

## Durham E-Theses

---

*No one can kill the drought: Understanding complexity in the relationship between drought and conflict amongst pastoralists in northern Kenya*

CARLA SUZANNE HANDLEY

---

### How to cite:

HANDLEY, CARLA SUZANNE (2012) No one can kill the drought: Understanding complexity in the relationship between drought and conflict amongst pastoralists in northern Kenya. Doctoral thesis, Durham University.

---

### Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a <https://etheses.durham.ac.uk/id/eprint/7289/> is made to the metadata record in Durham E-Theses
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the [full Durham E-Theses policy](#) for further details.

# *No one can kill the drought:* Understanding complexity in the relationship between drought and conflict amongst pastoralists in northern Kenya

Carla Suzanne Handley

## **Abstract**

Climate-induced resource scarcity is currently cited as one of the most important drivers of human conflict, particularly in the developing world. It is predicted that in the coming years, rising global temperatures may increase aridity in a number of resource-poor regions, precipitating violence, as subsistence populations struggle to maintain livelihoods. East African pastoral communities have long adapted to unpredictable, adverse climatic conditions by modifying behaviours according to their environmental circumstance. A growing concern, however, is whether pastoralists can adapt to prolonged periods of drought, reduced rangeland productivity, and increased livelihood insecurity. A number of studies have argued that pastoralists may rely on violent livestock raids in order to recoup herd losses incurred during drought periods. This thesis investigates the apparent relationship between drought-induced resource scarcity and inter-ethnic conflict amongst three pastoral populations in northern Kenya. Through the analysis of ethnographic data and quantitative applications, this study examines the nature of the relationship between periods of increased drought and escalations in conflict episodes, testing if there is, indeed, a direct relationship between these two phenomena. Furthermore, it builds on the complexity of this relationship by identifying a number of intermediary causal and social effects that may interact and influence the nature of the resource scarcity – conflict relationship. Game theory and socio-ecological resilience models are used as explanatory frameworks, as a way of making sense of these ‘chaotic’ interactions. Ultimately, this thesis presents new theoretical perspectives in understanding resource-based conflicts, tests the adaptive ‘limits’ of subsistence populations, and examines the impact that conflict has on the resilience of pastoral communities.

*No one can kill the drought:* Understanding complexity  
in the relationship between drought and conflict amongst  
pastoralists in northern Kenya

Carla Suzanne Handley

A thesis submitted for the degree of Doctor of Philosophy in Anthropology

Department of Anthropology

Durham University

Dr Kate Hampshire, Supervisor

Professor Robert Layton, Supervisor

2012

# Table of Contents

|                                                                                              |    |
|----------------------------------------------------------------------------------------------|----|
| List of Illustrations .....                                                                  | 11 |
| List of Abbreviations and Terminology .....                                                  | 16 |
|                                                                                              |    |
| CHAPTER ONE: INTRODUCTION                                                                    |    |
| 1.1 Introduction .....                                                                       | 23 |
| 1.2 Objectives.....                                                                          | 25 |
| 1.3 Plan and Thesis Outline .....                                                            | 26 |
|                                                                                              |    |
| CHAPTER TWO: LITERATURE REVIEW                                                               |    |
| 2.1 Conflict and Cooperation in Humans.....                                                  | 29 |
| 2.1.1 Biology and Social Learning Theory.....                                                | 29 |
| 2.1.2 Types of Aggression: Affective and Instrumental.....                                   | 31 |
| 2.1.3 Socio-Ecological Factors Associated with Cooperative and Aggressive Relationships..... | 32 |
| 2.1.3.1 Competition for Limited Resources .....                                              | 32 |
| 2.1.3.2 In-group – Out-group Bias .....                                                      | 33 |
| 2.1.3.3 Gender Relations .....                                                               | 34 |
| 2.1.3.4 Kinship and Marriage.....                                                            | 35 |
| 2.1.3.5 Reciprocity, Creating Alliances, and Spreading Risk .....                            | 35 |
| 2.1.3.6 Ideology and Social Values .....                                                     | 36 |
| 2.1.3.7 Leaders, Traditional Conflict Resolution, and Punishment .....                       | 37 |
| 2.1.4 Problems in Defining Violent Conflict.....                                             | 38 |
| 2.1.4.1 A Functional Definition of Violence and Associated Terminology.....                  | 39 |
| 2.2 Game Theory Approaches to Conflict and Cooperation.....                                  | 40 |
| 2.2.1 Principles of Game Theory .....                                                        | 41 |

|                                                                             |    |
|-----------------------------------------------------------------------------|----|
|                                                                             | 4  |
| 2.2.2 Lessons from the Iterated Prisoner's Dilemma.....                     | 42 |
| 2.2.3 The Emergence of Cooperation .....                                    | 43 |
| 2.2.4 The Maintenance of Cooperation .....                                  | 45 |
| 2.3 Resource Scarcity and Conflict: Understanding Causation .....           | 47 |
| 2.3.1 Components of the Complexity Approach .....                           | 49 |
| 2.4 Coping Strategies for Resource Scarcity .....                           | 54 |
| 2.4.1 East African Pastoralism and Coping in Rangeland Systems.....         | 55 |
| 2.4.1.1 Mobility .....                                                      | 56 |
| 2.4.1.2 Herd Accumulation and Diversification.....                          | 59 |
| 2.4.1.3 Social Networks, Stock Alliances, and Indigenous Knowledge Transfer | 60 |
| 2.4.1.4 Livelihood Diversification and Accessing Markets .....              | 60 |
| 2.4.2 Coping Mechanisms: Points for Consideration .....                     | 61 |
| 2.5 Theories of Vulnerability and Resilience.....                           | 63 |
| 2.5.1 Vulnerability .....                                                   | 64 |
| 2.5.2 Resilience.....                                                       | 67 |
| 2.5.2.1 Applying Resilience to Socio-Ecological Systems (SESs) .....        | 70 |
| 2.6 Conclusion .....                                                        | 74 |

### CHAPTER THREE: AREA AND BACKGROUND

|                                                              |    |
|--------------------------------------------------------------|----|
| 3.1 Brief History and Administration of Northern Kenya ..... | 75 |
| 3.2 The People.....                                          | 78 |
| 3.2.1 The Samburu.....                                       | 79 |
| 3.2.2 The Borana.....                                        | 82 |
| 3.2.3 The Rendille.....                                      | 85 |
| 3.2.4 The Fieldwork Experience.....                          | 88 |
| 3.3 Field Site Descriptions .....                            | 89 |
| 3.4 Photos of Study Area .....                               | 94 |

## CHAPTER FOUR: METHODS

|       |                                        |     |
|-------|----------------------------------------|-----|
| 4.1   | Introduction .....                     | 98  |
| 4.2   | Fieldwork Plan and Preparation .....   | 98  |
| 4.3   | Entering the Field .....               | 102 |
| 4.4   | Selecting a Sample .....               | 105 |
| 4.5   | Methods and Justification .....        | 108 |
| 4.5.1 | Semi-Structured Interviews .....       | 108 |
| 4.5.2 | Focus Groups .....                     | 111 |
| 4.5.3 | Participant-Observation .....          | 112 |
| 4.5.4 | Mobile Ethnographies .....             | 114 |
| 4.5.5 | Mapping .....                          | 114 |
| 4.5.6 | Tree Transects .....                   | 115 |
| 4.5.7 | Archival and Meteorological Data ..... | 115 |
| 4.5.8 | A Note on Technology .....             | 117 |
| 4.6   | Data Analysis .....                    | 117 |
| 4.6.1 | Qualitative Data .....                 | 117 |
| 4.6.2 | Quantifiable Data .....                | 118 |
| 4.6.3 | Tree Transect Data .....               | 119 |
| 4.6.4 | Mapping Data .....                     | 119 |
| 4.7   | Conclusion .....                       | 119 |

## CHAPTER FIVE: ETHNOGRAPHIC ANALYSIS OF CLIMATIC CONDITIONS AND CONFLICT

|       |                             |     |
|-------|-----------------------------|-----|
| 5.1   | Introduction .....          | 120 |
| 5.2   | Understanding Climate ..... | 122 |
| 5.2.1 | Climate Perspectives .....  | 124 |

|         |                                                       |     |
|---------|-------------------------------------------------------|-----|
| 5.2.2   | Climate Terminology .....                             | 125 |
| 5.2.3   | Understanding Conflict.....                           | 129 |
| 5.2.4   | Conflict Perspectives .....                           | 131 |
| 5.3     | Patterns of Climate and Conflict .....                | 132 |
| 5.3.1   | Conflict at Any Time .....                            | 133 |
| 5.3.2   | Conflict during Drought.....                          | 133 |
| 5.3.2.1 | Avoiding Conflict During the Drought .....            | 134 |
| 5.3.2.2 | Characteristics of Conflict during Drought .....      | 137 |
| 5.3.3   | Conflict during Rains.....                            | 138 |
| 5.3.3.1 | Avoiding Conflict during Rains .....                  | 140 |
| 5.3.3.2 | Characteristics of Conflict during Rains .....        | 142 |
| 5.3.3.3 | Conflict at the End of Drought / Start of Rains ..... | 142 |
| 5.3.4   | Interior versus Border Experiences.....               | 143 |
| 5.3.5   | Reduced Conflict: Long-term Trends .....              | 147 |
| 5.3.6   | Reduced Conflict: Annual Occurrences .....            | 149 |
| 5.4     | ‘Logical’ Progression and Thresholds .....            | 151 |
| 5.5     | Discussion and Conclusions.....                       | 153 |

## CHAPTER SIX: STATISTICAL ANALYSIS OF CLIMATIC CONDITIONS AND CONFLICT

|       |                                          |     |
|-------|------------------------------------------|-----|
| 6.1   | Introduction .....                       | 155 |
| 6.2   | Defining Variables .....                 | 155 |
| 6.2.1 | Conflict and Cooperation Variables ..... | 155 |
| 6.2.2 | Numerical Value of Drought .....         | 156 |
| 6.2.3 | Lag-time Effects .....                   | 156 |
| 6.2.4 | Spatial Distribution of Drought .....    | 157 |
| 6.2.5 | Comparative Statistical Analysis .....   | 157 |
| 6.3   | Statistical Analysis .....               | 158 |

|       |                                    |     |
|-------|------------------------------------|-----|
| 6.3.1 | Hypotheses and Relationships ..... | 158 |
| 6.3.2 | Datasets .....                     | 161 |
| 6.3.3 | Hypotheses Testing.....            | 165 |
| 6.3.4 | Statistical Tests .....            | 169 |
| 6.4   | Results.....                       | 170 |
| 6.4.1 | Discussion.....                    | 177 |
| 6.5   | Conclusions.....                   | 178 |

## CHAPTER SEVEN: MOTIVATIONS FOR CONFLICT

|         |                                                    |     |
|---------|----------------------------------------------------|-----|
| 7.1     | Introduction.....                                  | 180 |
| 7.1.1   | A Note on Methods.....                             | 182 |
| 7.1.2   | A Note on “Culture” .....                          | 183 |
| 7.2     | Results.....                                       | 184 |
| 7.3     | Dispositions of Conflict .....                     | 187 |
| 7.3.1   | “Prestige Culture” .....                           | 187 |
| 7.3.2   | “Youth / <i>Moran</i> Culture” .....               | 190 |
| 7.3.2.1 | Youth: Prestige .....                              | 190 |
| 7.3.2.2 | Youth: Ladies’ Praise and Incitement .....         | 191 |
| 7.3.2.3 | Youth: Employment .....                            | 193 |
| 7.3.2.4 | Youth: Group Belonging .....                       | 193 |
| 7.3.2.5 | Myths.....                                         | 194 |
| 7.3.2.6 | Differences in Perspectives, Separated by Age..... | 195 |
| 7.3.3   | “Revenge Culture” .....                            | 197 |
| 7.3.4   | “Tribal” Hate.....                                 | 199 |
| 7.4     | Triggers of Conflict.....                          | 201 |
| 7.4.1   | Competition for Land, Water, and Pasture .....     | 201 |
| 7.4.2   | Retaliation.....                                   | 203 |



|         |                                                                     |     |
|---------|---------------------------------------------------------------------|-----|
| 7.4.2.1 | Collectivism in Retaliation .....                                   | 205 |
| 7.4.3   | Opportunity .....                                                   | 206 |
| 7.4.3.1 | Optimal Conditions: Proximity and Obscurity .....                   | 206 |
| 7.4.3.2 | Vulnerability: Unarmed, Unprotected, or Imbalance in Manpower... .. | 207 |
| 7.4.3.3 | Gun Ownership .....                                                 | 210 |
| 7.4.3.4 | Markets and Commercialisation of Conflict .....                     | 212 |
| 7.4.4   | Poverty and Employment .....                                        | 213 |
| 7.4.5   | Politics and Government Incitement .....                            | 216 |
| 7.5     | Discussion .....                                                    | 219 |
| 7.5.1   | Population .....                                                    | 219 |
| 7.5.2   | Relationships between Triggers and Dispositions .....               | 220 |
| 7.5.3   | Multi-Causal Nature of Conflict .....                               | 221 |
| 7.5.4   | Disposition for Cooperation .....                                   | 225 |

## CHAPTER EIGHT: CONFLICT AND COOPERATION IN PASTORAL POPULATIONS

|       |                                                           |     |
|-------|-----------------------------------------------------------|-----|
| 8.1   | Introduction .....                                        | 229 |
| 8.2   | Applying Games to Empirical Data .....                    | 229 |
| 8.3   | The Samburu / Rendille and Borana Relationship .....      | 234 |
| 8.3.1 | Transition from Non-zero Sum to Zero Sum Games .....      | 238 |
| 8.3.2 | Mechanisms Promoting Continued Cooperation .....          | 240 |
| 8.4   | The Borana and Somali Relationship .....                  | 245 |
| 8.5   | The Samburu and Rendille Relationship .....               | 250 |
| 8.6   | Is Conflict Adaptive? .....                               | 254 |
| 8.6.1 | The 'Limited War' Theory and Extreme Violence .....       | 256 |
| 8.7   | Limitations of Theory and Scope for Future Research ..... | 260 |

## CHAPTER NINE: ADAPTATION AND RESILIENCE

|         |                                                                         |     |
|---------|-------------------------------------------------------------------------|-----|
| 9.1     | Introduction .....                                                      | 263 |
| 9.2     | Mobility in Northern Kenya .....                                        | 264 |
| 9.2.1   | Development Initiatives and Mobility .....                              | 265 |
| 9.2.2   | Environmental Change and Mobility .....                                 | 270 |
| 9.2.3   | Political Influence and Mobility .....                                  | 272 |
| 9.2.4   | Effects of Sedentarisation .....                                        | 273 |
| 9.3     | Conflict Effects on Coping Mechanisms .....                             | 276 |
| 9.3.1   | Mobility and Conflict .....                                             | 276 |
| 9.3.2   | Herd Accumulation / Diversification and Conflict .....                  | 280 |
| 9.3.3   | Social Networks, Stock Alliances, Knowledge Transfer and Conflict ..... | 284 |
| 9.3.4   | Livelihood Diversity and Conflict .....                                 | 287 |
| 9.3.5   | Markets and Conflict .....                                              | 288 |
| 9.3.6   | Conflict as Cause and Effect .....                                      | 289 |
| 9.4     | Limits of Coping and Evaluating Resilience .....                        | 290 |
| 9.4.1   | Evaluating Resilience .....                                             | 291 |
| 9.4.1.1 | Persistence .....                                                       | 291 |
| 9.4.1.2 | Adaptation .....                                                        | 292 |
| 9.4.1.3 | Desirability and Perceptions of Risk .....                              | 295 |
| 9.4.1.4 | Reorganisation and Transformability .....                               | 297 |

## CHAPTER TEN: DISCUSSION AND CONCLUSIONS

|        |                                                          |     |
|--------|----------------------------------------------------------|-----|
| 10.1   | Introduction .....                                       | 300 |
| 10.2   | Process Tracing .....                                    | 300 |
| 10.2.1 | Example: Retaliation .....                               | 304 |
| 10.3   | Modelling Resource Scarcity and Conflict Variables ..... | 305 |
| 10.4   | Is Conflict Part of a Resilient System? .....            | 309 |

|        |                                             |     |
|--------|---------------------------------------------|-----|
| 10.5   | Building Resilience in Northern Kenya ..... | 314 |
| 10.5.1 | Bottom-up Approaches .....                  | 315 |
| 10.5.2 | Top-Down Approaches.....                    | 316 |
| 10.6   | Assessment of Objectives .....              | 317 |
| 10.7   | Conclusions.....                            | 318 |
|        | References .....                            | 321 |

## List of Illustrations

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Figure 2.1: Diagram illustrating the resource scarcity – conflict relationship model, as explained in Homer-Dixon (1999).....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 49 |
| Figure 2.2: “Stability landscape,” top image adapted from Walker et al. 2004 with bottom image adapted from Gallopín 2006. ....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 68 |
| Figure 2.3: Components of resilience operating in a socio-ecological system.....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 73 |
| Figure 3.1: Map of Kenya showing detail of study area .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 76 |
| Figure 3.2: Detail of research area, demonstrating the division between ethnic groups                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 79 |
| Figure 3.3: Map of field sites, by ethnic group affiliation .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 90 |
| Figure 3.4: Photos taken within Samburu fieldwork areas. Clockwise from upper left-hand corner: a typical Samburu <i>manyatta</i> showing thorn-ringed fence and mud and wooden housing; highly mobile satellite <i>moran</i> camp within Kitich forest; a typical primary school in Kalama conservancy area; a married Samburu woman, as demonstrated by metal hooped earrings; typical nursery school under a shady tree and encircled by thorn fencing; drilled borehole with hand-pump used to fill domestic jerry cans near Ndoto Mountains; Lengusaka market selling livestock and small food items (maize meal flower, tea, sugar, etc.) ..... | 94 |
| Figure 3.5: Photos taken within Borana fieldwork areas. Clockwise from upper left-hand corner: earth dam constructed for livestock and domestic use in Girissa area; Gotu village containing houses and a number of small shops located on the road that is one of the two passageways across the Ewaso Nyiro River; a typical Borana <i>gose</i> constructed with wood and thick reed matting; a dry-season well for livestock, hand dug inside a dry riverbed and protected by thorn fencing; two young male herders standing by their <i>gose</i> . ....                                                                                           | 95 |
| Figure 3.6: Photos taken within Rendille fieldwork areas. Clockwise from upper left-hand corner: a group of Rendille <i>morans</i> demonstrating traditional bead adornment, carrying herding sticks and rifles; a typical Rendille <i>fora</i> with house constructed from wooden branches and thick reed matting, displaying a characteristic Rendille entranceway; a large <i>boma</i> of small stock enclosed by thorn-ringed fencing; a Rendille <i>gob</i> , showing sleeping area next to the animal <i>boma</i> and fireplace for cooking. ....                                                                                               | 96 |
| Figure 3.7: Photos taken during fieldwork. Clockwise from upper left-hand corner: researcher and field assistant’s tents amongst a mixed Samburu / Rendille <i>manyatta</i> near the Ndoto Mountains; typical ephemeral stream used to dig shallow wells used as a source of water for domestic and livestock purposes; the major waterway of northern                                                                                                                                                                                                                                                                                                |    |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Kenya – the Ewaso Nyiro River during the wet season; a Samburu cow pictured in August 2009 near Wamba, having succumbed to the effects of malnutrition. ....                                                                                                                                                                                                                                                                                                             | 97  |
| Figure 4.1: Hand-drawn map of Lolkerded field site, from field notebook. Drawn with the assistance of local elder and brother to the location chief. It depicts the sub-location borders as Laresoro River to the east, Losesia road to the south, and the tarmac road to the west and north. ....                                                                                                                                                                       | 106 |
| Figure 4.2: Representation of a Samburu <i>manyatta</i> , composed of 3 households, 3 animals <i>bomas</i> (1 belonging to each family), and 3 passages for each of the livestock herds to pass through out of the settlement.....                                                                                                                                                                                                                                       | 107 |
| Figure 5.1: Diagram depicting the relationship between three types of drought. (Source: NOAA Drought fact sheet, August 2006).....                                                                                                                                                                                                                                                                                                                                       | 123 |
| Figure 5.2: Explanation of interior and border populations' roles in conflict during drought and rainy conditions, taken from an interview with Samburu elder male, interior, Lenchokut:.....                                                                                                                                                                                                                                                                            | 146 |
| Figure 6.1: Four types of relationships to be tested by the eight hypotheses .....                                                                                                                                                                                                                                                                                                                                                                                       | 159 |
| Figure 6.2: Scatterplot of number of conflict incidents reported each year against annual rainfall (mm). The vertical reference lines show rainfall quartiles and 10% / 90% thresholds. The horizontal reference line shows the median number of conflicts reported (median = 2).....                                                                                                                                                                                    | 164 |
| Figure 6.3: Each of the highlighted cells represents a significant result ( $p < 0.05$ ). Each individual colour in the charts represents a separate result. Where colours are matching (for instance, 2 pale blue cells or 2 pale green cells), the combination of these cells represents a significant result. For example, pale blue cells = lowest 10% at one year + 3 year cumulative lowest 50% tested against compound conflict.....                              | 170 |
| Figure 6.4: Chart showing rainfall in millimetres plotted against the number of conflicts reported in each year. A line of best fit has been added to the data.....                                                                                                                                                                                                                                                                                                      | 174 |
| Figure 6.5: Chart showing rainfall in millimetres plotted against number of conflicts per year, detailing highest 10% of rainfall data points. ....                                                                                                                                                                                                                                                                                                                      | 175 |
| Figure 7.1: Results of the conflict motivations cited from using Open-ended Interview Method, separated into dispositions and triggers. I did not quantify these responses; however, the pie chart below demonstrates the proportional distribution of motivations that were cited during interviews. A larger sector means that the corresponding motivation was cited in more interviews than a motivation that corresponds to a smaller sector of the pie chart. .... | 185 |

|                                                                                                                                                                                                                                                                                                                                                                |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 7.2: Pie chart showing the percentage distribution of motivations cited by the participants after analysing the 300 unique conflict incidents (Incident Interview Method), separated into dispositions and triggers. The corresponding percentages here are the proportion of times a motivation was reported out of all responses that were given..... | 186 |
| Figure 7.3: Drawing by a Samburu teacher showing a sharp increase in conflict incidents coinciding with an increase in gun ownership.....                                                                                                                                                                                                                      | 211 |
| Figure 7.4: Associations between dispositions and triggers demonstrating that these factors do not operate independently of one another .....                                                                                                                                                                                                                  | 221 |
| Figure 8.1: Diagram describing pay-off matrices and scenarios for the Prisoner's Dilemma, Snowdrift game, and Hawk-Dove game .....                                                                                                                                                                                                                             | 230 |
| Figure 8.2: Diagram demonstrating how two groups can modulate between competitive and cooperative strategies based on an assessment of perceived differences between the two groups.....                                                                                                                                                                       | 248 |
| Figure 9.1: Girissa earth dam, Borana area, receiving more than 3500 livestock each day .....                                                                                                                                                                                                                                                                  | 267 |
| Figure 9.2: Goat grazing on grass and small shrubs, Garba Tula region .....                                                                                                                                                                                                                                                                                    | 282 |
| Figure 9.3: Diagram demonstrating a domain of attraction and the redundancy, or multiple pathways, found in pastoral coping mechanisms (red) which help to keep the SES within its current domain of attraction .....                                                                                                                                          | 292 |
| Figure 10.1: Process tracing web, including all variables discussed in the relationship between drought and conflict from chapters five, seven, and nine.....                                                                                                                                                                                                  | 301 |
| Figure 10.2: Diagram showing stepwise changes in independent and dependent variables depending on thresholds reached. Direction of the relationship changes when critical thresholds are no longer tolerable .....                                                                                                                                             | 303 |
| Figure 10.3: Diagram illustrating the resource scarcity-conflict relationship model based on Homer-Dixon (1999).....                                                                                                                                                                                                                                           | 306 |
| Figure 10.4: Resilience diagram for socio-ecological systems.....                                                                                                                                                                                                                                                                                              | 307 |
| Figure 10.5: The Socio-ecological systems Resilience-Relationship Model (SRRM), combining the resource scarcity-conflict relationship model in Figure 10.3 and the SES resilience model in Figure 10.4. Labels refer to components as they appeared in the original models. The bullet points are provided as examples of the components.....                  | 308 |

|                                                                                                                                                                                                                                                                                |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Table 1.1: Table showing themes discussed in the thesis, the data chapters that incorporate each theme, and the central research question addressed by each chapter ..                                                                                                         | 28  |
| Table 3.1: Key Samburu concepts solicited from ethnographic data collection.....                                                                                                                                                                                               | 80  |
| Table 3.2: Key Borana concepts solicited from ethnographic data collection.....                                                                                                                                                                                                | 83  |
| Table 3.3: Key Rendille concepts solicited from ethnographic data collection.....                                                                                                                                                                                              | 86  |
| Table 3.4: Description for each field site consulted. The colours in each row correspond with the ethnic affiliations provided above in Figure 3.3. The sequence of field sites provided corresponds to the chronological order in which data was collected in the field. .... | 91  |
| Table 5.1: Climatic terminology used during community interviews.....                                                                                                                                                                                                          | 126 |
| Table 5.2: Conflict terminology used during community interviews .....                                                                                                                                                                                                         | 130 |
| Table 5.3: Summary of the climatic conditions and associated conflict behaviour discussed in this chapter .....                                                                                                                                                                | 150 |
| Table 6.1: Differences in research design for statistical analysis of drought and conflict in two studies of north Kenyan pastoralists .....                                                                                                                                   | 158 |
| Table 6.2: Datasets consulted and used for the purposes of this analysis.....                                                                                                                                                                                                  | 161 |
| Table 6.3: Sample of annual rainfall in millimetres for each of the four sites.....                                                                                                                                                                                            | 163 |
| Table 6.4: Each of the significant results explained, colours refer to results in Figure 6.3.....                                                                                                                                                                              | 171 |
| Table 8.1: Comparison of the pay-off matrices for three games.....                                                                                                                                                                                                             | 231 |
| Table 8.2: Table showing the pay-off matrices for the pastoral drought scenario, reflecting a Prisoner's Dilemma game .....                                                                                                                                                    | 232 |
| Table 8.3: Iterated game having TFT and TFTT strategies .....                                                                                                                                                                                                                  | 237 |
| Table 8.4: Iterated game having TFT and TFTT strategies, with the introduction of unintentional defections .....                                                                                                                                                               | 238 |
| Table 9.1: Seasonal patterns of border population migration .....                                                                                                                                                                                                              | 280 |
| Table 9.2: Seasonal patterns of interior population migration .....                                                                                                                                                                                                            | 280 |
| Table 9.3: Diversity of activities / mechanisms pastoralists utilised during the 2009 drought in order to cope with extreme resource scarcity .....                                                                                                                            | 293 |
| Table 9.4: Results from tree transect data, showing the percentage of trees in each field site that have been cut for fodder usage during the 2009 drought. ....                                                                                                               | 296 |

|                                                                                                                                                   |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Box 1.1: Entering the field in a drought context, taken from field notes, Lenchokut, August 2009 .....                                            | 21  |
| Box 5.1: Reflections from field notes: Inter-subjectivity and perspectives on environmental conditions, Lenchokut, December 2009 .....            | 128 |
| Box 7.1: Taken from field notes, example demonstrating prestige associated with raiding, particularly amongst males. (Lolkerded, July 2010) ..... | 189 |
| Box 7.2: the multi-causal nature of conflict (Interview with Samburu Lkichami <i>moran</i> , Lenchokut) .....                                     | 221 |
| Box 9.1: Life in a Borana town taken from Field notes, Ewaso region, August 2010.                                                                 | 274 |
| Box 9.2: Field note demonstrating how social networks inform herd management, Biliqi Dera, February 2010 .....                                    | 284 |



## List of Abbreviations and Terminology

| TERM            | MEANING                                                                                                                                                                                                           | APPLICABLE TO        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Manyatta        | A group of temporary structures (huts) delineated by a thorn-ringed fence. The inhabitants are related as kinsmen, clansmen, or simply friends                                                                    | Samburu              |
| Fora            | (see explanation of <i>manyatta</i> )                                                                                                                                                                             | Rendille             |
| Gob             | Corresponds to the number of independently-owned herds within a fora                                                                                                                                              | Rendille             |
| Paran           | The giving of animals or money to those who come asking for it, generally between kinsmen, clansmen, or friends                                                                                                   | Samburu              |
| Lmaskara        | Mixed Rendille and Samburu families                                                                                                                                                                               | Samburu and Rendille |
| Ware            | Socialising and lively chatter into the night hours, quite often accompanied by a stimulant like miraa                                                                                                            | Borana               |
| Ola             | A group of homes ( <i>goses</i> , see below) where the <i>ola</i> is named after the man with the largest herd                                                                                                    | Borana               |
| Gose            | A stone fire pit (for cooking), which generally corresponds to an independently-owned herd                                                                                                                        | Borana               |
| Arjal           | Herding area, away from towns where people live in <i>goses</i>                                                                                                                                                   | Borana               |
| Gaada System    | Traditional generation set system for Borana males where each set is equivalent to an eight year period. This system is used to order social responsibilities of each generation set                              | Borana               |
| Miraa           | Latin <i>Catha edulis</i> , a.k.a. ‘khat.’ Leafy plant chewed as an amphetamine-like stimulant causing excitement and energetic activity                                                                          | All                  |
| Boma            | Swahili word for thorn-ringed animal enclosure                                                                                                                                                                    | All                  |
| KPR             | “Kenyan Police Reserve” – guns that are provided by the government to citizens (or “home guards”) to be used for protection of one’s property and person                                                          | All                  |
| AP              | Administrative Police – police officers most commonly seen in the north, stationed at posts near pastoral settlements                                                                                             | All                  |
| ASTU            | Anti-Stock Theft Unit – policing outfit charged with providing security for pastoralists and returning stolen livestock to rightful owners                                                                        | All                  |
| DC              | District Commissioner – head of security and operations for a district, hired through the office of the president                                                                                                 | All                  |
| DO              | District Officer – deputy to the DC and head of the divisions for each district. There are usually 1 – 2 DOs reporting to each DC                                                                                 | All                  |
| Chief           | Respected elder from each location, hired by the DC                                                                                                                                                               | All                  |
| Assistant Chief | Respected elder from each sub-location, hired by the DC and subordinate to the chief                                                                                                                              | All                  |
| Ewaso Nyiro     | The largest and only permanent river in northern Kenya (although it did dry up in 2009), running west to east through the southern border of the Samburu territory and through the centre of the Borana territory | Samburu and Borana   |

*No one can kill the drought:* Understanding complexity  
in the relationship between drought and conflict amongst  
pastoralists in northern Kenya

Copyright © 2012

Carla Suzanne Handley

All rights reserved

The copyright of this thesis rests with the author. No quotation from it  
should be published without the author's prior written consent and  
information derived from it should be acknowledged.

## Acknowledgments

First, I would like to thank my supervisors, Kate Hampshire and Bob Layton, who managed the perfect balance of giving me the support and freedom to explore intellectual pursuits but also knew how best to rein it in and provide me with some much-needed direction when things got muddled. For this, for your dedication and hours spent meeting and commenting on drafts, for your insight and guidance, and for making all of this somehow enjoyable, I will be forever grateful.

I would also like to give thanks to Nick Vivyan, Adetayo Kasim, and Tom Henfry for their additional support and conferring their specialist knowledge, which has made a world of difference in getting to terms with some key concepts in this thesis. For instilling excitement for learning and providing the underlying motivation for undertaking academic pursuits over all of these years, I would very much like to thank Mr Ernest Dodge.

A huge amount of thanks, actually many thousands of thanks, are paid to the Bucerius Foundation for funding this project and for facilitating excellent camaraderie through its fellowship. It is fair to say that without your assistance, this project would not have been possible, and I hope that the production of this thesis helps in paying back a small part of all that you have given to me. Furthermore, I am grateful to the Anthropology Department at Durham for providing financial support through the academic scholarship and teaching bursary, which ultimately helped to kick start this project and see it through to completion. Finally, I would like to thank Earthwatch Institute, particularly Alana Jones, for offering up some much-needed employment when I have found myself between degrees, for providing a network of friendly faces on the ground making my transition into fieldwork that much easier, and for allowing me my very first taste of a place that has given me nothing but joy.

I am eternally indebted to Raphael Leteele, Hussein Gonossa, Abdy Guyo, and Harun Basele for being the most amazing co-workers, friends, and dedicated individuals in the field. Your efforts during fieldwork have left few stones unturned, and your patience in this endeavour is gratefully acknowledged. For my other Kenyan compatriots that contributed so much to my time in the north, I would like to thank the Guyo family for a lovely home and warm bed when passing through Isiolo, the Lekamario family for their joy and for opening their family up to mine, Professor Joshua Akong'a in helping to

navigate Kenyan bureaucracy, Moses Mwachira for all his kindness and generosity, and I would also like to give a 'shout-out' of thanks to Antony Wandera, Jimmy, Melissa Craig, the Ol Pejeta staff, Paul Muoria and the Wamba crew, the DCs and chiefs for granting me permission to work within their communities, the Wamba Mission, Uhuru, and old-fashioned good luck.

Finally, I would like to thank my parents for their patience and for keeping their nerves in check throughout the fieldwork. Much love goes to my intrepid friends, Michelle and Merove, for coming out to support me and for keeping their nerves in check with the help of modern medicine. I would also like to give a big thanks to the Durham crew for late nights, early mornings and many happy hours over these last four years, particularly James, Emilie, Matt, and Megan, and a very special and heartfelt thanks to Gabe. I showed up on your doorstep, and in so many ways, you gave me a home.

*To the people of northern Kenya,  
for showing me what it means to persevere*

# Chapter 1: Introduction

---

Box 1.1: Entering the field in a drought context, taken from field notes, Lenchokut, August 2009

*We hear the bellowing and bleating of animals well before reaching the top of the barren hillside. The morning chorus of goats and sheep signals their growing impatience to leave the safety of their night time enclosure - possibly the memories of their stomachs deceiving that of their minds into believing that satisfaction awaits them. Not yet even 7 am, and the heat radiating across my back lets me know that again there will be no cool winds to calm the afternoon sun, and the treble in the animals' bleating begins to mirror the growing trepidation in my mind that this first foray into herding is going to be a lot harder than I had anticipated. Raphael grabs my hand to help pull me up and over the final ledge as the soil and rubble start to give way and tumble back down over our path of ascent. We have been working together only a couple of weeks, yet Raphael's steady hand reaffirms my assurance in him as a reliable field assistant, committed translator, and constant companion. He straightens up, greeting the Lesamare household with the familiar "supa," ready to be followed up with the hypnotic back and forth questioning of how family members have slept and inquiries into the well-being of animals. Unfortunately, today there will be none of this, as it is clear from the scene unfolding before us that the greeting has fallen on deaf ears. The head of the Lesamare family is positioned in the middle of the manyatta, a man distinctively sinewy and bare to the waist save for the characteristic red tartan cloth, worn by so many of his Samburu brothers, adorning his shoulders. His age is indeterminate to me, possibly belied by the physical and mental state in which we come to meet him. He dashes and darts back and forth between the two thorn-ringed enclosures, the contents of which are spilling out rapidly, their baying reaching something of a crescendo. Lesamare's two wives look on - witnesses like ourselves as he repeatedly takes three steps towards one enclosure, only to change his mind, moving two steps back towards the other. And then somewhere in the course of all this, he comes to find that he has gone nowhere, unlike his sheep and goats which have scattered everywhere amongst us. In realising this, he also comes to notice our presence as silent witnesses to his plight. Lowering his voice with concern, Raphael brings forth his greeting once more, but this time Lesamare responds, his eyes glazed and shoulders discernibly slumped. As the men talk, armed with my fledgling grasp of Kisamburu, my*

*ears pick up glimmers of conversation: water...animals...drought; however, the picture still remains very much unclear to me. I only come to grips with the reality of the situation after the conversation winds down, with Lesamare still standing in between the two thorn rings as Raphael turns to me with an explanation. In his deliberate and reflective manner, he tells me simply that Lesamare feels that he can no longer make decisions for his animals. There is nowhere for them to graze. There is no milk for the young to drink. Every night claims more and more of the malnourished herd. He cannot even come to sort them or dictate the direction of the day's herding. With that Raphael looks at me squarely and says, "You see? The drought has defeated him."*

*Not being one to remain idle in the face of adversity, Raphael begins to pull apart and untangle the opening of the outer thorn fencing, calling to Lesamare with a questioning lilt. Drawn back out of his distant gaze and seeing what must be done, Lesamare begins anew - the sting of his switch coming to life, separating the marauding animals into classifications of which only the Lesamare family are intimately aware. Needing no encouragement, the women join in on the livestock orchestration, and in minutes the animals are lined up, looking now more like soldiers ready for deployment. Carrying a hooked stick more than twice my height, the "little wife" passes it to me, indicating that this is to be my contribution for the day. Although untested and unsure I will be able to use it with any great effect, I can feel that it is pliable and at the same time incredibly strong. Satisfied that I am properly armed, she turns for me to follow her out of the enclosure, signalling that the time has come for us to begin.*

The vignette above provides an insight into the physical condition of the study area and represents the psychological state of a number of participants at the time in which I began my field research. By August 2009, three preceding rainy seasons had failed within the study site, a considerable number of people had been left destitute due to the effects of prolonged drought and / or livestock theft, and the feelings of the people during these initial stages of data collection ranged from bewilderment (as seen above), to confusion, to resignation, and indignation. It is under these conditions that the research begins.

## 1.1 Introduction

In 2007, the Intergovernmental Panel on Climate Change (IPCC) reported that climate change will enhance the propensity for violent conflict within the developing world, leaving communities poorer, less resilient, and less able to cope with the consequences of environmental degradation (Smith and Vivekananda 2007). Currently, the potential impact of climate change on subsistence populations is unclear and unpredictable, as a causal relationship between climatic changes and human conflict in light of coping mechanisms traditionally used to mitigate the negative effects of climatic events has not been clearly established. Some scholars see resource scarcity (produced by climatic changes) as a major underlying determinant of violent human conflict (McGuire 2008; Homer-Dixon 1999; Kaplan 1994). Others disagree, arguing that poverty, inequities between groups, availability of weapons, and political influences are more significant drivers of conflict outcomes than environmental change (Baechler 1999; Richards 1996). My goal for this thesis is to contribute empirical research to this unresolved theoretical debate and to present new theoretical perspectives that provide a more nuanced understanding of the data.

In order to achieve this, I have focused on a geographical environment that is highly sensitive to climatic shifts and on populations with long histories of successfully adapting to climate variability (Barnett 2001). It is predicted that in the coming years, Africa's temperatures will rise twice as fast as the world average, with sub-Saharan Africa enduring the worst water shortages (Qing 2006). East African pastoral communities have long adapted to unpredictable, adverse conditions by modifying behaviours according to environmental circumstance (Spencer 1998). A growing concern, however, is whether pastoralists can adapt to prolonged periods of ever-increasing drought, subsequent land degradation, and loss of livelihoods. Violent livestock raids are said to be a traditional method of restocking herds, so it is plausible that they may escalate during extreme climatic shifts and loss of adequate grazing lands (Johnson and Anderson 1988).

