the central plains of North America | 123 |
| | ALAN J. OSBORN & ROBERT K. HITCHCOCK | |
| | Beads, adornment and information | 124 |
| | Behavioural ecology and signalling theory | 125 |
| | Beads and ethnology: the Kalahari Desert of Southern Africa | 126 |
| | Beads and archaeology in the North American Great Plains | 132 |
| | Discussion and conclusions | 135 |
| <i>Chapter 10</i> | Studying sharing from the archaeological record: problems and potential of scale | 143 |
| | ROBERT L. KELLY, SPENCER R. PELTON & ERICK ROBINSON | |
| | Archaeological studies of sharing | 144 |
| | Sharing in the prehistory of Wyoming, USA | 147 |
| | Conclusions | 150 |

| | | |
|-------------------|---|-----|
| <i>Chapter 11</i> | An elephant to share: rethinking the origins of meat and fat sharing in Palaeolithic societies | 153 |
| | RAN BARKAI | |
| | Thoughts about sharing | 154 |
| | Becoming an elephant/mammoth | 157 |
| | The origins of fat and meat sharing in the Palaeolithic | 161 |
| | Endnote | 163 |
| | | |
| Part III | Learning and sharing of knowledge | |
| <i>Chapter 12</i> | Identifying variation in cultural models of resource sharing between hunter-gatherers and farmers: a multi-method, cognitive approach | 171 |
| | ADAM H. BOYETTE & SHEINA LEW-LEVY | |
| | Sharing in forager and farmer thought | 172 |
| | Sharing and early life experiences | 173 |
| | Evolutionary approaches to resource sharing | 173 |
| | Ethnographic setting | 174 |
| | Hypotheses and qualitative predictions | 175 |
| | Methods | 175 |
| | Results | 177 |
| | Discussion | 180 |
| | Conclusion | 182 |
| | | |
| <i>Chapter 13</i> | Foragers with limited shared knowledge | 185 |
| | PETER M. GARDNER | |
| | Actual learning processes | 186 |
| | The challenge of cognitive diversity | 189 |
| | Evidentiary criteria for knowledge claims | 190 |
| | Closing thoughts | 191 |
| | | |
| <i>Chapter 14</i> | The sharing of lithic technological knowledge | 195 |
| | GILBERT B. TOSTEVIN | |
| | Framing the question | 195 |
| | Why should one share flintknapping knowledge? | 197 |
| | But to what extent can one share one's flintknapping knowledge? | 198 |
| | The importance of the tactical vs. strategic knowledge distinction for the experimental investigation of the sharing of flintknapping knowledge | 199 |
| | What does it mean to share flintknapping knowledge? | 201 |
| | Sharing space | 201 |
| | Sharing time | 202 |
| | Conclusion: how do we test our assumptions about when a given lithic technology must have been shared? | 203 |
| | | |
| Part IV | Sharing in times of change | |
| <i>Chapter 15</i> | Men hunt, women share: gender and contemporary Inuit subsistence relations | 211 |
| | MAGALIE QUINTAL-MARINEAU & GEORGE W. WENZEL | |
| | Methods | 211 |
| | <i>Ningiqtuq</i> : the traditional sharing system | 211 |
| | Women, the mixed economy, sharing and subsistence | 213 |
| | Discussion | 217 |
| | Postscript | 218 |

| | | |
|-------------------|---|-----|
| <i>Chapter 16</i> | The pure hunter is the poor hunter? | 221 |
| | OLGA YU. ARTEMOVA | |
| | Preliminary notes | 221 |
| | Twists of fate | 223 |
| | 'Absolutely tribal people' | 226 |
| | There is no other way | 227 |
| | 'That's enough for me' | 227 |
| | 'We cannot be like them' | 228 |
| | When generosity is stressed | 229 |
| | Retrospect | 231 |
| <i>Chapter 17</i> | Ecological, historical and social explanations for low rates of food sharing among Mikea foragers of southwest Madagascar | 237 |
| | BRAM TUCKER | |
| | Mikea of Madagascar | 239 |
| | Mikea food sharing | 239 |
| | Why Mikea rarely share, explanation 1: culture history and property relations | 241 |
| | Why Mikea rarely share, explanation 2: competitive self-interest | 242 |
| | Why Mikea rarely share, explanation 3: social exchange | 244 |
| | Conclusions | 245 |

CONTRIBUTORS

OLGA YU. ARTEMOVA

Institute of Ethnology and Anthropology, Russian Academy of Sciences, 119991, Leninsky prospect 32a, Moscow, Russia.

Email: artemova.olga@list.ru

RAN BARKAI

Department of Archaeology and Near Eastern Cultures, Tel-Aviv University, Tel-Aviv, 69978, Israel.

Email: barkaran205@gmail.com

NURIT BIRD-DAVID

Department of Anthropology, University of Haifa, Mt. Carmel, 31905 Haifa, Israel.

Email: n.bird@soc.haifa.ac.il

ADAM H. BOYETTE

Max Planck Institute for Evolutionary Anthropology, Department of Human Behavior, Evolution, and Culture, Deutscher Platz 6, 04103 Leipzig, Germany.

Email: adam_boyette@eva.mpg.de

HILLARY N. FOUTS

Department of Child and Family Studies, University of Tennessee, Jessie W. Harris Building, Knoxville, TN 37996, USA.

Email: hfouts@utk.edu

DAVID E. FRIESEM

McDonald Institute for Archaeological Research, University of Cambridge, Downing Site, CB2 3ER, Cambridge, UK.

Email: df360@cam.ac.uk

PETER M. GARDNER

Department of Anthropology, University of Missouri, 112 Swallow Hall, Columbia, MO 65211, USA.

Email: GardnerP@missouri.edu

BARRY S. HEWLETT

Department of Anthropology, Washington State University, Vancouver, WA 98686, USA.

Email: hewlett@wsu.edu

ROBERT K. HITCHCOCK

Department of Anthropology, University of New Mexico, MSC01 1040, Albuquerque, NM 87131-0001 USA.

Email: rhitchcock@unm.edu

EMMANUELLE HONORÉ

McDonald Institute for Archaeological Research, Downing Street, CB2 3ER Cambridge, UK.

Email: eigh2@cam.ac.uk

JEAN HUDSON

Department of Anthropology, University of Wisconsin, Milwaukee, 3413 N. Downer Ave. Sabin Hall 390, Milwaukee, WI 53211, USA.

Email: jhudson@uwm.edu

ROBERT L. KELLY

Department of Anthropology, University of Wyoming, Laramie, WY 82071, USA.

Email: RLKELLY@uwyo.edu

NOA LAVI

Department of Anthropology, University of Haifa, Mt. Carmel, 31905, Haifa, Israel.

Email: noalaviw@gmail.com

JEROME LEWIS

Department of Anthropology, University College London, 14 Taviton Street, WC1H 0BW London, UK.

Email: Jerome.lewis@ucl.ac.uk

SHEINA LEW-LEVY

Department of Psychology, Robert C. Brown Hall RCB 5246, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6 Canada.

Email: sheinalewlevy@gmail.com

ALAN J. OSBORN

Department of Sociology and Anthropology, University of Nebraska-Omaha, 383G ASH, Omaha, NE 68182 USA.

Email: aosborn2@unomaha.edu

SPENCER R. PELTON

Transcom Environmental, 331 N. 3rd St., Douglas, WY 82633, USA.

Email: spencerpelton@gmail.com

MAGALIE QUINTAL-MARINEAU
Centre Urbanisation Culture Société, Institut
national de la recherche scientifique 385 Sherbrooke
Street E., Montreal, Canada H2X 1E3.
Email: magalie.quintalm@ucs.inrs.ca

ERICK ROBINSON
Department of Sociology, Social Work, and
Anthropology, Utah State University, 0730 Old
Main Hill, Logan, Utah 84322-0730, USA.
Email: Erick.Robinson@usu.edu

KENNETH SILLANDER
Swedish School of Social Science, University of
Helsinki, P.O.Box 16, 00014 Helsinki, Finland.
Email: kenneth.sillander@helsinki.fi

PENNY SPIKINS
Archaeology PalaeoHub, University of York,
Wentworth Way, Heslington. York YO10 5DD, UK.
Email: penny.spikins@york.ac.uk

GILBERT B. TOSTEVIN
Department of Anthropology, University of
Minnesota, 395 H.H. Humphrey Center, 301 19th
Ave. S Minneapolis, MN 55455, USA.
Email: toste003@umn.edu

BRAM TUCKER
Department of Anthropology, University of
Georgia, Athens, GA 30602 USA.
Email: bramtuck@uga.edu

GEORGE WENZEL
Department of Geography, McGill University, 805
Sherbrooke Street W., Montreal, Canada H3A 0B9.
Email: george.wenzel@mcgill.ca

THOMAS WIDLÖK
African Studies, University of Cologne, Albertus-
Magnus-Platz, 50923 Köln, Germany.
Email: thomas.widlok@uni-koeln.de