The impetus behind this doctoral study stems from Masters research that I conducted at the University of Cambridge where I examined whether human aggressive competition and interpersonal conflict are inherent, biological traits that are comparable to the intraspecific violence and conflict found within chimpanzee populations. In order to



achieve this, I relied on a several methods: comparative analysis of published ethnographies on extant human populations, archaeological case studies of extinct human groups, and primary osteological analysis of early Egyptian populations to assess conflict incidence levels. I was able to identify a number of causal factors that influenced levels of either aggressive competition or peaceable co-operation in varying human populations across time. Ultimately, my conclusions reinforced the idea that humans have the biological potential for both aggressive competition and peaceable co-operation, and therefore mediating socio-ecological factors can significantly influence the context under which competition or co-operation is expressed (Johnson and Earle 1987). This paradigm challenges the idea that human violence is the product of an irrational biological instinct (Riches 1986). It also opens up the discussion further in challenging environmentally deterministic arguments, which can sometimes arise from studies examining the relationship between resource scarcity and conflict. From my Masters research, I concluded that further studies in human conflict must utilise a similar systematic approach to understand the interaction of specific socio-ecological factors (population density, environmental constraints, population histories, political influences, etc.) in an attempt to gain an understanding of the conditions under which aggressive competition or peaceable co-operation may result. The research presented here follows this approach by examining the strategies employed by pastoralists in response to extreme climatic events and determining whether patterns or correlations can be established between the stressor event and the resulting behaviour.

It is within this context that I examine three main questions:

- 1) Do episodes of drought-induced resource scarcity correlate with higher levels of human inter-ethnic conflict found within Kenya's pastoral communities?
- 2) What is the current (and theoretical future) capacity of these populations to manage increased levels of drought-induced resource scarcity?
- 3) Is conflict used as a strategy for pastoral groups coping with resource scarcity?  
Is conflict a beneficial strategy as part of a resilient system?

The complex interrelationships between drought, land degradation, pastoral adaptation strategies, and conflict are not yet understood, as it is unclear which processes may drive others. Furthermore, it is important to investigate how pastoralists continue to employ appropriate coping mechanisms in order to successfully manage these relationships. Ultimately this doctoral study will help to clarify these networks through context-specific research and seek to establish correlations between drought episodes and conflict outcomes.

## 1.2 **Objectives**

In order to make a substantive contribution to the debate on the effects that climate-induced resource scarcity has on levels of pastoral conflict, there are four primary objectives that I have set out to accomplish in this thesis: 1) to explore and explain complexity, 2) to highlight human cooperation, 3) to demonstrate ethnographic breadth and depth, and 4) to achieve intersubjectivity.

- I. Exploring and Explaining Complexity: This empirical study seeks to go beyond simple explanations of the relationship between drought-induced resource scarcity and conflict. Instead, it aims to provide an understanding of: 1) the extent to which these two variables are related, 2) how they relate to one another, or the nature of their relationship, 3) the pathways and mechanisms that may lead from one to the other, and 4) other influences or components that may affect the outcome of this relationship. In order to maximise breadth, this study utilises a mixed-methods approach to capture a range of perspectives. Likewise, in order to explain potential complexities found in the results, their interpretation and explanation make use of a variety of approaches and analytical frameworks.
  
- II. Highlighting Human Cooperation: In support of the first objective, which looks to build on complexity, the second objective of this thesis is to incorporate an understanding of the role human cooperative behaviour plays in constructing social relationships. By declaring this aim, I look to redress an apparent imbalance in much of the existing literature, which tends to place great emphasis on the contentious relationships that develop as a result of resource competition, therefore de-emphasising the role cooperative behaviours play.

- III. Demonstrating Ethnographic Breadth and Depth: this study relies on results produced from extensive fieldwork designed to engage with a diverse group of people and provide a thorough account of individual perspectives. Recording data in this way has helped to assess the many possible ways that drought and conflict may be experienced by pastoralists in northern Kenya.
- IV. Achieving Intersubjectivity: Foregrounding the emic perspective in understanding drought and conflict aids in employing socially and culturally-appropriate analyses of phenomena experienced by local communities. An intersubjective understanding not only provides a more rigorous assessment, but it also helps to ensure that any recommendations resulting from the research will be applicable and desirable to local people.

In focusing on these four research objectives, the results of this thesis aim to be empirically-driven, understood from an intersubjective perspective, strengthened by the use of multiple methods, theoretical frameworks, and engagement with a diverse sample of respondents, and ultimately able to be placed within a global context and provide real insight into the debated nature of the relationship between resource scarcity and human conflict.

### **1.3 Plan and Thesis Outline**

In relation to the three overarching research questions, I address five distinct frameworks and thematic areas, each of which is discussed in the literature review in chapter two. Question one asks from the macro perspective whether there is, in fact, a relationship between climate-driven resource scarcity and conflict amongst pastoralists in northern Kenya. If there is a relationship, then how specifically do these two variables relate to one another? Therefore, the first theme addresses the nature of conflict in a resource scarcity context.

Much of the current literature discussing the relationship between climatic events and resulting human conflict is considered grey literature, coming from development institutions and various INGOs. Unfortunately when turning to the academic literature to fill these knowledge gaps, empirical research investigating the effects of climate-driven resource scarcity on human behaviours are still very much lacking in number and

scope. A number of scholars have tried to establish this relationship (e.g., Witsenburg and Roba 2007; Fukui and Markakis 1994; Homer-Dixon 1991; Fukui and Turton 1979), however, with mixed and generally limited results. A major critique of these studies is that the analyses rarely incorporate an understanding of rangeland dynamics within arid ecosystems, nor do they acknowledge the vast array of intervening variables that must be considered within this relationship. Furthermore, little attempt is made to gain a first-hand socio-ecological understanding of what exactly ‘resource scarcity’ entails from the people that it affects, and often times this body of literature focuses solely on discrete rainfall data as an indication of the condition. Therefore, in order to shed light on this relationship and to address some of the knowledge gaps that exist within the academic and development literature, I examine the relationship between drought-induced resource scarcity and conflict from an ethnographic perspective in chapter five, followed by a statistical assessment of this relationship in chapter six.

The remaining chapters in the thesis seek to build on the complexity of the initial ‘simple’ relationship discussed in the preceding paragraphs. First, chapters seven and eight focus on the motivations, or factors, that influence conflict outcomes during inter-ethnic interactions. In order to achieve this, chapter seven assesses motivations for conflict that take into consideration more inclusive influential factors, such as political agendas, economic pressures, environmental stresses, and ‘cultural’ objectives that conflict helps to address or fulfil. On the other hand, chapter eight takes a game theory approach, arguing that when faced with periods of resource scarcity, pastoralists are not condemned to a ‘downward spiral’ of warfare. Instead, outcomes during interactions between pastoral groups are mediated by relative costs and benefits of strategic decisions taken by both sides. Finally, chapter nine identifies and assesses the efficacy of traditional pastoral coping mechanisms utilised during periods of resource scarcity in order to alleviate the likelihood of negative outcomes and provides an assessment of the efficacy of such mechanisms in a modern context. The chapter concludes with an analysis of the degree to which these coping mechanisms build resilience within the pastoral system, thus directly addressing the second major question of this thesis. The third question regarding the use of conflict as a beneficial coping mechanism or as part of a resilient system builds on information presented in chapters eight and nine, with a final discussion of this question provided in chapter ten.

To summarise, the table below shows the five themes, the corresponding chapters that focus on each theme, and the associated question addressed by each chapter:

Table 1.1: Table showing themes discussed in the thesis, the data chapters that incorporate each theme, and the central research question addressed by each chapter

| <b>THEME</b>                                                     | <b>CHAPTER</b>  | <b>QUESTION<br/>ADDRESSED</b> |
|------------------------------------------------------------------|-----------------|-------------------------------|
| Relationship between resource scarcity and conflict              | five and six    | 1                             |
| Motivations for conflict and cooperation in pastoral populations | seven and eight | 1 and 3                       |
| Game theory analysis                                             | eight           | 2 and 3                       |
| Pastoral coping mechanisms managing resource scarcity            | nine            | 3                             |
| Resilience in pastoral systems                                   | nine            | 2                             |

The thesis is completed by a literature review in chapter two addressing the five relevant themes listed in the above table. Chapter three provides the ethnographic and historical context for each of the three pastoral populations under study and descriptions for each of the research sites consulted in the field. The diversity of methods employed during data collection are described and justifications provided in chapter four, and finally, chapter ten provides a comprehensive analysis of the conclusions that can be drawn from each of the preceding data chapters.

## Chapter 2: Literature Review

---

### 2.1 Conflict and Cooperation in Humans

Violence and interpersonal conflict are phenomena commonly thought to be universal among modern human populations. Judging by the levels of conflict being reported in contemporary society, one could be inclined to take a Hobbesian view that the human condition is one of perpetual warfare (Hobbes 1970). Although conflict is recognised as a pervasive trait witnessed throughout all human societies, it is also true that levels of aggressive behaviour and motivations towards aggression can differ significantly from one population to another (McCall and Shields 2008) and even within the same population depending on the nature of its interaction with others. The complex motivations governing the varying expression of human interpersonal conflict are not easily understood; however, any such analysis would be glaringly incomplete if it were not to discuss the other side of the very same coin: human cooperative behaviour. As Layton (2006) states, “violence and peacemaking are both parts of a broader social complex. One cannot be discussed without the other” (143). The following paragraphs will briefly outline the approaches taken by a number of authors who have examined the origins and expression of violence and / or peaceability amongst human populations. As the reader will see, there is a distinct imbalance in the volume of literature dedicated to each topic, which I will seek to redress in the following chapters.

#### 2.1.1 Biology and Social Learning Theory

When examining the origins of violence in human societies, there are two predominant theories. The first explains violent behaviour as biologically-determined, thus positioning violence as a human universal placed outside the realm or influence of socio-cultural factors (Wrangham and Peterson 1996; Lorenz 1966; Ardrey 1967; Freud 1933). The second theory suggests violence via cultural transmission where acts of aggression are driven by culturally-prescribed circumstances. Accordingly, violence in this case need not be considered inevitable across human populations (Carman 1997). At its most basic level, biological theory suggests that humans are capable of committing aggressive acts due to behavioural similarities that we share with our closest, and arguably the most violent of all primates relatives: the chimpanzee.

Aggressive behaviour, as Lorenz describes in his 1966 book *On Aggression*, results from an “excitation” built up within the human nervous system that compels the individual to act aggressively (Lorenz 1966). Conversely, social learning theory stems from the general Standard Social Science Model (SSSM) which suggests that human behaviour is free from biological control and not determined by evolutionary mechanisms (Cosmides, Tooby and Barkow 1992), thus human behaviours are a product of their social and cultural environments and subject to the rules that influence these realms (Riches 1986). A basic assumption of this theory is that similar reactions to external stimuli amongst genetically unrelated groups of people are a product of social learning. In the 1960s Albert Bandura was one of the first people to discuss social learning theory relative to aggression where he emphasised aggression as a learned behaviour that can be used as an appropriate response when presented with complementary social cues (Bandura 1977). Therefore for the individual, when similar social cues present themselves in the future, the aggressive behaviour has a greater likelihood of being repeated.

Cosmides, Tooby and Barkow heavily criticised the SSSM as they argued that social scientists portrayed the mind as a ‘blank slate’ that could be filled in with rules dictated by social transmission (1992). They presented a more progressive approach by introducing the Integrated Causal Model (ICM or IM), which incorporates greater nature-nurture interaction and does not reject an evolutionarily-informed basis for the expression of aggressive behaviours. Foley contributes to this middle ground by stating that there is no gene for aggressiveness (Foley 1997). He suggests that there are genes that control for very general characteristics such as the ability to learn, or observe, or alter responses. Therefore, it is not the specific behaviours that have been selected for, but the ability to respond appropriately to specific conditions. In this way, violence is not a direct expression of single genes but instead, it results from a complex web of traits acting upon and interacting with one another to produce the appropriate response. As Howell and Willis explain, “Human beings come pre-packaged with a set of potential capacities and constraints, but these in themselves are not fixed or determined. The chosen specific response makes reference to local histories, local circumstances, and local causes” (Howell and Willis 1989: 19). Violence is in this case a human potential, but it is one among many that can be expressed if given the proper stimulation.

Transference of aggressive traits clearly need not be simply through one pathway or the other, as biological and social learning transmission tend to be operating simultaneously. Bourdieu's 'habitus' describes the social cues that we observe and internalise as children that may be expressed as adults (Bourdieu 1977), where there exists a great likelihood that we will copy our parents' behaviour, therefore passing traits from one generation to the next (Layton 2006).

Within the framework of social learning theory, Geen and Donnerstein (1998) describe a number of conditions that may compel an individual to employ aggressive tactics upon receiving appropriate provocation:

- a. There is a history of reinforcement for aggression for the actor.
- b. There is a high utility and value placed on aggression.
- c. Positive outcomes are expected by using aggressive means.
- d. The actor has generated very few solutions for conflict resolution.
- e. There is a high hostile attribution bias where actor misreads social cues
- f. The actor holds strong beliefs supporting aggression.
- g. The actor has a poor anticipation of the consequences to using aggressive means.

This model can be criticised for the emphasis it places on pathways solely to aggressive actions. In examining the above framework, it is likely that given the correct exposure to peaceable strategies, cooperative outcomes would be just as likely to result from provocation as would aggressive ones.

### **2.1.2 Types of Aggression: Affective and Instrumental**

There are essentially two distinct forms of aggression that humans display: one is affective aggression, in which harming the victim is the main motive for the act, and the second is instrumental aggression which may or may not involve strong emotions, but it is motivated by concerns more important to the aggressor than the harm-doing itself (Geen 2001). According to Geen, affective aggression is accompanied by a strong negative emotional state and is usually aroused by some form of provocation. Jealousy, malice, or greed are examples of negative emotional states, but as the theory suggests, the state must at some point lead to an anger response. The response may directly follow the provocation stimulus, or it can be anger that is built up over time and



released later on, otherwise known as delayed-response affective aggression (Frijda 1994). Instrumental aggression, on the other hand, may include the aggressor intending to harm, but he may lack feelings of malice or anger towards the recipient (Geen 2001). The aggression in this case is simply a means to some other end. Violence for the purpose of self-defence or military action in an attempt to gain control of territory are both examples of this type of aggression. In assessing types of aggression, it is important to understand that affective and instrumental aggression are not mutually exclusive, and they can often be operating at the same time.

### **2.1.3 Socio-Ecological Factors Associated with Cooperative and Aggressive Relationships**

The following discussion highlights a number of socio-ecological factors closely associated with varying levels of cooperative or aggressive behaviours within human populations. The identified factors are not necessarily causes of cooperation or violence; in fact, some may be born from competitive or cooperative pressures.

#### **2.1.3.1 Competition for Limited Resources**

A number of authors have argued that when resource availability cannot sustain the number of individuals utilising them, aggressive behaviours may result. Although, as will be discussed later, heightened cooperation and reciprocity are also viable options when faced with limited resources, this school of thought maintains that a number of studies have shown that scarcity is more likely to produce hostility rather than friendship (Berkowitz 1993). The argument follows that, as resources diminish, competition inevitably arises, which can cause groups to monopolise resources and try to maintain control of them by any means necessary. Johnson and Earle (1987) argue that if the resource benefit outweighs the risk of violence, then violence will result. Although this statement may be valid, further discussions on game theory as presented in this chapter challenge this type of deterministic, and rather pessimistic, view of the relationship between resource scarcity and resulting human behaviours.

Furthermore, it is argued that resource competition can lead to the aggregation of bonded groups for the protection of themselves and of their valued resources. For farmers, competition is high over desirable land, necessitating reinforcement in

increased population, which can further intensify conflict levels (Johnson and Earle 1987). Pastoralists, who typically prefer smaller group sizes and little within-group territoriality due to the spatial distribution of patchy resources found in their areas (Yellen and Harpending 1972), are seen to band together for protection against livestock raiding by ethnic neighbours (Nisbett and Cohen 1996). Interestingly in this scenario, there are two processes operating simultaneously: pastoralists demonstrate high levels of intra-group cooperation (lack of internal territoriality over resources and defensive bonding) in order to provide a competitive advantage when managing inter-group relationships. van Hooff and van Schaik (1992) also acknowledge this complementary function amongst non-human primates when they write, “in contest competition for limiting resources, primates cooperate to improve their competitive ability” (378). Cooperation in intergroup conflict has been recorded in a wide range of both human and non-human populations (e.g., Adams 1990; Rissing and Pollock 1988); the essential elements being the nature of the resource and the intensity of intergroup competition (Davies and Houston 1984).

#### 2.1.3.2 In-group – Out-group Bias

Related to the above discussion, strong internal group cohesion helps to strengthen the inside / outside dichotomy found between groups, referred to as ethnocentrism (Summer 1906), the ‘we – they’ partition (Sherif 1966), in-group bias (Rabbie and Horwitz 1969), or in-group – out-group differentiation (Rabbie 1982, 1992). Evidence for such xenophobic behaviour has been recorded across a number of human and higher primate groups (Holloway 1974, LeVine and Campbell 1972). Internal peace fosters group solidarity, which can be highly effective in maintaining defences or waging hostilities towards non-related, external groups. The reverse may also well be true: due to external pressure and hostilities provoking a need for defence, internal cooperation can be forged and maintained. It is difficult to assess which exactly is the ‘initial condition’ driving the other, although the directionality of this distinction may not be entirely necessary to ascertain. Boehm (1992) notes that adhering to a strict code of conduct designed to manage internal strife, thus strengthening internal group solidarity, is paramount if a group is to successfully mitigate or handle any external threats. He concludes, like Bohannan (1967) before him, that “such conflict management behaviour has surely coevolved with the competitive behaviours it manages; indeed, it is useful to see them as functioning in a complementary manner” (Boehm 1992: 167).

### 2.1.3.3 Gender Relations

Pronounced gender inequality does not necessarily lead to an increase in societal aggression, however inequality may be a proxy for populations who are prone to aggressive interactions. A strong belief in female subordination and aggressive tactics used to maintain such subordination are manifest in the power differences of a male-dominated, patriarchally-oriented society (Dobash and Dobash 1979). These societies tend to place greater emphasis on male bravery, aggression, and displays of status.

Furthermore, it is argued that male-dominated societies perpetuate imbalances in power through strong male bonds and female dispersal. A great number of studies in humans and non-human primates have shown a correlation between male bonded societies and increased levels of violence (Otterbein and Otterbein 1965; Paige and Paige 1981; van Velzen and van Wetering 1960). This form of male bonding can facilitate the rapid mobilisation of related men into fighting groups for the benefit of community protection (Wrangham and Peterson 1996), yet it can also manifest itself in the exclusion and subordination of women. Nomadic pastoralists, being both patrilineal and patrilocal, provide a clear example of strong fraternal bonding and internal cooperation against neighbouring communities for the benefit and protection of their own communities.

In their 1976 paper “Population, Warfare, and the Male Supremacist Complex,” William Divale and Marvin Harris state that male-dominated societies display a number of characteristics closely associated with male aggression (e.g., male monopoly over weapons, male centred clubs, patrilineal bias for inheritance, polygyny, bride price, etc.) which they believe to result from the presence of endemic warfare and thus the heightened need for community protection (Divale and Harris 1976). For the authors, these characteristics are cultural manifestations resulting from the need for aggressive males in specific social conditions.

Conversely Howell and Willis, among others, successfully identified a correlation between peacefulness as a moral value and gender equality (Howell and Willis 1989; Knauff 1987; Chagnon 1988), and Ross (1986) further identified a significant relationship between low levels of violence and an increase in female political activity and female controlled organisations. It is again difficult to identify the direction of

causality between inter-community aggression and male-bonded, male-dominated groups, to which the following discussion of game theory approaches will offer some insight.

#### 2.1.3.4 Kinship and Marriage

Group solidarity is considerably strengthened through formal kinship relations, established through blood or marriage ties. Marriages may be used strategically through endogamous relations, thus creating greater solidarity within the group, or through exogamous relations, which helps to create a network of interrelationships that extend beyond the boundaries of the unified group. The inter-group bonds formed through kinship may help to dampen the aggressive relationships between competing populations.

However, as discussed above, kinship bonds also help to form an even greater dichotomy between in-group – out-group bias. As David Riches and Joanna Overing note in their separate discussions on the Amazonian Piaroa peoples, this group maintains strong internal cooperation established through kin ties; however, their group solidarity acts to enhance aggressive behaviour towards external non-kin (Riches 1986, Overing 1986). In this sense, kinship excludes outsiders from cooperative associations, thus stacking the deck in favour of aggressive relationships towards out-groups.

#### 2.1.3.5 Reciprocity, Creating Alliances and Spreading Risk

Related to the above discussion, ethnographic studies have shown that peaceability is enhanced by the sharing and exchange of goods and people between groups (Price 1975; Woodburn 1982; Gibson 1989a; Gibson 1989b; Dentan 1988; Howell 1988; Robarchek and Robarchek 1988; Roseman 1988). In order for inter-group cooperation to be likely, the benefits of the larger community must outweigh the costs of cooperation (i.e., drain on resources, increased population pressure, etc.) before people are likely to form alliances. However, as previously discussed, a primary method for creating alliances is through the exchange of marriage partners between groups (Tylor 1903; Lévi-Strauss 1969), where increased kinship ties facilitate cooperation through kin selection. As such, a strict cost-benefit analysis is not the sole consideration to be taken into account when assessing one group's proclivity towards cooperation with

another. To take this one step further, Trivers' concept of reciprocal altruism (1971) places greater emphasis on cooperative interactions between non-related group members in a form of reciprocity built out of repeated interactions that are ultimately beneficial to both partners. Groups that characteristically have seasonal food shortages or where resources are patchy and unpredictable in both time and space tend to rely on cooperative food sharing during particularly lean months or during the temporary abundance of seasonal foods (Flood 1980). On the one hand, resource scarcity may provoke conflict; however, violence is kept in check due to the importance of broad interpersonal and intergroup ties that are maintained in order to spread risks (Johnson and Earle 2000).

#### 2.1.3.6 Ideology and Social Values

Deep-seated social beliefs may strongly influence levels of peace or conflict within a population. It is argued that a society whose members engage in intensely violent activity and are rewarded for such behaviour (either socially or materially) may be reinforcing the instrumental value of aggression to its group members. Through this reinforcement, aggressive acts may then become embedded in the social norms that prescribe the conditions under which aggression is an acceptable, if not a desirable behaviour (Geen 2001). Males performing 'territorial duties' (e.g., feuding, raiding, warfare) are entrenched in patriotic ideologies that value and, more importantly, reward male bravery and courage (LeVine and Campbell 1972; Campbell 1975).

Conversely, if social ideologies can serve to foster aggression within communities, promoting and valuing peace may follow similar pathways. Interestingly, some authors have argued that peaceability is not necessarily the result of peace-loving or instigated through peace promotion, but instead is the result of a fear of and subsequent shunning of violence (Howell and Willis 1989, Briggs 1978). Their contention is that people who fear or hate violence will likely demonstrate emotional restraint in their own behaviour, live moderately, and will be highly conscious of appeasing those around them. Furthermore, this societal ideology is reinforced by the community onto its individuals in that if one transgresses against the values of peace, shunning or ostracism from the greater community may result. Ultimately in both cases, aggressive and cooperative behaviours are reinforced, promoted, and policed by the community at large.

### 2.1.3.7 Leaders, Traditional Conflict Resolution, and Punishment

Clearly defined leadership within strict hierarchical societies can serve as unifying forces in battle and warfare. More egalitarian societies, where leadership may be established solely through an age-respect hierarchy as seen amongst pastoral populations, typically correlate with reduced levels of violence (Flanagan 1989). Leaders may be charged with making decisions for the group that involve organising trade, organising ceremonies, forging alliances with leaders from other groups, managing risks, or emphasising behavioural restraint so that violent behaviour is kept in check within and between communities (Kiefer 1972).

A number of psychological studies have shown that relatively few people restrain themselves out of a strong internal sense of right and wrong, and that it is primarily the threat of punishment that preserves social order (Zimbardo 1969). In this case, preserving peace is fundamentally a matter of controlling individual behaviour by showing wrongdoers that their misdeeds will have negative outcomes. Where western societies have established court systems and policing to control and rule on disputes, in contrast many subsistence economies rely on traditional methods of conflict resolution where rules and punishments are established and agreed upon relative to local beliefs, customs, histories, and values. For pastoralists, punishment customs, enforcing rules, and maintaining / establishing positive inter-group relationships are matters for the elders that require group adherence.

In closing this section, it may be noted that pronounced competition for scarce resources, strong in-group – out-group bias, or inequity in gender relations do not always lead to aggressive relationships between groups, i.e. they are not deterministic. As will be demonstrated, pastoral communities have built up flexible responses and strategies to pressures that allow them to cope with societal stresses and potential depravity. Russell Geen notes that if people can generate responses that are necessary to produce instrumentally useful results, then they may not react to stressful conditions with aggression regardless of their level of predisposition to aggression (Geen 2001). The preceding paragraphs have highlighted a number of corollaries associated with either peaceable or competitive strategies found amongst human populations; however, the likelihood that either of these two strategies is employed depends on a broader understanding of contexts and mitigating factors. The following discussion on game

theory will provide some of this context and also provide the understanding as to how strategies may shift in light of changing contexts.

### 2.1.4 Problems in Defining Violent Conflict

In moving forward with an assessment of how conflict and cooperation strategies function within north Kenyan pastoral societies, a brief discussion is necessary on the various definitions of human violence, thus enabling its appropriate identification. However, establishing a functional definition is problematic in four distinct ways. The first deals with the issue of **physicality**. David Riches argues that the term ‘violence’ has such a distinctive Anglo-Saxon meaning that it can be problematic to compare violence cross-culturally in societies where ‘violence’ does not necessarily reflect the same range of behaviours that English-speakers commonly ascribe to the term (Riches 1986). In many non-Western societies much physical hurt is invisibly performed through acts like witchcraft or cursing as, for instance, described by Overing in Piaroa sorcery (Overing 1986). To the practitioners, these behaviours are a reality that brings about visible, physical hurt, and therefore any study addressing violence prevalence in an ethnographic context *should* include these interactions. We cannot simply identify violence in terms that John Carman describes as a solely “material event with material consequences” (Carman 1997: 6).

In an attempt to circumvent the dilemma of the physicality of violence, Gerda Siann defines aggression as the “intention to hurt or emerge superior to others that does not necessarily involve physical injury” (Siann 1985: 12). Although this definition helps to solve one problem, it raises a second in that it requires an assessment of the **intentionality** of the actor. Defining violence in this way has been criticised for a lack of objectivity (Buss 1961); furthermore, intentionality can be elusive to determine, especially when evaluating non-human populations (Silverberg and Gray 1992). Gerber’s analysis of Samoan family life describes Samoan children being beaten by their fathers – a seemingly violent act, however beating in this context is the method by which paternal love is manifest towards the child. Furthermore, both father and child agree on the legitimacy of the act (Gerber 1985).

This example draws attention not just to the mental state of the ‘aggressor’ but also to that of the recipient of violence. Baron and Richardson’s definition of aggression is

useful here in that it defines aggression as “any form of behaviour directed toward the goal of harming or injuring another living being who is motivated to avoid such treatment” (Baron and Richardson 1994: 11). Although valuable, this definition does not adequately satisfy the problem of intentionality, which remains as a concept that must be managed and addressed when conducting analyses of interpersonal interactions. Furthermore, it implies a **moral judgement** that aggression is inherently negative and juxtaposes the interaction between a perpetrator and a victim (Ferguson and Beaver 2009). Although potentially unavoidable, as one party must commit an act of violence and one must receive it, attention should be given to diminishing any accusatory language that may take a moral position.

E.O. Wilson addresses the analytical predicament of intentionality by defining aggression as “a physical act or threat of action by one individual that reduces the freedom or **genetic fitness** of another” (Wilson 1975: 577). On the one hand, Wilson’s definition avoids the intent of the actor which means that it can make for greater cross-species and cultural comparisons; however, it has been criticised for ignoring aggressive behaviour that may fail to decrease fitness. Also, it excludes violence that may increase genetic fitness, for example as demonstrated in mothers’ aggressive weaning of infants (Silverberg and Gray 1992).

#### 2.1.4.1 A Functional Definition of Violence and Associated Terminology

Clearly, defining violence in a way that is useful in identifying aggressive behaviours is problematic. In moving forward, one of the above definitions may be used with an acknowledgement of its inherent short-comings, or like Justice Stewart’s definition of pornography, may we simply “know it when we see it?” One of the main objectives of this dissertation is to establish quantifiable relationships between climatic conditions (i.e., drought) and levels of inter-ethnic conflict. Although I appreciated during my fieldwork that threats, coercion, rumour, and fear mongering, etc. have tangible effects on the behaviours and well-being of communities, it would be extraordinarily difficult to measure these interactions and outcomes in any systematic or reliable way. As such, I will focus solely on assessing physical acts of inter-ethnic conflict, where I have an understanding of the actor(s)’ motives, and the recipient is motivated to avoid such harm.



Furthermore, I will only assess acts of inter-ethnic conflict and not intra-ethnic or state / government level conflict. As my primary concern is to establish the nature of the relationship between climatic conditions and levels of pastoral conflict, state violence (i.e., police beatings, state confiscation of animals, corruption, etc.) is recorded as an external factor but not as a direct act of inter-ethnic pastoralist violence. Intra-ethnic violence is not recorded for the purpose of any quantitative analysis due to the extraordinarily high levels of internal cooperation, and any internal quarrels tend to centre on domestic affairs (i.e., jealousy, ridicule, discipline, etc.) which are not the focus of this study.

Regarding terminology, literature concerning violent behaviour tends to use the terms ‘aggression’ and ‘violence’ interchangeably as a matter of the author’s personal preference. For the remaining chapters, I will use the terms ‘conflict’ or ‘conflicts’ as: 1) I am interested in recording the *incidents* of aggressive acts, which can easily be referenced as ‘conflicts,’ and 2) ‘violence’ and ‘aggression’ are more loaded terms, recalling elements of biological theory with the actor having an innate drive to aggress, and these terms can place moral judgements on the actor as one who ‘is violent’ or ‘is aggressive.’ In contrast, ‘conflict’ carries less prejudice and lessens the impression that ‘fault’ needs to be assigned to any actor(s).

## **2.2 Game Theory Approaches to Conflict and Cooperation**

Game theory is used in this analysis for three primary reasons. First, using a game theory approach acts as a counter-balance to a rather ‘conflict-centric’ analysis. Game theory provides a framework where the presence of cooperation bears equal importance to the discussion and truly, one type of interaction cannot be discussed without the other. Second, a game theory approach, with its emphasis on the emergence of stable strategies, releases the discussion from any moral judgement that may appear from other types of analyses. As Layton suggests in his 2006 book *Order and Anarchy*, “if Darwinian hypotheses are applied to the analysis of human social behaviour they do not ask whether some forms of behaviour are intrinsically better than others, merely investigate how social strategies aid individuals’ survival through social interaction in specific circumstances” (Layton 2006: 5). Finally, game theory provides a robust

framework in which to test real world situations that operate in a social milieu, integrating both biological and social theory. John Maynard Smith (1982) highlights game theory in relation to standard evolutionary theory when he says,

“In the case of wing form, then, we want to understand why selection has favoured particular phenotypes. The appropriate mathematical tool is optimisation theory. We are faced with the problem of deciding what particular features (e.g. a high lift : drag ratio, a small turning circle) contribute to fitness, but not with the special difficulties which arise when success depends on what others are doing. It is in the latter context that game theory becomes relevant” (Maynard Smith 1982: 1).

When making an assessment as to whether or not conflict is “adaptive,” this question needs to be answered not solely in reference to one population operating in a vacuum, but instead with reference to all of the relevant players and to the social context in which the interactions are taking place. To this aim, game theory can be a very powerful tool.

### **2.2.1 Principles of Game Theory**

Game theory as a concept originated in the 1930s; however, it was applied extensively to the fields of biology and the social sciences from the 1950s into the 1970s. Game theory applications were heavily influenced by John Nash’s concept of the Nash equilibrium. This concept states that in a game, the strategies of the players and their corresponding pay-offs are said to constitute a Nash equilibrium if after each player chooses a strategy, it does not benefit any of the players to change his / her strategy while the other players’ strategies remain unchanged; or more simply, equilibrium is reached when each player has made the best decision possible in light of the decisions made by the other players. Based on the concept of Nash equilibrium, mathematicians Merrill Flood and Melvin Dresner, while working for the RAND Corporation, developed a model of cooperation and conflict, which was formalised by Albert Tucker in 1950 into the game known as the Prisoner’s Dilemma.

The design of the Prisoner’s Dilemma will be discussed in greater detail in chapter eight. However, it is based on the principle that when two individuals are faced with the decision to either cooperate or defect during an interaction, although joint cooperation

will provide the best result for both players, they may find it too difficult or costly to do so when faced with the chance that the other player may defect. Defection therefore becomes the optimum choice despite it receiving a lesser pay-off than joint cooperation. The most favourable strategy in this type of interaction is one which can be considered an evolutionarily stable one. As defined by Maynard Smith and Price, an ESS, or an evolutionarily stable strategy, is a “strategy such that, if most of the members of the population adopt it, there is “no ‘mutant’ strategy that would give higher reproductive fitness” (Maynard Smith and Price 1973: 15), meaning that no other strategy “could invade the population under the influence of natural selection” (Maynard Smith 1982: 10). The Prisoner’s Dilemma game shows that the most beneficial ESS in a one-time interaction, independent of what the other player does, is always to defect (Axelrod and Hamilton 1981).

### **2.2.2 Lessons from the Iterated Prisoner’s Dilemma**

Establishing an ESS of all defection (ALL D) in a one-time interaction is quite straightforward; however, this assumption does not accurately reflect real-world situations where the same two individuals may have a high probability of meeting one another more than once. In order to address this question of repeated interactions between the same individuals, in 1980 Robert Axelrod established two tournaments where he invited a number of theorists to design and submit a strategy that would compete with all of the other strategies submitted through 200 iterations of the Prisoner’s Dilemma. In both tournaments, the strategy that won was the most simple, known as the Tit-for-Tat (TFT), submitted by Professor Anatol Rapoport. The rules of the TFT strategy are that the player always cooperates on the first move, and subsequent moves reciprocate what the opponent has done on the previous move – defection for defection, cooperation for cooperation (Axelrod and Hamilton 1981; Axelrod 1984). Axelrod and Hamilton (1981) determined that this strategy has four basic principles that ensure its success: 1) it is ‘nice,’ meaning that it is willing to initiate cooperation; 2) it is ‘forgiving,’ meaning it can immediately resume cooperation after defection; 3) it is ‘provocable,’ meaning it can answer defection with a defection without being vindictive; and 4) it is ‘recognisable,’ meaning the strategy is straight-forward and easily understood by the opponent. Axelrod (1984) strongly supported the idea that TFT is the most likely outcome when individuals interact over a long time and are likely to continue their interactions in the future, leading to a balanced reciprocity between the pairing. It is

also the strategy that can survive in a ‘variegated environment’ (i.e., where there are multiple strategies present within the population) and avoid invasion by other strategies, thus making it an ESS. Robert Boyd concisely summarised the relationship between the TFT strategy and the ALL D strategy as ESSs when he writes, “ALL D can always resist invasion by TFT, but TFT can resist invasion by ALL D only if  $w$  is sufficiently large” (Boyd 1992: 481), where  $w$  is the likelihood that the pairing will continue to have interactions with each other in the future. When the number of interactions is known and finite between the pair, then the ALL D is the only ESS (Axelrod and Hamilton 1981). Because there can be more than one ESS and because ALL D is the only stable strategy regardless of the probability of continued interactions, this raised the problem for Axelrod and Hamilton of how cooperative behaviour could have initially infiltrated a population in the midst of predominantly unconditional defectors.

### **2.2.3 The Emergence of Cooperation**

The problem of the emergence of cooperative behaviour into a world of egoists has been discussed at length by a number of people, including those beyond the realm of evolutionary theorists with the contributions of philosophers like John Locke and Thomas Hobbes. They asked how it is that individuals can sacrifice self-interested goals having an immediate benefit to themselves so that instead they may benefit in the future (Hobbes 1970; Locke 1960). From an evolutionary perspective, Nowak makes the position clear when he states that “in any mixed population, defectors have a higher average fitness than co-operators...a population of only co-operators has the highest average fitness while a population of only defectors has the lowest. We see that natural selection in well-mixed populations needs help for establishing cooperation” (Nowak 2006: 1560).

Axelrod and Hamilton proposed two pathways by which cooperation could expand and establish itself amidst a population composed vastly of defectors. The first is through the spread of ‘mutant’ strategies via kin-selected altruism, where a high degree of biological relatedness helps to promote altruistic acts between family members. Cooperation can continue to spread through non-biologically related members of a population through a number of mechanisms, but most notably through social kinship and by Trivers’ theory of reciprocal altruism. Social kinship can encompass a greater scope of relatedness beyond that of biology to include members of one’s clan, intimate

members of one's peer group, respected elders, etc. who are capable of influencing our social spheres and behaviours. It has been noted that the behaviours that we display towards our social kin vary independently from the degree in which we are genetically related (Sahlins 1976), and therefore biology is not necessarily a prerequisite for the perpetuation of altruistic acts between group members. Reciprocal altruism aids the permeation of cooperative acts within a population of biologically unrelated individuals where there is an expectation that increasing another's fitness by reducing your own will be repaid by the other at a later time (Trivers 1971). Trivers feels that this type of altruistic behaviour develops in uncertain environments where there is a substantial, unpredictable risk from disturbances like climatic events, disease outbreaks, or social upheavals, etc., and there is no way of knowing ahead of time who will be in a better position.

According to Axelrod and Hamilton, the second method by which cooperative acts enter into a population is through clustering (Axelrod and Hamilton 1981). As they explain, clustering does not have to be entirely independent of kinship, and in fact, they can often times reinforce one another. The simple idea behind clustering is that a small group of members engaging in cooperative interactions, such as TFT strategies, are going to favour interactions with one another and will tend to avoid / reduce the number of interactions that they have with unconditional defectors (ALL D). As a cluster composed of cooperative individuals will have a higher average fitness than all other individuals and the probability of one TFT strategist meeting and interacting with another TFT strategist increases, then the population of those using cooperative strategies like TFT will increase. A clear summation is provided by Axelrod and Hamilton that illustrates the chronology of the emergence and growth of cooperative strategies into a population and the stability of such strategies:

“ALL D is the primeval state and is evolutionarily stable. This means that it can resist the invasion of any strategy that has virtually all of its interactions with ALL D. But cooperation based on reciprocity can gain a foothold through two different mechanisms. First, there can be kinship between mutant strategies...A second mechanism to overcome total defection is for the mutant strategies to arrive in a cluster so that they provide a nontrivial proportion of the interactions each has, even if they are so few as to provide a negligible proportion of the interactions which the ALL D individuals have. Then the tournament approach

demonstrates that once a variety of strategies is present, TIT FOR TAT is an extremely robust one. It does well in a wide range of circumstances and gradually displaces all other strategies in a simulation of a great variety of more or less sophisticated decision rules. And if the probability that interaction between two individuals will continue is great enough, then TIT FOR TAT is itself evolutionarily stable” (Axelrod and Hamilton 1981: 1394).

An important aspect to understanding whether a strategy is an ESS is that this distinction is very much context-dependent. As has been demonstrated, the ability for a strategy to maintain itself and be uninvadable by others is dependent on the number of interactions performed by the same pairing and the likelihood that they will interact again in the future for an unforeseeable amount of time, but an ESS is also partly determined by the types of strategies that are currently present in the same population. As we have seen, TFT is regarded as an ESS if and only if the number of interactions is sufficiently large, however a TFT population can be weakened by the appearance of unconditional co-operators (ALL C), which will lead to the proliferation of unconditional exploiters (ALL D) who can opportunistically gain advantage over the ALL C group (Nowak and Sigmund 1993) and spread. This discovery led to the emergence of the PAVLOV strategy, (cooperates on first move, cooperates when player and co-player do the same thing on previous move, defects when player and co-player do different things on the previous move), which is also known as the win-stay lose-switch strategy, as a more robust and stable strategy over the TFT in the iterated Prisoner’s Dilemma game. Nowak (2006) concluded that the TFT strategy is efficient in establishing itself within a society that is composed predominantly of defectors, however once cooperation is established, the PAVLOV strategy is better than the TFT in maintaining cooperative behaviour. Chapter eight will continue to explore this idea of population and context dependent ESSs with a more in-depth discussion of relevant theories presented by Maynard Smith and Price.

#### **2.2.4 The Maintenance of Cooperation**

Once cooperation has been established in a population, how exactly can it be maintained? There have been a great many authors who have contributed to this discussion; however, the majority have focused on three essential traits for the continuance of cooperative behaviours within a mixed population where other strategies are present: 1) trust

between group members, 2) the ability to recognise and identify co-operators and defectors within the population, and 3) the punishment of defectors.

Establishing trust between group members in a population is the result of pairings engaging in repeated interactions where the participants can begin to anticipate the other's move based on prior knowledge. Although homogeneity within the population is not essential for maintaining trust, Elinor Ostrom (1990) makes the point that social heterogeneity can reduce levels of trust between group members. However, of greater importance to Ostrom is not that all participants are the same, but instead that they share similar cultural / world views that help to govern their interactions and group decisions (Ruttan 2006). Anticipating each other's intentions can only improve through repeated interactions; however, faith in the anticipated outcome can be strengthened by cross-cutting similarities between groups, such as inter-marriage, similar cultural practices, or shared religious beliefs. Finally, trust is also strengthened through network reciprocity (Nowak 2006) and indirect reciprocity (Nowak and Sigmund 1998). Network reciprocity is similar to Axelrod's idea of clustering where co-operators form networks with other co-operators, increasingly the likelihood of continued cooperation and therefore reaffirming trust bonds. Indirect reciprocity, on the other hand, deals with establishing a good reputation based on previous incidents of helping others, which is spread by gossip and language amongst the group members, to be rewarded by others at a later date. Knowledge of a good reputation promotes trust between individuals whose actions may be anticipated, and they themselves will choose cooperative exchanges.

The second trait that helps to maintain cooperation within a population is the ability for group members to be able to clearly identify co-operators and defectors. Humans with their large brains and higher cognitive functions are able to distinguish between individuals and track social relationships. This ability is beneficial for fostering behavioural flexibility where an individual's actions can differ from pairing to pairing, depending on whom we interact with, thus also allowing us greater specificity in managing these different relationships. As Maynard Smith (1982) points out, effectively managing these relationships requires the ability to recognise individuals, or the number of partners one interacts with in the population must be relatively small. Ultimately, larger social groups hamper the conditions under which cooperative

behaviours are favoured (Boyd 1992; Bendor and Mookerjee 1987; Boyd and Richerson 1988, 1989; Joshi 1987).

Defectors cannot be tolerated within the group dynamic if cooperation is to be maintained due to their proclivity for opportunistically exploiting cooperative members. As such, punishment directed specifically towards defectors is an effective mechanism by which cooperation can be maintained (Nowak 2006; Fehr and Fischbacher 2003; Fehr and Gaechter 2002; Clutton-Brock and Parker 1995; Ostrom 1990; McCay and Acheson 1987; Axelrod and Keohane 1985). The costs of sanctioning defectors and obstacles that must be dealt with for the proper punishment of non-cooperative group members will be discussed in further detail in chapter eight.

## **2.3 Resource Scarcity and Conflict: Understanding Causation**

A number of scholars have argued that resource scarcity as a result of environmental pressures has an effect on the levels of national and international conflict within human societies (e.g., Gleick 1991; Homer-Dixon 1991; Brauch 2002). Much of the literature is more theoretically inclined than empirically driven (Barnett 2000), and some, particularly within the development and popular domain, can make sensational claims of ‘water wars’ and ‘environmental refugees’ based on no more than the intuition that increased resource scarcity will effectively lead to a breakdown in social stability (Homer-Dixon 1999). However, clear evidence to support such claims is often lacking, resulting in a rather overly-simplistic and, some would argue, deeply flawed analysis—extending from an environmentally-deterministic view of expanding population growth, depletion of natural resources and inevitable ensuing conflict. This mono-causal, ecologically-focused explanation of conflict stems from a Malthusian understanding of exponential population growth relative to linearly-increasing food production (Malthus 1798) and emphasising that climate is the over-whelming motivation behind human social structure, settlement patterns, and behaviours (Huntington 1915). Even though this perspective has gradually fallen out of favour in academic circles, particularly amongst social scientists (Riebsame 1985), some scholars continue to emphasise the role of resource scarcity as inevitably leading to human conflicts (Markakis 1994). Others have taken a more nuanced approach to understanding the causal links between



environmental scarcity and conflict and, when correlations are demonstrated, these authors acknowledge that diminishing resources in light of population growth may help to explain, or even be a key factor in explaining, some of the conflict present in a given society; however, environmental scarcity alone rarely, if ever, is an entirely adequate explanation for this outcome (Barnett and Adger 2007; Homer-Dixon 1999; Sillitoe 1977).

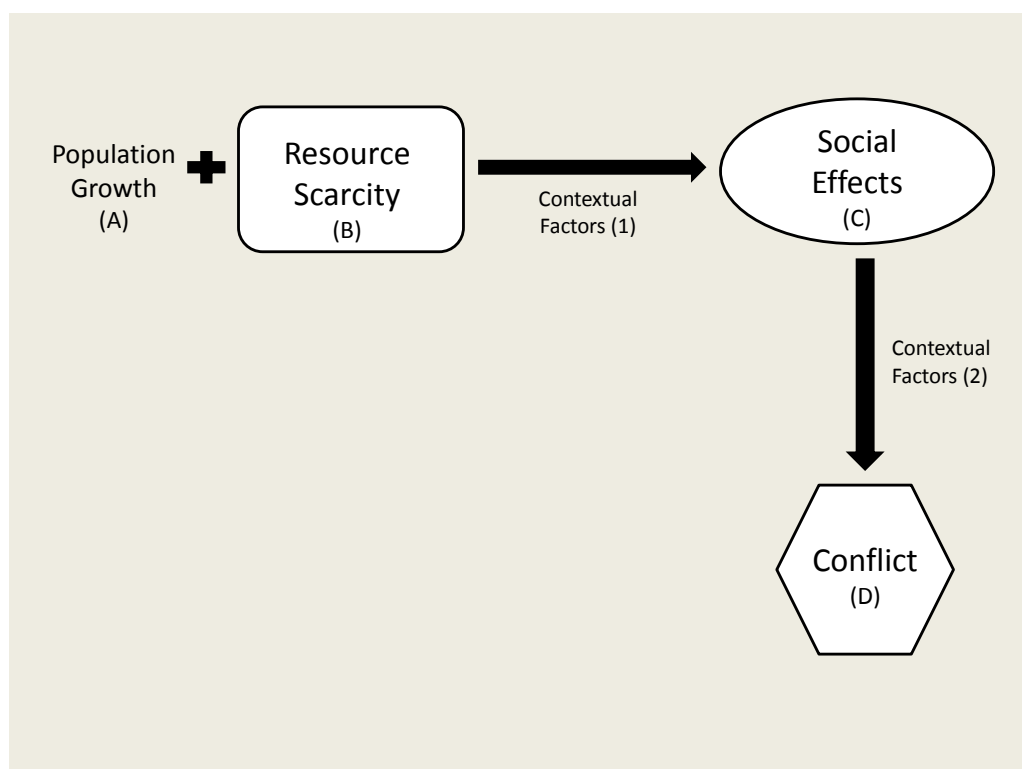
The following body of literature and research acknowledges that relationships between environmental scarcity and conflict is mediated, influenced, interacted upon, compounded, and alleviated by more complex social, cultural, political, environmental, and economic influences that operate on multiple levels over multiple time scales (e.g., Uvin 1996; Kasperson and Kasperson 2001; Leary et al. 2006). An illustration of the differences between these two points of view has been provided in discussions surrounding the link between increased environmental degradation and famine. The strictly ecological framework (Malthusian) would state that starvation is a direct result of human population growth over-whelming food supplies that have been reduced through the effects of drought. Authors such as Sen (1981), de Waal (1989) and Davis (2001) argue that famine is not a straight-forward result of a lack of food, but instead result from disease outbreaks, lack of / insufficient health services, market failures, and policy failures that result in food insecurity. Furthermore, famine is not an inevitable consequence of drought; avoiding disaster depends on mechanisms found within affected communities that help to mediate or alleviate the potential deleterious effects of resource scarcity. Applying this understanding to the resource scarcity – conflict context, a commitment to considering the complexity of this relationship requires an incorporation of the relationships that exist between the myriad of social, ecological, economic, etc. factors into any assessment and understanding the nature of the relationships that exist between each of these factors at a number of scales (Barnett and Adger 2007). In order to make sense of this complexity, a framework for identifying and evaluating the component parts of these relationships and understanding their interconnections is vital in the analysis of empirical data. Arguably the most comprehensive and functional framework examining the relationship between environmental scarcity and conflict has been provided by Homer-Dixon (1999) in his publication *Environment, Scarcity, and Violence*. I shall be relying most heavily on the approach taken in this work for the remainder of the thesis, however, also

acknowledging contributions from other studies, where applicable (e.g., Barnett and Adger 2007).

### 2.3.1 Components of the Complexity Approach

In achieving an adequate understanding of the component parts of the complexity framework demonstrating how environmental scarcity may lead to violent outcomes, Homer-Dixon (1999) advocates the use of arrow diagrams. Drawing on this approach, Figure 2.1 illustrates the component parts that contribute in key interactions or the intervening variables that need to be taken into consideration when looking to identify causal links leading to conflict within an empirical analysis. Homer-Dixon argues that these diagrams ultimately help to answer the question of whether environmental scarcity makes an important contribution to conflict in light of other processes at work (1999) – a critique made by a number of individuals who doubt the importance of resource scarcity (B) in producing social hardships (C). Homer-Dixon argues, in fact, that “a more accurate view of environmental scarcity’s role is that it often acts as a deep, underlying stressor of social systems, and it produces its effects by interacting with contextual factors unique to the society” (ibid: 81).

Figure 2.1: Diagram illustrating the resource scarcity – conflict relationship model, as explained in Homer-Dixon (1999)



This diagram reads from the left, starting with condition (A) where Homer-Dixon contends, and supports throughout his analysis, that population growth worsens resource scarcity (B) as the two have been proven to be highly correlated (Rudel and Roper 1996). Although this thesis, as will be demonstrated in chapter seven, opposes Homer-Dixon's insistence on population growth as a key driver of resource scarcity, it has been left in Figure 2.1 in order to fully present his argument. Continuing right along the diagram, Homer-Dixon explains the connections between (B) towards (C) and (D), where in his view, there are five components that provide a deeper understanding of the causal links between the explanatory variables (B) (in this case, resource scarcity) and the outcomes (C) and (D). Briefly, these are: 1) **Necessity** – can (C) and (D) be explained without (B); 2) **Strength** – along a continuum, how weak or strong is the relationship between (B) to (C) and (D); 3) **Proximity** – (B) is a distant or proximate cause of (C) and (D); 4) **Multicausality** – the number of processes (B)s that produce (C) and (D); and 5) **Interaction** – the relationship between the (B)s as either interactive or additive in producing (C) and (D).

In determining the likelihood that resource scarcity, and possibly other causal factors (B) like political upheaval or economic crisis, will lead directly to various social effects (C), Homer-Dixon believes that he makes his greatest contribution to the bigger debate in shedding light on the contextual factors (1) (referred to as CF1 in the text) that mitigate, alleviate, lessen or augment the direct effects of the causal factors contributing to conflict. CF1s specifically in relation to pastoralists will be discussed further in section 2.4 of this chapter; however, in the CF1s discussed here have been referred to in other sources as coping behaviours, adaptive strategies, buffering mechanisms, etc. and are essentially factors made up of environmental, institutional, social, and cultural components of a society (Choucri 1984). Reuveny (2007) contributes to this discussion when he says that it's not the strength of the disaster (B) that has the most impact, but rather, how strong (B) is relative to the capacity of people to withstand it (CF1). For Homer-Dixon's part (1999), the capacity of a population to employ robust CF1s that help to lessen the strength of the relationship between resource scarcity and negative outcomes (C) and (D) is based on a combination of social ingenuity (scope of practices, policies, and institutions buffering societies from scarcity effects) and technological ingenuity (food, water, risk-avoidance technologies and knowledge acting as safeguards against scarcity). He asserts that problems arise when societies face a widening

ingenuity gap, with the requirement / pressure for ingenuity rising but unfortunately the supply of ingenuity is not able to keep up with the increase by stagnating or dropping. Most at risk of facing ingenuity gaps, Homer-Dixon argues, are poor populations as they face insurmountable levels of brain drain, limited access to finances, ill-functioning judicial systems, and weak or incompetent governance.

Moving further through the diagram, as resource scarcity (B) is negotiated by the effects of contextual factors (1), the outcome of this interaction are resulting social effects. Homer-Dixon identifies five main categories of effects as a product of resource scarcity: 1) constrained agricultural productivity in ecologically marginal regions; 2) constrained economic productivity, predominantly on resource-dependent people; 3) migration of people in search of better livelihoods; 4) greater segmentation of society, usually along existing ethnic cleavages (Percival and Homer-Dixon 1995), and 5) disruption of institutions, especially the state (Homer-Dixon 1999: 80). Arguably the most important social effect resulting from escalating resource scarcity in relation to this dissertation is social segmentation, particularly along ethnic lines. Segmentation in this respect can encourage competition between groups where critical resources overlap and produces a tendency to look inwards, increasing the ‘we-they’ division between groups (Chazan 1994).

While a number of studies have been able to make the connection between resource scarcity (B) being mediated by contextual factors (1) that produce subsequent social effects (C) (e.g., Mochizuki 2004; Haile 2004), very few have closely examined the relationship between social effects (C) and resulting violent conflict (D). This omission is illustrated by analyses such as that of Markakis (1994), who says in relation to resource-based conflict in the Horn of Africa that “scarcity and mobility make conflict inevitable” (1994: 219). However, the point that Markakis and others (e.g., Oba 1992) often neglect is that there is a second level of contextual factors (2) that either moves actors to aggress or to employ cooperative means in response to prevailing social effects (Barnett and Adger 2007). Homer-Dixon (1999) presents three basic theories that help to explain the transition from social effects into conflict (i.e., contextual factors (2)): 1) frustration-aggression theory, 2) group identity theory, and 3) structural theory. Frustration-aggression theory acts on individual behaviours where aggression is thought to be the result of a belief that someone / something is blocking the individual from

achieving a desirable goal. Much of the literature dealing with frustration-aggression theories focus on youth where, for instance, expectations for a better life are left unfulfilled (Ohlsson 2000), there is the need to regain a lost sense of power or status (Goodhand 2003), members act out of a need for protection from violence (Keen 2000), or frustration can stem from a ‘generation gap’ between the wants and desires of youth versus the regulatory powers of elder members of society (Archibald and Richards 2002). Second, group identity theory explains the way groups reaffirm their identities and reinforce the ‘we-they’ divide through aspects such as building camaraderie when discriminating against others or improving the group’s status in relation to others. Finally, structural theory deals with economic and game theory explanations of conflicts based on ‘rational’ calculations that also take into consideration the opponent’s actions (see section 2.2). By way of an example of how social effects (C) can translate into violent conflict (D) via contextual factors (2), Reuveny (2007) notes that an influx of migrants into an area (social effect) may result in conflict if there is ethnic tension or lack of trust between the groups, civil strife, or disparities between groups that reinforce the ‘we-they’ divide (group identity theory); however, if the receiving population and migrant group share a common ethnicity, religion, or culture, conflict as an outcome is much less likely.

Finally, Homer-Dixon’s (1999) provides an explanation of the ‘types’ of conflict (D) that can result from the environmental scarcity – conflict pathway. He argues that group identity theory can best be used to explain group identity conflicts (i.e., scarcities that increase ethnic or group division where violence has a strong identity dynamic). A combination of frustration-aggression theories and group identity theories can be used to explain insurgencies against the state or other dominant bodies as these models emphasise frustration that arises from grievances or perceptions of relative disparity. Finally, structural theory can help to explain simple scarcity conflicts, which are the intergroup resource struggles that stem from a group self-interest in maximising one’s shares of a diminishing resource.

A major distinction between Homer-Dixon’s analysis and the one that will be demonstrated in this thesis relates to this last point. Homer-Dixon focuses on resources that are both ‘rivalrous and excludable’ and not on the common-pool resources that help to define pastoral systems. In this way, his analysis is one that should be viewed in light of a zero-sum game where there is the likelihood that groups are aware of the timespan

of interactions and the resources in question are in finite supply. It is due to this focus in Homer-Dixon's work that, I believe, leads to an over-emphasis on the propensity for violent outcomes as a result of social stresses, even when mediated by contextual factors. In this way, if resources are finite and excludable, then cooperative strategies in iterative interactions would have little benefit to the groups involved. The other point worth mentioning here is that the model presented by Homer-Dixon illustrates connections between its component parts as linear and uni-directional. However, the reality is a highly chaotic system of non-linear feedback mechanisms, stochastic processes, and thresholds that can be affected by perturbations, intervening elements and dynamic interactions that are hidden through the schematic of using simple arrows within the diagram. Although the components themselves have been identified through the help of Homer-Dixon's work, understanding the 'chaotic' nature of the relationships that exist between concurrent causal factors, contextual factors, and social effects is where a detailed empirical study, such as this thesis, can make the greatest contribution to the understanding of multivariate and highly interactive socio-ecological systems.

In order to test these complex relationships, Homer-Dixon's analysis and others provide some advice to researchers in moving from a theoretical to an empirical application. Primarily, Barnett and Adger (2007) suggest that a systematic research project designed to shed light on the relationship between resource scarcity and conflict will focus on populations where: environmental risk factors are high, state involvement or efficacy is considered to be low, public services such as educational and healthcare are poor / lacking, and the majority of the population's livelihood is highly resource-dependent. Second, after selecting a research area that reflects these criteria, George and McKeown (1985) suggest using process tracing as the first step in understanding the causal relationships that may exist in empirical data linking environmental scarcity to conflict. The aim here is to see if, in fact, 1) any such connection exists within the data between the independent (environmental scarcity) and dependent (conflict) variables, 2) if there are common patterns of causality within this connection, and 3) to identify the intermediate variables that may affect the relationship between the independent and dependent variables. Third, Homer-Dixon explains that a truly robust study having sufficient data, will make use of quantitative, correlational analyses that test the hypothesised relationships appearing out of the process tracing (Homer-Dixon 1999).

As discussed in chapter one, this thesis has incorporated these approaches in order to investigate fully the complex nature of the relationships that may (or may not) exist between increasing resource scarcity and levels of conflict found amongst pastoralists in northern Kenya. While Homer-Dixon's approach has been extraordinarily helpful in identifying the component parts in the relationship between resource scarcity and conflict, and hence, very useful in its application to process tracing, I have consulted more quantitative analyses to statistically test these relationships. In chapter six, I focus on research conducted by Witsenburg and Roba (2003, 2007) that provides the most comparable study to my own, as both focus on north Kenyan pastoral populations to see if decreasing rainfall in the area can help to explain historic and contemporary trends in resource conflict. Although the aims of both investigations overlap, where these two projects differ and for what reasons will be discussed further within chapter six.

## **2.4 Coping Strategies for Resource Scarcity**

Depending on a group's mode of production, the strategies used to cope with periods of resource scarcity are diverse and reflect the environments that shape each mode of production. To cope with environmental stress, hunter-gatherers may increase the number of food sources to include secondary and tertiary foods (Couper-Johnston 2000, Winterhalder 1986); engage in food sharing amongst an optimal number of individuals (Winterhalder 1990); migrate to distant, ecologically dissimilar areas where relationships have been maintained through kinship, trade, or historical alliances; share local knowledge regarding the availability of temporal resources (Couper-Johnston 2000; Winterhalder 1990); or increase their engagement in commercial trade (Couper-Johnston 2000).

Subsistence farming populations may cope with resource scarcity by adopting various strategies including: maintaining low population densities of small scattered communities, which opens up land necessary to increase fallow periods and crop diversity (Baksh and Johnson 1990); employing an open field system which is managed communally to spread risk across individual plots; increasing food storage reserves (Winterhalder 1990); investing in farming technology such as irrigation systems, improved crop selection, or soil diversification and management; intensifying and diversifying labour or engaging in commercial networks; utilising marginal lands for growing secondary crops; or placing greater importance on wild food sources (Puri

2007). Large-scale farming communities and industrialised societies cope with environmental hardship by employing similar strategies to those of subsistence farmers, but there is greater investment in technologies such as using automated irrigation systems, crop engineering, or developing drought-resistant seeds and plants (Warrick et al. 1975). Furthermore, these communities subscribe to a centralised leadership, which establishes policies for the protection and education of farmers; there is greater reliance on government aid (planting, food, and financial aid) during extreme environmental crisis (ibid); and increased engagement with the larger market economy, providing more extensive networks (Puri 2007).

In Cashdan's (1990) book, B.S. Low discusses the degree to which tribal and peasant populations need to employ particular adaptation strategies based on: 1) the extremeness of the environment in which they live, 2) how variable environmental conditions are in a given year, and 3) the predictability of these conditions (Low 1990). Low demonstrates that environments exhibiting extreme conditions favour highly specialised species adapted to cope with such extremes, whereas regions that experience a high degree of climatic variation generally call for a suite of adaptations instead of niche specialisation. However, it is the level of predictability that is crucial in allowing either specialisations or a range of adaptations to be employed optimally, to plan ahead, mitigate negative climatic effects, or avoid maladaptive behaviours. Here, predictability appears to have the greatest influence over the successful implementation of adaptive strategies for managing climatic conditions.

#### **2.4.1 East African Pastoralism and Coping in Rangeland Systems**

Pastoralism as a mode of production is estimated to have existed for 4000 years in East Africa. During this time, increased aridity in the area helped to move the tsetse fly southward on the continent, thus opening up expanses of land on which to keep large numbers of animals (Raimbault and Dutour 1990; Smith 1979). Three quarters of Africa's pastoralists inhabit this area (Sandford 1983) which typically receives between 250 – 750 mm of rain annually, but is prone to large fluctuations, unpredictability and spatial heterogeneity (Norton-Griffiths et al. 1975). It is within this dynamic environment that pastoralists must rely upon a wide range of coping strategies that act as 'buffering mechanisms' (Halstead and O'Shea 1989) or as risk avoidance strategies (McCabe 1997) in order to successfully manage periods of resource scarcity. The



following paragraphs highlight the six coping mechanisms most often discussed in the literature for East African pastoralists: mobility, herd accumulation, herd diversification, social networks, livelihood diversification, and increased commercialisation.

#### 2.4.1.1 Mobility

In unpredictable, risk-prone environments, a high degree of mobility and open utilisation of communal grazing land is of vital importance. Herds can be moved away from unproductive / risk-prone lands to benefit opportunistically from accessing more productive, spatially-distributed patches (e.g., Bollig and Göbel 1997; Lane 1998; de Bruijn and van Dijk 2003; Scoones 1995, 1994; Ellis et al. 1987; Ellis and Swift 1988; Ellis and Galvin 1994; Dyson-Hudson and Dyson-Hudson 1980). Movement for this purpose can be generally characterised as residing in wet season areas that lack permanent water supplies when rainfall allows the exploitation of these areas, followed by an increased rate and range of movement during the dry season / at times of resource scarcity in search of perennial water sources and available grazing (Angassa and Beyene 2003). Mobility not only allows for the use of productive tracts of land and water, but it also enables previously-inhabited land to rest and recover after utilisation, which is an essential component of successful rangelands management (Oba and Lusigi 1987; Cossins and Upton 1988a). Managed correctly, mobile pastoralism has been proven to be more economically profitable and productive than classical ranching models within paddocked, sedentarised areas (Niamir-Fuller 2005; Behnke and Scoones 1993; Coughernour et al. 1985). Dyson-Hudson and Dyson-Hudson (1980) note that, as a strategy, mobile herding is a favourable coping response to resource scarcity as it does not require a large capital investment, or high inputs of fuel energy, or the transference of foods suitable for human consumption into supporting livestock.

Unfortunately, this understanding and acceptance of pastoral nomadism and its ecological and economic benefits has not always existed. Starting in the colonial period in East Africa, there have been a number of attempts at settling nomadic pastoral groups, as the colonial governments saw mobility as a problem that needed to be eliminated and not a mode of adaptation in response to an unpredictable environment that needed to be strengthened (Baxter 1991, 1993; Gilles 1990). Primarily, the colonial governments promoted the idea that sedentarisation would benefit local populations by increasing access to education and establishing much-needed health systems. A more covert

rationale was that sedentarisation would assist the government in managing the whereabouts of its newly-colonised citizens for greater control, efficient tax collection, and improved security (e.g., PC/NFD/1/2/3; PC/NFD/1/9/9). At the close of the colonial period, a growing body of literature was also critical of the pastoralist lifestyle, arguing that nomadic populations negatively impact their natural environment. Most famously, Hardin's 1968 "Tragedy of the Commons" describes how common property resources and open access to communal land ultimately leads to over-grazing, environmental degradation, and a reduction in land productivity (Hardin 1968). Hardin's work influenced many others, including H. F. Lamprey, who in 1976 stated that communal, open access to land and the practice of maximising herd size promoted desertification due to human mismanagement of the land (Lamprey 1976). Other authors reinforced these beliefs, supporting the claim that pastoralists were self-destructive due to the levels of degradation that they caused in their environments (Picardi and Siefert 1976; Lamprey 1983; Brown 1971). The science behind this body of literature was based on the perception that rangelands in East Africa operated as a bounded equilibrial system where ecological stability determines stocking rates and carrying capacity based on the natural vegetation succession (Lamprey 1983; Westoby et al. 1989; Ellis and Swift 1988) and therefore should be managed as such.

It was not until the late 1980s and early 1990s, with the release of works like Behnke, Scoones and Kerven's *Range Ecology at Disequilibrium* (1993), that a new paradigm was emphasised in understanding how people live and thrive in highly variable, non-equilibrial environments based on flexible, responsive subsistence strategies. This work and others (e.g., Ellis and Swift 1988; Homewood and Rodgers 1991; Ostrom 1990; McCabe 1987, 1990; Fratkin 1989, 1991) supported the understanding that rangelands are grazing dependent, prone to stochastic events such as drought and subsequent livestock off-take, and that pastoralists who have been utilising these lands for many generations are well situated to manage them in an environmentally-sensitive manner. Ultimately, an adaptable mobile system over communal land shares risk, allows access to alternative grazing areas whilst waiting for exploited pasture to regenerate, and results in higher populations of herbivores maintained (Niamir-Fuller 1998). Thus, the 'new thinking' of rangeland ecologists within dryland areas promotes an awareness of pastoral mobility as a sound response to highly variable and unpredictable climates.

From an ecological perspective, it can now be seen that the effects of controlled grazing policies, formalised land tenure, and land alienation in East Africa were highly damaging to the overall productivity of pastoral subsistence at the time. It has even been postulated that some of the environmental changes observed in contemporary society, such as growing bush cover, are in part owed to these historical policies (Oba 1996; Bassi 1997). Continuous sedentary grazing, particularly during the wet season, results in increased levels of overgrazing, lower pasture palatability, a reduction in vegetation productivity, higher soil compaction, lower water infiltration, and ultimately pastureland degradation as livestock are forced to stay within a circumscribed area (Niamir-Fuller 2000). Furthermore, by restricting the movement of people to a reduced area of pastureland, there exists, by default, a large area of grazing land that is not utilised. These under-grazed areas not only represent unexploited resources for pastoralists and productivity lost, but lack of grazing can result in these areas having lower palatability of primary productivity, lower phosphorous content of topsoils, lower overall herbaceous densities, lower biomass production of fodder species, and increased invasions of unpalatable plants that can sometimes be a more serious problem than over-grazing (Niamir-Fuller 1998). The use of grazing schemes reflects the issues raised here. For example, in 1981 in Senegal, the German GTZ Ferlo project was set up to paddock 14,000 hectares of rangeland where water was supplied in each paddock and stocking rates were monitored for a period of 12 years in order to assess the environmental and socio-economic impacts of such grazing management schemes. Ultimately findings showed that fixed stocking rates meant that the stocking densities were too high in bad years and herds had to move out of the project area to survive, and in good years, the unconsumed biomass hampered plant growth in the following years. Out of the 12 years that were monitored, stocking rates and available biomass matched in only 2 of those years (Thebaud et al. 1995). The conclusion that may be drawn from this long-term monitoring project is that estimating stocking densities and formalising rangeland usage is extremely difficult in dynamic ecosystems. The failures of the GTZ project support the principle that free mobility provides a superior way of utilising variable and unpredictable natural resources, and therefore herd mobility and land use should be flexible, which is a vital part of pastoralist coping strategies.

#### 2.4.1.2 Herd Accumulation and Diversification

A second coping strategy employed by East African pastoralists to manage resource scarcity is accumulating herd stocks, effectively creating an insurance policy against drought extremes when large percentages of the herd may die. This strategy was criticised by Herskovits in 1926 as the ‘East African cattle complex’ as he believed that amassing livestock herds was an irrational pastoral practice ultimately counter-productive to effective environmental management (Herskovits 1926). However, as the ‘new thinking’ in rangeland ecology emerged in the 1980s, this body of work sufficiently demonstrated that in disequilibrium systems prone to repeated herd die-off, herd accumulation does not correlate with land degradation due to overgrazing. Furthermore, stocking rates prior to drought episodes have little effect on the numbers of animals remaining after the drought period has ended (Behnke and Scoones 1993; Sperling 1989; Ellis et al. 1987), where herd die-off is more a product of rainfall variability and the length of the dry period in question.

Beneficially, Coughenour et al. (1985) explain that accumulation allows for the keeping of large numbers of breeding females necessary for food requirements, and accumulation also allows for breeding herds to remain intact during scarcity periods so that when conditions once again become favourable, herders are more able to rebuild herds close to pre-crisis numbers (e.g., Coughenour et al. 1985; Hjort 1981; Roth 1996; McPeak 2005). Accumulation for pastoralists in East Africa is vital; a place where livestock off-take due to the effects of drought can diminish herds by estimates of more than half (McCabe 1985) and such devastation has the possibility of affecting herd numbers, particularly of breeding females, for up to ten years (Dahl and Hjort 1976, 1979).

Not only is accumulation important but due to the spatial heterogeneity and environmental variability found in East Africa, pastoralists of these regions buffer themselves against resource scarcity by diversifying the types of livestock species in their herds. One of the primary reasons for diversification is to take advantage of different ecological niches and grazing / browse requirements (Coppock 1994; Oba and Lusigi 1987; Franke and Chasin 1980) of cattle, sheep and donkeys (mostly favouring perennial grasses) and goats and camels (mostly favouring mixed bushy environments). Pastoralists are able to monitor their stocks and dynamics in the landscape to respond to

changing conditions that may favour varying proportions of livestock species within herds. As such, small stock (goats and sheep) have become increasingly favourable due to their apparent hardiness in recurring drought (Dahl and Hjort 1976; Legesse 1980; Barton, Morton and Hendy 2001) and opening up additional market opportunities (Little 1992). Furthermore, diversified stock acts as an additional insurance policy should environmental change or disease outbreak affect a sub-section of the herd, then the other species in the herd provide necessary redundancy to avoid catastrophic disaster (Lamprey and Waller 1990).

#### 2.4.1.3 Social Networks, Stock Alliances, and Indigenous Knowledge Transfer

As discussed previously in this chapter, building strong social networks through inter-ethnic marriage and spatially-dispersed stock alliances are paramount to spreading risk. Far-reaching social networks allow alliances to be called upon in times of individual hardship over areas showing differential fitness and risks being spatially heterogeneous (e.g., Almagor 1978; Sobania 1991; Goldschmidt 1979; Bollig 2006). The result of these reciprocal relationships allows for affected parties to ‘borrow’ livestock from affines in order to replenish breeding stocks after disturbances or to readily move animals into more productive pastures during times of environmental stress. Dyson-Hudson (1966) has estimated that maintaining social networks effectively opens up four or five times the amount of space within a pastoral territory than one herder would have access to if he were managing his herd in isolation. Furthermore, pastoralists living in the unpredictable, heterogeneous environments of East Africa need to rely on strong social networks that allow for the transmission of knowledge of temporary resource availability across generations, between family members, amongst age sets or kinsmen, and throughout clans in order to make optimal use of environmental assets if and when they become available during times of relative scarcity. Animal disease management and improved livestock rearing practices are also often transmitted through local knowledge systems (Morton 2006), which can help in mitigating the effects of environmental hardship.

#### 2.4.1.4 Livelihood Diversification and Accessing Markets

Just as diversification of herd species is beneficial in order to utilise a range of ecological zones, pastoralists also try to diversify livelihoods in a way to expand on their income-generating schemes and modes of subsistence. Diversifying subsistence

can be accomplished by changing food sources from a pastoral diet of animal products to one based on wild fruit and tuber gathering (Oba 1985), hunting wild game (Turton 1977), receiving relief food (Hogg 1983), and increasing cereals and grains into daily diets (Galvin 1992). Second, pastoralists can increasingly engage in different forms of labour, which can either be small contract work (fetching firewood, cutting fence posts, transporting goods, etc.) to more skilled positions in urban / peri-urban areas, such as night guards, police officers, game scouts, etc. Evidence shows that these forms of wage labour are on the increase where the number of Ariaal pastoralists reporting to be contract workers doubled from 1976 – 1985 (Fratkin 1991), while Richard Hogg reports that the number of Borana workers in Nairobi increased by 450% between 1962 and 1969 (Hogg 1980). Farming activities have also been encouraged by development agencies and governments in East Africa in areas with more reliable rainfall. As a production strategy, growing crops takes far less time to recover productivity after a disturbance than re-accumulating lost livestock herds due to animals' comparatively slow reproductive rate (Smith 1997). Strictly speaking, this may be the case; however, access to livestock markets for re-stocking (Little 1985) and the ability to move animals into productive areas can aid in the rapid recovery of herd numbers post-drought (Homewood and Lewis 1987).

Finally, to help in dampening the potential negative effects of resource insecurity, pastoralists are engaging more frequently in market systems and commercialisation of livestock and other natural products. From their herds, individuals will sell live animals, meat, hides, and milk (Little 1992) with other sources of income derived from the sale of such things as fence posts, charcoal, firewood, gum arabic, tea, soap, plastic items, and alcohol (Little et al. 1999; Zaal and Dietz 1999; Morton and Meadows 2000). Capital raised through the sale of these products can be used to purchase supplementary feed for livestock, pay for water from boreholes (Morton 2006) or purchase alternative foods (maize, beans, rice, cooking oil) necessary for supporting families when herds have either moved away from a home area in search of pasture or potentially when animals have stopped producing milk due to the effects of prolonged drought.

#### **2.4.2 Coping Mechanisms: Points for Consideration**

In moving forward from a discussion focused on coping mechanisms to one centred on whether or not these practices are adaptive in the long-term, there are three points to

consider. First, the mechanisms described above are not fixed nor do they represent any sort of sequential “stages” through which pastoralism passes over time. Instead, herd owners combine these at different points in their lives and under relevant circumstances as they see fit (Holtzman 1996). Furthermore, it is well-known that the utilisation of certain coping mechanisms can be transient and reversible for the individual, for instance, moving from exclusively herding livestock into wage labour for an indefinite period of time and then back again into livestock investment and herding (Little et al. 2001). The coping mechanisms change in response to contemporary social, ecological, political, personal, and economic pressures as necessary.

Second, the coping mechanisms described should not be thought of as independent and mutually-exclusive. Not only are they most often employed concurrently, but the effects of one strategy may also have repercussions on another strategy, both positively and negatively. For instance, diversifying diets to include relief foods enables greater herd accumulation as animals do not need to be sold during times of stress in order to raise capital (Hogg 1983), thus representing a positive association between these two mechanisms. Likewise, herd accumulation increases and is increased by extensive social networks: the more animals an owner has, the more he can distribute through affines, and the more affines he has, the more likely he is to successfully increase his herd numbers (Almagor 1978). Unfortunately, there are negative relationships that exist between a number of strategies, in particular between farming with mobility and markets with herd accumulation and social networks. In the former case, encouraging livelihood diversification into farming has often resulted in restricting the movement of herds over areas historically accessed by pastoralists. Therefore, this reduces the effective area which livestock may use in times of resource stress (Dahl and Hjort 1979; Hogg 1987, 1988). For the latter scenario, likely a relic of colonial de-stocking policies, engaging in livestock markets has a profound effect on pastoralists’ ability to accumulate herds and maintain breeding stocks. Swift (1979) warns that markets pose a risk by off-loading males that normally help to keep stock numbers high, getting rid of surplus animals that could otherwise become objects of exchange in social networks, and selling breeding stocks that reduce milk supplies and a vital subset of the herd required for re-growth after periods of resource stress.

Finally, there are marked differences in *who* exactly has the opportunity to utilise certain coping mechanisms and *to what effect*. The above coping mechanisms have been discussed rather generally and appear to be uniformly applied to all pastoralists throughout East Africa who are facing resource scarcity. However, factors such as age, gender, wealth, primary mode of production, and distance to urban areas all play a significant role in influencing which coping mechanisms can be optimally employed (Adger et al. 2007). Of these factors, the one that arguably demonstrates the clearest disparity is that of differential wealth – a relationship first recognised by Fredrik Barth in 1964. Empirical studies since this time have shown that comparatively wealthy individuals are: 1) more likely to control breeding numbers of livestock where poor individuals seek to accumulate herd numbers (Mace 1993); 2) less likely to lose animals during climatic stress than poorer individuals due to greater herd diversification and accumulation (Fratkin and Roth 1990); 3) more likely to engage in profitable livelihood diversification in comparison with poorer individuals who engage in cheaper and more unsustainable forms of wage labour (Little et al. 2001); and 4) more likely to benefit from decreased mobility by settling in towns where they can engage in business, while less wealthy individuals suffer from the loss of mobility when sedentarised in town areas (Coppock 1994). The relationships discussed here are not exhaustive in any sense, but they are important to keep in mind in regards to further points that will be raised in chapter nine when discussing the scope of adaptive strategies in contemporary pastoral societies in northern Kenya.

## **2.5 Theories of Vulnerability and Resilience**

Having reviewed the range of coping mechanisms employed by pastoralists to manage increased resource scarcity, the final section of this review considers associated questions of sustainability. Faced with apparently novel challenges, can populations continue as they have in the past; or instead, are there more fundamental changes that must be made in order for subsistence populations, such as pastoralists, to successfully adapt and persist? Where ‘sustainability’ and its many permutations (e.g., sustainable action, sustainable management, etc.) has received much attention in earlier decades, the focus has now squarely adjusted to discussions of ‘vulnerability’ and ‘resilience.’ Common use of these terms often times assumes them to be simply two sides of the same coin, (i.e., a population having high resilience naturally has low vulnerability).