Figures

| | | |
|-------|--|-----|
| 2.1. | <i>The waves of sharing.</i> | 28 |
| 2.2. | <i>Screenshots from a field video documenting sharing among ≠Akhoe Hai//om.</i> | 29 |
| 2.3. | <i>Small foraging camp of a ≠Akhoe Hai//om person in the north of Namibia.</i> | 33 |
| 2.4. | <i>An Owambo agro-pastoralist homestead in northern Namibia.</i> | 33 |
| 2.5. | <i>Advertisement for a gated community in Nairobi, Kenya (2015).</i> | 33 |
| 2.6. | <i>≠Akhoe Hai//om burial ground.</i> | 36 |
| 2.7. | <i>≠Aonin Nama burial ground.</i> | 36 |
| 3.1. | <i>Four people co-sleep on an Aka bed.</i> | 45 |
| 3.2. | <i>Percentage of time forager and farmer infants, children and adolescents are held or touched during the day.</i> | 47 |
| 3.3. | <i>Feedback loops between intimate shared spaces and other forms of sharing.</i> | 53 |
| 4.1. | <i>Significant cognitive-emotional capacities involved in sharing in mobile hunter-gatherer contexts.</i> | 58 |
| 4.2. | <i>Evolutionary pressures, motivations to share and sharing behaviours in early humans.</i> | 59 |
| 4.3. | <i>Example of an embedded figures test.</i> | 62 |
| 4.4. | <i>Example of portable art showing embedded figures (or overlapping forms).</i> | 63 |
| 4.5. | <i>Examples of embedded forms (or overlapping figures) in parietal art.</i> | 64 |
| 4.6. | <i>Contrasting internal working models and social behaviour between sharing through generosity and calculated collaboration.</i> | 65 |
| 8.1. | <i>The sharing of material things (dividing) and the sharing of immaterial things (multiplying).</i> | 114 |
| 8.2. | <i>Location map and general view of Wadi Sūra II, Eastern Sahara.</i> | 116 |
| 8.3. | <i>The central panel of Wadi Sūra II paintings.</i> | 116 |
| 8.4. | <i>A group of human figures depicted with bent legs in the rock art of Wadi Sūra II.</i> | 117 |
| 8.5. | <i>Human figures in a row at Wadi Sūra II.</i> | 117 |
| 8.6. | <i>A row of human figures holding possible musical instruments at Wadi Sūra II.</i> | 117 |
| 9.1. | <i>Interpretive framework for understanding the interrelationships between social recognition and quality signals.</i> | 126 |
| 9.2. | <i>Distribution of San language groups in southern Africa.</i> | 128 |
| 9.3. | <i>Ju'hoan beadmaker at Nyae Nyae (//Xao//oba).</i> | 130 |
| 9.4. | <i>Tubular bone beads from the Felis Concolor Site (25SM20) in central Nebraska.</i> | 132 |
| 9.5. | <i>Spatial distribution of sites with tubular bone beads in the Central Plains of North America.</i> | 133 |
| 9.6. | <i>Temporal distribution of sites with tubular bone beads in the Central Plains of North America.</i> | 134 |
| 10.1. | <i>The Winterhalder-Kelly model of sharing relations between groups of foragers.</i> | 146 |
| 10.2. | <i>Radiocarbon dates, groundstone, nearest neighbor, and obsidian distance for the study area.</i> | 148 |
| 11.1. | <i>An Acheulean flint biface from Lower Paleolithic Revadim site, Israel.</i> | 157 |
| 11.2. | <i>An experiment in using flint handaxes in butchering operations.</i> | 159 |
| 11.3. | <i>A biface made on an elephant bone from the site of Fontana Ranuccio.</i> | 160 |
| 12.1. | <i>Box plot of cultural competency scores for Aka and Ngandu men and women.</i> | 177 |
| 14.1. | <i>The relationship between equifinality and the likelihood of accurate reverse engineering of core reduction processes.</i> | 204 |
| 15.1. | <i>Country food consumption and financial support to harvesting activities.</i> | 216 |
| 16.1. | <i>Map of Australia.</i> | 224 |
| 16.2. | <i>Phillis Yankaporta throws the cast net.</i> | 225 |
| 16.3. | <i>Lucky family.</i> | 225 |
| 16.4. | <i>The interior of an Aurukun house.</i> | 229 |
| 16.5. | <i>The children of Aurukun.</i> | 230 |
| 17.1. | <i>Map of the forest camp of Belò in 1998, showing households clustered by space and kinship.</i> | 240 |

Tables

| | | |
|------|--|----|
| 3.1. | <i>Measures of settlement density in five forager groups.</i> | 41 |
| 3.2. | <i>Average nearest neighbour in forager groups with data.</i> | 41 |
| 3.3. | <i>Average size and space per person in Aka and Efe homes.</i> | 43 |

| | | |
|-------|---|-----|
| 3.4. | <i>Comparison of space per person in a typical household of mobile hunter-gatherers and farmers.</i> | 43 |
| 3.5. | <i>Average home size and living area per person in developed countries.</i> | 44 |
| 3.6. | <i>Average space per person in a bed among Aka hunter-gatherers and Ngandu farmers.</i> | 44 |
| 3.7. | <i>Infant holding and other measures of caregiver sensitivity.</i> | 47 |
| 3.8. | <i>Percentage of time intervals G/wi adults touched or were within proximity of other males and females in the camp setting during daylight hours.</i> | 48 |
| 3.9. | <i>Percentage of time G/wi adolescents touched or were within proximity of other males and females in the camp setting during daylight hours.</i> | 48 |
| 3.10. | <i>Husband-wife co-sleeping in hunter-gatherers versus other modes of production.</i> | 49 |
| 3.11. | <i>Average frequency of sex per week among married couples in three age groups among Aka foragers, Ngandu farmers and U.S. middle-class market economists.</i> | 49 |
| 7.1. | <i>Southern Mbendjele mokondi massana (spirit plays) organised according to context of use.</i> | 102 |
| 9.1. | <i>Late Stone Age and recent forager sites in the Kalahari that have evidence of ostrich eggshell beads.</i> | 127 |
| 9.2. | <i>Iron Age sites in the Kalahari Desert region of Botswana with ostrich eggshell beads.</i> | 130 |
| 9.3. | <i>Evidence for severe droughts on the plateau of southern Africa during the Iron Age Interpretive framework for understanding the interrelationships between social recognition and quality signals.</i> | 131 |
| 10.1. | <i>Obsidian Frequencies by Wyoming County and Time Period.</i> | 149 |
| 12.1. | <i>Interview questions and associated hypothetical domain.</i> | 176 |
| 12.2. | <i>Percent of forced-choice responses by ethnicity and domain.</i> | 178 |
| 12.3. | <i>Rankings of responses to the question: who teaches children to share?</i> | 178 |
| 12.4. | <i>Rankings of responses to the question: Who do children share food with?</i> | 179 |
| 12.5. | <i>Ranking of responses to the question: Who do children share non-food items with?</i> | 180 |
| 15.1. | <i>Ningiqtuq/sharing interaction sets in the Inuit social economy.</i> | 212 |
| 17.1. | <i>Per cent of different foods given away to other households among Mikea and Ache foragers.</i> | 240 |
| 17.2. | <i>Mikea foods and the predictions of the marginal utility model of tolerated theft.</i> | 243 |

Acknowledgements

First and above all, we wish to express on behalf of all the authors of this monograph our deepest gratitude to the people and communities with whom each of us worked and shared experiences. Without their sharing of selves, thoughts, actions, space and time, the studies presented here could not be possible. We are grateful for their help and trust and hope this volume will promote better understanding of their unique ways of sharing as they see it.

This monograph is a result of a conference we organized at the McDonald Institute for Archaeological Research at the University of Cambridge on ‘Sharing among hunter-gatherers’, which aimed to promote a wider notion of sharing. We are especially indebted to Nurit Bird-David and Peter Gardner for being our source of inspiration for the theme of this conference and for their endless support and encouragement along the road. We also thank Jerome Lewis who was extremely supportive and helpful in making the conference both attractive and successful.

A number of people at the McDonald Institute for Archaeological Research formed an important and essential part of the conference and we are grateful to all of them. Especially, to Emma Jarman and Laura Cousens, who were there from the beginning and made every request and need possible and simple. To Cyprian Broodbank and Simon Stoddart for their institutional support. To Patricia Murray, Luc Moreau,

Emily Hallinan, Emmanuelle Honoré, Tanja Hoffmann, Cynthia Larbey and Laure Bonner, who made sure everything went smoothly and professionally. The success of the conference was truly thanks to them.

The publication of this monograph owes much to the work of those involved in the McDonald Conversations Series and we are very thankful to James Barrett for his support, help and advice and to Ben Plumridge for his editing and typesetting work. We are also grateful for the anonymous reviewers who helped us improve each chapter and the monograph as a whole. Thanks too to Elizaveta Friesem for her help and invaluable comments on earlier versions of the text.

The conference and the monograph were funded by the McDonald Institute for Archaeological Research, the University of Cambridge and the People Programme (Marie Curie Actions) of the European Union’s Seventh Framework Programme (FP7/2007-2013) under REA agreement no. 623293 (granted to D.E.F.). OpenAIRE, the European Research Council FP7 post-grant OA publishing fund, contributed to the open-access publication of the monograph.

Lastly, we would like to thank all the people who took part in the conference and the writing of this monograph for imparting their knowledge, experiences and thoughts, giving their time and helping us to promote a better and more holistic understanding of the core social notion and practice of sharing.

Noa Lavi & David E. Friesem,
Cambridge, October 2019

Chapter 17

Ecological, historical and social explanations for low rates of food sharing among Mikea foragers of southwest Madagascar

Bram Tucker

Of anything they have, if it be asked for, they never say no, but do rather invite the person to accept it, and show as much lovin'ness as if they would give their hearts.

Christopher Columbus speaking
of indigenous Taino of Hispanola,
quoted in Josephy (1994, 115)

I only share food with those who give food
to me.

I don't give to other people [outside the
household] because they are stingy.

I take care of my own first.

Mikea informants during social
network interviews, June 2017

Generous, public division and distribution of food to distant kin and non-kin is a staple of hunter-gatherer ethnography (Altman & Peterson 1988; Bird-David 1990; Kaplan & Hill 1985; Marlowe 2010; Wenzel et al. 2000; Wiessner 2002) and of textbook descriptions of foraging societies (Ember et al. 2011, 297; Guest 2014, 536; Haviland 2002, 165; Kottak 2015, 311; Miller 2010, 63; Park 2006, 204; Scupin & DeCorse 2012, 327). For example, among Ache hunter-gatherers of Paraguay, households give away 70 to 90 per cent of all of the wild and domesticated foods they obtain, both in the context of forest foraging and when living on reservation farms (Gurven & Kaplan 2002). In this chapter, I describe the case of Mikea, a hunting and gathering population of southwest Madagascar, who do not share food in this manner. In a previous study, I documented that Mikea in one community transferred less than 15 per cent of raw plant and animal foods from one household to another, and only a third of prepared meals (Tucker 2004).