However, there is much subtlety missed here; a problem that Davoudi (2012) raises when he describes them as contemporary buzzwords that are in danger of losing all significance. The following discussion will look closely at the concepts of vulnerability and resilience as potentially useful and robust analytical tools.

### 2.5.1 Vulnerability

Vulnerability has been defined as the “state of susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt” (Adger 2006: 268). Some authors have argued that a more complete definition of vulnerability should make reference to human well-being (Wisner et al. 2003) as it incorporates all social, economic, environmental and political spheres of influence (Bohle, Downing and Watts 1994), and the nature of resulting vulnerability is closely related to the type of interference causing the condition (Handmer, Dovers and Downing 1999). As such, in the literature, vulnerability has been divided into two distinct categories: entitlements-based explanations of vulnerability dealing with the social influence of institutions, class, social status, gender, etc. and secondly, natural hazards-based vulnerability dealing with environmental risks and the associated human responses (Adger 2006). Although this thesis has initially focussed on the latter of the two, entitlements-based influences will be discussed at considerable length in the following chapters. In either case, vulnerability refers to the exposure of groups or individuals to stress (Chambers 1989), where stress is the result of social factors or environmental risks causing disruption to group or individual livelihoods (Adger 1999), which results in ‘forced’ adaptation to a changing environment (Adger 1999).

In the context of this dissertation, the contribution of vulnerability is problematic for a number of reasons. Primarily, vulnerability as a concept lacks the analytical weight in establishing the limits of coping strategies in the context of dynamic environmental and social conditions, such as those found in northern Kenya. Some studies have sought to quantify vulnerability, for example Liverman’s 1990 study in Mexico that assessed the major components of vulnerability on collectively owned land in light of increased exposure to drought, and Luers et al. (2003) quantifying vulnerability as:

$$\frac{\text{Sensitivity to stress}}{(\text{State relative to threshold}) \times (\text{Probability of exposure to stress})}$$

Although these studies represent considerable and worthwhile attempts, it is inherently difficult to assess with any precision rather vague terms such as ‘sensitivity to stress.’ Furthermore, quantifying such diffuse terms may not result in any clearer conceptualisation of how vulnerability is understood and how it operates within socio-ecological systems and may, in fact, diminish its impact by hiding its complexity (Alwang et al. 2001). The IPCC has attempted to identify criteria on which a vulnerability assessment can be made by evaluating the following categories: 1) Range of technology available for adaptation, 2) Availability and distribution of resources across a region, 3) Structure of vital institutions, their decision-making authority, and the decision criteria used, 4) Range and stock of human capital (education, security, etc.), 5) Range and stock of social capital, 6) Risk spreading measures available, 7) Decision-makers’ ability to manage information, determine the credibility of information, and the credibility of the individuals themselves, 8) Population’s determination of the source and perception of stress and the significance of exposure to it (in Yohe and Tol 2002). However, Fraser, Mabee and Slaymaker (2003) argue that, although the IPCC has included a great range of social, economic, and political considerations in an attempt to move away from overly-simplistic descriptions, the result is stiflingly complex, and the breadth of information cannot be adequately assessed. The alternative is to rely on a framework that is dynamic, has the flexibility to be qualitatively applied to varied regions and populations, and can highlight relative states amongst this variety. However, this approach still lacks a long-term understanding and evolution of vulnerability within systems, which will need to be addressed elsewhere.

Second, vulnerability literature is often considerably pessimistic, with emphasis on assessing risks, exposure to risks, and sensitivity to risks and little attention on the adaptive capacities of populations in overcoming such risks. Within climate change discussions, the IPCC defines vulnerability simply as the “degree to which a system is susceptible to and is unable to cope with adverse effects [of climate change]” (McCarthy et al. 2001: 2.3), and a substantial number of publications make the assumption that climate change will ultimately result in widespread problems, as though this statement is a foregone conclusion without reference to well-established coping mechanisms or populations borne from unstable, unpredictable environments. Where studies such as Kasperson et al. (1995) ‘regions at risk’ analysis determine vulnerability

based solely on regional biophysical data, Handmer, Dovers and Downing (1999) reinforce the argument that there is a vast difference between the impact of climate change and the impact of climate change *with adaptation measures* in place, which will have knock-on effects in determining the relative vulnerability of a population facing climatic threats.

As the vulnerability literature has arguably been guilty of downplaying the role of coping mechanisms in mitigating vulnerability, the result is perhaps an assumption that increased vulnerability is an inherent part of subsistence communities and developing regions. Poor households are said to be most at risk from natural hazards (Hewitt 1983, 1997; Watts 1983) as it is assumed that vulnerability is contingent on poverty and local resource dependency (Adger 1999). The argument follows that wealthier nations have greater disaster preparedness (Handmer, Dovers and Downing 1999) due to their enhanced technology and increased income (Burton, Kates and White 1993). Poverty in this context is defined generally as a measure of absolute poverty (i.e., quantifiable poverty lines, \$1.25/day, etc.) rather than referencing a more inclusive and dynamic incorporation of multidimensional poverty indices, such as wealth of social relationships, membership in broad networks, subjective attitudes towards well-being, etc. (e.g., Suich 2012). This tradition, in the context of climate change vulnerability, is focused on the environmental risks, the probability of exposure to them, and their likely impacts without a firm understanding of the extent to which poor and rural populations are capable of managing risks in unpredictable or harsh environments. In order to address this issue, a number of authors (e.g., Cannon 1994; Burton et al. 1993; Berkes and Jolly 2001; Mortimore and Adams 2001; Wisner et al. 2003) have argued that vulnerability resulting from hazards is not directly determined by levels of wealth, and therefore it is essential to bring into the discussion how coping mechanisms, institutional structures, and behavioural adaptability help to mediate the potential deleterious effects of such risks and reduce overall levels of vulnerability.

The inadequacies of a vulnerability framework in which to discuss climatic risks *with adaptation* may actually be inherent in the design. The vulnerability literature is borne from a tradition emphasising the desire to return the system to some state, deemed to be 'sustainable,' that existed prior to the effects of any perturbations. Focusing on hazards with relatively little attention paid to coping mechanisms and adaptability places

emphasis on how these hazards are felt, mitigated, and overcome rather than accepting a complete system reconfiguration. In this case, resilience is a necessary framework in which to address these issues and adequately reflect on the goals of resilience for subsistence based populations living in dynamic environments.

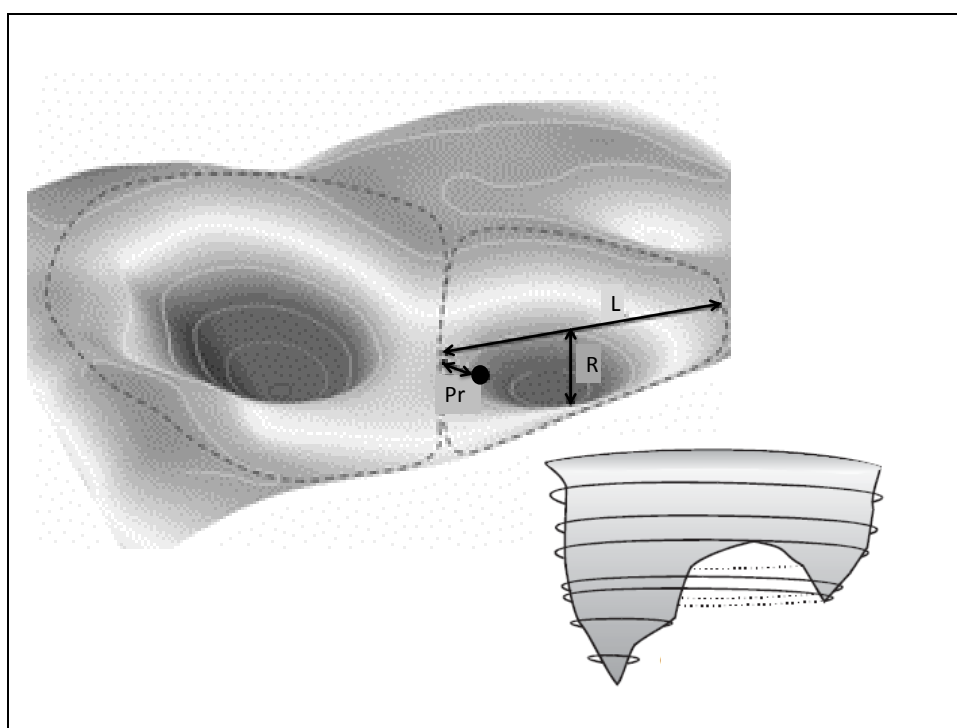
### 2.5.2 Resilience

In the 1960's the term 'resilience' made its appearance within ecological literature where it had previously been used by physical scientists to describe the properties of a spring, emphasising the stability of the object and its resistance to external forces (Davoudi 2012). C.S. Holling brought this kind of thinking to the fore in his 1973 paper "Resilience and Stability of Ecological Systems" where he identified two distinct properties of ecological systems: stability and resilience. In his words, stability is "the ability of a system to return to an equilibrium state after a temporary disturbance; the more rapidly it returns and the less it fluctuates, the more stable it would be," and he went on to describe resilience as "a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" (Holling 1973: 17). These distinctions led Holling to think of stability as a property of, what he called, engineering resilience. The focus here is on the ability of a system to return quickly to a single equilibrium, or to *bounce back* to the condition that was present before the introduction of a disturbance. For engineering resilience, the faster the system returns to the original state, with the least fluctuation, then the more resilient the system (Holling 1973, 1986, 1996). Engineering resilience is a framework often favoured in the examination of urban systems, where there is high value placed on the system's capacity to rebound, rebuild, and recover quickly after a devastating event, such as a flood or terrorist attack (Vale and Campanella 2005).

On the other hand, Holling also proposed the idea of ecological (later called evolutionary) resilience, that closer resembled his original definition of resilience. Instead of emphasising the amount of time it would take for a system to bounce back after shock, ecological resilience focused on the "magnitude of the disturbance that can be absorbed before the system changes its structure" (Holling 1996: 33) and places greater value on the ability of a system to persist and to adapt (Adger 2003). This understanding represented a shift from focusing on constancy of behaviours and placed

it squarely onto the persistence of the relationships in a system. Holling discouraged the idea of fixed and rigid states having a single, stable equilibrium to which it was necessary to return after external shocks for a system to be deemed resilient. Instead, he offered the alternative of the existence of multiple equilibria, where systems could persist by moving into various alternative stable states, which Holling referred to as ‘domains of attraction’ (Holling 1973). Figure 2.2 below illustrates the integration of multiple domains of attraction into a stability landscape, where the dot represents the system and the basins represent the domains of attraction.

Figure 2.2: “Stability landscape,” top image adapted from Walker et al. 2004 with bottom image adapted from Gallopín 2006.



The component parts of the domains of attraction as described by Walker et al. (2004) and represented in the figure above are: 1) Latitude (L): the maximum distance between thresholds where a system crossing into a new threshold means recovery into the original threshold is difficult or potentially impossible; 2) Resistance (R): the depth of the basin, representing the system’s reluctance at being changed; 3) Precariousness (Pr): the proximity of a system to the threshold; and 4) Panarchy (not pictured): positioning in a domain on one focal scale is dependent on the interactions and influences of scales above and below (e.g., climate change, market fluctuations, local uprising, etc.) (Gunderson and Holling 2002). Both internal and external forces (e.g., rainfall, temperature, management practices, etc.) can augment the stability landscape by

changing the number or shape (L, R) of the domains of attraction. The location of a system within the stability landscape can change in primarily two ways. First, the behaviours and relationships within the system may remain constant, yet with the change in shape of the domain, the relative position of the system changes.

Alternatively, the behaviours or nature of relationships can change, which means that the positioning of the system will move around the domain (or potentially cross into a new domain) as the shape of the stability landscape remain constant. Furthermore, the system may also change position due to a combination of the above two methods: a change in landscape coupled with a change in behaviour. In order to understand how these concepts operate more practically, Holling (1973) provides the example of cattle grazing lands in the western United States where he notes that due to grazing pressure and reduced effects of fires from fire prevention campaigns, these grasslands are becoming dominated by trees and woody shrubs at the expense of the grasses. Once the trees and shrubs have become established to the point of out-competing the grass, even the prohibition of grazing in these areas will not re-establish the grass. By establishing the dominance of the trees and shrubs, this moves the system from one domain of attraction (grasslands) into this new domain of attraction (trees) where a return to the original domain could only be achieved by a directed reduction in the number of trees and shrubs. Holling summates that this example points “to one or more distinct domains of attraction in which the important point is not so much how stable they are within the domain, but how likely it is for the system to move from one domain into another and so persist in a changed configuration” (Holling 1973: 9).

The ecological resilience framework as described above represents an important paradigm shift away from the conservative perspectives favoured by government action plans of single-equilibrium systems, emphasising optimality, valuing stability and ‘bounce-backability.’ On the contrary, ecological resilience allows for a ‘bouncing forth,’ recognising that environments are dynamic and hardly ever return to ‘original’ states (Kinzig et al. 2006). With the stability view and timeliness in mind, emergency response plans may erroneously focus their attentions on short-term damage reductions, where in fact, the long-term approach taken by ecological resilience rightly incorporates adaptive capacity building in order to foster persistence of the system within a variable, dynamic landscape. Closely examining stability and resilience, these two concepts are, by nature, directly opposed to one another. As Davoudi explains, “resilience is performed when systems are confronted with disturbance and stress. This means that

[systems] become resilient not in spite of adversities but because of it” (Davoudi 2012: 7). A number of authors, including Holling, have noted that systems evolving within a highly fluctuating and unstable landscape may take advantage of opportunistic periods of favourable conditions, thus producing a “highly resilient system capable of repeating itself and persisting over time until a disturbance restarts the sequence” (Holling 1973: 15). These authors conclude that instability can produce an enormous amount of resilience into the system, therefore systems having low stability will have high resilience. The relationship between instability and resilience is clearly a product of their evolutionary history in systems persevering through multiple permutations and fluctuations in the stability landscape. As instability helps to build resilience in this way, it is worth noting that precariousness (Pr), although seemingly undesirable at the outset, is also borne out of a strong evolutionary feedback that helps to foster resilience. Kaufmann (2000) explains that a system’s existence on the edge of a threshold has led to the evolution of strong resistance (R), therefore helping to keep the system within the domain of attraction and reinforcing its resilience.

#### 2.5.2.1 Applying Resilience to Socio-Ecological Systems (SEs)

The ecological understanding of resilience as defined by Holling can be translated to socio-ecological systems (Simmie and Martin 2010), however with the inclusion of two additional considerations: adaptability and transformability (Gunderson and Holling 2002; Walker et al. 2004; Folke et al. 2010). Resilience in this context remains as ‘the magnitude of disturbance that can be absorbed before the system dramatically changes to an alternative state,’ but goes on to include adaptation, which refers to the collective capacity of humans within a system to self-organise and to actively manage or influence resilience (Holling 1973; Carpenter et al. 2001; Berkes and Folke 1998; Berkes, Colding, Folke 2003; Folke 2006; Adger 2006). Levin (1998) emphasises that self-organisation for a complex adaptive systems occurs ‘without intent,’ even though the human actors within the system may manage resilience with intent. These intentions may change the trajectory of the system by increasing the size of desirable domains of attraction, shrinking undesirable domains, or changing the system to move deeper within a domain, or to move towards the thresholds / out of an undesirable domain (Walker et al. 2004). The paramount importance of adaptive capacity within variable environments should not be understated. Managing uncertainty through anticipatory policies often misses the mark as the type and scale of the disturbance in such

environments cannot be adequately ascertained in advance. As such, many authors argue that, given the levels of uncertainty, the most useful approach in resilience building is to strengthen adaptive capacity within the system (Handmer, Dovers and Downing 1999). Walker et al. (2004) argue that the key to strengthening adaptive capacity, and therefore improving resilience in the system, is through diversifying both biological and social components of the system. Diversifying these components within the system contributes to its 'functional redundancy,' and can keep the system within a desirable domain of attraction, which is a property of its resistance (R). Conversely, when a system becomes unsound due to political, ecological, social, or economic influences, the fundamental nature of the system needs to be drastically overhauled, which is made possible by the system's capacity for transformability. Transformability allows for a reconfiguration of the stability landscape or the capacity to create a new system before becoming irreversibly trapped in a failing or undesirable basin of attraction (Walker et al. 2004). Through overhauling behaviours and withstanding adjustments to a novel domain, the system persists, which is the fundamental objective behind ecological resilience.

In applying an ecological / evolutionary understanding of resilience to the socio-ecological domain, Davoudi (2012) offers some words of caution. Primarily, he suggests that resilience research in SESs should not take a deterministic view of systems. Outcomes should be treated as tendencies and not as though they are inevitable. Second, attention must be paid to the effects on a system coming from multiple levels and not simply at the scale of the system, as the beliefs and objectives of human actors on one level can have a significant influence on the outcomes of a system at another scale. Finally, in moving resilience beyond the scope of an ecological lens, close attention must be paid to that which can be provided by a social science perspective. Human actors can be highly adaptable and display great ingenuity in shaping their worlds, but most importantly the operation of resilience within a socio-ecological framework must make reference to the human desires that help to guide these principles (Davoudi 2012).

This last point exposes the tension that exists between strict objectives of ecological / evolutionary resilience and resilience as it operates in socio-ecological systems. Slobodkin (1964) likens evolution to a game, where the only real pay-off is to remain in the game, which is achieved through adaptability. Holling, with his emphasis on persistence through flexibility, would likely concur with this statement. However,

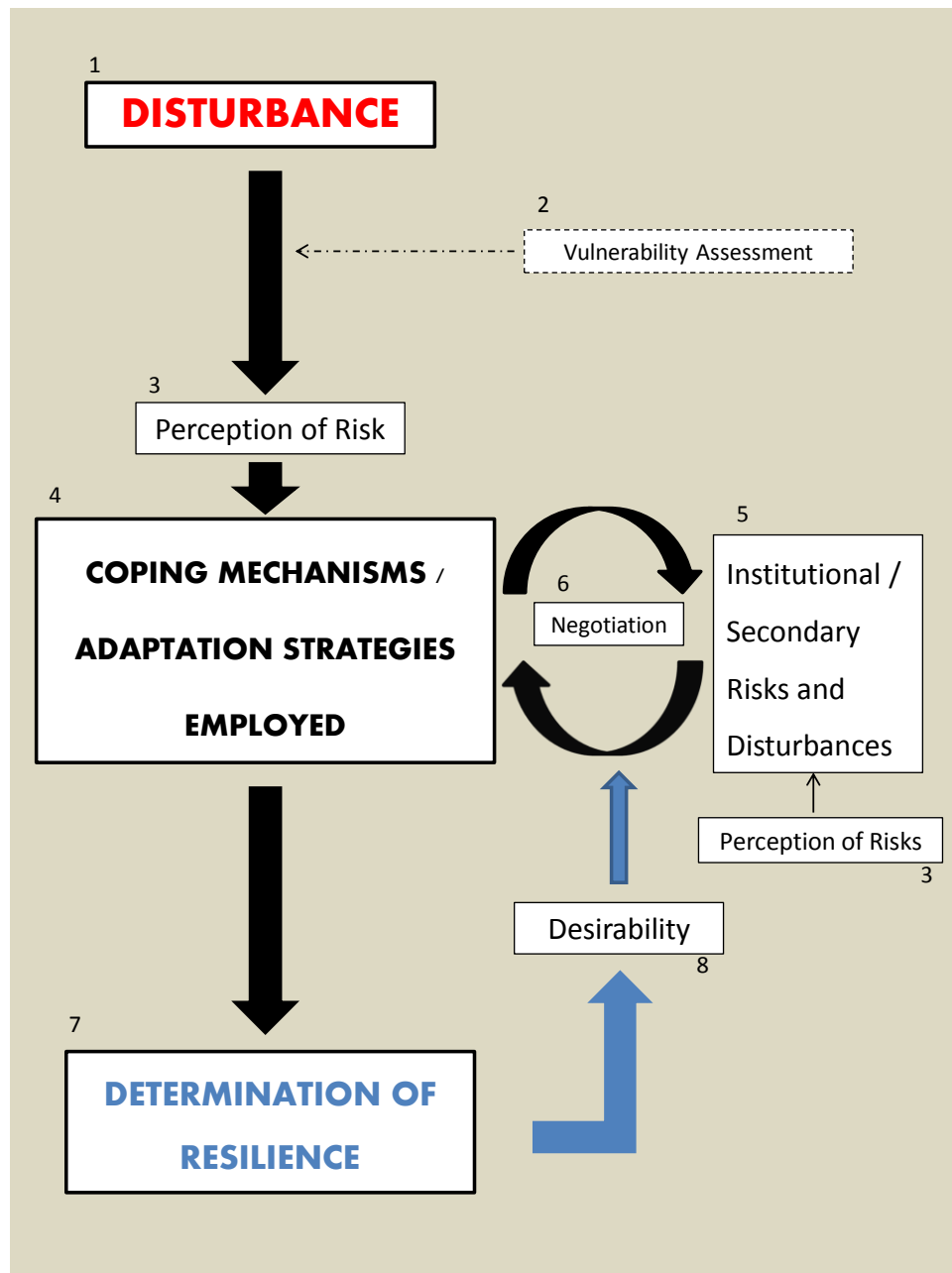


Davoudi (2012) raises the point that for socio-ecological systems, we must ask: resilience for whom and to what end? Engineering resilience, with its emphasis on stability and bounce-backability, is also problematic when applied to SESs as it exalts a rapid ‘return to normal;’ but, it does not think critically about what this entails exactly and for whom (Pendall et al. 2010). Pendall et al. (2010) highlight this tension by showing that Hurricane Katrina, while physically destructive, helped to expose underlying social issues that were unacceptable to many and voiced objections in returning ‘to business as usual.’ Davoudi concludes by saying, “If the outcomes depart from the perceived desirable, reaching an alternative outcome is not seen as a sign of resilience” (Davoudi 2012: 9).

The issue of desirability does not factor significantly into discussions of ecological resilience theory, and as such, it may become problematic when attempting to examine empirical data from human populations in these terms. This is where I believe vulnerability can make its greatest contribution. Although, as highlighted above, for the purposes of this thesis the concept of vulnerability lacks the analytical capacity to guide discussions dealing with resource scarcity and coping mechanisms in a disequilibrium system, it does place great emphasis on the *perceptions* of risk within communities (Kasperson et al. 2005, Adger 2006) and pays close attention to rich qualitative assessments in regard to place and to appropriate contexts (Luttrell 2001; Winkels 2004). In moving forward, a complete understanding of resilience as it operates within subsistence communities prone to disturbances will need to incorporate this type of emphasis on community-led perceptions of risk, vulnerability, and desirability of outcomes.

The following diagram outlines a model illustrating the component parts of resilience as discussed within this section, which will formulate the framework for chapter nine. Being a model, it is neither prescriptive nor does it necessarily show a conscious pathway that groups take when managing threats. Instead, it provides a visual conceptualisation of how resilience may operate within a population faced with a disturbance.

Figure 2.3: Model demonstrating the components of resilience operating in a socio-ecological system



The model begins with a disturbance to the system (1) such as a drought event, flooding, or terrorist attack, for example. Under a more traditional vulnerability framework, an assessment may be made at this point (2) as to whether the disturbance is likely to increase vulnerability within the system. The approach this dissertation will take instead is for the presentation of a disturbance to elicit (3) where stakeholders are able to assess their perceptions of the risk at hand and whether active response is needed. Adaptive strategies and coping mechanisms (4) may be actively employed in response to the perceived risk, or they may be an in-built, unreflective part of the system, depending on its evolutionary history. At this point, there may be the additional

disturbance of institutional or secondary risks (5). Handmer, Dovers and Downing (1999) echo this point that a system's coping mechanisms can be seriously undermined and their efficacy reduced by the presence of chronic violence, institutional collapse, or warfare, which may have catastrophic results to the system if these secondary disturbances are not negotiated properly. The negotiation phase (6) is where resilience is managed, and the adaptive capacity of the system is tested to handle these novel introductions and secondary perturbations. Following this negotiation, a resilience assessment may be made by the actors (7), which can be re-evaluated in light of the desirability of the outcome (8) to the stakeholders within the system. Depending on this evaluation, there may need to be further investment in continuing to manage resilience (6) by re-negotiating the interplay between coping mechanisms and secondary influences. The model as described here will be used in chapter nine to illustrate the dynamics between pastoral coping mechanisms and external influences for communities facing increased resource scarcity in northern Kenya.

## **2.6 Conclusion**

The following chapters will reflect upon and make use of the theories and analytical frameworks discussed within this literature review. Chapter five refers to issues raised when assessing the direct relationship between resource scarcity and conflict, as described here in section 2.3. Chapter six continues with this analysis, however, approaching the question using quantitative applications. In chapter seven, the relationship begins to incorporate more complex additive and intermediary social effects and motivations for conflict, highlighting theories discussed in sections 2.1 and 2.3. Chapter eight utilises a game theory approach (i.e., section 2.2) as a way of explaining competitive or cooperative strategies employed by pastoralists during inter-ethnic interactions. Finally, chapter nine references issues raised in sections 2.4 and 2.5 when discussing the coping mechanisms that pastoralists employ in order to mitigate the negative effects of resource scarcity and how this contributes to pastoral resilience.

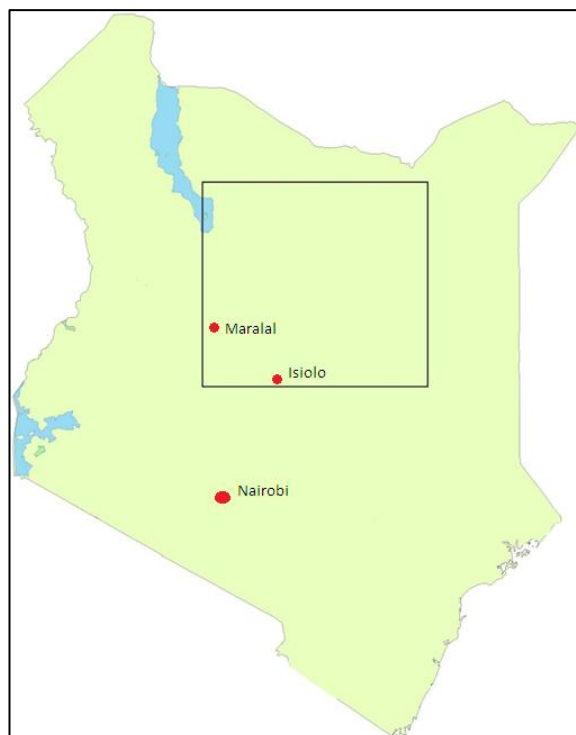
## Chapter 3: Area and Background

---

### 3.1 Brief History and Administration of Northern Kenya

I undertook fieldwork within the pastoralist areas of the Samburu (Central and East), Isiolo, Garba Tula, and Laisamis districts of northern Kenya, which span both the Rift Valley and Eastern provinces (refer to Figure 3.1 for a map of the area). These districts cover an area of 68,700.4 km<sup>2</sup> and, according to the 2009 Kenyan National Census, are home to 479,412 nomadic pastoralists; the greater northern region has an estimated population of 6,050,189 pastoralists and agro-pastoralists (Kenyan Bureau of Statistics 2010). Some of the major ethnic groups in the area are the Samburu, Borana, Somali, Turkana, Pokot, Gabra, and Rendille. These populations have remained largely distant from the official gaze of national politics and development. However, like many other East African pastoral group, livelihoods in northern Kenya have been greatly affected by regional, national, and international influences (Catley, Lind and Scoones 2013), most recently demonstrated by increasing engagement with long-distance, integrated markets, a rising Somali refugee population (Gedi et al. 2008), and growth in Chinese development initiatives, road construction, and oil extraction. Northern Kenya itself has largely been viewed as a buffering zone for Kenya's southern, more populated cities (such as Nairobi, Naivasha, and Nakuru) from potentially harmful neighbouring countries like Sudan, Ethiopia and Somalia. As such, it has often served as an isolated location for international refugee camps and consequently has suffered a number of integration problems from trans-boundary movement (Fratkin and Roth 2005).

Figure 3.1: Map of Kenya showing detail of study area



Politically, Kenya became part of the East Africa Protectorate under Britain in 1895 and was administered as a British colony from 1920 until gaining independence as a self-governing democracy in 1963. Under British rule, northern Kenya was known as the Northern Frontier District (NFD), having established colonial posts in Maralal, Marsabit, and Archers Post. At the time of independence, the ethnic Somali living in northern Kenya lobbied for the NFD to secede from the newly-independent Kenya in order to join the Greater Somali region; a desire that precipitated the Shifta War (1963 – 1968). The colonial British government had initially entertained this request and took preliminary steps to allow for the administration of the NFD to be granted to the Somali Republic; however, the independent Kenyan government denied their claim, which led the British to renege on their agreement with the Somali (de Waal 1997). Brought to arms over the claim for the NFD, the Somali approached their neighbouring Borana in Kenya to assist them in fighting in the Shifta War, enticing the Borana with claims that the new Kikuyu, Christian government under President Jomo Kenyatta would threaten their Islamic way of life, where the colonialists had been tolerant and respectful of Borana religious practices. The resistance faced by the independent government from the ethnic Somali and their sympathisers led to what is locally known as *Daba*. As one Borana religious scholar told me:

“*Daba* was when we were living in reserves. Kenya became independent, and the Somali were against the independent government and joined hands with the

Borana...the Somali asked the Borana to join hands with them to fight so they all went to Somalia to get guns and come back as *shifta*, attacking police all over this Ewaso region. Eventually the *shiftas* were defeated because the government attacked many Borana and put their animals in concentration camps and burned [the animals] down or shot them. This was actually the *Daba*. People were also put in concentration camps and killed. Then a lot of police and security were put in this region in order to control the *shifta*...Many people were left in poverty, and there was no government relief then. Not all Borana or Somali wanted *shifta*, but they ended up paying the penalty. Even our DC was against the *shifta*, saying they were deceiving the Borana. When the Somali heard this, they killed him...the Somali didn't suffer *Daba* like the Borana because they could go back to their area or back to Somalia. They provided guns to the Borana and convinced the Borana that the war was a good idea. The Shifta War was fought against the independent government because the Somali convinced the Borana that the Kikuyu would lead them astray with the Christian government. The Somali didn't want a Kikuyu government. They wanted to lead their own district, and they wanted pure Islam in their areas and to manage themselves...It was more political than anything but [the Somali] used religion as the convincing reason to the Borana."

The *Daba* had a profound effect on the Borana way of life in Kenya in the post-colonial period. Anthropologist Paul Baxter noted during follow-up fieldwork conducted in 1982 that very few Borana still maintained themselves through pastoralism, and he estimated that approximately 40% of Borana were living in shanty towns, having few economic alternatives by which to support themselves (Baxter 1993). Alex de Waal stressed that the result of the government concentration camps, enforced reduction in pastoral mobility, and systematic impoverishment of the Borana people meant that their "society was irretrievably altered" (de Waal 1997: 41). The reduction in livestock numbers in comparison with other northern ethnic groups who were unaffected by the *Daba* has been noted in other studies (Hogg 1985) through to this present study.

From the time of fieldwork in 2009 up until 2012 (with the implementation of the new Kenyan constitution), Kenyan administration divides the north into three provinces (Rift Valley, Eastern, and North Eastern), sub-divided into 96 districts, with further sub-

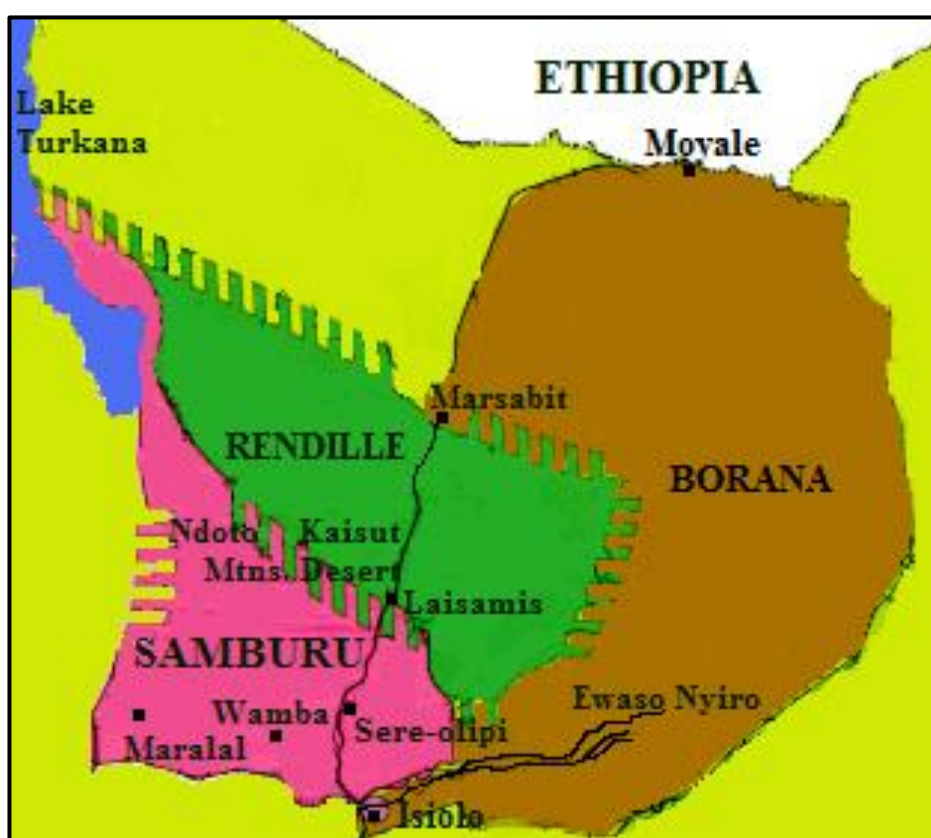
divisions of each district into divisions, divisions into locations, and locations into sub-locations (see Table 3.4 for examples). Each province is administered by a Provincial Commissioner (PC), who is appointed by the President under the Ministry of State for Provincial Administration and Internal Security. Administration is further divided at the local level to the: District Commissioner (DC, district); District Officer (DO, division); Chief (location); Assistant Chief (sub-location); Chairman (settlement area). Establishing and maintaining security is at the core of these government posts; however, the organisation of Kenyan policing units is also a complex matter. Nationally, there is the body of security known as the Kenyan Police; however, this entity is comprised of the Kenyan Regular Police, the Criminal Investigations Department (CID), the General Service Unit (GSU) which is a paramilitary police branch, and other specialised policing units such as the Anti-Stock Theft Unit (ASTU). Administered through the DC's office is the Administrative Police (AP) branch, which was established in order to address local community needs in light of cultural traditions, structures, and governance. The jurisdiction held by each of these bodies is not always clear, and it is not uncommon to find an AP post located within the same location as an ASTU camp and a Regular Police station, for instance. Beyond these official security units, the DC's office also administers the use of Kenyan Police Reserves (KPR) or "home guards" as they are known locally. Home guards were established by the colonial government in 1948 due to the wartime pressures placed on an already over-extended regular police service, and currently they are only in operation in rural and remote areas where a strong police presence is lacking. Local individuals apply to the DC's office to be provided with a gun for the purpose of protecting their community and property from lawlessness, banditry, and livestock theft, although the people report that very little training and monitoring is provided in the use of KPR weapons.

## **3.2 The People**

This research focused on three historically rival ethnic groups found within these regions: the Samburu, Borana, and Rendille (see Figure 3.2 below for geographical distribution). From the numerous ethnic groups that compose the northern territories of Kenya, I selected three distinct populations for further research as the dynamics between the three groups lend themselves to a number of interesting comparisons and questions for analysis. Each group shares a border with the other two groups; therefore the nature of the interactions between all three groups could be observed, recorded and

analysed. Furthermore, previously published ethnographic literature on these populations (Baxter 1954, 1979; Baxter, Hultin and Truilzi 1996; Dahl and Hjort 1979; Dahl 1979; Dahl and Megerssa 1990; Spencer 1998, 1973, 1965; Straight 2006; Fratkin 1986) pointed to three dyadic relationships where two were aggressively competitive (Samburu – Borana; Rendille – Borana) and one was peaceably cooperative (Samburu – Rendille). Moreover, variations in subsistence economies, cultural practices, religion, political engagement, ranging behaviour, levels of mobility, and access to natural resources make these three groups ideal study populations for exploring behavioural adaptations in the context of a changing environment.

Figure 3.2: Detail of research area, demonstrating the division between ethnic groups within Kenya



### 3.2.1 The Samburu

The Samburu are a Nilotic-speaking people originating in Sudan but most closely resembling the Maasai in terms of subsistence and cultural traditions, to the extent that 98% of language is shared between the two groups (Sommer and Vossen 1993). They are nomadic pastoralists living in the Samburu district, who rely most heavily on milk production from cattle and small stock (sheep and goats). People from the area report that, within the last 20 years, camel herding has been introduced (either by development



agencies or through inter-personal relationships) to a number of Samburu communities as a way to combat livestock losses resulting from prolonged drought.

Paul Spencer's *The Samburu* (1965) and *Nomads in Alliance* (1973) are regarded as providing the most comprehensive account of Samburu organisation, traditions and practices despite the majority of Spencer's fieldwork being conducted under colonial administration. Much has changed for the Samburu from the colonial period until now in terms of environmental conditions, political influences, development initiatives, and livelihood pursuits; however, Spencer's work continues to stand as the major authority in describing Samburu age set systems, genealogies, and kinship relationships, for which the reader should refer to these works for more information.

For the purposes and scope of this study, and based on my observations of contemporary Samburu life whilst in the field, I have identified a number of key concepts that will be used for comparative purposes between the three ethnic groups.