In this chapter I consider potential historical, evolutionary, and social explanations for non-sharing. But first, allow me to clarify what I mean by food sharing,

and what I mean when I say that Mikea rarely share. Division and distribution of food is to some degree a human universal; raising human offspring requires that parents provide food to their children, and this is a hallmark of the human species (Hrdy 1999). Hereafter, I refer to sharing among close relatives or within a household as 'household provisioning'. I restrict the term 'food sharing' for distribution of food beyond the immediate family. Among Mikea, household provisioning is routine, but food sharing is rare.

Mikea do not think of themselves as stingy; they have a sharing ethic, and they place a high value on generosity. To call someone generous (*matarike*) is the best compliment Mikea give, just as stingy (*matity*) is among the worst insults. In common with all peoples of Madagascar, when Mikea sit to a meal, if others in their vicinity are not eating, it is customary to call out, 'welcome to our food' (*mandroso sakafo*)! The most common response is yes (*eka*), a polite way of saying no.

And yet, when Mikea consume meals inside their cramped houses, they are not obliged to call out 'welcome to our food', except if a neighbour happens to be at the right place to witness the meal through an open doorway. Mikea camps and villages are not organized to encourage public view of private, indoor spaces; typically, doors point north, in contrast to some Kalahari and Congo foraging settlements where doors point inward to public space (Kitanishi 2000; Tanaka 1980). Mikea foragers often return from foraging in secret and stash their prey inside houses before appearing in public view, claiming, if asked, that they were unsuccessful and had not caught anything. Once, when a young forager reported this to me, I pointed to the obvious bundle of freshly dug tubers sitting just inside his doorway; he then felt obliged to give me a portion. Mikea have a sharing ethic, but they avoid situations where the ethic should be fulfilled.

Anthropologists study food sharing because the simple acts of giving and receiving food exemplify

sociality and cooperation, and reveal social norms of generosity, property, and value (Bird-David 1990; Hunt 2000; Wenzel et al. 2000; Winterhalder 1996a). Both evolutionary and social anthropologists have published prolifically about hunter-gatherer food sharing, but without much obvious intellectual cross-pollination. Perhaps this is because evolutionary and social scholars begin with different assumptions about human nature.

Neo-Darwinian evolutionary anthropologists of the late twentieth century tended to assume that individual organisms are self-interested and competitive, for the simple reason that if particular individuals are more interested in the good of others than in their own good, these individuals would be less likely than their selfish competitors to survive and reproduce, and less likely to pass their generous behaviours on to future generations. (More recently, some evolutionary anthropologists have embraced an alternative vision human nature, expecting widespread generosity among distant kin and non-kin based on group selection arguments; I discuss this at the end of this chapter). From the perspective of self-interest, the challenge of food sharing studies is to explain how apparent altruistic generosity could in fact provide selfish advantages for the giver (Gurven & Kaplan 2002; Hawkes & Bliege Bird 2002; Hawkes et al. 1991; Kaplan & Hill 1985; Winterhalder 1996a).

In contrast to neo-Darwinian approaches, social anthropologists tend to assume from the outset that humans are social, and focus instead on how material exchanges create, maintain, and change social structure (Hunt 2000). The challenge for social anthropologists has been to explain how the morality food sharing changes with new commodities, new values, and new trading partners (Bird-David 1990; Fortier 2000; Kitanishi 2000; Wenzel 2000).

I begin my analysis of Mikea food sharing by considering explanations based on history and property institutions. Unlike some of the foraging societies that populate the anthropological imagination, Mikea have only been foragers for the past few centuries, their recent ancestors having been herders and farmers (Tucker 2003; Yount et al. 2001). It could be that Mikea rarely share because they maintain agro-pastoral norms and institutions within which food is the property of corporate descent groups. There are some valid cultural-ecological reasons to expect this (Netting 1968; Bates 2005), and indeed, agro-pastoral traditions probably do explain why Mikea share livestock meat. But I question why anthropologists have historically framed food sharing as a 'species-typical trait' exclusive to hunter-gatherers. This framing, I argue, is a residue of discredited Victorian-era unilin-

ear social evolutionism, and earlier Enlightenment-era constructions of 'man in the state of nature' lacking private property (Barnard 1999). A quick glance at the ethnographic record for farmers and herders finds ample evidence that food sharing is not the exclusive domain of foragers (in agreement with Sillander, chapter 5). Agro-pastoral ancestry alone does not explain low rates of food sharing among Mikea.

Second, I consider possible evolutionary explanations for why Mikea rarely share, explanations which assume individual self-interest: kin selection, reciprocal altruism, trade, costly signalling, and tolerated scrounging. I revisit an explanation that I have offered in a previous publication (Tucker 2004), that Mikea rarely share food because their foods are either too small to satisfy other claimants, or are equally available to everyone so that sharing is not necessary, consistent with the 'tolerated scrounging' model (Blurton Jones 1984; Winterhalder 1996b). I critique my previous argument on the grounds that while it is sufficient-- the evidence matches the predictions of the tolerated scrounging model), it is not necessary-- it does not demonstrate that Mikea food sharing results from a contest of self-interests.

Third, I consider the act of not sharing from a social exchange perspective; does *not* giving food to others constitute, as Mauss (1967 [1925], 11) said of the unreturned gift, 'a declaration of war; a refusal of friendship...'? Among Mikea, not sharing seems to be an accepted norm that coexists with the obligation to share. As Mikea have been increasingly drawn into the market economy, they may have shifted to thinking of foods as commodities and private property. As they have become increasingly impoverished, they may find themselves not wanting to share the few resources they have.

I offer ethnographic and theoretical conclusions. I argue that Mikea sharing behaviour is a complicated result of history, strategy, and social institutions. Sharing and not sharing are behaviours that result from an overlapping set of contradictory norms of common, clan, and private property, resulting from massive social changes over the past centuries. I argue that we should expect hunter-gatherer food sharing to be a complicated mix of history, strategy, and social facts. This, then, suggests that researchers should embrace theoretical pluralism. Researchers must search for causes of behaviour rather than associations between invented categories such as hunter-gatherer and behaviours such as sharing. I argue that recent advances in evolutionary anthropology associated with group selection may offer a bridge in the historical gap between evolutionary and social anthropologists, so that the time right for fruitful theoretical cross-pollination.

Mikea of Madagascar

The people of rural southwestern Madagascar, north of the provincial capital of Toliara, classify themselves as Mikea, Masikoro and Vezo based on dual criteria: subsistence specialization and family history. To be Mikea means that one is a hunter-gatherer, whereas Masikoro are agro-pastoralists, and Vezo are coastal fishers and sailors. To some degree, purported subsistence specializations are symbolic of political fealty or resistance to the precolonial Andrevola Kings, rather than accurate descriptions of economic specializations. Masikoro are those whose ancestors were loyal vassals to the kings, paying tribute in slaves, cattle, and agricultural staples. Vezo remember ancestors who evaded the kings by sailing away to sea (Astuti 1995; Poyer & Kelly 2000; Tucker 2003; Yount et al. 2001). Mikea recall that their ancestors were Masikoro and Vezo who moved their families and livestock into the dense, dry, deciduous Mikea Forest (*Alamikea*), and transitioned to hunting-and-gathering, to establish independence from the Andrevola Kings, and later, French Colonial agents.

Mikea, Masikoro and Vezo identify first and foremost as Malagasy people (*olo gasy*), and generally think of themselves as the same basic 'kind of person' (*karazanolo*). The three groups share an overlapping set of clan memberships and genealogical and commercial ties, and they have similar dialects and customs. But in a recent survey (N=30), 83 per cent of informants said that it was impossible for a Mikea to ever become a Masikoro or a Vezo, and vice versa.

Mikea hunt and gather for a living. Mikea forage for wild *ovy* tubers (*Dioscorea acuminata*), water-engorged *babo* tubers (*Dioscorea bemandry*), honey (*Apis mellifera*), and small game, including tenrecs (African hedgehogs, *Echinops telfairi* and *Tenrec ecaudatus*), mouse lemurs (*Microcebus murinus*), a variety of birds, and wild cat (*Felis silvestris*). In the basins of Ihotre, Namonte and Bevondro they fish for tilapia (*Paratilapia* spp.) and the invasive snakehead fish (*Channa striata*), and some Mikea forage for marine prey in the Bay of Fagnemotse. Mikea are unlike other foragers in that there is almost no available large game, the exception being the exceedingly rare bushpig (*Potamocorus larvatus*).

Foraging has probably never been the exclusive profession of Mikea. Fields and pastures feature prominently in Mikea oral histories (Tucker 2003). Nineteenth century Mikea archaeological sites in the Namonte Basin show evidence of cattle pens (unpublished results of Douglass & Tucker, 2017). In the 1990s when I started working with Mikea, most households had forest swiddens for growing maize (then a popu-

lar cash crop) and sharecropped manioc and rice fields owned by neighbouring Masikoro.

In common with other hunter-gatherer populations, Mikea are mystified and exoticized by neighbouring non-foragers (Poyer & Kelly 2000). City folk have told me repeatedly that it is impossible to see Mikea because they instantly flee into the forest when visitors approach. When I insist that I have met many Mikea, I am usually told that these must have been 'false Mikea', for 'true Mikea' are extremely timid and can vanish in plain sight. Others have told me that Mikea are pygmies, lack language, eat their food raw, and sleep in burrows within the sand. In the Masikoro village of Antanimieva, only a dozen kilometres from the Mikea Forest, a community leader told me in 1996 that Mikea are descendants of Vazimba, aboriginal inhabitants of Madagascar. All of these statements are false. Mikea are normal human beings, not dwarfs or mutes or hidiers or ancestors. They speak the same language and follow many of the same customs as other Malagasy.

Madagascar National Parks established the Mikea Forest National Park in 2012. Park rules permit Mikea live in some parts of the park, and to forage throughout the park. But in practice, Mikea who exercise these rights have found themselves confronted by false park guards, who demand phony fines. As a result, many Mikea have voluntarily left the forest to settle near agricultural communities, where sharecropping and agricultural wage labour provide meagre subsistence. Foraging continues to play a major role in the food supply.

Mikea food sharing

In order to systematically document how frequently Mikea do and do not share food, I observed meals in the forest camp of Belò in January-March of 1998 (Tucker 2004) as part of my dissertation research (Tucker 2001). Each time I observed a meal at Belò, I recorded the kinds of foods eaten, and the names of consumers, food preparers, and food producers (the persons who obtained the food from nature, fields, or pens). If producer, preparer and consumer were in the same household, I classified the meal as 'household provisioning'. If the producer and preparer were in different households, this indicated sharing of raw (unprepared) foods. If the preparer and consumers were in different households, this was evidence of sharing of prepared meals.

Kaplan & Hill (1985) and Gurven & Kaplan (2002) used similar methods to quantify food sharing among Ache of Paraguay, who spend part of the year foraging nomadically and part of the year in agricul-

Table 17.1. Per cent of different types of food given away to other households among Mikea of Madagascar and Ache of Paraguay.

| | Mikea of Madagascar (Tucker 2004) | | Ache of Paraguay (Gurven & Kaplan 2002) | |
|------------------|--------------------------------------|-------|--|-------------|
| | Raw | Meals | Forest | Reservation |
| Wild plants | 6 | 28 | 70 | 91 |
| Wild animals | 0 | 13 | 89 | 90 |
| Honey | 8 | 28 | 87 | |
| Agricultural | 10 | 36 | | 78 |
| Livestock meat | 14 | 77 | | 91 |
| N (observations) | 85 | 403 | 5609 | 380 |

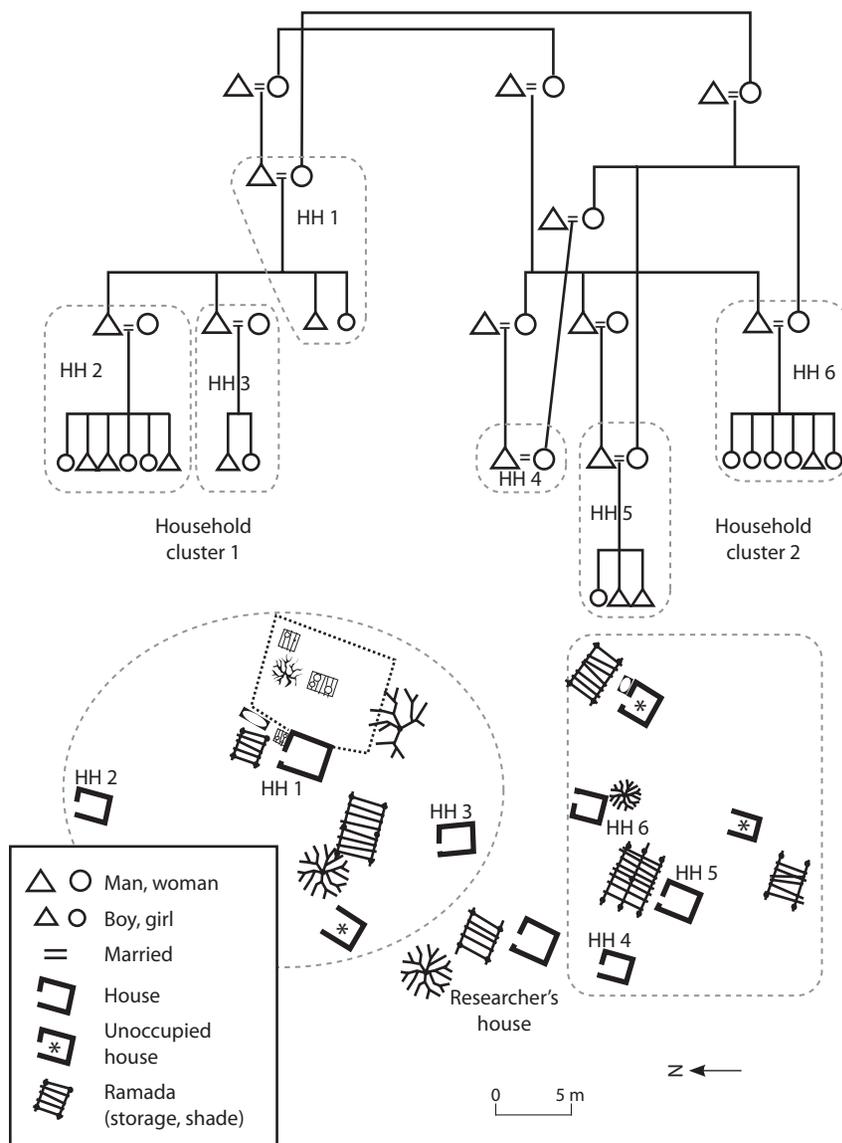


Figure 17.1. Map of the forest camp of Belò in 1998, when food sharing data were collected. Mikea households formed two clusters, differentiated by space and kinship. Cluster 1 self-identified with the Marofote clan, and Cluster 2 with the Tsimitiha and Tsimamorike clans. This figure was originally published elsewhere (Tucker 2004) and is reprinted with permission.

tural villages. Table 17.1 contrasts the frequency that different kinds of foods were shared among Mikea (Tucker 2004) and Ache (Gurven & Kaplan 2002). Mikea shared less than 15 per cent of raw foods, and 0 per cent of animal prey, contrasted to Ache, who shared 70 to 90 per cent of all foods, and 89 per cent of animal prey, specifically.

Mikea shared prepared meals of wild and domesticated plants and honey roughly one-third of time, and meals involving game meat 13 per cent of the time.

Meal sharing was patterned by kinship and proximity. As Figure 17.1 displays, the six household that were resident at Belò during the observation formed two clusters of three households each, separated by physical space and kin distance. Households within the same cluster would sometimes share cooking responsibilities or accept the customary invitation to join meals. Of meals in which preparers and consumers came from different households, they belonged to the same household cluster 90 per cent of the time (Tucker 2004).

The only food that was widely shared was meat from slaughtered livestock. Because this is a relatively rare event, the frequency of sharing of raw livestock meat in this table, 14 per cent, does not match longer-term observation. When a cow or goat is killed, it is customary to deliver a portion of raw meat to all households, including visitors. The one time I was present when foragers brought home a wild bushpig, this large game was also distributed in this manner.

Why Mikea rarely share, explanation 1: culture history and property relations

Theory

Why do anthropologists expect hunter-gatherers to share, and, by implication, why we do expect farmers and herders *not* to share? Barnard (1999) argues that, from the genesis of the hunter-gatherer category, a forager was a person without private property. Seventeenth-century European social philosophers constructed the forager (referred to as a natural man, a man in the state of nature, a savage, a primitive, or a hunter) primarily from speculation, as a heuristic foil to 'civilization'. Hugo Grotius and, a century later, Jean-Jacques Rousseau, asserted that man in the state of nature had only common pool resources. Domestication, they argued, led to violent attempts to monopolize property, resulting in the need for the state, law, and private tenure. Samuel Pufendorf and Thomas Hobbes lamented that, without law and the state, man in the state of nature was unable to trust his fellows sufficiently to allow for property,

accumulation, technology, art, and commerce. In the eighteenth and nineteenth centuries, classical economists like Adam Ferguson, Adam Smith and Karl Marx transformed 'natural man' into the earliest evolutionary stage, characterized by either an absence of property or rudimentary property rights of transitory resources. Schemes like Smith's proposed trajectory of hunters-shepherd-farmers-merchants inspired Victorian-era schemes like Morgan's savagery-barbarism-civilization.

Twentieth-century anthropology was borne from a rejection of unilinear evolutionism, which proved factually insufficient and inspired by racist and colonial agendas (Stocking 1974). However, the association of foragers with common pool resources, and farmers and herders with private property, persisted in different forms.

For example, cultural ecology texts by Netting (1968) and Bates (2005) among others offer basic formulae linking environmental challenges, subsistence modes, property relations, and social organization, with the caveat that we should expect variation from these formulae. The formula for foragers starts with the key environmental challenge of resource unpredictability, caused by dispersed, seasonal and migratory prey. Foragers solve this problem with social flexibility and interconnectedness, which facilitates mobility and fluctuating band size, allowing foragers to form opportunistic aggregations around temporary resources. Foragers achieve social flexibility by leveling status differences, through flexible and inclusive notions of kinship, and of course, by routinely sharing food and other items, which builds friendships and minimizes status differences.

The formula for farmers and herders begins with a different set of environmental challenges. Because they control the reproduction of crops and livestock, they must worry about tenure, about who has access rights to the animals and lands in which their labour is invested. The social solution is corporate descent groups (Bates 2005, 122–3). Descent groups own, allocate and bequeath property, schedule labour, and adjudicate property disputes. We do not expect farmers and herders to share food equally with close kin, distant kin and non-kin, because food is property, and legally must be divided according to kinship and descent calculus.

History and property among Mikea

Mikea conform to some aspects of cultural ecologists' formula for foragers, and some aspects of cultural ecologists' formulae for farmers and herders. Like many foragers, Mikea tend to be quite mobile, moving, according to opportunity and ability, among

numerous patches of wild foods, agricultural fields, and cash earning activities. Mikea community formation corresponds with what Sillander (in chapter 5 of this volume) call 'open aggregation', meaning that communities easily expand to welcome new members. Wild resources are common pool but are not open-access. One must ask permission of the camp's elders before foraging near an established camp. The elders legitimize their own right to live where they do by citing the actions of recent ancestors. Although Mikea lack the kind of open kinship rules documented among Ju/'hoansi by Lee (1979), or the forms of bilateral 'relatedness' that Sillander (chapter 5) argues facilitates sharing, visitors wishing to join a camp can often find some kin relationship to justify their request.