Table 3.1: Key Samburu concepts solicited from ethnographic data collection

|                           |                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Ethnic Neighbours | North = Rendille (peaceful)<br>East = Borana (contentious)<br>South = Wildlife conservancies and European ranches (peaceful); Pokot (contentious)<br>West = Turkana (contentious); Pokot (contentious)                                                                                                                                                                         |
| Religion                  | There has been a successful spread of Christianity through the Samburu district; however, traditional pre-Christian worship practices still continue. There is a strong belief in the divine (either Christian or pre-Christian); however, there is very little evidence of Christian practices within remote community areas.                                                 |
| Marriage                  | Marriage must be exogamous to the clan, although there are a growing number of individuals who are marrying within their own clans and a substantial number of individuals who are marrying from Rendille and Turkana areas. Marriage continues to be polygamous with men having on average 2 – 5 wives, and a negotiated bride price must be paid to the family of each wife. |
| Seasonal Fission / Fusion | Families tend to live together during rainy months in large <i>manyattas</i> when the landscape around settlement areas is able to support the numbers of livestock that will return home with the young herders.                                                                                                                                                              |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | These families will stay together and only fission during extended dry seasons and under drought conditions where herders need to travel far from the settlement areas in order to locate adequate pasture and water.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Education                 | Nursery schools are found in high numbers throughout the territory; however, primary schools tend to be under-equipped and under-staffed. Secondary schools are found only in densely populated areas (such as Wamba, Archers Post, and Maralal, etc.). Free primary education is provided by the government; however, secondary schools incur considerable fees. Literacy rates are still quite low for northern Kenya, and mother tongue is the standard for communication.                                                                                                                                                                      |
| Production                | Most Samburu remain pure pastoralists; however, there are agro-pastoralist areas found around the Maralal highlands where there are higher levels of precipitation. Samburu herds tend to have high numbers of small stock (typically 100 – 400 individuals per herd), but the cow remains the most precious inclusion in the herd. However, due to an overall reduction in grass-cover and other grazing fodder, along with the cow's high dependence on water, cow numbers have decreased substantially over the last generation.                                                                                                                |
| Internal Governance       | The elders system is still quite strong amongst the Samburu where organisation and internal disputes are addressed by the respected elders of each community. Age-sets become elders once the younger age-set (separated by approximately 15 years) has been circumcised into the <i>moran</i> age-set, which signals the elder group to begin marrying and to become trained in the 'ways of the elder.' The position of the elder is highly structured by the age-set system, and members of the elder group are expected to act with authority, thoughtfulness, and moderation and to not actively engage in conflict with other ethnic groups. |
| Settlements               | Villages and towns are not major features of the Samburu territory where people prefer to live in rural <i>manyattas</i> with related clansmen. There are comparatively few amenities available (schools, clinics, markets, etc.) for the Samburu due to this rural lifestyle.                                                                                                                                                                                                                                                                                                                                                                     |
| Environment and Resources | The Samburu territory benefits from the inclusion of hilly, forested areas (Maralal, Ndoto mountains, Matthews Ranges, etc.) as these receive comparatively higher levels of rainfall than other areas of the territory, and they are thick with vegetation. Samburu along the southern border benefit from water provided by the Ewaso Nyiro River where the rest of the territory relies on small ephemeral streams, shallow wells, a number                                                                                                                                                                                                     |

|                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 | of drilled boreholes, and natural water catchments (i.e., rock hollows).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Youth                                           | Male Samburu youth remain children until the age of circumcision (~15 years old). After this rite of passage, taken with other youth members of the same clan, the initiated age-set is collectively responsible for the protection of their ethnic group's livestock and personal safety. For this reason, all morans carry weapons (knives, spears, or guns). High labour demands are placed on the morans as they are required to herd animals far from home territory areas when the environmental conditions require substantial migrations in search of pasture and water. However, during rainy periods, the morans are able to return to their home areas where they will be at leisure. <i>Moran</i> spend this free time singing and dancing in the evenings with young ladies from their area, where the subject matter of these songs range from the re-telling of battles, to where morans have travelled during the dry season, to acts of bravery, or praise for animals. The <i>moran</i> age-set period ends when the new <i>moran</i> age-set is ready to take its place, and the current morans can begin to marry, at approximately 30 years old. |
| Division of Labour<br>(based on age and gender) | The young children (pre-circumcision, both boys and girls) are trained to herd small stock around the home areas from a young age (~4 years old) until they are capable of taking the animals further for grazing or until the boys are circumcised as morans. Samburu wives are required to herd small stock along with cattle and camels near the home areas, but they may be called on to herd further from the home territory in search of water and pasture if the morans are over-extended or in short supply. The Samburu wives are also charged with taking care of the home and all domestic activities (cooking, gathering firewood, collecting water, taking care of children, constructing the house, moving the home during migrations, etc.). The elder men are charged with making all decisions that affect the household and the family's herds and the day to day management of the livestock.                                                                                                                                                                                                                                                      |

### 3.2.2 The Borana

The Borana are a Cushitic people found in Kenya in the Isiolo, Garba Tula, and Marsabit districts but originating from Ethiopia. While acknowledging that these people are part of the larger Borana ethnic community, extending from northern Kenya into southern Ethiopia, this study will focus specifically on the Waso Borana, who are

Oromo speakers living in regions close to the Ewaso Nyiro River in Kenya (e.g., Isiolo, Garba Tula, Merti, Malka Daka, Mado Gashi, etc.). However for the sake of simplicity, they will be referred to in this thesis simply as ‘Borana.’ The Borana rely mainly on cattle and small stock; however, they also herd a number of camels in particularly arid regions of their district, with many individuals citing a Somali influence in camel rearing. The table below (Table 3.2) details some of the features found amongst the Waso Borana communities of northern Kenya, as recorded during ethnographic fieldwork. Other published ethnographic accounts (e.g., Baxter 1954, 1979; Dahl and Hjort 1979, 1976; Dahl 1979; Helland 2001) supplement information provided here.

Table 3.2: Key Borana concepts solicited from ethnographic data collection

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Ethnic Neighbours | <p>North = Borana of Marsabit and of Ethiopia (peaceful)</p> <p>East = Somali (currently peaceful, although contentious in recent past)</p> <p>South = Meru (peaceful)</p> <p>West = Samburu and Rendille (contentious)</p> <p>Within territory = Turkana (contentious), Somali (see above), Meru (peaceful), Garre (peaceful)</p>                                                                                                                                                     |
| Religion                  | <p>The vast majority of Waso Borana are Muslim, as a result of their long-standing interaction with Somali clans, who introduced the Borana to Islam in the early 1930s. Conversion was aided through ethnic isolation of Waso Borana from more northern Borana, resulting from the strict colonial ethnic boundaries drawn in 1934 (Aguilar 1996). Mosques are common throughout Waso Borana territory, and Islamic practice (i.e., daily prayer) can be witnessed in most areas.</p> |
| Marriage                  | <p>Marriage must be exogamous to the clan although, like the Samburu, an increasing number of people are marrying within their own clans; however, there are fewer reported inter-ethnic marriages than among the Samburu and Rendille. Families are polygamous, although men report having fewer wives on average than the Samburu (typically 1 – 3 wives). Bride price is also paid amongst Borana families, although this too is reduced in comparison to Samburu marriages.</p>    |
| Seasonal Fission / Fusion | <p>Families tend to be more highly sedentarised around town / village centres (<i>olas</i>) therefore having access to local amenities while herds remain in nearby (2-15 kms away) pasture areas (<i>arjals</i>). Family members either take turns leaving their <i>olas</i> to care for livestock or non-related herders are hired to manage the animals. Animal products</p>                                                                                                        |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | (mainly milk) are sent back to the settled families on a regular basis (approximately every other day).                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Education                 | Because Borana families tended to live closer to settled areas, children can access educational institutions more readily, and many are educated through secondary school. While mother tongue is the preferred language for communication, a large number of Borana speak Swahili, and many are proficient in English.                                                                                                                                                                                                                                     |
| Production                | Livestock remain the major source of income (and reportedly preferred source) for most Borana families; however, paid herding, wage labour, small-scale business, and scattered small-scale farming (along the Ewaso and Lorian Swamp areas) are also part of contemporary Borana livelihoods. Herds tend to be smaller than those of the Samburu and Rendille; however, the rate of camel ownership is higher amongst the Borana than the Samburu.                                                                                                         |
| Internal Governance       | All internal issues are addressed through community elders; however, important matters of Borana governance at a more regional level are decided upon through the <i>Gaada</i> system (see Baxter 1954; Legesse 1973 for further explanation). For the purposes of this thesis, it is adequate to note that Borana activities, particularly in relation to Borana youth, are heavily dictated and influenced by the elders of the community at the local level. Decisions to engage in inter-ethnic conflict are most often sanctioned by the local elders. |
| Settlement                | Villages and towns feature heavily within the Borana territory, and as such, people tend to have better access to education, health services, development aid, and markets. However, there is a high rate of unemployment reported in these settled areas.                                                                                                                                                                                                                                                                                                  |
| Environment and Resources | The Ewaso Nyiro River extends through the Isiolo and Garba Tula districts, providing much-needed water for livestock and acts as a source of irrigation for farming schemes. There are a number of natural springs, particularly in the west of their territory, and the Borana may utilise vegetation found in wildlife reserves and conservancy areas to the south during times of extreme hardship.                                                                                                                                                      |
| Youth                     | Male Borana youth remain children until the passage of three generation sets (each spanning 8 years, 1 – 24 years old), at which point, the youth will graduate into a ‘junior’ warrior-hood for the next 8 year period (25 – 32 years old), and finally into ‘senior’ warrior-hood for the remaining 8 year period (33 – 40 years old). At the end of the senior warrior-hood,                                                                                                                                                                             |

|                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 | <p>males are expected to marry and manage their own herds. Although this is the official progression through the generation sets, the Waso Borana no longer follow such strict timelines as indicated above (although respondents did indicate that the generation set process is more formalised amongst the Ethiopian Borana). The Borana are circumcised, but this practice is not as ritualised as that found amongst the Samburu. In terms of raiding behaviours, older Borana men (as long as they are still physically capable) may still participate in raiding activities, where this is not the case amongst the Samburu or Rendille.</p>                               |
| Division of Labour<br>(based on age and gender) | <p>Labour and herding activities are divided up between the men and the women where Borana adult men are more actively involved with herding activities than the Samburu elders, and the Borana wives, although also herders, tend to focus on more domestic issues and caring for the young children. The women are required to fetch water and firewood, along with cooking, constructing homes, and moving the house during migration periods. However, Borana women are more associated with <i>ola</i> areas (larger settlements, closer to amenities, etc.) than life in the <i>arjal</i>, which is dominated by young men, married male herders, and employed herders.</p> |

### 3.2.3 The Rendille

The Rendille of Marsabit and Laisamis districts, a Cushitic ethnic group originating from Somalia, are predominantly camel herders with a considerable number of small stock and small supply of cows where there is grazing available in their area. The Rendille herds are highly mobile in order to adapt to the extreme arid conditions of their home ranges located within the Kaisut Desert. Spencer's work on the Rendille notes that during the colonial period, approximately one-third of all Samburu communities descend from Rendille families (Spencer 1965) through generations of Rendille migration into Samburu territory and subsequent intermarriage (see Spencer 1973 for a more detailed description of Rendille – Samburu marriage practices). Today it is clear that the Samburu and Rendille are very much “together,” born from a relationship that not only saw the mixing of families but also the mixing of livestock based on the ecological niches each community inhabited. Spencer wrote, “The areas which best suit the Samburu cattle are those which least suit the Rendille camels. Camels do not thrive in the rather cooler climates of the south-west...camels have a low resistance to sleeping

sickness which tends to be prevalent in areas of thick bush associated with Samburu grazing areas” (Spencer 1973: 12). There existed a symbiotic relationship between these two ethnic groups where the Samburu could rely on the Rendille to keep and herd their camels in exchange for the Samburu taking care of Rendille cows (Dahl and Hjort 1976). However, my observations between these two groups demonstrates a diminished exchange and co-management of animals between the Samburu and Rendille, possibly due to increased covariate risk of drought and prevalence of severe climatic events (see chapter nine for further discussions on covariate risk). The ethnographic description provided here is supported by other published ethnographic accounts (e.g., Spencer 1973; Fratkin 1987, 1991, 1993, 1998; O’Leary 1990).

Table 3.3: Key Rendille concepts solicited from ethnographic data collection

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Ethnic Neighbours | North = Turkana (mixed, reported conflict incidents)<br>East = Borana (contentious), Somali (contentious)<br>South = Samburu (peaceful)<br>West = Turkana (mixed, reported conflict incidents), Samburu (peaceful)                                                                                                                                                                                                                                                                                                                |
| Religion                  | Christian missions and Christianity has been spread throughout Rendille territory; however, traditional religious practices are still very prevalent in this area.                                                                                                                                                                                                                                                                                                                                                                |
| Marriage                  | In principle, marriage must be exogamous between clans; however, there are reports of individuals marrying within their own clans, and marriage with the Samburu is prevalent. Spencer reports that Rendille families are monogamous (due to the nature of camel ownership); however, currently many Rendille families report polygamous relationships. Families tend to be smaller than the Samburu (typically 1 – 2 wives). Bride price is also paid amongst Rendille families, which are comparable to Samburu marriage costs. |
| Seasonal Fission / Fusion | Herds tend to be highly mobile amongst the Rendille compared with the other two ethnic groups; however, they follow a similar pattern to Samburu fission / fusion depending on seasonality. The mobile herding camps have considerably high livestock densities which gather around premium water supplies and are herded mainly by the <i>moran</i> and young men with very few women present.                                                                                                                                   |
| Education                 | Literacy rates and formal education were some of the lowest reported to me amongst these three populations. Herding still appears to be a priority amongst Rendille communities, and the mobile lifestyle does not                                                                                                                                                                                                                                                                                                                |

|                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 | necessarily lend itself to engaging with education establishments.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Production                                      | Livestock (particularly camels and small stock) are the preferred source of income and subsistence found in Rendille areas. Herds tend to be on a similar scale as those reported amongst the Samburu; however, camel ownership is considerably higher. There is very little opportunity for farming in these areas due to the desert-like conditions found in much of the territory.                                                                                                                                                                                                                                                                         |
| Internal Governance                             | All internal issues are dealt with through counsel amongst the elders and chairmen (respected elders from the community in positions of leadership, as established by the community). Matters are discussed under a large tree within the settlement area, and all advice must be adhered to by community members.                                                                                                                                                                                                                                                                                                                                            |
| Settlement                                      | Access to education, health services, and markets can be found almost exclusively in populated towns (Kargi, Korr, Laisamis, Nguronit) that house a lot of the children and mothers. Herders prefer to live in more rural collections of fora (see terminology) in areas where animals can have access to graze and sufficient water located away from the towns.                                                                                                                                                                                                                                                                                             |
| Environment and Resources                       | Access to water is problematic in Rendille territory as deserts like the Chalbi and Kaisut dominate much of this region. Due to extreme aridity, Rendille are increasingly relying on drilled boreholes in order to utilise vital pasture areas.                                                                                                                                                                                                                                                                                                                                                                                                              |
| Youth                                           | The Rendille have similar age-set systems to the Samburu, and are circumcised in a similar manner, and pass through a warrior phase (also <i>moran</i> ) like that of the Samburu. The Rendille herding camps are predominantly composed of young male herders and <i>moran</i> who are capable of moving over vast distances with the camels and small stock. There are also a number of hired Rendille herders amongst the satellite camps, as inheritance is provided solely to the first-born male, thus requiring subsequent male children to grow their wealth from investment in small stock or through herding other's in exchange for pay / animals. |
| Division of Labour<br>(based on age and gender) | The division of labour is very similar to that described amongst the Samburu families; however, Rendille women are often times found closer to town areas than are Samburu women in order to access goods and services and have access to domestic water. Male youth are responsible for the majority of labour-intensive herding activities; however, many unmarried girls were also observed managing large camel herds for grazing and watering. Similar to the Samburu, Rendille                                                                                                                                                                          |



|  |                                                                                                                                                                            |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | women are responsible for the domestic activities of the home, where Rendille men are officially charged with the responsibilities of herd management and decision-making. |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 3.2.4 The Fieldwork Experience

In the following paragraphs, I endeavour to provide some insight into the experiences of living with, working with, interviewing, and observing these three ethnic groups for a period of a year and a half in order to supply some additional context to the field situation. From engaging with Samburu communities across six different regions, I personally came to find them welcoming to outsiders, extremely hard-working, open to long discussions and detail-oriented with their descriptions. Furthermore, I found that most informants answered questions based on their own personal experiences and observations with little regard to how others from their community may answer the same question. In relation to this point, when being pressed for answers to questions where an individual him/herself was not personally witness to a situation or had first-hand knowledge of the account, it was common for me to hear the response, “I do not know so I cannot lie.” As an outside researcher coming to this area to find out “how things are,” I appreciated that individuals would refuse to answer such questions rather than potentially lead me astray in my investigations.

My time with the Borana was also an enjoyable and fruitful one as I found people to be talkative and very interested in the nature of the research. I found the married women to be accommodating and protective of me as their guest and “daughter;” likewise, the elder men took on a more paternal role in our interactions, making sure that I was welcomed and cared for as a visitor to their area. Although I am not Muslim (however I observed all religious practices while amongst the Borana), people were curious about my belief system and tolerant of alternative views of science and religious or physical cosmologies. During interviews, I found that I had to place greater reliance on creativity in asking questions and cross-checking information, as my impression from conducting interviews amongst the Borana is that they tend to value a high degree of conformity in their answers to questions and can be “policed” by other individuals listening to the interviews. I often joked that responses read as though they were taken from, as I called it, “The Borana Handbook for Standardised Responses.” In order to manage this issue and avoid 100+ identical interviews, I realised early into the

fieldwork that a more productive approach was to interview people alone, request input in the form of descriptions rather than through direct questions, and preface each interview with a more detailed introduction of the research objectives and a more direct request for each respondent's own personal views than I had whilst interviewing Samburu participants.

Working and living amongst the Rendille was highly rewarding in witnessing community practices that were steeped in, what the Samburu referred to as, "deep culture." The 'traditional' and seemingly more 'simple' lifestyle with a strong reliance on livestock required a high labour investment from the young herders. I found respondents to be inquisitive, talkative, and helpful; however, there were times of internal frustration on my part when responses sometimes appeared illogical based on information obtained earlier in discussions. Unlike Spencer, who reported that he found Rendille informants, "easier to work with than the Samburu" with the Rendille coming across as "more direct and more consistent," thus allowing him to cover more ground during interviews (Spencer 1973: 3), I found just the opposite to be true. Because of this issue, I came to find participant-observation methods more fruitful amongst the Rendille than relying on interview data alone.

### **3.3 Field Site Descriptions**

The processes of selecting field sites for data collection are discussed in the following chapter. A map is provided in Figure 3.3 below, situating each of the seventeen field sites within the research area, and Table 3.4 provides a description for each study site.

Figure 3.3: Map of field sites, by ethnic group affiliation

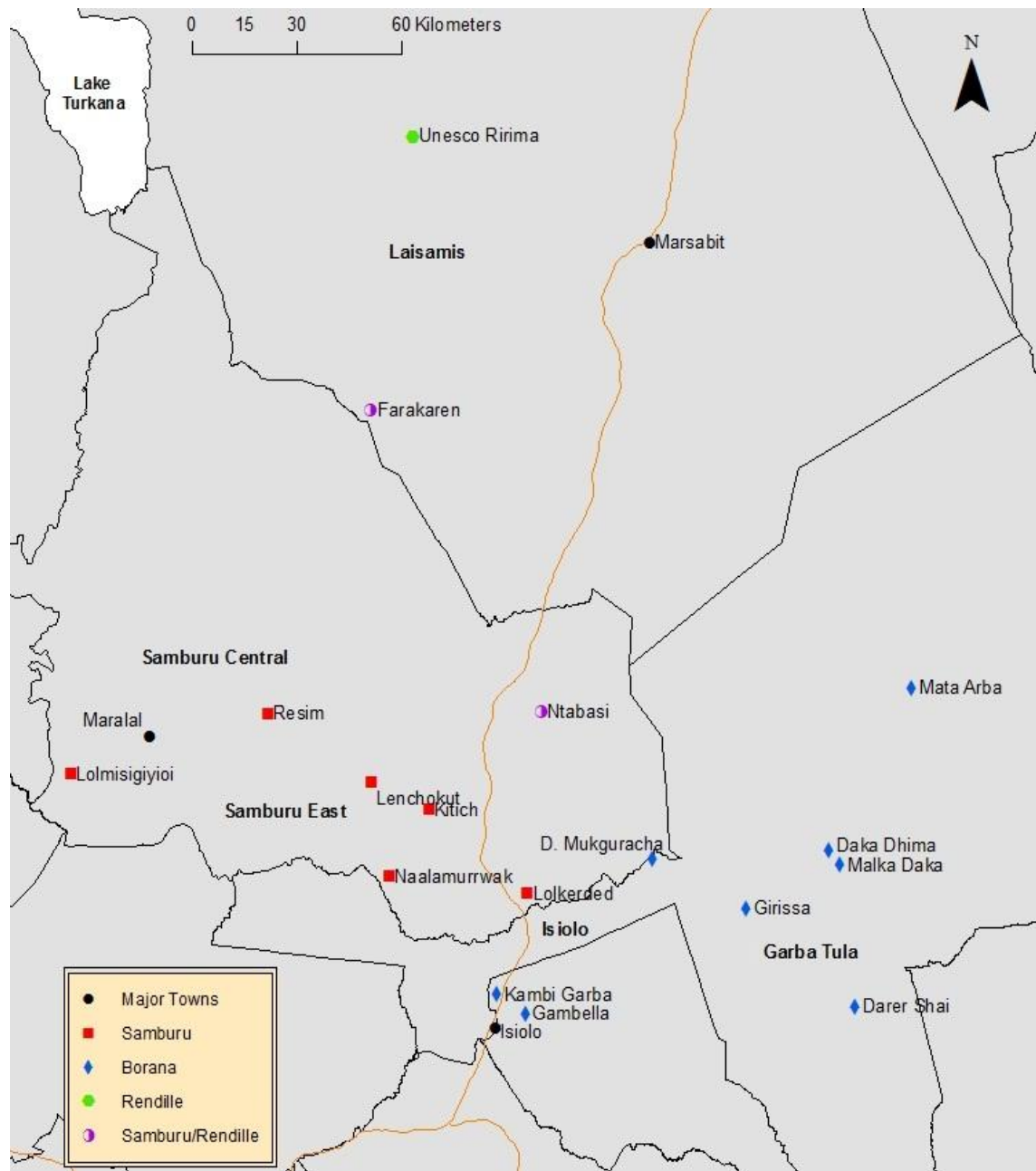


Table 3.4: Description for each field site consulted. The colours in each row correspond with the ethnic affiliations provided above in Figure 3.3. The sequence of field sites provided corresponds to the chronological order in which data was collected in the field.

| SETTLEMENT<br>(Sub-location /<br>Location /<br>Division / District<br>/ Province)             | STUDY<br>GROUP           | DESCRIPTION OF FIELD SITES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lenchokut</b><br><br>(Lkisin / Ngilai<br>West / Wamba /<br>Samburu East / Rift<br>Valley)  | Samburu                  | Purely Samburu area in the interior of Samburu East District. It is located close to a major livestock market (Loolkuliyani) and Samburu centre (Wamba). Livestock numbers are comparatively high in this location, and the area consists of approximately 29 <i>manyattas</i> made up of 142 temporary houses. It is a hilly area, lacking tree cover.                                                                                                                                                                                                   |
| <b>Kitich</b><br><br>(Ngilai / Ngilai<br>Central / Wamba /<br>Samburu East / Rift<br>Valley)  | Samburu                  | Highly mobile, satellite camps comprised solely of Samburu <i>morans</i> with their livestock. It is a densely forested area with perennial water sources in the interior of the Samburu territory as part of the Matthews Ranges. There is high disease prevalence from insects and insecurity from the high abundance of wildlife. The satellite camps were too numerous and mobile to count.                                                                                                                                                           |
| <b>Naalamurwak</b><br><br>(Remote / Waso<br>West / Waso /<br>Samburu East / Rift<br>Valley)   | Samburu                  | Pastoral area close to Wamba centre and Lengusaka livestock market. The area is part of a community conservancy where there has been a grazing management scheme implemented. This is a border area; however, it is not a contentious one as there are livestock ranches and conservancies to the south. The area consists of 8 <i>manyattas</i> made up of 58 temporary houses.                                                                                                                                                                          |
| <b>Lolmisigiyo</b><br><br>(Tinga / Loosuk /<br>Kirisia / Samburu<br>Central / Rift<br>Valley) | Samburu                  | An agro-pastoral area on the Leroghi Plateau, bordering the Pokot ethnic group to the west. It is a high altitude area and benefits from significant rainfall due to its elevation; however, it is highly insecure due to the presence of the Pokot. The homes here are more permanent structures where <i>manyattas</i> contain only 1 – 2 houses each. There are approximately 45 <i>manyattas</i> in this settlement.                                                                                                                                  |
| <b>Ntabasi</b><br><br>(Sere-olipi / Sere-<br>olipi / Waso /<br>Samburu East / Rift<br>Valley) | Samburu<br>/<br>Rendille | Predominantly Samburu area with a number of mixed Rendille families. This is a highly contentious border area with the Borana where there is much insecurity. It is located close to the great northern highway and to the village of Sere-olipi. There are approximately 13 <i>manyattas</i> in this settlement, comprised of 124 temporary houses.                                                                                                                                                                                                      |
| <b>Girissa</b><br><br>(Kulamawe /<br>Kulamawe / Kinna<br>/ Garba Tula /<br>Eastern)           | Borana                   | A very large, highly mobile Borana and Somali area located close to Kulamawe town. It is populated mainly by male herders living in small mobile <i>goses</i> (without shelter). There are approximately 50 <i>olas</i> in this region, with each <i>ola</i> being comprised of approximately 2 – 5 <i>goses</i> . There is a heavy concentration of livestock in this area, relying on the Girissa earth-dug water pan for their drinking water. This area is considered to be an interior area; however, it is approaching the border with the Samburu. |
| <b>Mata Arba</b><br><br>(Mata Arba /<br>Korbesa / Cherab /<br>Isiolo / Eastern)               | Borana                   | A large settlement of approximately 47 <i>olas</i> , on average having 1-3 <i>goses</i> per <i>ola</i> and populated solely by Borana in the interior of Borana territory. The <i>goses</i> here are in the form of semi-permanent housing, a few having corrugated iron roofs. This is a more settled area, consisting of mainly women, children, and elderly. Livestock were not allowed into the settlement area so they were kept by the male                                                                                                         |

|                                                                                              |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                              |                    | herders within grazing land a short distance away from the settlement (about 2km). The area surrounding Mata Arba is incredibly dry and collecting water for domestic use is extremely difficult.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Darer Shai</b><br><br>(Garba Tula North / Garba Tula / Garba Tula / Garba Tula / Eastern) | Borana             | A densely wooded area close to Garba Tula town. It is a pastoral area where the herds of Garba Tula families are kept by the male herders. There are both Borana and Somali found here, with 7 <i>olas</i> , having 20 <i>goses</i> , and it is considered an interior area.                                                                                                                                                                                                                                                                                                                                         |
| <b>Kambi Garba</b><br><br>(Bulla Pesa / Isiolo Central / Isiolo Central / Isiolo / Eastern)  | Borana             | A large settlement of approximately 82 <i>olas</i> , made up of 1-3 <i>goses</i> per <i>ola</i> . These are mainly permanent / semi-permanent households, and the settlement is in close proximity to Isiolo town, which is a densely populated area. It is a cosmopolitan area comprised of Borana, Somali, Turkana, and Garre families with few livestock being found within the settlement. Many families engage in small-scale farming in nearby areas or have family members working in Isiolo to provide additional income. This is considered a border area with the Samburu and migrant Turkana populations. |
| <b>Gambella</b><br><br>(Bulla Pesa / Isiolo Central / Isiolo Central / Isiolo / Eastern)     | Borana             | Gambella is a grazing area located close to Kambi Garba, composed of satellite livestock camps accompanied by predominantly male herders. This is a border area with the Samburu and Turkana, having both Borana and Somali herders present. There are approximately 10 <i>olas</i> , each composed of 1-3 <i>goses</i> .                                                                                                                                                                                                                                                                                            |
| <b>Farakaren</b><br><br>(Illaut / Nguronit / Korr / Laisamis / Eastern)                      | Rendille / Samburu | This is a non-contentious border area between the Samburu and Rendille territories located close to the Ndoto Mountains. It is a particularly dry area and finding potable water for both humans and livestock is problematic. The Rendille families have very large camel herds which are kept in grazing areas in the surrounding hillsides. There are 7 <i>manyattas</i> here, containing 186 temporary homes.                                                                                                                                                                                                    |
| <b>Lolkerded</b><br><br>(Laresoro / Waso East / Waso / Samburu East / Rift Valley)           | Samburu            | This is a highly contentious border area with the Borana, located close to the town of Archers Post, the great northern highway, and the Ewaso Nyiro river. It is found within the Kalama conservancy area, and there are grazing management schemes underway here. The families are predominantly Samburu, although there are a number of Turkana families living in the area. It is pastoral area comprised of 28 <i>manyattas</i> with 138 temporary houses. The area is close to the British and Kenyan army training grounds where a large number of disused bullets can be obtained from the ground.           |
| <b>Resim</b><br><br>(Resim / Ngaroni / Wamba / Samburu East / Rift Valley)                   | Samburu            | Interior Samburu area with comparatively large herds and having large <i>manyattas</i> used as “training grounds” for junior elders. Many of the elder males remembered Paul Spencer living with them during the colonial period. The settlement area is made up of 19 <i>manyattas</i> consisting of 76 temporary homes.                                                                                                                                                                                                                                                                                            |
| <b>Daka Dhima</b><br><br>(Malka Daka / Malka Daka / Garba Tula / Garba Tula / Eastern)       | Borana             | Arjal area of livestock whose families live in Malka Daka village. It is a Borana area for grazing livestock; however, due to the dense vegetation, it suffers from a lot of conflict with wildlife. It is an interior area; however, it was the site of much conflict with the Somali in the 1990s as the Somali were already settled in these areas amongst the Borana. The area has 18 <i>olas</i> , comprised of 74 <i>goses</i> located close to the Ewaso Nyiro river.                                                                                                                                         |
| <b>Malka Daka</b>                                                                            | Borana             | Malka Daka village is an established settlement area having a mosque, a clinic, and a school. There are no animals that are kept in the village                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                                                     |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (Malka Daka / Malka Daka / Garba Tula / Garba Tula / Eastern)                       |          | as they are all grazed in the surrounding arjals. Education, literacy, and spoken English are high here; however, unemployment is also very high. Although the <i>olas</i> were not counted, a decent estimate would be approximately 50-60 <i>olas</i> , consisting of semi-permanent and permanent structures, each having 1 – 2 homes in each <i>ola</i> . Small-scale farming is practiced by a number of inhabitants here at times when irrigation is possible or as a form of supplementary food.                                        |
| <b>Darer Mukguracha</b><br><br>(Gotu / Ngare Mara / Isiolo East / Isiolo / Eastern) | Borana   | A hotly-contested border area with the Samburu to the north and west. It is a pastoral grazing area for Borana and Somali families consisting of mainly male herders who are heavily armed and equipped. The grazing areas are located north of the Ewaso Nyiro, and the town of Gotu (having important natural perennial springs) is across the river to the south. There is an AP post and ASTU unit stationed in Gotu due to the high prevalence of raiding in this area. The settlement contains 10 <i>olas</i> , having 29 <i>goses</i> . |
| <b>Unesco Ririma</b><br><br>(Kargi / Kargi / Loiyangalani / Laisamis / Eastern)     | Rendille | This is a very dry, purely Rendille area with a large number of camel herds. Accessing water here was highly problematic until a borehole and pump were dug in the area in 2006. The area consists of mainly young male herders and Rendille <i>morans</i> . There are approximately 32 fora in the area, comprised of 153 gobs. This is considered an interior area; however, many of the men graze their animals closer to border areas with the Borana where conflict typically ensues.                                                     |



### 3.4 Photos of Study Area

Figure 3.4: Photos taken within Samburu fieldwork areas. Clockwise from upper left-hand corner: a typical Samburu *manyatta* showing thorn-ringed fence and mud and wooden housing; highly mobile satellite *moran* camp within Kitich forest; a typical primary school in Kalama conservancy area; a married Samburu woman, as demonstrated by metal hooped earrings; typical nursery school under a shady tree and encircled by thorn fencing; drilled borehole with hand-pump used to fill domestic jerry cans near Ndoto Mountains; Lengusaka market selling livestock and small food items (maize meal flour, tea, sugar, etc.)

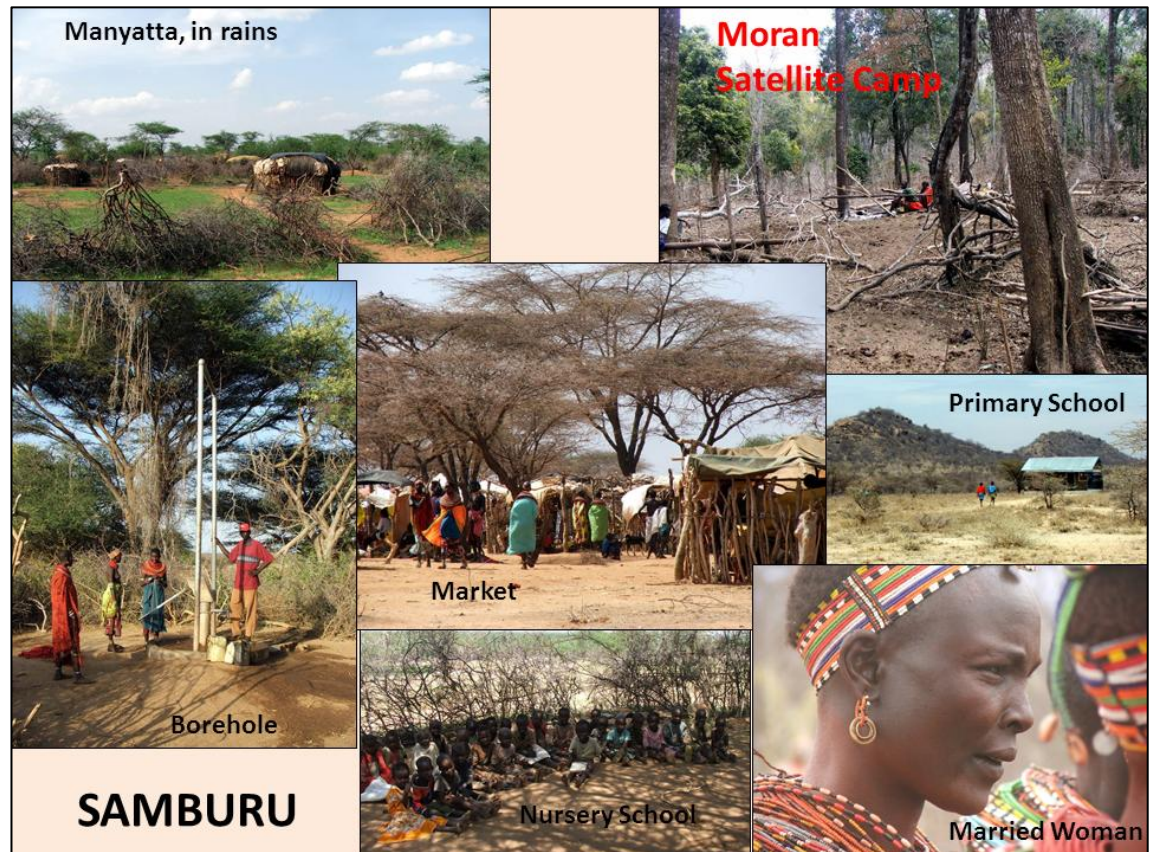


Figure 3.5: Photos taken within Borana fieldwork areas. Clockwise from upper left-hand corner: earth dam constructed for livestock and domestic use in Girissa area; Gotu village containing houses and a number of small shops located on the road that is one of the two passageways across the Ewaso Nyiro River; a typical Borana *gose* constructed with wood and thick reed matting; a dry-season well for livestock, hand dug inside a dry riverbed and protected by thorn fencing; two young male herders standing by their *gose*.

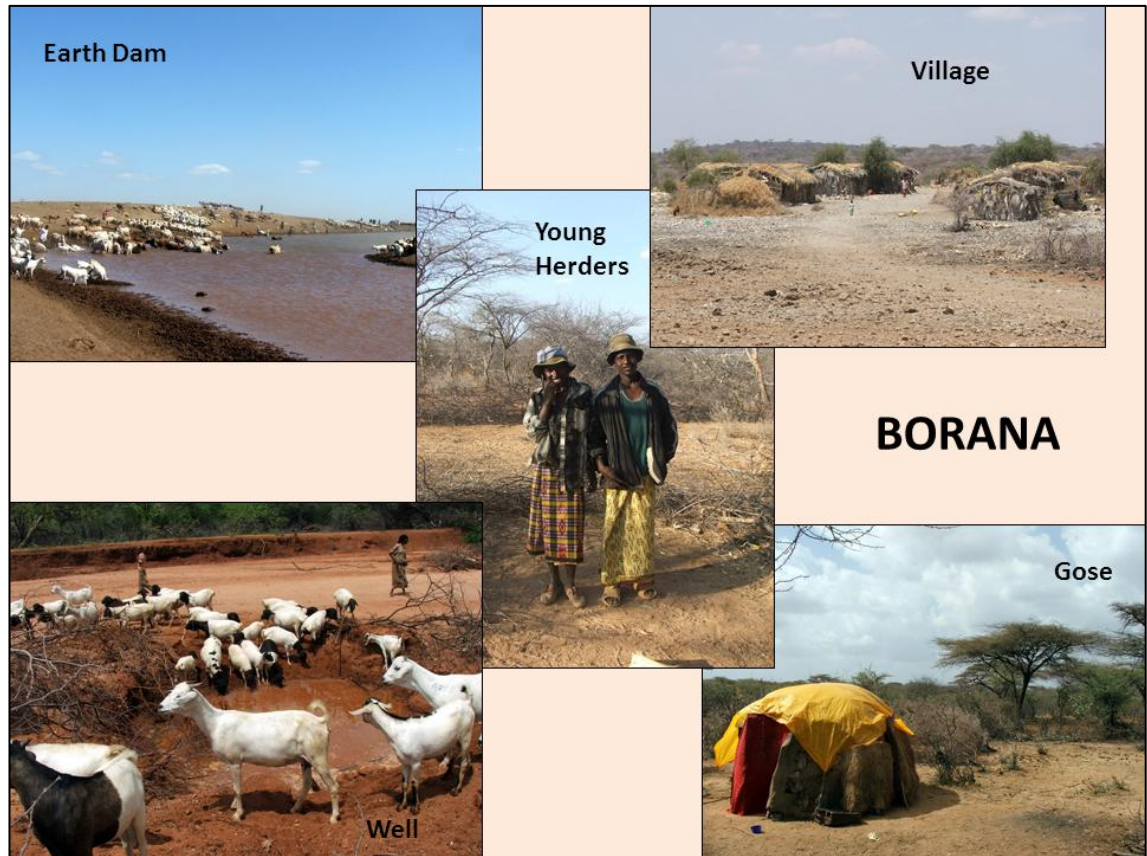




Figure 3.6: Photos taken within Rendille fieldwork areas. Clockwise from upper left-hand corner: a group of Rendille *morans* demonstrating traditional bead adornment, carrying herding sticks and rifles; a typical Rendille *fora* with house constructed from wooden branches and thick reed matting, displaying a characteristic Rendille entranceway; a large *boma* of small stock enclosed by thorn-ringed fencing; a Rendille *gob*, showing sleeping area next to the animal *boma* and fireplace for cooking.