Mikea, like other agro-pastoral Malagasy and East Africans, traditionally managed rights to livestock, agricultural land, and people through membership in patrilineal corporate clans. Before the French conquest of the Andrevola kings in 1898 and for many decades after, livestock and land were clan property. The clan head (*mpitankazomanga*) and other clan elders organized labour, distributed resources, adjudicated disputes, and organized ceremonies to honour the ancestors with cattle sacrifice, including marriage (*soratse*), rights of filiation (*soroanake*), circumcision of boys (*savatse*), healing ceremonies (*soro* and *bilo*), and funerals (*faty*). Like other African agro-pastoralists, marriage requires the payment of brideprice in cattle, and children remain in their mother's clan until the father performs rites of filiation. The authority of clans has diminished over the twentieth century, a legacy of French and Malagasy governmental efforts to privatize property, accompanied by increasing livestock poverty. Today, cattle and land are titled in the names of individuals, although clan obligations to share remain.

Agro-pastoral property norms clearly explain how and why Mikea share one class of foods, slaughtered livestock meat. Livestock are not just large resources; slaughtered cattle (and to a lesser degree, goats) symbolize links to ancestors. Sacrificed animals are divided according to a rather strict recipe, with the meat around the tail being reserved for the clan head or officiating elder, the feet, heart, and tongue eaten by the sponsor of the ceremony, the liver and zebu's hump served in small pieces to all attendees, etc. When the animal is slaughtered strictly for food purposes, a reduced set of these rules is applied. In both contexts, all in attendance receive some portion of meat.

If Mikea at Belò in 1998 considered agricultural foods to be clan property, we would expect sharing within clans. This appears consistent with the pattern of within-cluster sharing of prepared meals at Belò, for the two household clusters in Figure 1 belong to

different patrilineal clans. This is weak evidence in support of food as corporate descent group property. The explanation is marginally sufficient, in that clan membership predicts sharing of prepared meals; but it is unclear why raw foods would not be shared among clan members. The explanation is not necessary, for kin-based sharing of meals is equally consistent with evolutionary and social-exchange explanations for food sharing.

Why Mikea rarely share, explanation 2: competitive self-interest

Theory

According to the individual selectionist logic that has dominated evolutionary theory until recently, altruistic individuals who provide benefits to others at a cost to themselves are at a disadvantage relative to selfish competitors, so that selfish individuals will have more children and flood future generations with selfish traits (assuming that altruism and selfishness are somehow heritable, biologically or culturally). The fact that humans perform apparently altruistic behaviours routinely suggests to the evolutionary anthropologist that such behaviours are not truly altruistic, but provide some form of selfish, competitive advantage (Hawkes et al. 1991; Kaplan & Hill 1985; Winterhalder 1996a).

Possible selfish explanations for food sharing included *kin selection*, that generosity with those who share your traits, such as kin, will promote the survival and reproduction of those traits (Hamilton 1964); *reciprocal altruism*, that people take turns giving and receiving food, potentially evening out differences in food supply and reducing the risks of unsuccessful hunts (Trivers 1971); *mutualism* or *trade*, that in sharing, foragers exchange one type of value for another, for mutual benefit (Kaplan and Hill 1985); *tolerated scrounging*, that foragers give away surplus food to pre-empt others' costly requests (Blurton Jones 1984); and *showing off* and *costly signalling*, that men share meat to gain status and mating opportunities, or to advertise their quality as a mate (Hawkes & Bliege Bird 2002). Researchers found evidence supporting each explanation in different ecological and cultural settings (*kin selection*, Ziker & Schnegg 2005; *reciprocal altruism*, Gurven & Kaplan 2002; *mutualistic trade*, Kaplan & Hill 1985; *tolerated scrounging*, Tucker 2004; *showing off*, Hawkes et al. 1991; *costly signalling*, Smith et al. 2003).

Mikea food sharing as a self-interested contest

At first glance it appears as though food sharing at Belò is predicted by kin selection, for most foods are kept

within the household by close kin, and when meals are shared, they are shared preferentially with closer kin rather than distant kin. However, kin selection theory does not necessarily predict household provisioning. It predicts a preferential distribution of food to those who share all heritable traits, genetic and cultural, a set of people who, at Belò, would include more than just parents and siblings. It is also worth noting that the individuals who did the most sharing at Belò were the food preparers, who were mostly women married into the family, who were giving food to their husbands' relatives rather than their own genetic kin. I did find evidence for reciprocal sharing of prepared meals, for the number of times household X gave prepared food to household Y is strongly associated with the number of times Y gave to X (Spearman's $\rho = 0.861$, $p=0.000$). Rather than risk reduction, reciprocal sharing of meals may be a form of turn-taking (*sensu* Gurven & Kaplan 2002), given the high time costs of transforming dried staples into edible porridge. But neither kin selection nor reciprocal altruism explains why prepared meals are shared more often than raw foods. Showing off and costly signalling do not appear to be valid explanations, for Mikea foragers were very secretive about their foraging successes, and there was almost no hunting of large game.

I have argued (Tucker 2004) that Mikea food sharing is best explained with Blurton Jones's (1984) concept of tolerated scrounging, as formalized by Winterhalder (1996b). Imagine a forager returning to camp with prey, and imagine that her campmates were less successful or ambitious. Let us call this successful forager 'the producer', and her empty-handed campmates 'scroungers'. The tolerated scrounging model envisions producers and scroungers entering into a contest of competing self-interests.

The producer wants to keep as much of the prey as she can, through physical defence or subterfuge. Scroungers want to acquire food from the producer, by wheedling, demand-sharing, or outright theft. How hard the producer will work to defend portions

of prey, and how hard scroungers will work to obtain portions, depends on the size of the prey and the marginal utility of portions. For a medium-to-large size prey, the utility of portions diminishes over quantity; the producer values the first several portions highly, because they will feed her family, but the $n+1^{\text{th}}$ portion is less valuable, and the $n+2^{\text{th}}$ portion is worth even less. If the value of a marginal portion is less than the costs of defending that portion from scroungers, then it makes more sense to give that unit away to scroungers. The contest between producers and scroungers may not be publicly visible. The producer, as she returns to camp, may make a subconscious mental calculation, and decide to give portions away to pre-empt neighbour's costly scrounging behaviours.

Winterhalder (1996b) offered predictions about how resource size (small versus medium-to-large) and synchrony (the number of households with access to the food at a time) predict food sharing behaviours. When foods are small, producers will work hard to defend each unit. Small food packets constitute few portions, so there are no marginal portions with diminished utility. When foods are medium-to-large, producers are more likely to cede portions to scroungers, because the utility of these marginal portions is diminished. When foods are synchronously acquired, there is no contest between haves and have-nots, for everyone is a producer. When foods are asynchronously acquired, scroungers scrounge and producers defend. These predictions correspond rather well with Mikea sharing behaviours by food type, as summarized in Table 17.2.

Box 1 contains small, synchronously acquired foods, including small fruits (*Flacourtia indica*, *Zizyphus* spp.) and wild melons (*Citrullus lanatus*). They are neither dunned nor shared because, when in season, anyone can collect them almost as easily as asking for them from a neighbour. Box 2 contains medium-to-large, synchronously acquired foods, including raw and cooked wild *ovy* tubers and domesticated maize and manioc. These foods are synchronous because all

Table 17.2. Mikea food types and the predictions of Winterhalder's (1996b) marginal utility model of tolerated theft (based on Blurton Jones 1984).

| | Small size Producer will defend | Medium-to-large size Producer can afford to give away marginal portions to pre-empt scrounging |
|--|--|--|
| Synchronously acquired Few, if any, scroungers | Box 1: • Wild fruits & melons | Box 2: • Agricultural staples • Wild plant foods • Porridge (prepared staples) |
| Asynchronously acquired Scroungers actively scrounging | Box 3 • Small animal prey: tenrecs, lemurs, birds, cats | Box 4: • Slaughtered livestock • Bushpig • Baskets of tenrecs and buckets of honey |

households tend to harvest and prepare them simultaneously. Producers offer to share these foods by eating in public and calling invitations to others to join them, with the confidence that few people will accept the invitation, because they themselves already have these foods. In Box 3 we find small, asynchronously acquired resources, particularly, small animal prey. Producers actively avoid sharing these foods by hiding them and consuming them indoors, while scroungers try to spot these foods through open doorways and imperfect bark or grass walls, to demand-share them. In Box 4 we find medium-to-large foods that are asynchronously acquired. Here we find livestock meat and bushpig, the only foods that Mikea share openly.

The only foods that do not fit the predictions of the model are baskets of tenrecs and buckets of honey, which are medium-to-large foods, asynchronously acquired, but are rarely shared. I argued that, despite their size, these foods are unlikely to have diminishing marginal utility. Tenrecs, which estivate (dry-season hibernate) for nine months per year, preserve perfectly without any effort on the forager's part, sleeping for months in a basket or bucket until the forager is ready to eat them. Honey can last a long time without spoiling. Each portion may be consumed (or sold) over time, so that each has equivalent value for the forager's family, delivering constant marginal utility.

There are some rather obvious shortcomings of my analysis. As with the previous explanation, this one is sufficient but not necessary: Mikea behaviour is consistent with tolerated scrounging, but this does not demonstrate that Mikea behaviour is *caused* by contests between producers and scroungers based on self-interested subconscious calculations of marginal value. It is unclear why the tolerated scrounging explanation applies to the Mikea case but not to Ache or Hadza, who widely share small fruits. Tolerated scrounging does not explain why Mikea have a sharing ethic in the first place. The theory assumes that prey are private property under the control of the producer.

Why Mikea rarely share, explanation 3: social exchange

Theory

Social anthropologists position food and gift sharing as a collectivistic act of social creation and maintenance. As one of Lee's (2003, 119) Kalahari informants said about *hxaro* gift exchange, 'we don't trade with things, we trade with people'. Sharing was the theme of the 1998 Conference on Hunting and Gathering Societies (CHaGS 8, see Wenzel et al. 2000), where

scholars, inspired by the writings of Mauss, Polanyi and Sahlins, explored the many ways in which giving food and gifts builds social relations and social structure (Hunt 2000). Contributions by Wenzel (2000), Fortier (2000) and Kitanishi (2000) among others explored how contemporary hunter-gatherers, living on the frontier of agro-pastoral and industrial societies, adapted traditional morally charged gift giving traditions to money and commodities and exchanges with outsiders.

In Sahlins' (1968) well-tread terms, food sharing is generalized reciprocity, giving without expectation of receiving a return gift. Generalized reciprocity is a 'moral' exchange because it strengthens social ties, and so generalized reciprocity is expected to be the norm among close kin. Bird-David (1990) argues that some foragers extend 'primary metaphors' of close kinship to all group members, with the forest as a generous parent, facilitating generalized reciprocity. This is akin to Sillander's concept of 'relatedness' in chapter 5.

Market exchange typifies balanced reciprocity, when two parties exchange goods of roughly equivalent value. Such exchanges carry very little moral valence because they do not engender future debts or social intercourse. Economic anthropologists expect that market exchange may erode traditional social cohesion by replacing generalized with balanced reciprocity (Dalton 1965; Polanyi 1957). A classic example of this was the collapse of prestige market spheres among Nigeria's Tiv, which transformed cattle, brass rods, slaves and wives into market commodities (Bohannan 1955).

Not sharing food would appear to exemplify what Sahlins (1968) called negative reciprocity, profiting at others' expense; 'a declaration of war' (Mauss 1925, 115). Ethnographers have reported negative reciprocity resulting from extreme poverty. During famines, Ik of Uganda (Turnbull 1972) and Gwembe Tonga of Zambia (1979) neglected traditional social institutions and went out of their way to avoid sharing obligations, as have Mpimbwe of Tanzania with the collapse of traditional social institutions and rising income inequality (Kasper & Borgerhoff Mulder 2015).

Changing social relations among Mikea

As described above, Mikea have a sharing ethos, in that they value generosity and feel compelled to share when others see resources they lack. But during a social network interview that I conducted with 78 Mikea adults in the region of Bevondrorano June 2017, many informants made statements suggesting that non-sharing is also normal, as I provided in this chapter's epigraph. There would seem to be conflicting norms of generosity and property.

Many Mikea food items have become market commodities, so it is possible that Mikea do not share foods they want to sell, thus changing generalized to balanced reciprocity and communal to private property. Market exchange is not new for Mikea; Mikea sold wild silk cocoons to buyers as early as the 1920s, and have participated in several market booms since then, for butterbeans, maize, and marine products. Mikea oral historians recount that their ancestors used money since they were first visited by pirates in the seventeenth century.

If Mikea food sharing patterns reflect conflicting norms of public generosity and private property, then we might expect market commodities to be shared less frequently than foods that are exclusively consumed in the home, creating two economic spheres (*sensu* Bohannan 1955). This is not the case. Feral cat, lemurs, and wild watermelon have no market value, and yet are not shared.

A second possibility is that Mikea are abandoning traditional norms of generosity because food is too scarce, as has been documented among Ik (Turnbull 1972), Gwembe Tonga (Colson 1979), and Mpimbwe (Kasper & Borgerhoff Mulder 2015). During focus group discussions about poverty and wealth in 2006 (Tucker et al. 2011), Mikea described themselves as poorer than Masikoro and Vezo, but explained that this is not due to a lack of food, but a lack of political status vis-à-vis their neighbours. At that time, Mikea experienced less food insecurity than Masikoro (Tucker et al. 2010). But today, following their displacement from the Mikea Forest by the new national park, many Mikea are experiencing rather severe food shortages, as I witnessed in the community of Bevondrorano in June 2017. Despite their right to forage within the park, Mikea at Bevondrorano complained that even when they forage outside of the park, they are accosted by people claiming to be park guards who demand they pay fines. As a result, Mikea forage close to home, exhausting local tuber patches. Agricultural profits were very low due to severe drought, and most families had lost most of their cattle and goats to bandits and their poultry to disease. Many informants told us that their biggest struggle was finding food for their children, and that adults often slept hungry.

Changed and eroded norms could account for low sharing. But as with the previous explanations, this explanation is sufficient but not necessary. It does not explain why some foods are shared more frequently than others, and it assumes that Mikea once had norms of generosity and common property like those of other foragers, which has not been demonstrated.

Conclusions

Why Mikea rarely share most foods

I have offered three explanations for why Mikea rarely share most foods: because, due to their agro-pastoral ancestry, they treat food like clan property; because, consistent with the tolerated scrounging model, self-interested foragers are unlikely to share small and synchronously acquired foods; and because social norms of generosity and property have changed due to market involvement and poverty. I have concluded that each explanation is consistent with some of the data from Belò, but there is not sufficient evidence to conclude that property norms, conflicting self-interests, or eroded social institutions are the *cause* of observed behaviour.

I suspect that all of these explanations have some validity, for Mikea strategically negotiate a complex set of conflicting norms of generosity and property. Ancestral norms of clan property, that anthropologists associate with agro-pastoralism, continue to influence how Mikea distribute livestock meat, for livestock sacrifice to honour ancestors continues to be central to Mikea cultural life. The size and synchronous availability of foods probably plays some role in the frequency with which they are shared, even if tolerated scrounging cannot fully explain why Mikea share food so much less frequently than do many other foragers. If Mikea share food out of competitive self-interest, this could just as well be a result of historical shifts to market exchange and increased poverty, rather than the 'human nature' envisioned by individual selectionist evolutionary theory.

Mikea's sharing ethos, visible in the value they place on generosity, could be relict from time before wild foods were market commodities, and before the stresses of the National Park, and perhaps before French colonization. Some informants have made this claim; a common discourse is that in former days, two foragers who happened to meet in the forest would exchange game. Other informants claim that Mikea were more generous before the year 2000, when a joint commission of governmental and non-governmental organizations effectively halted Mikea agriculture in the forest in the name of environmental protection. When I started fieldwork in the mid 1990s, it was very common for Mikea to gift a chicken or small game to visitors; more recently, Mikea offer visitors the chance to purchase these products. Contemporary Mikea people balance sharing obligations with recognition of the market value of foods, and very real needs to feed their children daily, in the context of scarcity.

We should not be surprised that food sharing among Mikea is a complicated mix of history, strategy, and culture. Recent accounts of hunter-gatherer adap-

tation to cash economies make this clear. Canadian Inuit have renegotiated what goods should be shared according to the cultural institution of *ningigtuk* (Wenzel 2000), and gender roles for cash and food income production that enables *ningigtuk* (Quintal-Marineau and Wenzel, chapter 14, this volume). Likewise, Artemova (chapter 15, this volume) documents the continuity of indigenous Australian sharing traditions into the modern cash economy.

Social change is not a recent phenomenon. Foragers have been influenced by kingdoms, empires, exchange, slavery, and colonialism since the dawn of the Holocene (Lee & Guenther 1991; Solway & Lee 1990; Wilmsen 1989; Wilmsen & Denbow 1990). We should expect that the food sharing behaviours of prehistoric foragers were equally complicated. Nor should we be surprised that people simultaneously conform to conflicting norms. Knight & Astuti (2008) argue convincingly that people commonly accept conflicting cultural norms without acknowledging them or attempting to resolve them.

Theoretical conclusion 1: Anthropologists should not necessarily assume that food sharing pertains to foragers
Of all of anthropology's specialties, hunter-gatherer studies have had the most difficulty vanquishing the spectre of Victorian-era unilinear social evolutionism. The spectre is resurrected almost every time we voice a generalization about foragers, for example, that they share food. When researchers make this generalization, we unwittingly frame people and behaviours after a style that has less to do with the observed data, and more to do with European cultural bias; specifically, imaginings 'man in the state of nature' without private property.

I am accustomed to hearing from fellow hunter-gatherer specialists the critique that Mikea do not share food (or are not strictly egalitarian, or deviate some other way from the forager stereotype) because their agro-pastoral roots locate them outside the category of a true hunter-gatherer. There are two ways to interpret this critique.

One way imagines that there are some pure examples of the hunter-gatherer type out there, presumably African foragers in the Rift Valley or the Kalahari Desert, and that groups like Mikea are not them. This argument employs a fallacy that tends to lurk behind the spectre of unilinear evolutionism in hunter-gatherer studies: no true Scotsman (Flew 1975). No true Scotsman involves:

Making what could be called an appeal to purity as a way to dismiss relevant criticisms or flaws of an argument.

Angus declares that Scotsmen do not put sugar on their porridge, to which Lachlan points out that he is a Scotsman and puts sugar on his porridge. Furious, like a true Scot, Angus yells that no *true* Scotsman puts sugar on his porridge.

Richardson, 2012,
'What is your logical fallacy?'

Hunter-gatherer scholars commit the No True Scotsman fallacy when they exclude societies from the forager category that do not align with models of idealized foragers, such as foragers who do not share food. Societies that do not conform to what Isaac (1990) called the 'generalized forager model' (egalitarianism, low population density, lack of territoriality, limited storage, and fluctuating band membership), are often relegated to other categories, such as 'complex hunter-gatherer', 'forager-horticulturalist', 'sedentarized forager', 'post-forager', or 'Australian' (for many Australian foraging societies defy the generalized forager model).

If we define 'hunter-gatherer' as anything other than a person or society who lives by hunting and gathering, then we risk creating a thing of bias that is arbitrary to the facts and that promotes the unilinear spectre. Perhaps worst of all, we create a thing that has causal agency based on some purported essential property, as if people do what they do because of the type of society they belong to. In actual fact, people do not naturally predicate their behaviours on the categories social scientists put them into (Kelly 2013, 21–2).