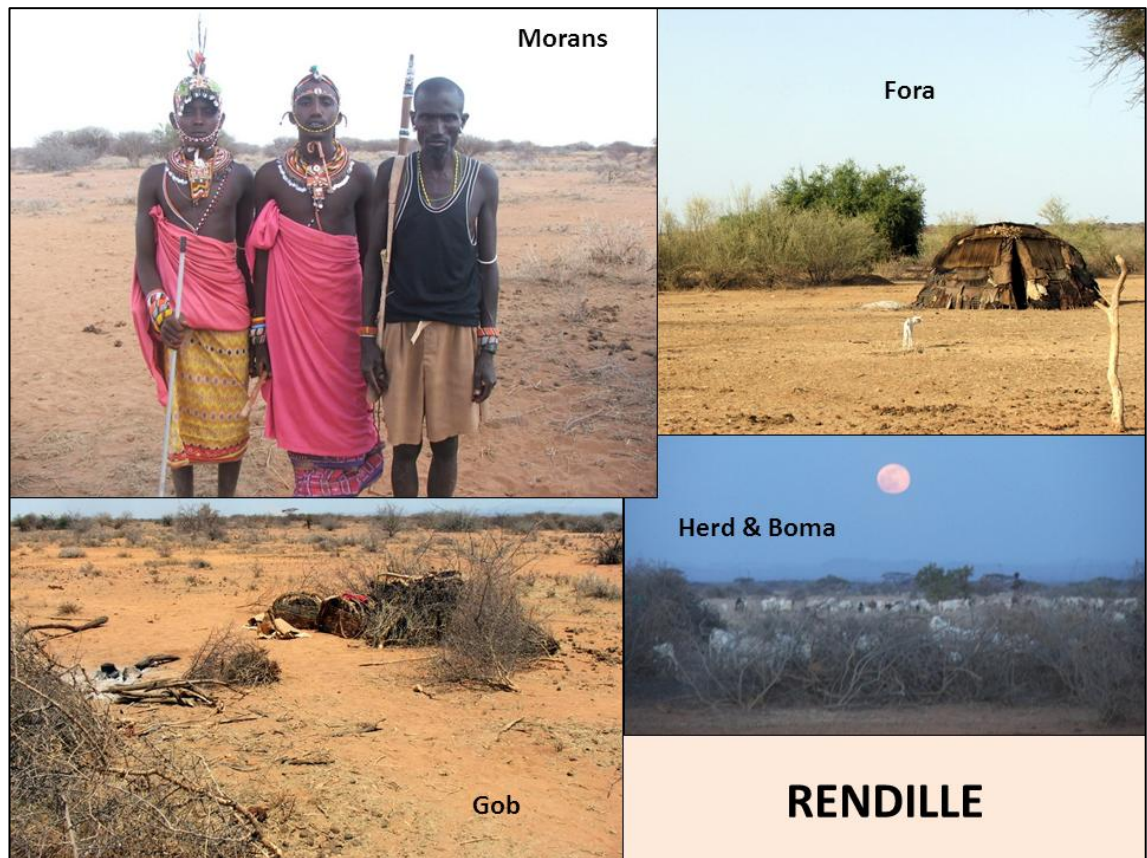
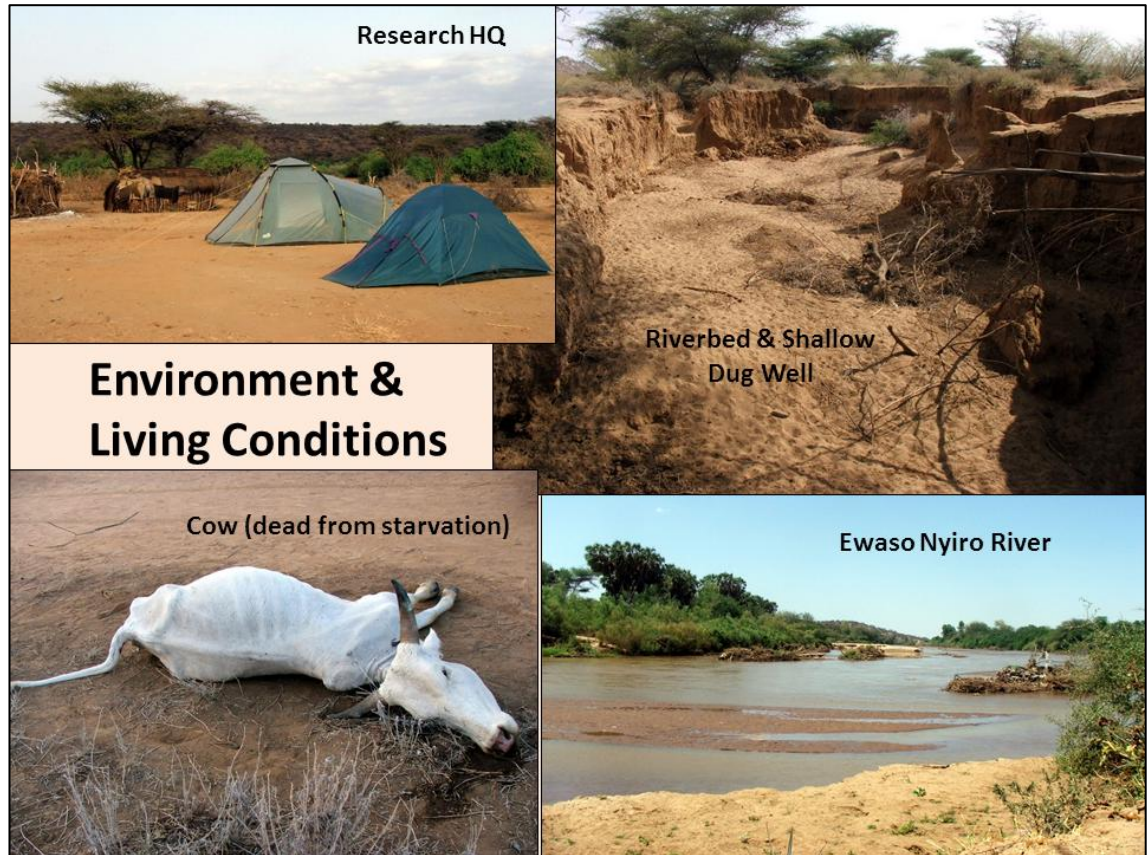


Figure 3.7: Photos taken during fieldwork. Clockwise from upper left-hand corner: researcher and field assistant's tents amongst a mixed Samburu / Rendille *manyatta* near the Ndoto Mountains; typical ephemeral stream used to dig shallow wells used as a source of water for domestic and livestock purposes; the major waterway of northern Kenya – the Ewaso Nyiro River during the wet season; a Samburu cow pictured in August 2009 near Wamba, having succumbed to the effects of malnutrition.



## Chapter 4: Methods

---

### 4.1 Introduction

This chapter outlines the reasoning behind decisions taken in the research and fieldwork design, how data were gathered in the field, and how the data were processed post-fieldwork. The aim of the data collection and analysis was to maximise the number and variety of sites sampled, individuals interviewed, activities witnessed, and perspectives recorded in order to achieve substantial ethnographic depth. Furthermore, considerable effort was taken in order to be able to place qualitative data within a relevant environmental and climatic context.

### 4.2 Fieldwork Plan and Preparation

The fieldwork was designed to be divided up into two distinct field trips utilising mixed methodologies. The first phase of fieldwork lasted 9 months (August 2009 – April 2010) and was to focus on qualitative ethnographic data collection in the form of detailed interviews, collecting oral histories, migration histories, participant observation, focus groups, and mobile ethnographies. The data gathered during this phase were to be used to develop hypotheses regarding the relationship between climatic conditions and conflict prevalence. These hypotheses were to be used to develop a standardised questionnaire that would be administered during the second phase of fieldwork (June – December 2010) to collect quantifiable data. However, in practice, the distinction between the two fieldwork phases was not so apparent. During data collection in the first phase of fieldwork and through recording people's understanding of the role of drought in their lives, I progressively developed questions that would lend themselves to being quantified at a later stage. However, these questions, incorporated as part of the 'natural' course of the interviews and discussions, lacked the rigidity of a standardised questionnaire. Ultimately, I believe that this was a superior approach to the original fieldwork plan, as it was important to understand the questions in context with individuals' lives and experiences, especially considering the delicate nature of inquiring about drought and violent episodes. Furthermore during both of the fieldwork phases, participatory GIS mapping of resource use, water sources, and settlement distributions were carried out within community areas (Abbot et al. 1998) in order to

map the field sites accurately, including a robust understanding of the resources available to local communities. This also helped to provide the appropriate environmental context under which anthropological data can be analysed (Steinberg and Steinberg 2006).

Before commencing fieldwork, I was already well acquainted with the more southerly regions of the research area as I had worked and travelled within these areas on two previous excursions to Kenya in 2004 and 2005 and had established numerous contacts in-country that would prove to be invaluable as I began doctoral fieldwork. In July 2009, Earthwatch Institute, that had been my employer in the previous field expeditions, invited me to supervise one of their research projects at their Arid Drylands Research Centre, located in Wamba, Samburu East District. During this two week project, I worked with staff and researchers from the African Wildlife Foundation (AWF), Kenya Wildlife Service (KWS), Moi University, and resident Samburu and Borana field staff. These individuals assisted by providing me with an introduction into the wider local community. For the first month of my PhD fieldwork, I based myself at the Wamba Catholic Mission, where I became acquainted with various members of the administrative and pastoral staff. The mission, along with its hospital, is generally considered the heart of the Samburu community in Wamba. Religious practices make up a very small proportion of the wide range of activities that are carried out through the mission – from feeding programmes, to educational services, to sports and leisure activities, and artistic performances.

It was through my relationship with the mission that I was able to secure a highly qualified and well-suited individual to assist me with: 1) translation, as the Samburu communities within my research area predominantly spoke mother tongue (Maa), 2) data recording, in order to provide context and interpret behaviours from a local perspective, and 3) logistical support in the field, as the duration and conditions of the fieldwork could be challenging (remote area, little field support, etc.). In order to identify appropriate candidates, the mission administrator announced a job description that I had prepared seeking such a person during one of the Sunday masses. In total, 11 men applied for the position, whom I interviewed, and made my decision based on their proficiency in English, accuracy in translation from Maa to English and vice versa (assessed with the assistance of a highly-educated Samburu researcher), geographical

and ecological knowledge of the greater Samburu region, their level of integration into the community, having a “likeable” personality, the ability to problem-solve and, not without good reason, some knowledge of bush mechanics. A more nebulous criterion, but nonetheless an important one, was the field assistants must be able to “think” between two cultures, providing both emic and etic perspectives on the same events and occurrences. Henige (1982) describes such people as being exposed to new modes of thinking but also having a deep understanding of their own cultural heritage. Judging against these criteria, Raphael Lejohn Leteele, a primary school graduate up through class eight (~13 years old), was an excellent match for the requirements of the job and was employed as my field assistant throughout my time within the Samburu communities.

After being in the field for approximately five months while working with the Samburu communities, I needed to begin searching for a field assistant to help me with similar tasks within the Borana region. Due to the more cosmopolitan nature of Isiolo District, there was no central body where I could advertise for a Borana field assistant, as I had done through the Wamba Mission. Instead, I distributed a job posting to all of the government, development, community-based organisations (CBOs), and non-governmental organisations (NGOs) that are based within Isiolo town. From this posting, I interviewed 17 aptly qualified men and women from the Borana community and selected Hussein Guyo Gonossa, a secondary school graduate who had a rich background in working for other field researchers on various development and ecological programmes, as my field assistant. Unfortunately, due to poor health, Hussein was unable to commit to the duration of the fieldwork and was subsequently replaced by his younger brother Abdy Kareem Guyo, who was also a secondary school graduate and qualified school teacher.

By the time that I was coming to choose a Rendille field assistant, I had already been in the field for a period of one year, and this process was therefore not as formal, as I had made many contacts along the way and knew of a number of individuals who were well qualified. Instead of canvassing for applicants, I used close personal connections and recommendations from friends to select Harun Basele, a secondary school graduate, from a short-list of three individuals. Harun and I worked together until I officially left the field in December 2010.

All of the field assistants chosen were men, all married, and all of an elder (non-youth / warrior) age-set. Although this was not a specific requirement for the three positions, and I was highly motivated to hire female field assistants, the use of married male field assistants was advantageous for a number of reasons. The first reason is that married women in all three communities simply did not apply for the position. When I queried this aspect, I was told by a number of local women that it would be difficult to leave their domestic responsibilities and children for weeks and months at a time. For the Borana community, the women who applied were unmarried girls, and although highly educated and well qualified, there were a number of concerns that I had about working together. The first, and most important, is that while the unmarried girls would be able to converse freely with the married and unmarried women in their communities, it would be more problematic to speak with the men in the communities, particularly the older men. Within the Samburu and Rendille communities, unmarried girls rarely converse openly and speak at length to elder men, in part because they are marriageable and represent ‘potential’ wives. This can also be true for the Borana; furthermore, married males have more ‘authority’ in speaking with other married males than an unmarried female would in the same situation. It can already be difficult to talk directly with an individual *moran*, as they generally keep to themselves, unless you can engage them within a group (as discussed in section 4.5.2 of this chapter). Having an unmarried woman converse with a group of *morans* would have been difficult, as she would represent a potential girlfriend, and therefore they may not be direct with her or answer pointed questions. Finally, the women whom I interviewed were more ‘sheltered’ than their male counterparts, primarily exposed to their local region but with little first-hand knowledge about areas more than 50km away from where they were living. Married men, in this case, were more appropriate field assistants because they generally could talk openly with a more diverse group of people, they were able to leave their families for a number of weeks at a time, they tended to have better first-hand knowledge of all of the community areas, they had more ‘authority’ in dealing with community leaders, police and DCs, and they generally had more field experience than their younger female counterparts.

Field conditions were generally physically harsh, with very limited access to water in the form of hand dug wells, no electricity, travelling over unpaved bush roads / paths,



and temperatures approaching 50°C during the daytime. My field assistants and I would travel to each research site by 4-wheel drive vehicle, carrying with us 70 litres of clean drinking water, dry food and root vegetable provisions to last the duration of the fieldtrip, a three-person tent, and a large main tent that would serve as a rain shelter, gathering point, impromptu interview area, kitchen, bathing facility, and my home for the 17 months of fieldwork. For each field site, I would spend approximately 1 month in each area and then leave the field for a period of 3 – 4 days to stay at a rented home in Nanyuki, a comparatively large town in the Rift Valley some 3 – 14 hours' drive away, depending on the location of the previous field site, where I would wash clothes, have a shower, charge batteries, safely store field notebooks, buy more food stuffs, and replenish water supplies. While at the field sites, data collection took place seven days a week from 6am (at the time of the morning milking) until 6:30pm (at the time that the livestock would return to their *bomas* for the evening milking).

The final aspect worth mentioning regarding the fieldwork logistics is that by August 2009, the Rendille, Samburu, and Borana people of northern Kenya had experienced three failed rainy seasons, equating to approximately one year of extreme drought conditions (the actual period without rain was a year and a half; however drought conditions are reported to have started at the beginning of the second failed rainy season). It would not rain until October 2009, and even then, the rain that fell was far from sufficient to replenish water reserves and promote vegetation regeneration. Resources for livestock and people alike were extremely depleted at the time that I entered the field, and feelings of bewilderment, desperation, indignation, and resignation characterised many of the people that I spoke to during the initial stages of data collection. Despite these conditions, people were extraordinarily welcoming, generous with their time in providing information, and supportive of my fieldwork, which I was surprised to find considering the hardship conditions.

### **4.3 Entering the Field**

All official permissions to conduct research amongst these three pastoral populations were granted before entering the field. I abided strictly by the Association of Social Anthropologists of the UK (ASA) ethical guidelines, as the research plan was approved by the Durham Anthropology Ethics Committee in March 2009. The project was also given health and safety approval from Durham's Department of Anthropology. Further

permissions were granted from Kenya's Ministry of Education, Science and Technology to carry out research from July 2009 – January 2012. In order to expedite the processing of the Kenyan research permit and to serve as a mentor in the field, additional in-country research oversight and support was provided by Professor Joshua Akong'a in the Department of Anthropology and Human Ecology at Moi University in Eldoret, Kenya, who has studied pastoral decision-making strategies in drought-prone areas.

Entering the field was a multi-step process, which was vital for the successful implementation of the fieldwork. The first step in working with each group was to find reliable maps for each ethnic territory. To this end, the DC's office in Wamba and the Isiolo Bureau of Statistics were extremely helpful. With each field assistant, we would consult the maps, identify where communities were likely to be found, and the general conditions expected in each area (amount of rainfall, topography, water sources, etc.). My primary criterion at this stage was to make sure that the study sites would represent both interior populations and border populations for each ethnic group, as I was aware that these two groups are disproportionately prone to conflict episodes and would experience conflict in different ways (e.g., Smith, Barrett and Box 2001). After assessing the maps and choosing the general regions where we were looking to work, my field assistant and I would travel to the DC's office that had jurisdiction over the region we were looking to enter (sometimes requiring up to an extra day of travelling), in order to be granted his permission, to notify him that we would be working in the area for security reasons, and for him to 'hand us over' to the location chief of the area in which we wanted to work. This 'handing over' process was of the utmost importance in allowing us to enter the community areas without any issues and to be 'known' to the people, even before our arrival. On occasions when the mobile network permitted, the DC would make direct contact with the chief to alert him to our pending arrival, or he would supply us with an official letter from his office stating that we had been given local approval to conduct research within a specified community area. Having obtained the DC's approval, we would proceed into the community area in order to find the location chief. With the chief, the three of us would talk about the local area, and the chief could describe where the communities could be found during the time period in question. From these discussions, we would decide upon a community area that had a considerable number (>5) of homesteads (*manyatta*, *ola*, *fora*) so that the pool of



individuals was large enough to provide a decent sample size. Once the particular settlement area had been chosen, the chief then either travelled with us to the area, or we were handed over to the local chief. From there, the local chief would either gather his community's elders, or he would call a *baraza* (meeting) with the community at large to introduce us, notify his people of our purpose during our time with them, and to ask that we be treated as part of the community. This method of entering the community areas worked exceedingly well across all three populations to the extent that we had close to a 100% acceptance rate amongst identified participants. A number of people expressed their pleasure that we had been sensitive to the local ways of entering others' communities and that we had used the prescribed chain of command in order to do so.

Working between three communities over a large area and without any prior knowledge of the local languages being used in interviews was not without its challenges. However, in order to facilitate trust between the interviewer and interviewee and to ensure the highest quality of data being collected, the methods devised for this research were designed specifically to address these issues. First, the handing-over process and obtaining the appropriate permissions, as described in the preceding paragraphs, were paramount to the community receiving us with openness and respect. Second, I selected my three field assistants with such care that they be 'known' and respected by the larger community, either through their family names or as individuals. For instance, Raphael Leteele belongs to one of the largest Samburu clans, many people told me that he has a reputation of being a trustworthy and hardworking individual in the community (which I also found to be true), he had worked previously on a number of support projects in the greater Samburu region (digging permanent wells, driving people in hospital vehicles for clinics and medical support), his father (with whom Raphael shares his name) was well-known for circumcising a great number of men throughout the Samburu area, and the Leteele name can be found in both Samburu and Rendille areas, which was helpful when working in mixed Samburu – Rendille locations. Third, my field assistants and I worked very closely together before entering the field, extensively discussing the purpose of each interview and how interviews should be conducted without interpretation or embellishment during translation. Also, there was a good working and personal relationship between myself and my assistants that they could tell me if problems arose during any of the interviews. We discussed every interview afterwards, whether anomalies had appeared, what may have caused them, and if there

were aspects (verbal or non-verbal) that I had missed. As fieldwork lasted approximately one month in each of the field sites, trust needed to be established quickly between myself and the community. To this aim, my approach was to capitalise on and make use of already well-established trust bonds between the chiefs and the local community and between my field assistants and the local community. Furthermore, I (and my field assistants) did work exceedingly hard when we were in the community areas: never taking a day off, entering into remote / dangerous locations, walking everywhere over long distances, milking animals, herding animals, collecting water, driving people for medical attention, observing eating restrictions during Ramadan, etc. that I was told by many that these behaviours went a long way among the people in proving my dedication to the research that they, in turn, wanted to help me with their time and openness. My relationship with each of these communities was extremely positive, setting an atmosphere that lent itself to productive data collection. Furthermore, I conducted a number of interviews in English (approximately 25), and none of these interviews yielded information that was contrary to the translator-assisted interviews. These aspects gave me confidence that the data being collected were reliable and accurately captured interviewees' thoughts and feelings on the issues being discussed.

#### **4.4 Selecting a Sample**

During fieldwork, participants were chosen by first mapping the homesteads (*manyattas*, *olas*, *foras*) with the help of the sub-location chief / informed elder within each field site. We asked the informant to describe which families / households could be found within each homestead. Although no formally agreed-upon boundaries exist between one sub-location area to another, the informant often cited important landmarks, such as a water source, road, hilltop, riverbed, etc. that they felt delineated sub-location boundaries, and the members found inside such boundaries would share common resources, such as a well, borehole, or grazing land. Once the homesteads had been mapped, including the names of the families for each household, my field assistant and I would then divide the settlements up by proximity to one another, allowing for members from 2 – 3 homesteads to be interviewed each day. For the 17 field sites studied, the number of homesteads ranged from 8 up to 82, each homestead having between 1 – 35 households. However, the average size sub-location was approximately 35 homesteads, and the average household number was approximately 5 per homestead. The typical distance

between the two furthest homesteads away from each other in any given sub-location was approximately 8km. Please see Figure 4.1 for a graphic representation of a typical sub-location and Figure 4.2 for a representation of a typical homestead.

Figure 4.1: Hand-drawn map of Lolkerded field site, from field notebook. Drawn with the assistance of local elder and brother to the location chief. It depicts the sub-location borders as Laresoro River to the east, Losesia road to the south, and the tarmac road to the west and north.

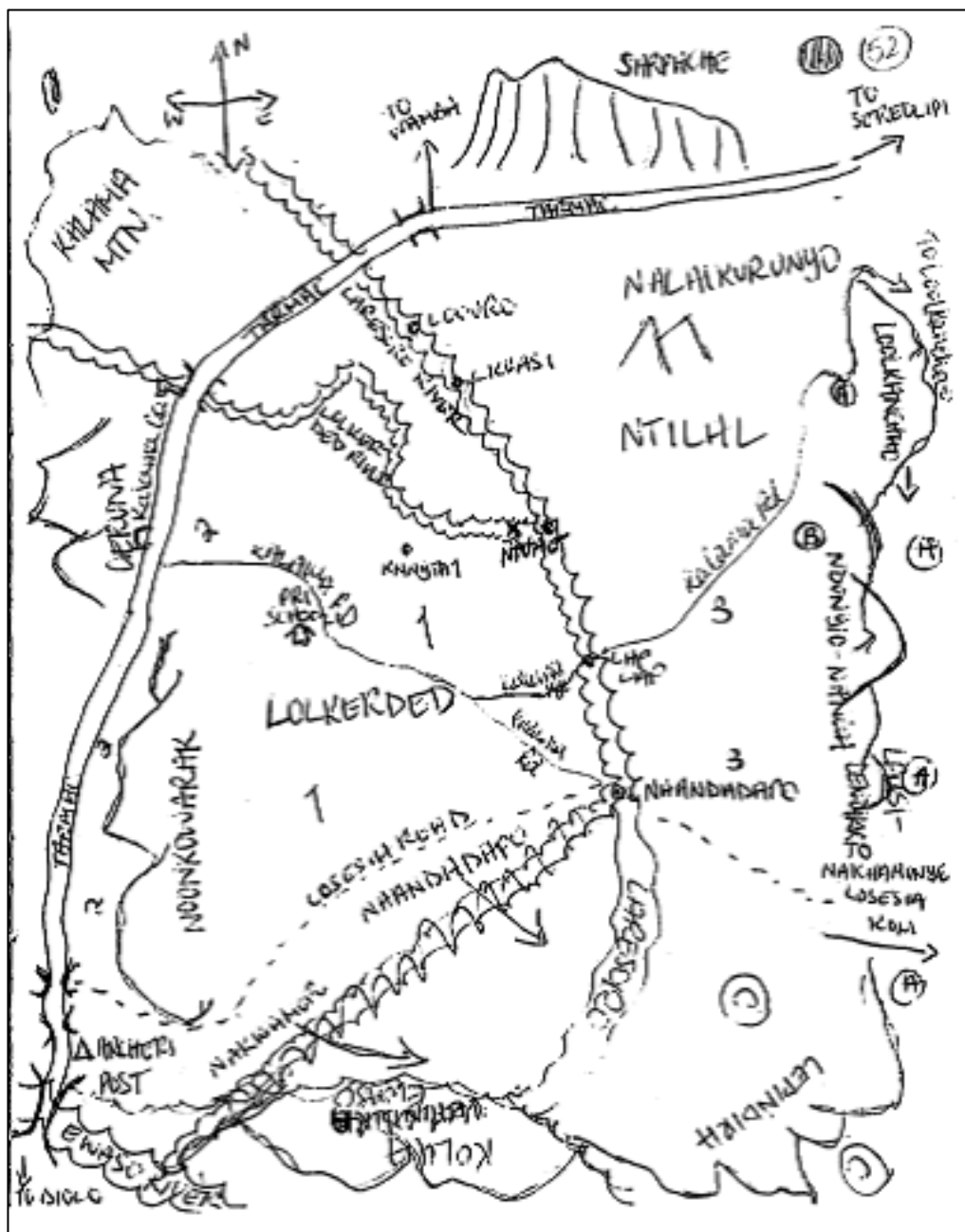
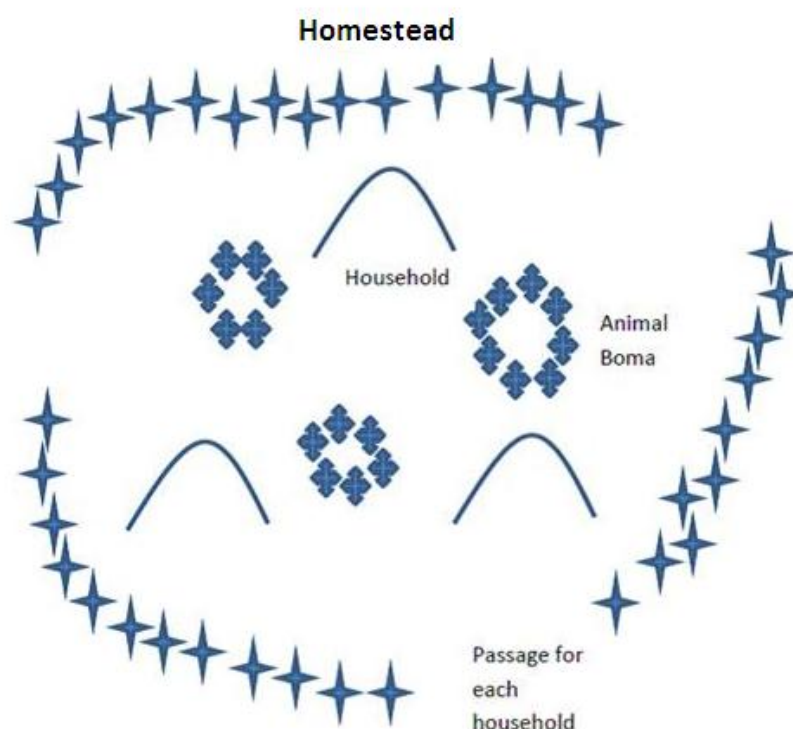


Figure 4.2: Representation of a Samburu *manyatta*, composed of 3 households, 3 animals *bomas* (1 belonging to each family), and 3 passages for each of the livestock herds to pass through out of the settlement



It was not possible to specify an exact sample size before entering the field since it depended on the quality and nature of interviews and the point at which ‘saturation’ was reached. At the outset, I aimed to interview *at least* 20 members of each of the three ethnic groups (60 respondents in total). However, at the close of fieldwork, I had interviewed more than 275 individuals. The inclusion criteria for interviews were purposely broad, as I wanted the sample to encompass the full range of ages, gender, marital status, education levels, etc. It was important to record the different experiences of conflict and climatic events from many points of view. Ultimately, I interviewed an equal number of married men and women, many groups of children, a number of groups of *morans* (approximately fifteen), unmarried individuals (more male herders than females), with ages that approximately ranged from four to one hundred. Interviews with children were brief (less than thirty minutes), always in the presence of a parent / adult, and they did not discuss conflict incidents. Instead, they focused on the types of games children play, if they attend school, their expectations for / source of their future livelihoods, and exposure / attitudes towards other ethnic groups. The overall interview

approach was designed to be one that was a stratified random sampling (Fink 2003); however, the sample was more opportunistic than random. After choosing the homesteads based on the methods described above, we would enter each homestead, greet all of the family members who were present, see who was available to be interviewed, and then select an individual who would contribute to the diversity of the sample. Whenever possible, we would try to solicit interviews from more elder members of the settlement (ages 70+ years), as these individuals were relatively few in number, and we could capture historical knowledge from as far back in time as possible. Each of the interviews lasted for a period of 1 – 3 hours on average, which we found to be an adequate amount of time to solicit information and was also acceptable to the interviewees. We made clear to all participants that they could stop the interview at any time if they felt uncomfortable, upset, ill, tired, or if they had responsibilities that needed their attention. The majority of individuals were talkative, eagerly provided information, and often times liked to continue the conversation even after the official interview had ended.

Initially, we were interviewing more than one person per homestead; however, we came to find that the stories (such as migration histories and conflict incidents) between two individuals from the same homestead were rather similar as a result of the families' tendencies to migrate together. Because of this, we switched tactics early in the fieldwork to only interview one member from each homestead, therefore allowing us to cover more ground, include an increased number of homesteads in the sample, and increase the diversity of experiences being recorded.

## **4.5 Methods and Justification**

### **4.5.1 Semi-Structured Interviews**

Before recording any data, participants were informed fully about the purpose, methods, and limitations of the study (e.g., not making promises based on results) before seeking their voluntary agreement to participate. During the interviews, a major goal was to help the participants place themselves within a certain environmental context and have participants verbalise what each environmental condition means or looks like to them. It was important for this analysis to make sure that the participants had a clear understanding of the time periods that they would be discussing and the behaviours

associated with each of those periods. We would start by recording oral histories (Henige 1982) which focused on life events, pertinent issues regarding environmental change, change and continuity in pastoral modes of production, ranging behaviour, ethnic conflict, government administration, livestock populations, development in the area, etc. One area that I focused on in the oral histories was to record very detailed migration histories starting from the time and place where the individual was born, where s/he had moved to, how long s/he lived in each location, why s/he moved *to* a particular area, what each area looked like, how productive each area was, why s/he moved *from* each area, how the next place was chosen that s/he moved to, etc. Recording detailed migration histories in this way got people thinking about the land, how they lived within it, and how it changed over time; moreover, this approach enabled people to link their behaviours and actions to the environments in which they found themselves throughout their lifespans. In order to optimise the quality of the retrospective reporting, event history calendars that were developed for the 2009 Kenyan census (Kenya Bureau of Statistics 2010) were used to tie memories back to specific political, ecological, or life history events (Belli 1998). Next, we discussed the landscape around them, as they saw it at the time of the interview. I asked how the land was, if it was benefitting the animals, what was deficient about it (if anything), and how it compared to areas in which they had lived in the past. Then I would ask about the years leading up to the present – how they had changed or stayed the same or had an influence on what the land looks like in the present. This was one of the key elements in furthering the inter-subjective pursuits of this study as we could discuss the land together, and I could gain a first-hand appreciation of its contemporary appearance, and then was able to put that information into an historical context.

When talking about conflict incidents, it was important that this was not initially emphasised too early on in the interview, in order to make the participant feel more at ease, to foster rapport between us, and the “non-conflict” information recorded earlier in the interview could be used to corroborate details provided about the conflict incidents that were reported. Discussing conflict in general can be a highly contentious issue. Even though the research participants knew that I was an independent researcher without any connections to the government, there is a pervasive fear that details about raids, who was involved, the weapons that were used, etc. can be reported back to the government, which they fear may cause them problems. As I divided my fieldwork

time between more than one ethnic group, there was no pressure for me to solicit details regarding conflict events where the research participant would be culpable in any way. Instead, I could focus on conflict events where the interviewee was the 'victim' rather than the perpetrator, meaning that he / she would be more willing to report events and to provide details. However, this method of recording events where the research participant is primarily the victim of a conflict event does have its problems. The major issue is the tendency for interviewees to over-report episodes of victimisation or animals lost in raiding events in order to provoke sympathy from the researcher and create negative feelings towards "the enemy." Throughout the interviews, my field assistants and I remained highly vigilant in order to recognise anomalies in an interviewee's reports, exaggerations, misrepresentations, etc., based on the data collected previously in the interview, which would render the conflict incident details unreliable. If this were the case, we would ask for additional clarification on any details that were not corroborated with other information contained in the interview. Taking the time at the beginning of the interview to collect a highly detailed migration history for each family was incredibly helpful in verifying conflict incidents as this allowed us to cross-check dates, locations, types of animals being herded, family members who were involved, etc. Conflict information was also examined against meticulous incident reports kept by the Secretary for the District Peace Committee in Samburu East District that recorded the date, specific location, ethnic groups involved, and a description of each conflict event for 2009. Incidents were also verified when one household referenced a conflict that had not affected their animals specifically (mentioned because it had factored into how they managed their migration at the time), but it had affected another household in the area, for whom we had recorded conflict information previously. During the entirety of the fieldwork, there were a number of interviews (approximately 10 out of 275+ interviews) that were wholly abandoned due to misinformation.

More specifically, participants were asked if they themselves had ever experienced any conflict or were involved in any raiding events, either as 'perpetrator' or 'victim.' If they answered in the affirmative, details were then gathered about the particular raiding event: people involved, ethnic groups involved, animals affected, weapons used, etc. Dates for each conflict event were placed into a chronology in light of the event history calendars and the oral / migration histories previously recorded in the interview in order

to narrow conflict dates to a specific year. For the vast majority of interviews, this technique worked exceptionally well, and I was able to ascertain the exact year of a conflict. For those incidents where the exact year was not achieved, every effort was made to narrow the date to within  $\pm 1$  year. If the accuracy of the dates was called into question, for instance if there were conflicting timelines between the conflict incidents and migration histories, then the particular conflict incident in question was not included in further analysis. As each participant recounted additional conflicts, a chronology of conflicts could be established, whereby I was able to flag any anomalies in order that dates may be corrected. After I recorded all of the details surrounding conflicts that the participant had experienced personally, I would then ask whether either of the participant's parents had been involved in any conflicts at the time that the participant was living at home, i.e. before marriage. This line of questioning helped to ensure a higher level of accuracy in terms of dating conflicts as the interviewee had a first-hand account of all of the conflict events that were discussed rather than reporting details based on hearsay.

Throughout the interviews, the questions asked were all open-ended in order to allow people to express fully their understanding of the environment, experiences that they have had in it, and feelings that they have associated with these experiences, thus promoting a rich, inclusive data set.

#### **4.5.2 Focus Groups**

Focus groups were used for two very important reasons, which I only discovered as a result of conducting some unproductive interviews. Primarily, it was a way for me to engage with subsets of the community that were relatively difficult to access on a one-on-one basis. These tended to be the younger members of society – the young (unmarried) women because they were shy or not used to discussing personal sentiments or feelings in front of an elder male of their community (as my field assistants were all elder males). However, once they were situated amongst their peers, they felt more comfortable and opened up considerably more to my line of questioning within the focus group. The young (unmarried) males were also engaged in focus groups as the elders had warned me that I would never come to understand the minds of a *moran* or young man because they keep their thoughts to themselves. After conducting a couple of unsuccessful interviews with some young males, I decided to



engage them as a group and in the bush away from the eyes and ears of their fathers and elders, which is how and where they spend their leisure time normally. The third group that I engaged in a focus group setting was the married women. Although approximately 50% of my interviewees were composed of married women, I found the focus group forum to be highly productive for the women to feel free, speak out, have a voice, and be consulted on a larger scale than they may feel simply being interviewed within their home.

This leads to my second reason for conducting focus groups, that when discussing the motivations for someone to raid or support a raid during a one-on-one interview, the respondents may not feel entirely comfortable expressing their inner-most sentiments if they think that the response will be met with judgement, disdain, or if they are afraid that they may be the only person to answer in a certain way. However, during a focus group, I found that it only took one member of the group to express him / herself and the rest of the group would also begin speaking up as, based on my response / my field assistant's response, they could see that the focus group was a space where their opinions and sentiments would not be judged nor would there be any consequences for "provocative" points of view. This finding is contrary to one of the concerns of focus groups, namely that they breed conformity in opinions or withholding information (Morgan 1997); however, I did not find this to be the case. Instead, I was told that, because each member of the focus group knew one another's personal information (in terms of migration, raiding behaviour, etc.) then when members were asked to contribute, they were 'policed' by the rest of the individuals in the group. This was not an active policing, but instead, people reported that it would be impossible to lie in the group situation where all but the researcher is aware of the truth.

### **4.5.3 Participant-Observation**

Dyson-Hudson (1972) wrote that if one wants to understand herders, then one must also understand herding. In order to further the inter-subjective approach, I helped with the herding and watering livestock activities with a wide array of herders and with each type of livestock herd (cows, goats, sheep, camels). Herding activities were divided up into the morning herding and the afternoon herding, where I would stay with the same herder throughout the day. I would spend either the morning or the afternoon walking with the herd, passively watching, recording, photographing, and GPS tracking the

actions of the herder and the livestock animals. In the other herding session, I would actively ask questions about herding, the livestock themselves, how herd decisions were made, what plants or water was best for the animals, etc., as I helped the herder move the animals as they grazed / browsed. Milking was also an important part of the day's activities, and I was involved in both the morning and evening milking sessions. I contributed greatly with the goat milking; however, I proved to be entirely inadequate at milking the cows. Herding and milking allowed me to speak freely with the women, and gave me the greatest access to the young girls and male youths (warrior-age or uncircumcised). Similarly, collecting water with the women from wells and boreholes was a time for chatting and listening to community gossip as women would remain around the waterholes talking to people or washing clothes. These experiences were also vital for me to see the trouble in finding a substantial supply of clean water, collecting the water from often-times deep wells, and carrying the water back to the household more than once in a day. Helping with the water collection gave me a first-hand view into the increasing hardships that women face in particular (as the women are the water collectors) as the effects of drought continue to escalate.

Throughout my time in the field, I also attended a number of livestock markets, which represented the biggest social event of the week for most local communities. Here, I witnessed and recorded how animals are bought and sold, the activities associated with getting animals to market, how prices are brokered between buyers and sellers, who *are* the buyers and sellers, the 'credit' system as it applies to local community members, the fluctuating value of animals in the market, obstacles people face in getting their animals to market, and feelings associated with the location of markets, access to markets, what markets provide to people, and how to regulate markets.

Finally, I attended a number of peace meetings hosted either by location chiefs or district peace committee members that were either focused on peace discussions in general (how to improve inter-ethnic peace relations overall), or on addressing a particular recent inter-ethnic conflict event. During the meetings, I recorded the number of individuals who were present and which ethnic groups they were representing, along with notes on what people were saying, how they were talking to one another, and what issues were focussed on in terms of peace-building.

One final note about my participation in the field is that the importance of walking with pastoralists cannot be under-estimated. Although I would use a vehicle to travel to and from the field sites, this was the only time that the vehicle was used, and all other activities were conducted whilst walking with individuals. The importance of walking from a research perspective will be discussed in the next section; however, from a personal perspective, walking together was appreciated by the local community and helped to build rapport between participants and researchers. Many people commented on the difference between this approach and that of development officials who ‘never even get out of their cars’ and get to see the situation ‘on the ground.’

#### **4.5.4 Mobile Ethnographies**

In light of the discussion above, I also collected ethnographic data within pastoral communities by conducting mobile narratives – a method successfully used by my supervisor whilst recording children’s mobility experiences in Africa (Porter, Hampshire et al. 2010). By walking with pastoral communities during settlement migrations, herding activities, to / from water sources, and to / from markets, we were able to discuss changes to the land, concerns during movement of the camps, decision-making processes, ranging behaviour, etc. Mobile narratives were an effective way to elicit information and gain an improved understanding of how place and environment impact pastoralists’ daily lives.

#### **4.5.5 Mapping**

The initial mapping of settlement areas has been discussed in section 4.4 of this chapter; however, these maps were not only used to identify homesteads in the area and inform interview activities, they were also used in participatory mapping exercises (Abbot et al. 1998). Walking with an informed member of the community, we would cover the entire area of each field site, using a GPS to record waypoints of important features: water sources, productive grazing areas, riverbeds, mountains, erosion areas, thick bushy areas, field site boundaries, amenities available, locations of all homesteads, etc. For each waypoint, a digital photograph was taken of the surroundings, and with the help of the informant, we would record the vegetation that could be seen whilst standing at the waypoint, its current condition, and if there were any interesting stories, anecdotes or historical information associated with the area. The participatory mapping was a way

to get a sense of the history of the land and to see it from the perspective of the local people in how it's used, what aspects are considered to be valuable, discuss how things have changed over time (if at all), understand the significance of new developments, etc. Unlike perhaps in other parts of Kenya where there have been concerns surrounding land grabs, people in these areas did not find the mapping to be problematic or contentious, and many enjoyed assisting with this exercise.

#### **4.5.6 Tree Transects**

Tree transects were conducted in order to determine an estimation of the number of trees that were being cut as supplementary fodder for animals during drought conditions when ground-cover was particularly sparse. The function of the tree transects will be discussed further in chapter nine. We used line transect sampling as this method effectively lends itself to sampling sparse, tall vegetation (Sutherland 1996). For each field site, four 1-kilometer transects were blindly selected without prior familiarity with the area, and the transect line was walked using a GPS. Any livestock fodder species tree above two meters (the minimum height for mature trees) touching the transect line (that is, within one meter of the transect line) was entered into a data sheet that recorded the species of tree, if there were any human cuts made on the tree, whether the cuts were 'new' (considered to be within the previous year) or 'old' (made sometime before the previous year), or if the tree was dead, or if there were no cuts made to the tree. At the end of the transect, a description of the transect was taken, recording information regarding proximity to riverbeds, proximity to homesteads, or any other pertinent information, such as competition / lack of competition with other vegetation in the area.

#### **4.5.7 Archival and Meteorological Data**

Colonial administrative records housed within the National Archives of Kenya were consulted in order to provide historical context, gather preliminary rainfall data taken during the colonial period, and record conflict incidence data taken by colonial administrators. Particularly useful were the provincial and district annual reports for the Northern Frontier District (NFD) and district handing over reports written by the outgoing District Commissioners to the incoming individuals, which provided information on inter-ethnic relations, climatic conditions, pastoral management, and note-worthy

incidents that had taken place within the district or on the international borders. The records dated from 1902 to the close of the colonial period.

Rainfall data were obtained from the Kenya Meteorological Department in Nairobi, which has recorded rainfall measurements at dozens of sites throughout northern Kenya from approximately 1959 to present day. However, there are major discrepancies in the data in terms of the continuity of recording (i.e., many sites have numerous years with missing information or are lacking entire entries for certain years). In choosing from the dozens of recorded sites in northern Kenya from which to obtain rainfall records, it was necessary to have at least one site correspond with each ethnic group under study and obtain areas that had a long recorded history with most of the data filled in for each month and year under investigation. Under the most ideal conditions, I would have been able to obtain data from every weather station in order to get the most complete historical and spatial understanding of rainfall patterns in northern Kenya, but obtaining all of these data would have been cost-prohibitive as the foreign student rates were exceedingly high at 18,000 ksh (~£140) per site. Ultimately, the areas of Marsabit Mountain (typically high rainfall, intersection of Borana, Samburu, and Rendille populations), North Horr police post (Rendille area), Wamba District Officer's office (Samburu area), and the Garba Tula police station (Borana area) were chosen for data collection purposes. Although Marsabit Mountain is an area of atypically high rainfall, it is included in this study because: 1) it does represent a common area that can be utilised by all three ethnic groups, and 2) in years where surrounding areas are dry / drought-like, it can serve as a dry season refuge or dispersal area to ease resource shortages in a home location.

Some recent studies on pastoralists (e.g., Ericksen et al. 2013) have used NDVI (Normalised Difference Vegetation Index) as a measure of the amount of live green vegetation available in a given land area rather than relying on rainfall data to assess this measurement. NDVI was also considered for this thesis, and will likely be used in future analyses based on this research; however, rainfall records were used in this current study for a number of reasons. First, the amount of rainfall received in arid and semi-arid areas has been shown to be the factor most closely associated with vegetation growth (Vetter 2005; Ellis and Galvin 1994), and therefore is a reliable source of data for this type of analysis. Furthermore, rainfall records are readily available for the time

periods covered by this study, where the earliest NDVI maps for this region date back to 1981. Therefore, using rainfall records rather than NDVI has yielded a larger dataset for statistical analysis. Finally, as mentioned in chapter two, statistical analyses from this study are compared to results from Witsenburg and Roba (2003, 2007), which also make use of rainfall measurements; therefore, comparisons benefit from using the same metric.

#### **4.5.8 A Note on Technology**

Briefly, all data recording was conducted simply using notebooks as I was trying to facilitate an environment where people could speak freely. There was a certain amount of mistrust people had in speaking with a voice recorder present; therefore, I found the notebook to be more user-friendly, particularly when discussing conflict. Furthermore, the lack of electricity in the field made it difficult to use any power-aided technology (recorders, laptops, etc.). Digital photography was only used to document environments, livestock activities, and homesteads, as it was unnecessary to photograph people for the purposes of the data collection, and in fact, a number of respondents expressed their displeasure if photographs of them had been requested.

### **4.6 Data Analysis**

#### **4.6.1 Qualitative Data**

All qualitative data collected in field notes from interviews, observations, mobile ethnographies, focus groups, participatory mapping, and archival data were typed into a Word document. Due to the sheer quantity of data collected (as the data entry, processing and cleaning required ten months' of work), it was not possible to take the time to code all of the qualitative information systematically. Instead, my purpose with the field notes was to familiarise myself thoroughly with the data by: 1) typing up the field notes, 2) re-reading the complete set of field notes and highlighting key sections, 3) writing brief summaries for each interview, and 4) identifying 'emerging themes' for each field site, which were the starting point in formulating, thinking about, and making connections between the data. The analysis took a grounded theory approach (Glaser 1992), as these emerging themes greatly helped to form the structure and key arguments found in this thesis.

### 4.6.2 Quantifiable Data

Meteorological data was entered into an SPSS database, recording the year, location of weather station, and amount of annual rain in millimetres. See chapter six for the complete statistical analysis of rainfall data.

Conflict incidents were entered into an SPSS database, which recorded aspects such as: 'affected' ethnic group, 'raider' ethnic group, year of conflict, month of conflict (if known), location of incident, whether livestock and / or people were affected in the conflict, number and types of livestock affected, number of people injured / killed, and the motivations given for the conflict event. In order to ensure that conflict incidents were not being double-counted, I paid close attention to specific details that were provided about each conflict event aside from the basic questions of where, when, and who was involved. People tended to recall a striking aspect of each conflict that would help to discount a subsequent re-telling of the same conflict. For instance, a number of Borana in the Malka Daka area recalled a conflict where children were burned alive by a group of Somali, or the Samburu community in Ntabasi made reference to a famous battle at Kauro where all of the Borana were slaughtered in their sleep, but no animals were taken. Although I recorded what each person had to say about the same conflict event, these events were only counted once in the statistical analysis. Furthermore, the method by which we chose research participants helped to limit the double-counting of conflict incidents. For each incident I recorded, I would ask the research participant if others were involved in the incident, particularly members from the same location that may be interviewed on a later day. By recording the families that were involved in a particular conflict, I would typically not interview members of that family to reduce the likelihood that conflicts could be double-recorded. This method also helped to increase the total number of unique conflicts that were being recorded, as it was necessary to capture as many incidents as possible in order to produce a robust statistical analysis. From the 275+ individuals interviewed during fieldwork, there were 194 people who recorded unique conflict incidents, which accounted for exactly 300 individual conflict events that were used in this statistical analysis. For further details regarding the statistical analysis, please see chapter six.

### **4.6.3 Tree Transect Data**

Data taken from the tree transects were entered into an Excel spreadsheet, listing each location, transect number, names of tree species, number of total trees included in the transect line, number of trees having new cuts, number of trees having old cuts, number of trees without cuts. For trees that contained both new and old cuts, these were counted solely as ‘new cut’ trees in order to avoid double-counting. From this database, I could then calculate the percentage of total fodder-species trees cut, the percentage of new fodder-species trees cut, and the percentage of old fodder-species trees cut for each location.

### **4.6.4 Mapping Data**

GPS data has been downloaded and catalogued using ArcGIS in order to produce a map of the entire study area, detailing each of the 17 field sites (shown in the previous chapter). However, due to the vast quantity of data collected in relation to the mapping activities, time has not permitted me to offer any thorough analysis of these data for the purposes of this thesis. It represents an exciting source of information for future spatial analyses, but such a rigorous investigation of the data is beyond the scope of this current thesis. Instead, these data were used to supplement and enrich the qualitative data analysis, as discussed in section 4.6.1.

## **4.7 Conclusion**

The mixed-method approach as described in this chapter has taken a broad perspective in investigating pastoral livelihoods, experiences, and motivations from an inter-subjective standpoint. Furthermore, the research approach that I have taken has been conducted with the goal of placing the above understanding within a deep socio-ecological context – how people interact with landscapes, understand them, manage them and whose actions are shaped and influenced by them. The approach is purposely inclusive and seeks to assess the likely complexity found within multiple diverse perspectives.



# Chapter 5: Ethnographic Analysis of Climatic Conditions and Conflict

---

## 5.1 Introduction

The purpose of this chapter is to assess the nature of the relationship between drought-induced resource scarcity and conflict in the most straight-forward manner, focusing solely on this relationship's two primary variables: 1) climate and 2) conflict. As discussed in chapter two, there has been a considerable amount of literature, both academic and from development, that posits a significant connection between these two variables; however, conclusive empirical evidence in support of these trends is often lacking. Many ethnographies describing pastoralists in East Africa may talk about climatic conditions and also offer discussions on conflict behaviour, but often times, the readers is left to draw conclusions between these two phenomena without truly understanding the nature of this relationship. Furthermore, the significance of these terms alone or the emphasis an author places on one term or the other can be problematic in the literature. Spencer's seminal ethnographic works, *The Samburu* (1965) and *Nomads in Alliance* (1973), explain quite clearly the effects that recurrent drought had on both of these societies and how herd management was largely focused on reducing the negative consequences of extreme climatic events. However, in both of these volumes there is very little discussion regarding the role of aggressive behaviour and conflict between ethnic groups. Spencer refers to the, "substantial loss [of cattle] through enemy raids (mainly in the past)" (1965: 27); however, he does not elaborate beyond this point to discuss the motivations behind aggressive acts, the significance conflict has / had, or why these contentious relationships came to an end – perhaps reflecting the nature of data collected during colonial administration and security. He states that conflict and the role of the *moran* are defining features of the past, but from this description, it can be difficult to conceptualise these defining features and make use of them in further analysis.

Contrary to the 'mainstream' paradigm that suggests a positive correlation between drought-like climatic conditions and increased levels of conflict amongst pastoralists

(e.g., McCabe 2004; Mkutu 2001; Homer-Dixon 1999, 1991; Markakis 1998; Fukui and Markakis 1994), local stakeholders and ‘people on the ground’ may, in fact, report the opposite relationship to be true. In a talk given at London’s Royal Geographic Society in November 2008, Ian Craig, Executive Director of Lewa Conservancy and the Northern Rangelands Trust in north central Kenya stated that rainfall and pastoral conflict have the inverse relationship, meaning higher levels of violence can be seen during rainy season abundance. Craig’s understanding of this relationship is based on years of observation as a large ranch and wildlife conservancy owner bordering on the Samburu and Borana territories, and he is well-placed to draw these conclusions, as he himself has negotiated and resolved many stock conflicts between disparate ethnic groups. His reasoning behind this conclusion is that during rainfall periods, cattle populations rapidly increase, there is no market to sell off surplus animals, the pressure on communal resources increases, and people start to congregate and settle around large water resources (earth dams, reservoirs, etc.). These water points become contested areas between disparate groups utilising them, where conflicts are likely to result. Furthermore, animals at this time increase in body mass, body condition, and strength, which makes them attractive to would-be raiders and attackers, and improved animal health allows the livestock to travel faster and further back into the territory of the raiding party, therefore making raiding during this time highly lucrative. Similar findings that conflict is correlated with rainy periods and relative resource abundance have been presented by Witsenburg and Roba (2003, 2007) in their study among the Borana of northern Kenya.

However in response to Craig’s reasoning, the following arguments can be made: 1) in areas prone to recurrent drought, livestock populations never have the chance to increase beyond any environmental or economic carrying capacities (Behnke and Scoones 1993), and 2) as demonstrated by migratory wild animal populations in East Africa, gathering at water points normally happens during dry seasons when water access is not widely-spread through small ephemeral streams or water catchments, etc., not during wet season months, as Craig had mentioned. Spencer reinforces the nature of this pattern of migration when discussing Samburu movements when he writes, “As the dry season advances, there is progressive migration towards those water points which have not yet dried up. With the onset of rains there is a wider choice for

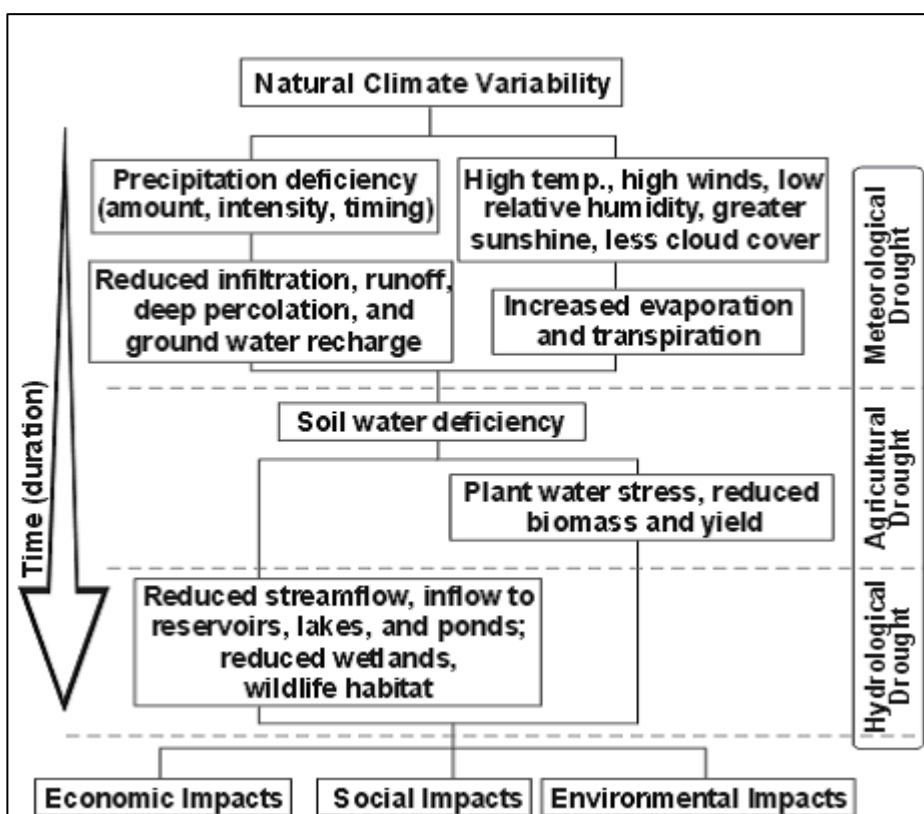
nomadism, and the population tends to disperse more evenly over the countryside” (1965: 7).

From the discussion above, can we be sure that Craig and Spencer are referencing the same experiences and therefore making accurate comparisons? Craig talks about ‘rainy season abundance,’ yet Spencer references the ‘onset of the rains.’ With the information provided here, it is difficult to estimate whether or not these are indeed similar climatic conditions. Therefore, for any robust analysis to take shape, a deep understanding of the terminology used must be provided.

## **5.2 Understanding Climate**

One of the primary methodological issues that needed to be addressed in this study was how to go about defining exactly what drought ‘is’ and how to identify the emic criteria by which a population determines whether it is experiencing drought conditions so that it may be understood from an etic perspective. The National Oceanic and Atmospheric Administration (NOAA) defines a drought as “a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and / or people” and goes on to say that drought “is a temporary aberration from normal climatic conditions” (NOAA drought factsheet, Aug 2006). A distinction is made here between meteorological drought (a degree of dryness or duration of dryness away from the norm for a particular area), agricultural drought (having impacts on plants, soil and ground water levels), and hydrological drought (extended precipitation shortfalls impacting water supplies) – please see Figure 5.1 for a further explanation of the relationship between these three types of drought.

Figure 5.1: Diagram depicting the relationship between three types of drought. (Source: NOAA Drought fact sheet, August 2006)



When trying to apply these definitions of drought to the East African pastoralist context, even at the most basic level, it becomes highly problematic. Primarily, to attempt to define what a normal degree of dryness or rainfall is for these areas is challenging, as rainfall and weather patterns across East Africa are predominantly characterised by their high degree of variability *as the norm*. This will be discussed in greater detail in the following chapter which requires a numerical understanding of drought. However, what is important to keep in mind here is that due to the nature of variability within East African rainfall patterns, it would be inappropriate to apply a specific rubric of drought characteristics indiscriminately with little regard to how the local people themselves define drought within their own communities. Drought is, in fact, defined by the people who experience it and in a context that is well-known to the actors. A farmer, meteorologist, or pastoralist may all have different thresholds for the environmental conditions that they consider constitute drought, and therefore, it must be examined from this user-defined, emic perspective. This perspective may be sub-divided even further within each group, for instance, between agro-pastoralists, pure pastoralists, camel owners, cattle owners, etc.

### 5.2.1 Climate Perspectives

Even within the three pastoral communities involved in this research, there were some differences in perspectives of drought based on one's age or gender. As I was speaking with many elders from these communities, they often spoke with nostalgia of the landscape during their youth, where nowadays drought may be seen by them as a more modern phenomenon.

“The landscape has changed over time. Before, there was grass everywhere...but now we don't see any. It's been since the early 1990s that this has happened. The periods between the droughts are becoming closer together, and the rainfall is less and less when it does come. Comparing a long time ago to now, cow dung used to float due to the heavy rains.” (Samburu, elder woman, Lenchokut)

Within all three populations, the elder communities' stories corroborated that “back then” (generally referring to the period of their youth) there was grass and plenty of water for their animals. If drought did happen, it was nothing like those of “today” because it did not last very long, but more importantly, it was broken by a period of sufficient rain that would replenish the water sources and the grazing land. Nowadays, the rain in their eyes is never sufficient to overcome the deleterious effects of a preceding year's drought. However, younger individuals often times viewed recurring drought as part of the “typical,” albeit difficult, life experience, in contrast to the views held by many elders who have not always been consistently exposed to drought periods. The life that the pastoralist youth know may be one filled with hardships; however, without having a basis for comparison with a more prosperous time, this type of hardship may become the norm for them, with the rains offering a small amount of respite from their otherwise arduous way of life.

Likewise, male and female perspectives on what constitutes “drought” were also different amongst the three pastoral populations and tended to focus on how drought conditions affected each sphere of influence. Men, who were largely in charge of day-to-day herd management, would quite often refer to the lack of pastureland, the need to move frequently and to distant places, or how difficult it was to find sufficient water for their herds, etc. Women, whose influence would have an emphasis on more domestic

affairs, would say that drought means a lack of milk, or that the children had very little food and had to rely on rations, or that they had to travel further to collect water compared to years receiving sufficient rain.

### **5.2.2 Climate Terminology**

Due to these differences in perspectives and in order to ensure that researcher and participants were discussing similar concepts, and whether each participant's view could be representative of the general population, a baseline terminology needed to be agreed upon ahead of conducting interviews that dealt with relationships between climatic conditions and conflict. In order to devise a list of terms that were agreeable in definition to the researcher, field assistant / translator, and with the intention of the discussion being clear to the community, an intermediary needed to be consulted for two of the populations under study. Raphael, my Samburu field assistant and translator, was an educated man within his community as a class 8 graduate (up until age ~13). However, in order to ensure the highest degree of accuracy possible with terminology, we consulted over a number of days with a third party. This individual is herself a member of the Samburu community, living within the heartland of Samburu District. Furthermore, she is a university graduate who worked for an international NGO, where she assisted Kenyan and western researchers with environmental field projects. Her understanding of the nuances within the English language, with reference to ecological terminology, and in relation to her mother tongue made her an ideal intermediary between myself and Raphael. The three of us discussed various aspects of climatic conditions from both perspectives in order to arrive at a baseline vocabulary that was in-line with the aims of the research, but more importantly, could be understood and built upon by the local participants, who were able to contribute context to the terminology being used. This method of using a highly-educated, western-exposed intermediary worked so well while conducting interviews amongst the Samburu population that it was also employed when moving on to work with the Borana communities, with pre-field discussions taking place between myself, my field assistant, and a Borana graduate in conservation biology from the University of Nairobi. Harun Basele, my field assistant when working within the Rendille community, was educated up through form four (up through age ~18), had worked for a number of years with the British Army based in central Kenya, had a very strong understanding of English, and fluently spoke Kisamburu and Kiborana in addition to his native Kirendille. In order to ensure

consistency between the former two populations and within the Rendille communities, Harun met with myself and Raphael ahead of entering the field so that we could discuss the terminology that had been used amongst the Samburu population, which was then translated into Kirendille, to the satisfaction of both Raphael and myself.

Preparing in this way, although a somewhat lengthy process, draws inspiration from other studies, such as de Waal's *Famine that Kills* (1989), that have taken a highly nuanced approach to understanding seemingly 'universal' concepts, like drought or conflict or famine, and classified them from an emic perspective. After completing this process for all three ethnic groups, the following climatic terminology was agreed upon and used throughout the interviews, as shown in Table 5.1.

Table 5.1: Climatic terminology used during community interviews

| <b>TERMINOLOGY</b>       | <b>SAMBURU</b> | <b>BORANA</b> | <b>RENDILLE</b> |
|--------------------------|----------------|---------------|-----------------|
| Rainy Condition          | Lari           | Rob           | Herr / Rob      |
| Normal Dry Condition     | N'kolong Supat | Bon           | Rob Dahn        |
| Extended Dry Condition   | N'kolong Turno | Bon Atholesa  | Nabahai         |
| Severe Drought Condition | Riai           | Oola          | Arabah          |

By using this terminology and asking people to describe conditions that were associated with each term, the following descriptions began to take shape for each group:

Rainy Condition – this is a time where everything is green, there are leaves on the trees, the grass is growing, and animals have plenty to eat. There can be areas of dense, thick bush, and the land looks productive. Water is abundant and wide-spread, being collected from temporary streams / rivers, and the smaller catchments. The animals are producing a lot of milk, and the children have enough to eat. People (particularly the young men) are at rest / leisure within their home area, and other leisure activities are going on, such as singing, dancing, and making crafts or domestic goods. This condition is characterised by the leaves and grass being green and abundant and the people being at leisure. It is apparent typically as the rains are continuing.

Normal Dry Condition – this is a time where there is still grass on the ground, but it is starting to dry. Also, the leaves are still on the trees, but they are drying up. Water is less in abundance; however, there is still enough for livestock and domestic use. People

are still at home, but they may be travelling a bit further from the *boma* in order to graze their animals, but they will return each night to their home. The animals are still producing sufficient milk for the needs of their family. This condition is characterised by drying, green grass and leaves.

Extended Dry Condition – although historically not an annual occurrence, the extended dry condition has now become part of the ‘normal’ annual cycle. This is a time where the grass has dried and has become quite scarce to the point that the leaves have completely dried on the trees and are starting to fall. Water may become scarce during this time for both livestock and domestic use, and people will need to dig deeper wells and invest a lot more time and energy into watering their animals and fetching domestic water. Some animals will stop producing milk at this time (particularly the weaker or older ones or those relying on grazing), and people will have to start moving with their herds to more distant pastures, too far away to return home in the same day. This condition is characterised by very dry, white grass and leaves that the animals will eat from the ground.

Severe Drought Condition – this is a time where even dry grass and leaves are highly scarce, and people have to resort to shaking leaves and seeds from the trees in order for the animals to have anything to eat. People have to labour very hard for their animals during severe drought and resort to practices such as finding supplementary fodder (weaver bird nests, dried maize husks, or chopping tree branches). Water is extremely scarce for people and animals, and herds will have to travel far in order to be watered. The women will have to spend a long time fetching domestic water from deep wells or digging new wells. The animals are no longer producing milk and will be found at a great distance away from their home areas. Animals will begin to die at this point from famine, or disease, or a combination of the two and will continue to die until it starts to rain. People will begin to fear that humans will start to die if the drought continues. This is the time when people will need to take their animals to sub-prime grazing areas or to the border areas in order to find sufficient pasture in these dry season refuges. This condition is characterised by hardship, lack of pasture and water, lack of food, and animals dying.



When conducting interviews across the three different ethnic groups, it was important to establish whether or not these terms were in any way contested between the groups, or even within each of the groups across ages, genders, or ecological regions. It could be that what is considered a “normal dry condition” for one group would be called an “extended dry condition” in another group, for example. I began each interview by talking with people about how they felt the landscape was at the time they were being interviewed. They were not asked to choose from the four conditions that my field assistants and I had identified, but instead, we allowed people to speak freely and would listen to how they identified the present state and what environmental or social conditions they would expect to find during that period. The overwhelming majority identified one of the four conditions listed above, and the agreement between groups and within groups was exceptionally high. This level of agreement gave us confidence that we could safely make comparisons between different sites and corresponding behaviours and also between different ethnic groups and corresponding behaviours.

Furthermore, it was important for me as the researcher to come to understand how to identify and re-calibrate my own understanding of what drought conditions look like or what could be expected during rainy conditions. The research benefitted from the fact that, when I began fieldwork in July 2009, Kenya was, by all accounts (pastoralists, European ranchers, wildlife managers, taxi drivers in Nairobi, etc.), experiencing one of the worst droughts in living memory. This helped me to understand the full range of environmental conditions that people were facing in the north, and the fieldwork was purposely scheduled so that I would be able to experience all conditions from the rainy season to extreme drought within each of the areas under investigation. I also returned to a number of areas on more than one occasion during a different season so that I could assess for myself changes in the land and how the same landscape can progress from one condition to another. This was vital in order to gain a first-hand appreciation of environmental change from season to season. The box below provides some insight into the progression of an inter-subjective viewpoint.

Box 5.1: Reflections from field notes: Inter-subjectivity and perspectives on environmental conditions, Lenchokut, December 2009

*Lenchokut, set in the foothills of the Mathews Ranges, was to my mind the place of my Samburu origins. It was the first area that I arrived at in August 2009 along with my field assistant, Raphael, without having any expectations as to what I might find. The*

*District Commissioner for Samburu East had decided that my care was to be entrusted to a local councillor and successful herd owner, Benjamin Lekamario, who would come to be my Samburu father and steadfast guardian throughout my time in Kenya. We arrived after a dusty and arduous drive to a fenced home set on top of a hill, from which I could see many other similar hills in the distance, each dotted with the familiar outline of a thorn-ringed fence protecting the small domed houses found within. I stepped out of the Land Rover and from this perch, surveyed all that I could see, as my heart began to sink. The covering was bare, dry, and brown, looking like a desolate wasteland. There was not one sliver of green to catch the eye for miles and miles in any direction. The acacia trees with their sharp thorns, even at the best of times looking dangerous and uninviting, were particularly harsh as there were no leaves to soften their appearance. Taking in the scene that spread out before me bit by bit, my only thought repeating over and over in my mind was, “How can people live here? How can it be that anyone is still standing in these conditions?”*

*In December 2009 I was again dismounting from my vehicle to step out onto the same hill and survey what was five months earlier a barren wasteland. Yet this time, my heart leapt up as a flush of relief swept over me. Where once the hillsides looked like brown scars on the landscape and the wind had whipped through the dry river bed, picking up dust in tiny cyclones, these had been replaced by patches of short, hardy tufts of grass and the sound of people in the riverbed shouting and collecting tin buckets of water from the dug well. I had returned to the beginning and found it not as I had left it, but instead, with happiness and the promise of prosperity bubbling all around. As my mother undid the latch at the back of the Land Rover and let herself out, stepping onto north Kenyan soil for the first time in order to celebrate the Christmas holidays together, she stood next to me peering out over the scene around us, and said, “My goodness, it’s totally bare isn’t it!”*

### **5.2.3 Understanding Conflict**

As discussed in chapter two, aggressive acts can take many forms from physical violence to the perceived threat of violence. Violence can be unleashed directly from the perpetrator onto the victim, or it can be delivered instead through a spiritual act, as by way of a curse. For the purposes of this thesis, the conflict that I am examining is purely that which has a physical manifestation – either animals being taken, people

fleeing from their land in fear, or individuals being injured or killed during confrontations. Most importantly, all conflict referred to in this analysis is solely inter-ethnic fighting between disparate small-scale populations and does not include intra-ethnic conflict or violence directed by the state or against the state.

Having established an agreed upon set of terminology for climatic conditions to be addressed during interviews, it was necessary to do the same for terminology dealing with aggressive conflict. After conferring with the same mediators as mentioned above, we decided to use the following vocabulary throughout the interviews:

Table 5.2: Conflict terminology used during community interviews

| TERMINOLOGY                                                            | SAMBURU    | BORANA         | RENDILLE |
|------------------------------------------------------------------------|------------|----------------|----------|
| Small Stealing                                                         | Nyamu      | Hann           | Wein     |
| Fight to retrieve animals                                              | Ngutung'at | Bua            | Solabna  |
| Unsuccessful retrieval / taking enemies' animals during retreat (verb) | Naaru      | Bojes / Bojesa | Hatu     |
| Raid                                                                   | Njore      | Dul            | Dul      |

The following provides descriptions for each of these terms:

Small Stealing – this is the type of small theft of a few animals that are taken in a back and forth (generally referred to as 1 – 1 stealing) fashion with one ethnic group taking a few animals, followed up by the other ethnic group taking a few animals. The overall characteristic of small stealing is that it is opportunistic, usually covert, and most importantly, little to no force is used. Examples of this are snatching a few animals while they are being watered, taking livestock when the herder's attentions are elsewhere, or taking animals from child herders who offer no defence or who run away at the sight of "enemies."

Fight to retrieve animals – this conflict occurs when animals have been taken from an ethnic group, which then **immediately** organises itself to get back the animals that were taken. It most often involves force or trapping / ambushing the thieves while they are in transit, before they can re-enter their own territory. The objective here is to retrieve one's property; however, people are injured in these exchanges, particularly if members

of one's ethnic group had been injured in the original theft, and the victimised party wants to enact immediate revenge.

Unsuccessful retrieval / taking enemies' animals during retreat – this conflict occurs when the retrieval of one's own animals has been unsuccessful, at which point the victimised ethnic group becomes the aggressor and takes animals from the thieves as they retreat from the unsuccessful retrieval episode. This exchange most often involves a use of force (usually meaning the use of guns or spears).

Raid – this type of conflict is the most formalised type of aggressive exchange where a raiding party meets, discusses the strategy of where to raid / which ethnic groups to be targeted, asks for volunteers to strengthen their numbers, and takes the time to gather provisions for a successful raid (food, water, spears, guns, bullets, etc.). There generally needs to be a legitimised reason for the raid (e.g., a show of strength in order to maintain and defend one's territory, or as an act of retaliation), and in some circumstances, the raid may receive prior approval by the group's elders (particularly within the Borana community). Above all else, a show and use of force (guns / spears / aggressive tactics) is the defining feature of a raid.

#### **5.2.4 Conflict Perspectives**

During fieldwork, there appeared to be very little variation amongst all three communities in how types of conflicts are identified between age groups and between the sexes. The definitions were not at all contested, and all people felt comfortable using the above terminology in reference to any skirmishes or conflict events that were being discussed. The only evident differences were more to do with the emotional / moral attachments that individuals placed on conflict events. Although there was a range of feelings associated with discussing conflicts amongst the individuals within each of these communities, there was a slight tendency towards certain attitudes that could be classified by age, but very little difference could be discerned according to gender. The youths in all three communities were almost entirely united in feeling that aggressive acts towards an enemy ethnic group were justified and necessary; however, their parents (or parents' generation) tended to preach the virtues of moderation and tempered behaviour. These differences and the apparent reasons for them will be

discussed further in chapter seven when looking at the motivations behind aggressive conflicts, but it is an important distinction.

### **5.3 Patterns of Climate and Conflict**

Utilising interview methods discussed in chapter four helped to place people within an environmental context and to reconstruct their migration histories, and episodes that occurred relative to each area, in reference to an environmental context. I would then ask the following questions:

- 1) During which climate condition would you expect there to be an increased amount of inter-ethnic conflict or do you feel that there is no connection between these things?
- 2) Why would you expect an increase in conflict during that particular time?
- 3) What type of conflict would you expect during that time? Why is that?
- 4) Does this type of conflict or other type of conflicts happen under any other climate conditions? Why / why not?
- 5) If conditions were to get drier and drought was more frequent and more severe within your community, what would you expect to happen to the levels of conflict found here? Would they increase or decrease or stay the same? What is your reasoning behind this?
- 6) If conditions were to get wetter and there was a lot more rain within your community, what would you expect to happen to the levels of conflict found here? Would they increase or decrease or stay the same? What is your reasoning behind this?

This line of questioning yielded some interesting results because it aimed to ensure that people took the time to think through how, or if, there is a connection at all between climatic conditions and levels of conflict found between ethnic groups.

After compiling all of the responses from these interviews (sample of more than 275 interviews), I then began to classify a number of patterns and themes that were emerging when people came to discuss the relationship between climatic conditions and levels of conflict between communities. These classifications are detailed in the following sections.

### 5.3.1 Conflict at Any Time

A small number of participants amongst all three ethnic groups mentioned that climatic conditions have very little to no bearing on whether or not there is conflict between ethnic groups. They stated that conflict is pervasive throughout each season and from year to year. During my fieldwork, I recorded comments such as:

“Conflict now has become a tradition in the droughts or the rain. It happens at any time because people are living in tough situations.” (Borana, elder male, border, Kambi Garba)

and

“Most conflicts are happening at any time of the year...[the thieves] can’t wait. They can’t wait for drought to come nor rain to come before conflict happens. For thieves, they are just hoping to get animals whenever so they don’t wait to go.” (Lmaskara, elder female, interior, Farakaren)

From these perspectives, it appears that the discharge of conflict and violent acts has no discernible patterns dependent on climatic conditions. In this case, conflict is an omnipresent feature of these societies, and in many ways, people who express this view seem to have resigned themselves to the fact that conflict is always a part of their lives.

However, upon comparative examination of the 17 different sub-locations under study, the view that conflict occurs regardless of climatic condition does not hold true for each area, nor is it fully representative of the majority of individuals interviewed. In reflecting upon ‘who’ experiences conflict, why, and when they do so in relation to other groups, there are discernible patterns that emerge between episodes of conflict being reported in light of corresponding climatic conditions. The following paragraphs will discuss these different climatic conditions and how conflict operates or appears in each state.

### 5.3.2 Conflict during Drought

Within each of the three ethnic groups under study, a large proportion of participants reported that they would expect, or they hear about, the greatest number of conflicts occurring during periods of intense drought (*riai*, *oola*, or *arabah*). The overwhelming

reason that is cited for an increase in conflict during extreme drought periods is the tendency for migration patterns to shift towards border areas as people search for adequate water and pasture. Border areas are quite often utilised as dry-season refuges, predominantly because they are highly-contested and therefore experience long fallow periods as a result of disuse. Extreme drought forces people to move into these areas as pastureland and water in the interior of a territory begins to dry and productivity decreases to a point that it cannot sufficiently support the animal numbers that are found there. As one man explains,

“Droughts take us closer to our enemies. There is no enemy who gets tired of looking for our animals in a drought. It is we who bring our animals to them.”  
(Samburu, elder male, interior, Lenchokut)

This quote is highly reminiscent of Terrence McCabe’s (2004) seminal work *Cattle Bring Us To Our Enemies*, discussing the mobility patterns of Turkana populations and the pressures groups face in taking their animals to resource-rich, contested border areas. In order to cope with these pressures, pastoral families in this current study explain that as the length of the drought increases over time, the interior populations move from their home areas gradually to the border, picking up comrades and kinsmen along the way. By the time the border is reached, the population of both people and animals living there is exceptionally high. This condition creates the ideal opportunity in which to take animals because drought brings those who would not normally have contact with one another together, which has historically been a rare occurrence.

#### 5.3.2.1 Avoiding Conflict During the Drought

Although the discussion above makes a clear case as to why one would expect to find an increase in the amount of conflict seen during a drought period, interviewees also pointed to a number of deterrents against fighting during dry periods that also must be considered. Primarily during periods of extreme drought, many people explained that labour demands increase when herding animals, putting a strain not only on the herd but also on the herder. As one woman explained,

“In drought, people search busily for pasture. There is no time for raiding. Also animals are weak so they can’t move quickly so they will be caught and returned by the *bua*.” (Borana, elder female, interior, Malka Daka)

The Dyson-Hudsons (1980) have also made this claim that the high labour demands found amongst livestock herders greatly reduces their ability to operate solely as warriors or to become completely militaristic. In these cases, the pastoral herding responsibilities diminish their capacity for raiding. On top of the labour demands, participants also explained that joining and planning for a raid takes time, a lot of resources (food, water, money for ammunition, etc.), and it requires a lot of physical expenditure on the part of the raider. This type of investment takes effort and attention away from one's own herd, and therefore it has the potential to jeopardise the quality and quantity of animals already owned.

“No *moran* leaves his animals in *n'kolong* and *riai* because everyone is concentrating on his own animals then.” (Samburu, elder female, interior, Resim)

People explained that under another herder's care, the animals may be more vulnerable to attack from enemies, more susceptible to predation from wildlife, and have an increased risk of malnutrition while the livestock owner is away because the 'substitute' herder will likely give preference to caring for his own animals during such a precarious time. For good reason, there is a certain amount of anxiety that herd owners feel over-worked and stressed during drought periods, and therefore they feel it is unwise to increase the burden of another individual while taking your chances in joining a raid, which could very well result in a lack of returns.

“[During the drought], I herded the cows and shoats...and didn't give the herd to any related *morans* because all of the others were busy taking care of their own animals, and I don't trust that they will take care of them like me.” (Samburu, elder male, interior, Lolkerded)

Second, respondents say that it is part of the collective good to try to keep amicable relationships with neighbouring ethnic groups at a time of drought so that both sides may have access to vital shared resources during periods of scarcity.

“They won't fight in drought because they want to make sure that each side's animals have access to shared grazing where there is grass in the middle of them. They call a 'cease fire' during these hardship times so that their animals can graze until it rains.” (Samburu, elder male, border, Lolmisigiyo)

Maintaining peace within the boundary areas allows people to have equal access to resources that are vital for their herds' survival, where these areas may in fact be a last resort for people.



“It is important to keep the peace because if peace were broken in the boundary, they have to go home, and the animals will suffer.” (Samburu, *moran*, interior, Kitich)

In this way, running away from the border due to a fear of conflict will almost certainly mean death for livestock during periods of extreme drought.