A second way to view the critique that Mikea do not share food because they are not foragers requires neither categorical purity nor unilinear progress, but instead considers what factors, common to some foragers but not exclusive to foraging societies, predict food sharing. This kind of argument does not seek cause in categorical essence, but in ecology, sociology, and politics. As I have discussed, cultural ecology provides reasons why foraging, farming, and herding subsistence modes may require specific social institutions to solve their particular ecological challenges. Sillander (chapter 5) argues that food sharing is common when societies exhibit 'open aggregation', when communities can easily incorporate new members and customs; and 'relatedness', particularly, a shared ethos of kinship.

The ethnographic record demonstrates that property norms vary considerably among foraging societies. For example, Hadza of Tanzania seem socially unable to monopolize property, which may be why they have rarely practiced agriculture (Blurton Jones 2016). Kalahari Ju'/hoansi freely give away possessions in *hxaro* exchange and consider food patches

to be common property, but family groups develop claims to waterholes (*!Nore*), so that non-members must ask permission before settling near them (Lee 1979). By contrast, many indigenous Australian societies have the kinds of corporate descent groups that we normally expect of agro-pastoralists, including clan-owned 'estates' (Barker 1976). The so-called 'complex hunter-gatherers', such as the Kwakwaka'wakw of North America's Pacific Coast, have descent groups (*numima*), and personal and clan property (Rohner & Rohner 1970).

The *performance* of food sharing also varies among foraging societies. Rebecca Bliege Bird (personal communication, 2016) has told me that after a day of foraging, Martu of Australia's Western Desert will immediately divide all foods evenly among all present without apparent negotiation, even with individuals who did not contribute much (this conforms to Artemova's account in chapter 15). By contrast, Frank Marlowe (personal communication, 2016) describes Hadza food sharing as a constant stream of demands and bluffs. Echoing my description of Mikea, Marlowe said that it was not uncommon for his Hadza informants to ask him to hide their game in his truck to avoid obligations to share.

Food sharing is not exclusive to societies we call hunter-gatherers. Evans-Pritchard writes of the Nuer of South Sudan in the 1930s:

Although each household owns its own food, does its own cooking, and provides independently for the needs of its members, men, and much less, women and children, eat in one another's homes to such an extent that, looked at from the outside, the whole community is seen to be partaking in a joint food supply. Rules of hospitality and conventions about the division of meat and fish lead to far wider sharing of food than a bare statement of the principles of ownership would suggest.... (Evans-Pritchard 1940, 84).

Similarly, Johnson (2000, 98) says of nomadic Turkana herders, 'Food sharing, unlike livestock exchange, is a daily experience for all Turkana; food is not only shared with family members, but often with neighbours, friends, and on occasion, even with unknown passers-by'. One of Johnson's informants explained, 'Turkana is a culture of sharing' (Johnson 2000, 103). Another informant elaborated:

...in Turkana, the generous people are many, the greedy are few... whenever you

are traveling you never carry food... as long as you know that you are passing where there are people you will eat whether you know people or not (Turkana informant quoted in Johnson 2000, 99).

In Bohannan & Bohannan's ethnography of agricultural Tiv of Nigeria (1968, 143), they describe networks of gift exchange for developing social relationships. They also describe the movement of food across the landscape in lean times.

Yam harvest can begin a week or two earlier in southern Tivland than in central areas, and baskets of yams are, on request, sent north in early August, just as grain had been sent south earlier. This movement of food is not organized; it takes place on a kinship or a friendship basis and is morally important to Tiv.... Tiv insist that these gifts are not reciprocated, even though a person is more likely to 'send hunger' to someone who has formerly sent food to him than to someone who has not (Bohannan & Bohannan 1968, 143).

In this volume, Sillander (chapter 5) describes food sharing among Bentian horticulturalists of Indonesian Borneo.

Theoretical conclusion 2: The time is right for evolutionary and social anthropologists to work together

There has been an unfortunate and unproductive degree of acrimony between evolutionary and social anthropologists during the past few decades on topics such as hunter-gatherer food sharing, stemming, I believe, from their divergent starting assumptions about human nature (Fuentes 2004; Tucker 2014). In this chapter I have contrasted evolutionary anthropologists' approach to food sharing, which is to find some selfish benefit for being nice, versus social anthropologists' approach, which assumes that human nature is social.

In the twenty-first century an increasing number of evolutionary scholars accept that humans (and other organisms) are often not self-interested, but act for the good of others or the group (Boyd & Richerson 2010; Richerson et al. 2016; Wilson & Wilson 2007). If one's membership in a group has similar or greater impact on one's survival and reproduction than one's individual traits or choices, then the survival of the group becomes more important than individual advantage. Even detractors accept

that ‘group selection’ occurs; they argue that this is just another way to look at individual selection and kin selection, and individual self-interest still drives the desire to work for the group (West et al. 2008, 2011). Proponents aver that group selection permits evolutionary scholars fresh perspectives on cultural phenomena, particularly social institutions such as religion, ethnicity, and exchange (Atran & Henrich 2010; Boyd & Richerson 2010; Richerson et al. 2016.).

Food sharing is one of these cultural phenomena. We need not explain away generosity with nepotism, reciprocal altruism, trade, costly signalling, or tolerated scrounging. People could be generous as the result of ‘norms of strong reciprocity’, shared cultural concepts that function to keep groups cohesive (Gintis 2000). We are finally at a moment when explanations based on culture history, individual’s strategic interests, and social exchange may coexist within a common theoretical umbrella, facilitating exploration of the plural causes for behaviour.

Acknowledgements

This research was funded by grants from the National Science Foundation (BCS-9808984, BCS-0650412), including a grant to Jeremy Koster, Elanor Power, Matthew Jackson, Monique Borgerhoff Mulder, and Samuel Bowles (BCS-1743019). Research was conducted in association with the Université de Toliara, Madagascar (thanks to President Lezo Hugue, and past presidents Dina Alphonse and Théodoret) and the research unit CeDRATOM (thanks, Barthélemy Manjakahery). Tsiazonera, Jaovola Tombo, Tsimitamby, Patricia Hajasoa, Gérard Soanahary, and Gervais Tantely assisted with data collection. This paper is dedicated to Frank Marlowe, whose imagination will be forever wandering the trails of Hadzaland.

References

- Altman, J. & N. Peterson, 1988. Rights to game and rights to cash among contemporary Australian hunter-gatherers, in *Hunters and Gatherers. Vol 2: Property, Power and Ideology*, eds. T. Ingold, D. Riches & J. Woodburn. Oxford: Berg, 75–94.
- Astuti, R., 1995. ‘The Vezo are not a kind of people’: Identity, difference, and ‘ethnicity’ among a fishing people of western Madagascar. *American Ethnologist* 22, 464–82.
- Atran, S. & J. Henrich, 2010. The evolution of religion: How cognitive by-products, adaptive learning heuristics, ritual displays, and group competition generate deep commitments to prosocial religions. *Biological Theory* 5(1), 18–30.
- Barker, G., 1976. The ritual estate and aboriginal polity. *Mankind* 10, 225–39.
- Barnard, A., 1999. Images of hunter-gatherers in European thought, in *The Cambridge Encyclopedia of Hunters and Gatherers*, eds. R.B. Lee & R. Daly. Cambridge: Cambridge University Press, 375–83.
- Bates, D., 2005. *Human Adaptive Strategies: Ecology, Culture, and Politics* (3rd ed.). Boston: Pearson, Allyn, and Bacon.
- Bird-David, N., 1990. The giving environment: another perspective on the economic system of gatherer-hunters. *Current Anthropology* 31(2), 189–96.
- Blurton Jones, N., 1984. A selfish origin for human food sharing: tolerated theft. *Ethology and Sociobiology* 5, 1–3.
- Blurton Jones, N., 2016. Why do so few Hadza farm?, in *Why Forage? Hunters and Gatherers in the Twenty-First Century*, eds. B.F. Codding & K.L. Kramer. Santa Fe: School for Advanced Research, 113–36.
- Bohannon, P., 1955. Some principles of exchange and investment among the Tiv. *American Anthropologist* 57, 60–70.
- Bohannon, P. & L. Bohannon, 1968. *Tiv Economy*. Evanston: Northwestern University Press.
- Boyd, R. & P.J. Richerson, 2010. Transmission coupling mechanisms: Cultural group selection. *Philosophical Transactions of the Royal Society B* 365, 3787–95.
- Colson, E., 1979. In good years and bad: Food strategies of self-reliant societies. *Journal of Anthropological Research* 35, 18–29.
- Dalton, G. 1965. Primitive, archaic, and modern economies: Karl Polanyi’s contribution to economic anthropology and comparative economy, in *Essays in Economic Anthropology*, ed. J. Helm. Seattle: University of Washington Press.
- Douglass, K. & B. Tucker, 2017. Testing models of cultural change through archaeological survey and oral history among Mikea forager-agropastoralists of SW Madagascar. Funded research proposal, Wenner Gren Foundation for Anthropological Research.
- Ember, C.R., M. Ember & P.N. Peregrine, 2011. *Anthropology* (13th ed.). Boston: Prentice Hall.
- Evans-Pritchard, E.E., 1940. *The Nuer: A Description of the Modes of Livelihood and Political Institutions of a Nilotic People*. Oxford: Oxford University Press.
- Flew, A., 1975. *Thinking About Thinking: Do I Sincerely Want to Be Right?* London: Collins Fontana.
- Fortier, J., 2000. Monkey’s thigh is the Shaman’s meat: Ideologies of sharing among Raute of Nepal, in *The Social Economy of Sharing: Resource Allocation and Modern Hunter-Gatherers*, eds. G.W. Wenzel, G. Hovelsrud-Broda & N. Kishigami. (Senri Ethnological Studies 53.) Osaka: National Museum of Ethnology, 113–48.
- Fuentes, A., 2004. It’s not all sex and violence: Integrated anthropology and the role of cooperation and social complexity in human evolution. *American Anthropologist* 106(4), 710–18.
- Gintis, H., 2000. Strong reciprocity and human sociality. *Journal of Theoretical Biology* 206, 169–79.
- Guest, K.J., 2014. *Cultural Anthropology: A Toolkit for a Global Age*. New York: W.W. Norton & Company, Inc.
- Gurven, M., & H. Kaplan, 2002. From forest to reservation: Transitions in food-sharing behavior among the Ache of Paraguay. *Journal of Anthropological Research* 58(1), 93–120.

- Hamilton, W.D., 1964. The genetical evolution of social behavior. I. *Journal of Theoretical Biology* 7, 1–16.
- Haviland, W.H., 2002. *Cultural Anthropology* (10th ed.). Fort Worth: Harcourt College Publishers.
- Hawkes, K., & R. Bliege Bird, 2002. Showing off, handicap signaling, and the evolution of men's work. *Evolutionary Anthropology* 11(2), 58–67.
- Hawkes, K., J.F. O'Connell & N.G.B. Jones, 1991. Hunting income patterns among the Hadza – Big game, common Goods, foraging goals and the evolution of the human diet. *Philosophical Transactions of the Royal Society of London Series B* 334(1270), 243–51.
- Hrdy, S.B., 1999. *Mother Nature: A History of Mothers, Infants, and Natural Selection*. New York: Pantheon Books.
- Hunt, R., 2000. Forager food sharing economy: transfers and exchanges, in *The Social Economy of Sharing: Resource Allocation and Modern Hunter-Gatherers*, eds. G.W. Wenzel, G. Hovelsrud-Broda & N. Kishigami. (Senri Ethnological Studies 53.) Osaka: National Museum of Ethnology, 7–26.
- Isaac, B. 1990. Economy, ecology, and analogy: The !Kung San and the Generalized Foraging Model. *Research in Economic Anthropology* 5, 323–35.
- Johnson, B.R., 2000. Social networks and exchange, in *Turkana Herders of the Dry Savanna: Ecology and Biobehavioural Response of Nomads to an Uncertain Environment*, eds. M.A. Little & P.W. Leslie. Cambridge: Cambridge University Press, 88–106.
- Joseph, A.M., 1994. *500 Nations: An Illustrated History of North American Indians*. New York: Alfred A. Knopf.
- Kaplan, H. & K. Hill, 1985. Food sharing among Ache foragers: Tests of explanatory hypotheses. *Current Anthropology* 26(2), 223–46.
- Kasper, C. & M. Borgerhoff Mulder, 2015. Who helps who and why? Cooperative networks in Mpimbwe. *Current Anthropology* 56(5), 701–32.
- Kelly, R.L., 2013. *The Lifeways of Hunter-Gatherers: The Foraging Spectrum*. Cambridge: Cambridge University Press.
- Kitanishi, K., 2000. The Aka and the Baka: Food sharing among two Central African Hunter-Gatherer groups, in *The Social Economy of Sharing: Resource Allocation and Modern Hunter-Gatherers*, eds. G.W. Wenzel, G. Hovelsrud-Broda & N. Kishigami. (Senri Ethnological Studies 53.) Osaka: National Museum of Ethnology, 149–70.
- Knight, N. & R. Astuti, 2008. Some problems with property ascription. *Journal of the Royal Anthropological Institute* 14, S142–S158.
- Kottak, C.P., 2015. *Anthropology: Appreciating Human Diversity* (16th ed.). New York: McGraw Hill Education.
- Lee, R.B., 1979. *The !Kung San: Men, Women, and Work in a Foraging Society*. Cambridge: Cambridge University Press.
- Lee, R.B., 2003. *The Dobe Ju/'hoansi*. Belmont: Wadsworth Thomson Learning.
- Lee, R. & M. Guenther 1991. Oxen or onions? The search for trade (and truth) in the Kalahari. *Current Anthropology* 32, 592–601.
- Marlowe, F., 2010. *The Hadza: Hunter-Gatherers of Tanzania*. Berkeley: University of California Press.
- Mauss, M., 1967 [1925]. *The Gift: Forms and Functions of Exchanges in Archaic Societies*. New York: Norton.
- Miller, B., 2010. *Cultural Anthropology in a Globalizing World* (2nd ed.). Boston: Pearson.
- Netting, R.McC., 1986. *Cultural Ecology* (2nd ed.). Prospect Heights: Waveland Press.
- Park, M.A., 2006. *Introducing Anthropology: An Integrated Approach* (3rd ed.). Boston: McGraw Hill.
- Polanyi, K., 1957. *Trade and Market in the Early Empires: Economies in History and Theory*. Glencoe: The Free Press.
- Poyer, L., & R.L. Kelly, 2000. Mystification of the Mikea: constructions of foraging identity in southwest Madagascar. *Journal of Anthropological Research* 56, 163–85.
- Richardson, J., 2012. What is your logical fallacy? yourlogicalfallacyis.com.
- Richerson, P., R. Baldini, A.V. Bell, K. Demps, K. Frost, et al., 2016. Cultural group selection plays an essential role in explaining human cooperation: A sketch of the evidence. *Behavioral and Brain Sciences* 39, 1–68.
- Rohner, R.P. & E.C. Rohner, 1970. *The Kwakiutl: Indians of British Columbia*. New York: Holt, Rinehart and Winston.
- Sahlins, M., 1972. *Stone Age Economics*. Hawthorne: Aldine de Gruyter.
- Scupin, R., & C.R. DeCorse, 2012. *Anthropology: A Global Perspective* (7th ed.). Boston: Pearson.
- Smith, E.A., R.B. Bird & D.W. Bird, 2003. The benefits of costly signaling: Meriam turtle hunters. *Behavioral Ecology* 14(1), 116–26.
- Solway, J.S. & R.B. Lee, 1990. Foragers, genuine or spurious? Situating the Kalahari San in history. *Current Anthropology* 31, 109–46.
- Stocking, G.W., 1974. *Victorian Anthropology*. New York: Free Press.
- Tanaka, J., 1980. *The San Hunter-Gatherers of the Kalahari: A Study in Ecological Anthropology*. Tokyo: University of Tokyo Press.
- Trivers, R.L., 1971. Evolution of reciprocal altruism. *Quarterly Review of Biology* 46(1), 35–57.
- Tucker, B., 2001. *The Behavioral Ecology and Economics of Risk, Variation, and Diversification among Mikea Forager-Farmers of Madagascar*. PhD dissertation, University of North Carolina, Chapel Hill, Department of Anthropology.
- Tucker, B., 2003. Mikea origins: Relicts or refugees? *Michigan Discussions in Anthropology* 14, 193–215.
- Tucker, B., 2004. Giving, scrounging, hiding, and selling: Minimal food transfers among Mikea forager-farmers of Madagascar. *Research in Economic Anthropology* 23, 43–66.
- Tucker, B., 2014. Rationality and the Green Revolution, in *Applied Evolutionary Anthropology: Darwinian Approaches to Contemporary World Issues*, eds. M. Gibson & D. Lawson. New York: Springer, 15–38.
- Tucker, B., A. Huff, Tsiazonera, J. Tombo, P. Hajasoia & C. Nagnisaha, 2011. When the wealthy are poor: Poverty explanations and local perspectives in southwestern Madagascar. *American Anthropologist* 113(2), 291–305.
- Tucker, B., Tsimitamby, F. Humber, S. Benbow & T. Iida, 2010. Foraging for development: A comparison of

- food insecurity, production, and risk among farmers, forest foragers, and marine foragers in southwestern Madagascar. *Human Organization* 69(4), 375–86.
- Turnbull, C., 1972. *The Mountain People*. New York: Simon and Schuster.
- Wenzel, G.W., 2000. Sharing, money, and modern Inuit subsistence: Obligation and reciprocity at Clyde River, Nunavut, in *The Social Economy of Sharing: Resource Allocation and Modern Hunter-Gatherers*, eds. G.W. Wenzel, G. Hovelsrud-Broda & N. Kishigami. (Senri Ethnological Studies 53.) Osaka: National Museum of Ethnology, 61–86.
- Wenzel, G.W., G. Hovelsrud-Broda & N. Kishigami (eds), 2000. *The Social Economy of Sharing: Resource Allocation and Modern Hunter-Gatherers*. (Senri Ethnological Studies 53.) Osaka: National Museum of Ethnology.
- West, S.A., A.S. Griffin & A. Gardner, 2008. Social semantics: How useful has group selection been? *Journal of Evolutionary Biology* 21, 374–85.
- West, S.A., C.E. Mouden & A. Gardner, 2011. Sixteen common misconceptions about the evolution of cooperation in humans. *Evolution and Human Behavior* 32, 231–62.
- Wiessner, P., 1982. Risk, reciprocity, and social influences on !Kung San economics, in *Politics and History in Band Societies*, eds. E. Leacock & R.B. Lee. Cambridge: Cambridge University Press, 61–84.
- Williams, G.C., 1966. *Adaptation and Natural Selection*. Princeton: Princeton University Press.
- Wilmsen, E.N. 1989. *Land Filled with Flies: A Political Economy of the Kalahari*. Chicago: University of Chicago Press.
- Wilmsen, E.N. & J.R. Denbow, 1990. Paradigmatic history of San-speaking peoples and current attempts at revision. *Current Anthropology* 31, 489–524.
- Wilson, D.S. & E.O. Wilson, 2007. Rethinking the theoretical foundations of sociobiology. *Quarterly Review of Biology* 82(4), 327–48.
- Winterhalder, B., 1996a. Social foraging and the behavioral ecology of intragroup resource transfers. *Evolutionary Anthropology* 5(2), 46–57.
- Winterhalder, B., 1996b. A marginal model of tolerated theft. *Ethology and Sociobiology* 17(1), 37–53.
- Yount, J.W., Tsiazonera & B. Tucker, 2001. Constructing Mikea identity: Past and present links to forest and foraging. *Ethnohistory* 48, 257–91.
- Ziker, J. & M. Scnegg, 2005. Food sharing at meals: Kinship, reciprocity, and clustering in the Taimyr Autonomous Okrug, Northern Russia. *Human Nature* 16(2), 178–211.