Another reason people identified to avoid conflict during times of climatic stress is that if raids were to happen in the boundary when two ethnic groups' animals are close to one another, this puts one's own herd at risk of retaliation.

“In drought, [people] go closer to the border for grazing, but each group fears one another so they don't raid because of the fear of retaliation. They don't raid when close, only small fights happen, and one animal may go to the other side. The enemy will only be very aggressive when they are far from their border because their animals will be far and protected so there won't be the possibility of retaliation.” (Samburu, elder male, border, Sereolipi)

Many respondents explained that this scenario is quite common that when the victim goes to the enemy side to retrieve his animals after they have been taken (*ngutung'at / bua / solabna*), the enemy has then opened himself up for his own animals to be taken as well (*naaru / bojesa / hatu*) and could end up much worse off than before he stole another's animals. Retaliation generally involves taking back one's stolen animals and taking the animals of the raider. When questioned about the reasons for taking others' animals as well, respondents explained that this acts as both a punitive measure and as a result of the logistical problem that the stolen herd is generally mixed within the captor's own herd, therefore making it impossible for the retaliator to take back his own animals whilst keeping the raider's animals separate. Stolen animals that remain in the boundary area will be seen by the original owners or other members of the owners' ethnic group. Herders indicated that this constant reminder that animals have been taken is very painful to a herd owner, and it is likely to cause provocation amongst his clansmen to the point that retaliation is almost certain.

A final deterrent to raiding during droughts is that, as alluded to above, the stolen animals are more likely to die during these periods, and therefore, the raids are not only likely to incite further conflict, but they are also unlikely to be lucrative.

“If the drought continues to increase in the area over time, then they can only take their animals to the border. There will be a lot of petty theft because animals are few, but raids will not happen because there will be nowhere to take the stolen animals, and so they will have to graze together in the border and respect each other’s grazing. They couldn’t go anywhere with the stolen animals.” (Samburu, elder female, border, Lolkerded)

Already there is a heavy burden placed on one’s animals during droughts with the need to find adequate water and pasture. As the original herd is already suffering and finding it problematic to meet their nutritional needs, there is little reason to add to this hardship with additional animals. The likelihood of their survival is also low in the midst of resource scarcity.

#### 5.3.2.2 Characteristics of Conflict during Drought

There are a number of characteristics that help to define the type of conflict that happens during drought-like conditions. One is that it can be classified as more small (1 – 1) stealing (*nyamu, hann, wein*) rather than full-scale raiding.

“There’s not much raiding in the dry season because they need to sort out and agree how to graze and water animals so they can overcome the drought period. This is small stealing compared to the big raids that can happen during the rain.” (Samburu, elder male, border, Lolkerded)

Due to the proximity of people to a large number of available animals and the lack of planning that is required, this type of stealing is more frequent, and it is generally opportunistic.

“Most conflict that happens in drought is because people go to the boundary. The best time to steal is to go to the boundary, and not steal right away, but instead, just protect your animals, but if one group finds an ‘opening’ over the other one, they can attack...An ‘opening’ would be something like when the majority of the herd comes to drink water and the minority is left grazing. The enemy then can take the minority.” (Samburu, elder male, interior, Resim)

As described above, to carry out large-scale raiding and capturing a lot of animals during a drought period would not be wise as there is nowhere to take the raided animals for safe grazing. The drought keeps people in the boundaries, otherwise the

animals are sure to die from malnutrition if taken back into the interior areas. Therefore, many people conclude that the persistent, clandestine stealing of a few animals from each side while in the boundary is a more beneficial scheme during this time.

### 5.3.3 Conflict during Rains

Another popular understanding amongst the participants interviewed was that more conflict occurs during rainy conditions rather than during drought-like conditions. The primary reason most often cited was because the male youth can be home during the rains with their families' animals, as there is enough pasture to graze around their home territories. Because of this, the youths are at leisure and have the time to talk, plan, and organise large-scale raiding activities.

“Most of the time, the raids happen in the rain because [*morans*] go back to the interior, relax, meet with others, and organise for raids.” (Samburu, elder male, border, Lenchokut)

People describe raids as generally not a spur-of-the-moment activity – they require a certain amount of planning, organising, and fortifying the party in numbers and supplies. They have to be arranged at a time of year that permits a raider to entrust his animals to other kinsmen in a safe environment. Furthermore, because the families and animals are experiencing relative prosperity during this time, there are enough resources (food, milk, money for ammunition and other supplies, etc.) to support major raiding events, and the raiders themselves are in good condition to carry out the physical demands of a raiding event.

“Most conflict happens in *rob* because animals get fat, there is lots of water, lots of pasture, animals have milk, and you get lots of good meat. These things contribute to conflict because animals are strong to walk, and raiders are also not hungry, thirsty, or weak so they can walk too.” (Borana, male youth, border, Gotu)

With improved conditions found during the rains, herd owners may feel more comfortable selling an animal at an increased price (as its condition has improved) that can be used to purchase raiding supplies, such as food, guns, or ammunition. These items would be too costly to purchase during a drought season, and animals sold during this time would fetch a very low market value.

Second, respondents explained that during rainfall periods, raiding parties have enough water resources available to them, and the conditions are more favourable to travel over a vast distance into enemy territory for the purpose of a raid.

“If *rob* increases, conflict will also increase because the raiding party will have plenty of water and food to travel – they will never be tired so they can attack all the time.” (Borana, elder male, interior, Malka Daka)

Raiders report that the journey into enemy territory can be arduous as a raiding party may need to cross more than 100 km before meeting a neighbouring ethnic group. After stealing the animals, the raiding party would then need to travel back into their territory, however this time while driving a large herd of livestock. The physical demands of such a journey should not be underestimated. If the raid is well-planned, the party will move through areas that have sufficient drinking water, plenty of shade, and at a time when the climate is much cooler, as can be found during the rains.

Third, the rainy season helps to obscure those about to raid and those who have successfully raided.

“During 1997, all people were living in town due to insecurity because it was very thick bush here due to the heavy El Niño rains. The Borana attacked here by spending the night at Sere-rongai before they came here. The Borana planned to come here then due to the amount of cover here.” (Samburu, elder male, border, Sereolipi)

Respondents claim that thick bush found during rainy conditions is essential for launching a successful attack as the element of surprise helps to ensure an advantage for the raider by reducing the amount of time the victims have to either prepare for the attack or to run away with their animals. As the landscape in northern Kenya can become quite open during the dry season with large sweeping vistas, an enemy can be spotted at a great distance, thus reducing the chances of a successful raid. Furthermore, a number of people interviewed mentioned that once a raiding party has stolen the livestock and is driving them back into their territory, the rain helps to obscure the footprints of the raiders and of the animals. These footprints are the key means by which the herd owners and security personnel track the stolen animals in order to return them and identify the perpetrators, as members of the clan / ethnic group would not divulge such information freely. If the stolen animals are not found, the footprints still

need to be tracked to their exact origin for compensation to be paid from one ethnic group to another. Without these, the herd owner receives nothing in return for his loss.

Finally, the rainy season is a time where defences are diminished within the border populations.

“If I were living all the time in the boundary, I would raid more during the rains because animals then are very healthy and fat, and there will be fewer enemies in the boundary so the boundary communities are more vulnerable to attack.”  
(Samburu, *moran*, interior, Kitich)

The reduction of enemy numbers in the border during the rains creates the opportunity for an unfair advantage between potential raiders and vulnerable border settlements. Although the journey into enemy territory may be arduous, the likelihood of success once there is increased tremendously due to improved man / firepower.

#### 5.3.3.1 Avoiding Conflict during Rains

Despite the rainy season appearing to be an ideal time to conduct raids, interviewees cite a number of reasons for not initiating conflicts under these conditions. Primarily people noted that

“During the rains, you have lots of pasture so you don’t need to attack.” (Borana, elder male, border, Kambi Garba)

The rainy season allows people once again to become more self-sufficient and start to ‘grow up’ their animals once more. Many people said that the rains give them time to focus on their own animals so there is no need to look for other people’s animals. They stress that it is through their own labour and management that they can recover from any livestock losses incurred during the drought.

Second, when the rains come to northern Kenya, they seem to come all at once, which can cause the small, ephemeral streams to flood over large areas and the major rivers to become deep and wide. As one woman explains,

“There are natural barriers in the rains, the riverbeds are flowing and the Ewaso may flood so you cannot pass it.” (Borana, elder female, interior, Malka Daka)

The Ewaso Nyiro is the major source of water in the north that passes through the territories and across the boundaries of a number of ethnic groups. Once it fills during the rains, it is impossible to traverse, save for one permanent road, and even this was washed away in 2010 following heavy rainfall. As the chief from Gotu, a Borana border settlement close to the Ewaso Nyiro, explained to me that once the rains come, his people must be on the ‘right’ side of the river (meaning closer to the larger Borana settlements), otherwise they will be cut-off from their people until the rains stop, and the Samburu will have access to raid them. The river offers them protection and peace of mind during the rainy season. As he explains:

“It is good to be on the south of the river during rains because Samburu and Rendille may attack here so it is good to be on the other side as the river floods, and that creates a barrier between us and the Samburu. It’s not that Samburu and Rendille raid more in the rainy season, it’s just that the Borana use the flooded river as an opportunity that it’s a natural barrier so people can relax then if they are on the south side. Samburu are afraid to cross the river because they know they can’t get back with the animals. Also, the Borana here on the north side don’t want to be cut off from the town and food when the river floods if they are on north side.” (Borana, elder male, border, Gotu)

Finally, raiding in the rains after a drought may, in fact, not be a highly lucrative pursuit. A planned raid that happens during the rainy season takes time, effort, manpower, and resources. The raiding party may be up to 100 – 200 men strong. With the likely reduction of livestock during the drought months, which estimates in this area suggest approximately 70%, raids of border areas that happen during the drought may produce very few stolen animals. As one Borana elder explains, in raids that occur during the rains after a major drought has ended,

“the problem is, there is nothing to take on the side that was more affected.”  
(Borana, elder male, border, Isiolo)

Raiders report that once these animals have been divided amongst the raiding party, individuals would be lucky to receive 1 – 2 animals each, if any at all. Raiding occurs for a number of reasons (see chapter seven for more information on this); however, a major reason to raid is to accumulate animals into one’s own herd. Without this, the motivation for raiding during the rainy months is diminished.

### 5.3.3.2 Characteristics of Conflict during Rains

As demonstrated in the preceding paragraphs, raiding that occurs during the rains is characterised by large-scale, well-equipped, and well-planned raids involving many people and resources. The main reasons behind this is that people are comparatively prosperous during the rains to afford the raiding costs, the raiding party are at leisure and can invest in the planning and organising of a raid, animals that are stolen are more likely to be retained in the interior far from their original owners, and the animals' chances of survival increase tremendously when vegetation is more abundant during rainy conditions. The following quote helps to summarise some of the differences between the small-scale stealing that occurs during the drought and the characteristically larger raids that happen in the rainy season:

“The Samburu go to steal from others during the dry season because they are in contact with each other in the boundaries at that time. The types of conflict during this period are the 1 – 1 or 2 – 2 types. The big raid can only occur when the 1 – 1 type of stealing gets to be too much so the two sides will split apart from each other and organise a very big raid. This is just the *morans*. Big raids can be emergency raids if the community is upset at what the Borana have been doing. Otherwise, they can take their time to organise and wait until the conditions are good, there is milk, and things are better because people may have to trek for a long distance so they need water along the way. Also, organising a successful raid takes time to plan well so they need time to relax for this.” (Samburu, elder male, border, Remote)

### 5.3.3.3 Conflict at the End of Drought / Start of Rains

In trying to understand the ideal time for stealing animals where there are trade-offs between when one has access to a neighbour's animals and whether the stolen animals will be re-captured or will survive, people refer to one time above all others where opportunities and strategies are optimal. When a drought is coming to a close as the first rain showers are being reported within a population's interior areas, there is a small but significant window of opportunity that herders try to capitalise on whilst still in the border areas. One Samburu man explains,

“When it starts to rain, it is a major problem because as people leave the border, they snatch animals in order to go back with prizes.” (Samburu, elder male, border, Sereolipi)

At this time, conflict explodes due to people getting ready to go back to the safety of the interior where stolen animals will be able to go undetected and will survive during the rainy conditions. This is the raiding equivalent of a ‘smash and grab’ tactic, and it is highly effective as it requires little / no planning, somewhat reduced effort than rainy season raiding, little financial or time investment, and a higher assurance / known outcome that there are animals to be taken. The mechanics of this strategy are rather interesting, as one woman explains,

“conflict starts when the clouds are starting to form in their territory. Each group starts to secretly move their animals back into their territory, then they attack.” (Samburu, elder female, border, Lolkerded)

Even if relations have been relatively cordial while two ethnic groups are grazing in the border areas together during drought conditions, at the first signs of rain, they will start to move their own animals back towards their interior for protection. Only when they feel that their animals are safe from potential retaliation will they strike and return to their home territory with as many animals as it is possible to obtain during this small window of opportunity.

### **5.3.4 Interior versus Border Experiences**

Not only is it relevant to consider the climatic conditions under which conflict occurs between groups and what the characteristics are of each type of conflict happening at a given time, but it is also important to consider which groups of people are affected during conflicts. Furthermore, the spatial distribution of the actors and their roles, either as perpetrator or victim, must also be taken into consideration. There are a number of distinctions that could be made here about how conflict disproportionately affects elders versus youths or males versus females, for example. However, the two broadest categories for comparison that come out of the ethnographic data are whether members of an ethnic group live within the interior of a territory versus living within one of the border regions. The distinction between risks associated with border areas compared to those in interior regions has also been commented on in work by Smith,



Barrett and Box (2001) in relation to pastoral populations. One Samburu woman helps to illustrate this difference when she explains,

“Those who live in the interior will not have any conflict during the middle of the rains because they will come back to their [interior] sides. Those who live close to the boundary are more protected during the drought if they don’t move because those from the interior will go beyond them and form a ‘wall’ at the boundary so they are more protected then. During the rains, the ‘wall’ leaves, and they are left open to attack. They are actually more protected during the drought because people move beyond them, and they have strength in numbers.”  
(Samburu, elder female, interior, Remote)

This explanation is very telling because it demonstrates that depending on where one typically lives and grazes during the rainy conditions strongly influences when, or if, he or she will be the victim of conflict. A Samburu woman living within a border area goes on to say that,

“There is more conflict during the rainy season because their animals are home close to the Pokot, and in the dry season, they take animals closer to [the interior area]. In February through August, there’s rain here so there is insecurity here. For other people, this is vice versa, and so they come here in the drought season, and they get insecurity here then.” (Samburu, elder female, border, Lolmisigiyoioi)

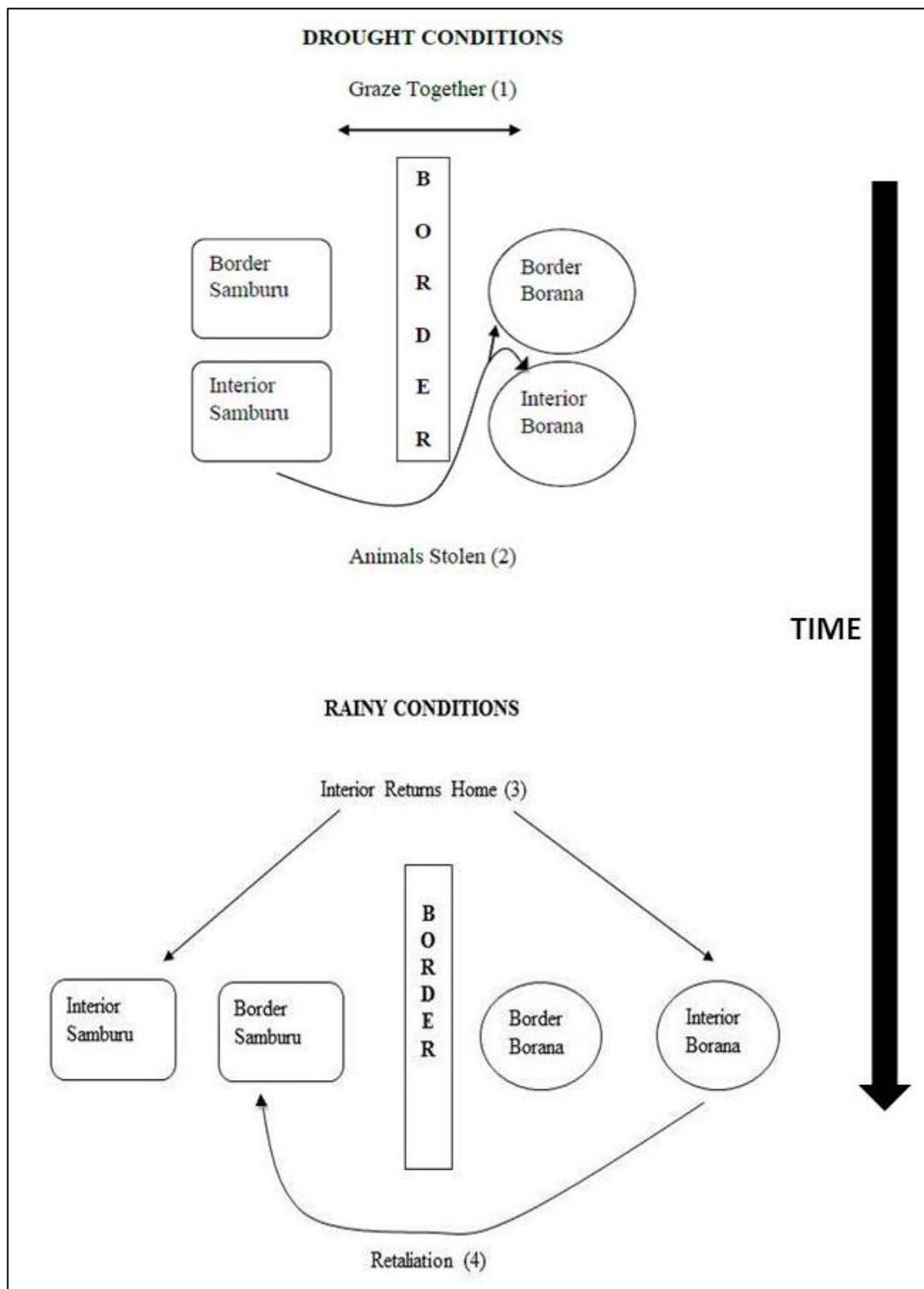
What can be assessed from these quotes is that, due to the buffer that border populations provide most of the year, it is mainly interior populations who become the victims of conflict during drought conditions when they have to move from their protected areas into contested border regions. However, as demonstrated earlier in this chapter, interior populations can be the perpetrators of conflict incidents during either drought conditions, characterised by small, frequent, opportunistic stealing, or during rainy conditions when they can carry out well-planned, large-scale raiding. In contrast, border populations, due to their perpetual proximity to neighbouring ethnic groups, can be the victims of conflict under any climatic condition, however their *relative* level of conflict reduces during drought conditions because they tend not to be the most exterior (closest to the enemy) group at that time, where the interior populations have moved slightly beyond them (in order to access better grazing), and there is greater strength in numbers that the risk of being raided is spread over a larger group of people. The situation changes

under rainy conditions when the border populations are left more vulnerable as the interior communities move back into their home areas, and the conditions become favourable for large-scale raiding from people living in the border. A number of participants noted that as perpetrators, border populations may become involved in conflicts during drought conditions, but they are less likely to do so during rainy conditions. The reason behind this is the raiders would have to move with the stolen animals into the interior areas to avoid detection, which is already a well-populated area, or they would need to send their stolen livestock into the interior with another herder, therefore not receiving the greatest benefit from obtaining these animals. Furthermore, during rainy conditions, it behoves the border populations to maintain peaceful relations with their neighbours in order to try to reduce the possibility of attack when manpower is at its lowest, and people in the border have the most to lose.

From this description, one can see that there is a great disparity between which subsets of a population are involved in conflict incidents and the role that each subset plays in the conflict. As recalled to me by one very shrewd Samburu man, he described the following relationship that I have diagrammed below in Figure 5.2:

Figure 5.2: Explanation of interior and border populations' roles in conflict during drought and rainy conditions, taken from an interview with Samburu elder male, interior, Lenchokut:

- 1) Interior moves to border during drought. Neighbouring groups graze together and start small stealing
- 2) the Interior grabs as many animals as possible once it begins to rain
- 3) the Interior leaves to the safety of the interior area with their animals
- 4) the Border populations are left vulnerable to raids from the neighbours during the rainy season.



Clearly from this relationship there seems to be an unfair burden of stealing that the interior populations put on the border populations. One of the Samburu chiefs who lived year-round in the border regions close to the Borana communities told me that as a chief, he tries to counsel the interior youth who come through his location not to cause problems, not to take animals, and to go away with nothing. Otherwise, they are likely to cause substantial problems for him and his people if they steal, pass through his area with the stolen animals, and then retreat back into the interior. The enemy will follow the livestock and raider footprints, and once happening upon the chief's area, unable to find their own animals, they will take the animals of his people in retaliation. This was a source of much stress for the chief and one that he had to monitor very closely by remaining vigilant to any would-be raiders of his ethnic group in the area.

This relationship begs the question: why does anyone choose to live in the boundaries at all when they seem to be rife with problems? Briefly, people cited three main reasons that were benefits to living in border regions. The first is that border areas tend to have access to major roads (of which there are few in the north) and to larger settlements / towns where goods and services can be obtained. Second, because the borders are hotly-contested regions, there are not as many animals present within these areas; therefore, there is lower grazing pressure and more available vegetation for grazing animals. Finally, by default, within any given territory someone has to be the most external subgroup of people living closest to the neighbouring territory. Therefore, for the purposes of this study, "border populations" are not necessarily living within earshot of a neighbouring ethnic group. Instead, it simply means that they are the subset of their ethnic community that is living closest to the neighbouring ethnic group. The neighbouring groups can even be more than 100 km away from one another, which is seen in some highly contested areas.

### **5.3.5 Reduced Conflict: Long-term Trends**

Based on my observations and discussions with research participants, I inferred a number of time periods that could be categorised as relatively peaceful between different ethnic groups. These time periods can be separated into both long-term trends and also as annual fluctuations. Over year to year timescales, I can hypothesise that conflict would be less likely to happen if there was continuous, sufficient rainfall regularly throughout the year and from one year to the next. Under these conditions,

people could stay closer to their home areas, move about their territory grazing their animals freely, not have to go to the border areas for grazing, and therefore not have to mix or engage in conflicts with their neighbours, which would also reduce the pressure for retaliation. These conditions would create a more relaxed, prosperous situation for pastoralists where they would not be forced into confronting one another. There would also be abundant resources throughout their territory where they could accumulate their animals and utilise them for their own benefit. There would still be raiding that is characteristic of that which normally occurs during rainy conditions, as discussed, but it would be greatly reduced from current levels in the north because favourable rainy conditions would reduce a number of triggers that instigate conflict, such as poverty or opportunity (see chapter seven for a more detailed explanation of causes of conflict). However, the major problem with testing this theory is that there are very few cases, if any, where conditions have remained favourable for such long periods of time. When I asked a Borana man if there had ever been a period of ten years where pasture and water were continuously plentiful and no effects of drought in the area, he responded,

“No, there has always been *oola*. There has always been conflict too.” (Borana, elder male, interior, Malka Daka)

The other long-term trend that may correlate with a reduction in conflict between disparate communities (other socio-political factors notwithstanding) would be if there were predictable, ‘regular’ rains followed by ‘regular’ dry season periods. “Regular” here is a rather difficult term to define but, for the sake of simplicity, it would mean a rainfall period that lasted long enough to provide enough pasture and water at home to graze the livestock freely with minimum labour, but not too much rain that the male youth were excessively idle and essentially unemployed as herders due to the abundance of leisure time at home. The dry season would be long enough that the male youth remained employed and moving the animals around for pasture, but not too long that resource scarcity would force them into the border areas. This kind of regularity would likely provide the ideal conditions necessary to greatly reduce the amount of conflict seen between different ethnic groups, beyond that which would be expected in the previous scenario. The reasons being that, people would not have to go to the border areas, livestock would likely not die off due to the results of drought and malnutrition, and the male youth would have less leisure time in which to potentially create problems with neighbouring groups. Ultimately, this condition is somewhat ‘artificial’ as it is a composite of climatic conditions that people associate with reductions in conflict

incidents; however, the likelihood of ‘regular’ rains and ‘regular dry seasons’ across multiple years is highly improbable.

### **5.3.6 Reduced Conflict: Annual Occurrences**

The above two scenarios are ‘idealised’ situations based on long-term trends that rarely occur. Based on current observations of climatic conditions in northern Kenya, there are two periods during the course of a year where one would expect to see a drastic reduction, or lull, in the amount of conflict reported between communities. The first of these periods is after the rains have started but before the land and animals have had the opportunity to recover considerably. As detailed earlier in this chapter, at the very start of the rains after a drought period where two communities are found in the border together, there is an explosion of conflict as the proximity to another’s animals creates opportunity, and the onset of the rains provides the ideal climatic conditions in which to take stolen livestock back to the interior. However, once this initial injection of conflict has subsided, people report that they spend the next phase returning home, re-connecting with their kinsmen, enjoying their new-found free time and investing in leisure activities. It is during this time that the focus is clearly on recovery: socially, physically, financially, and environmentally. It is a time to take stock of what has happened in the preceding months, to re-cooperate, to begin to “grow-up” what is left of one’s herd, and to enjoy down-time. It may take some time to recover, and raiding will likely wait until animals start to “come up” again, in number and in body condition in order to make the raid a worthwhile venture.

After this time passes and people move into the middle of the rainy conditions, where the land and animals have recovered significantly, raids may once again start, as explained in the discussion on rainy condition raiding earlier in this chapter. After this time, the land will pass through the normal dry season, where people are still grazing their animals around their home areas, and then it will move to the extended dry season, where animals will have to be taken further afield. It is during this time that the work load increases significantly, domestic resources such as milk and water are reduced, and the male youth will once again be in high demand to start to take the livestock to grazing pastures away from the home that are too far to return to the home with the animals at the end of the day. Because of the high labour demands associated with this timeframe, there would be another relative lull in conflict, as leisure time has been

greatly reduced, the male youth are fully employed, and people are labouring more in preparation for an extended dry season that has the potential to turn into drought-like conditions should the rainy season not arrive. Many participants state that it is during this time that their thoughts turn inwardly as each man looks to manage his own animals and to build resilience against possible resource scarcity.

Table 5.3 below summarises each season discussed in this chapter, the levels of relative conflict predicted during each condition, who is affected, the reasons why conflict would be kept in check under each condition, and the characterisation of the types of conflict that occur in each period.

Table 5.3: Summary of the climatic conditions and associated conflict behaviour discussed in this chapter

| ESTABLISHED DROUGHT CONDITIONS                                                                                                                                                                                                                                                                                | START OF THE RAINS                                                                                            | RAINS            | ESTABLISHED RAINY CONDITIONS                                                                                                                                                                                                                                                                    | DRY              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <u>Border vs Interior</u> <ul style="list-style-type: none"> <li>• Interior moves beyond Border</li> <li>• Interior can steal and can be stolen from</li> <li>• Border stolen from less b/c of fortification from Interior</li> <li>• Border can steal, but stolen animals will go to the interior</li> </ul> | <u>Border vs Interior</u><br>Same relationship as during the drought conditions, yet stealing <b>explodes</b> | Lull in conflict | <u>Border vs Interior</u> <ul style="list-style-type: none"> <li>• Interior prepares for raid</li> <li>• Border gathers intelligence and supports interior</li> <li>• Interior raids enemy Border and takes animals back to the interior</li> <li>• Border more susceptible to raids</li> </ul> | Lull in conflict |
| <u>Stealing Kept in Check By:</u> <ul style="list-style-type: none"> <li>• People are preoccupied / busy herding</li> <li>• People worried about retaliation / safety of own animals</li> <li>• Necessary to keep peace to access water &amp;</li> </ul>                                                      | <u>Stealing Kept in Check By:</u><br>Stealing is not kept in check                                            |                  | <u>Raiding Kept in Check By:</u> <ul style="list-style-type: none"> <li>• People are capitalising on prosperity in the land</li> <li>• Rain can make natural borders b/w enemies</li> <li>• Stock numbers may be so low that stealing isn't</li> </ul>                                          |                  |

|                                                                                                                                            |                                                                                                                                                                                          |  |                                                                                                                                                |  |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------|--|
| grazing<br>• Stolen animals<br>will die in<br>drought                                                                                      |                                                                                                                                                                                          |  | lucrative                                                                                                                                      |  |
| <u>Conflict</u><br><u>Characterisation</u><br>Numerous, small<br>stealing / petty<br>theft events<br>without force or<br>with little force | <u>Conflict</u><br><u>Characterisation</u><br>Rampant,<br>unplanned stealing<br>and raiding, with<br>use of force to take<br>as many animals as<br>possible in a short<br>amount of time |  | <u>Conflict</u><br><u>Characterisation</u><br>Large, well-<br>organised raids<br>using lethal force to<br>steal as many<br>animals as possible |  |

## 5.4 ‘Logical’ Progression and Thresholds

After talking at length with people in interviews about the time periods when they expect to see conflict occurring based on their observations and understanding of conflict, I would ask them two final questions. The first was: if droughts were to increase in frequency and severity in the future, what do you think would happen to the conflict levels? The second question was: if rains were to increase in the future, what would you expect to happen to the conflict levels? Looking at the first question, many people responded in a way that ‘logically’ coincided with the relationship between climate conditions and conflict that they had discussed during the course of the interview. For instance, if a respondent said during the interview that conflict is associated with drought periods, then he / she may have responded to the first question with:

“If droughts increase in the future, I think conflicts will increase because animals will all migrate to the same areas in other’s territory, and the two sides will fight to have access to grass” (Samburu, elder female, Resim),

or

“If droughts increase, there will be a massacre of people because of the increase in poverty. [People] will look for livestock in other communities.” (Borana, elder male, Malka Daka)



This type of response follows a ‘logical’ progression, i.e. conflict is typically found in drought periods; therefore, if droughts were to increase in the future, then you would expect conflict to also increase. However, what was an interesting result from this line of questioning was that in almost half of the interviewees polled, their responses did not follow with any type of ‘logical’ progression. To clarify, this does not imply that the response was arrived at without reasoning or understanding, but simply that the given response did not match the expected response based on the relationship between climatic conditions and conflict levels that had been established during the interview. Some examples of these responses are:

“If drought increases in the future, conflict will decrease because people will be very busy searching for pasture, you have no time to raid. Also animals will be thin so people won’t be stealing them” (Borana, male youth, Malka Daka),

or

“If droughts increase in the future, conflict will reduce because the pasture area will decrease so there will be nowhere to take raided cows.” (Samburu, elder male, Resim)

Likewise, when asking the second question to individuals who had previously stated that raids were more likely to occur during the rainy season, they may reply:

“If rains increase in the future, conflict will increase because people will have plenty of water and food so the raiding party will have plenty to support them. They will feel more energetic and boastful so they will attack.” (Borana, elder male, Daka Dhima)

However, many of these individuals were as likely to respond in the following way:

“If rains increased in the future, conflict will decrease because reduction of conflict is caused by enough pasture and water so people are satisfied that they are not hungry. Also, there are natural barriers – the *darers* are flowing and the Ewaso may flood so you cannot pass it.” (Borana, elder female, Daka Dhima)

This result came as a surprise to me at first as the responses did not reflect an expected ‘logical’ progression. However, the reasoning behind these responses complies with the results presented in this chapter. More importantly, I would argue that these unexpected responses potentially reflect the idea of climatic thresholds, that when reached, they change the nature of the relationship between climatic conditions and conflict behaviour.

In this way, increasing frequency of drought may be associated with increasing conflict levels until a point at which the severity of the drought makes raiding physically, logistically, or economically undesirable. As we can see from the above quotes, the same threshold principle may also be applied to increases in rainfall. The following chapter will examine these relationships more closely, with a look towards incorporating an understanding of critical climate-conflict thresholds.

## **5.5 Discussion and Conclusions**

In this chapter, each of the climatic conditions and their associated conflict levels has been discussed in isolation from one another. However, it is important to question whether or not the associations established under one climatic condition have any bearing on the associations found under another climatic condition. For instance, many people I spoke with made reference to the concept of escalation.

“In the drought season people go to the border and then just as it starts to rain, they grab animals so they can go home with them. That happened at the end of this drought in September 2009. This starts the conflict because then the other side needs to retaliate back and forth.” (Samburu, elder male, border, Lolkerded)

It seems that once reaching the border, relationships may start out as cordial; however over time, the petty small stealing of animals from each side that is characteristic of drought conditions will eventually escalate into a full-scale raid, which sets the scene for rainy condition raiding. People say that there is a certain “grudge” that starts during the drought from the persistent irritation of small stealing, each side progressively gaining collectively more and more animals to the point that one side feels that something must be done to try to stop the small stealing or gain back a portion of what they feel they have lost. This is particularly true the longer a drought continues, and therefore the longer these two populations must stay together in the boundary areas.

This being the case, then it seems that the drought condition here may be the motivating factor, or the initial condition, that sets off a series of aggressive interactions between the two sides. This begs the question: without drought, would conflicts happen at all? I believe, as demonstrated above, that the answer to that question is “yes,” however maybe in a diminished capacity or for different reasons that are not related to the resulting effects of drought conditions. Chapter seven will explore this question in

further detail when I discuss the motivations behind each type of conflict that is witnessed in northern Kenya.

This chapter ends as it began in saying that to a removed, outside observer, it may appear that conflict is occurring at all times in northern Kenya. It is also sometimes difficult to separate the rhetoric of “pastoralists are always fighting” from reality. Part of the problem lies in the fact that there are a considerable number of disparate ethnic groups spread throughout the northern region, which is an area characterised by spatially heterogeneous rainfall patterns. When two groups are experiencing rainy conditions, there are two other groups who may be living under extended dry conditions. It is rare, although it has happened, that all of the northern territories experience the exact same conditions at the exact same time. However, with this type of spatial and temporal heterogeneity, it will appear to an outsider that pastoralists do continuously fight because the conditions will be suitable somewhere in the north at any given time to create the opportunity to realise a potential conflict between two neighbouring groups. Furthermore, as will be discussed in the following chapter, conflict episodes are more widely recorded than instances demonstrating cooperation between two ethnic groups. This creates a bias that only strengthens the sentiment that pastoralist communities are always fighting. However, this chapter sought to analyse how conflict is defined, the nature of inter-ethnic conflict, who are the actors, how they engage in conflict, and under which environmental conditions are conflicts more likely to occur. It is only armed with this understanding that we can start to examine whether or not conflict is as pervasive from year to year, regardless of the types of climatic conditions that are found within each year.

# Chapter 6: Statistical Analysis of Climatic Conditions and Conflict

---

## 6.1 Introduction

The previous chapter suggests a positive relationship exists between drought conditions and inter-ethnic conflict; however, the chapter also shows that this relationship is not as straight-forward as one might think. Firstly, there are compelling motivations for not aggressing during drought periods, and reasons for engaging in conflict can also exist outside of drought periods. This current chapter will seek to analyse the relationship between drought-induced resource scarcity and conflict through quantitative applications. Statistical analyses used in this way can help to test some of the hypotheses raised in the previous chapter, therefore contributing to more robust results. The aim here is to ascertain the strength of the relationship that exists between drought prevalence and inter-ethnic conflict levels in northern Kenya.

## 6.2 Defining Variables

### 6.2.1 Conflict and Cooperation Variables

One of the key objectives of this study is not to focus simply on a human inclination towards competitive, aggressive behaviour, but also to incorporate an understanding of human potentials for pro-social behaviours. Given north Kenyan pastoral communities' proclivity for intra-group cooperation to manage unpredictable environments and resources, why then do I focus my attentions on quantifying only conflict incidents rather than including cooperative incidents? The answer to this question is partly a methodological one: it is very difficult as a third party to observe and record cooperative instances between ethnic groups or for informants to recall cooperative experiences as they are somewhat more obtuse and subtly woven into the fabric of people's lives. In truth, there are times when disparate ethnic groups may share access to wells, graze alongside one another, or have been known to trade livestock goods with one another; however, I was not directly witness to any such cooperative instances, and it is problematic for a participant to recall when, how, and why these instances took

place. In contrast, an informant is more likely to be able to recall with great detail and accuracy a conflict incident where animals may have been taken, or people injured, or territory was lost to a neighbouring ethnic group. These are the instances that are clear in people's minds and not necessarily the more fleeting experiences of watering one's animals together, for instance. Although I am only able to quantify conflict episodes in this thesis, the importance of cooperative behaviours is discussed at length in later chapters, highlighting the significance of non-aggressive and conciliatory behaviours between ethnic groups.

### **6.2.2 Numerical Value of Drought**

The first issue to manage in the statistical analysis of the relationship between drought and conflict is the quantification of climatic conditions. The previous chapter highlighted contextual and descriptive depictions of drought; however, there are difficulties in quantifying these conditions. Some ecological studies have defined drought in meteorological terms when rainfall is less than half of the long-term average (Hendy 2001). The problem with applying this meteorological definition to north Kenyan pastoral populations is that the climate here is highly variable and prone to perturbations and vast fluctuations over time. Thus, assessing drought in terms of its deviation from a long-term average would hide, or smooth out, the effects of these perturbations. As demonstrated in the previous chapter, it may be climatic thresholds, rather than averages, that are more important in driving behavioural changes. Low (1979) strengthens this argument when she says that populations are more likely to react to climatic extremes encountered rather than climatic means, and any statistical analysis should reflect this idea. The annual spatial distribution of rainfall in northern Kenya ranges from less than 250mm of rain each year in the northern lowlands to over 750mm of rain per year in more mountainous regions (Markakis 1998). It is with these ranges in mind that a numerical definition of drought can be arrived at in the following sections.

### **6.2.3 Lag-time Effects**

Another effect that was raised in the preceding chapter was the issue of lag-time, both as "rainfall lag" and "behavioural lag." Many participants have stated that multiple consecutive years of insufficient (but not drought-level) rainfall can have a similar effect to a single-year acute drought episode. If the rainfall data were only analysed as

discrete variables, then the effects from multiple years of low rainfall (but not necessarily drought) would not be picked up in the analysis. Therefore, this approach will need to incorporate multiple consecutive years of insufficient rainfall into the drought index. Furthermore, as we have seen through the ethnographic analysis, pastoralists affected during drought conditions may postpone the initiation of conflict until a time when the drought conditions have broken. In this case, there is a behavioural lag-time between the drought event and the resulting behavioural outcome, which will also have to be incorporated into this analysis.

#### **6.2.4 Spatial Distribution of Drought**

Finally, as these are migratory populations, an understanding of the spatial distribution of climatic conditions in a given year is essential. Using only one data source (i.e., one weather station) will only reflect the conditions found at one point in the landscape; however, due to the heterogeneous distribution of rainfall throughout the region, one source does not provide enough information about the climatic conditions elsewhere in the same time period. As long as there is a distribution of rainfall, one area experiencing drought-like conditions in a given year will not generally have negative effects on a nomadic population. Therefore, this study will need to incorporate an understanding of covariate risk throughout the region rather than simply at a fixed point.

#### **6.2.5 Comparative Statistical Analysis**

Witsenburg and Roba (2003, 2007) tested the theory that increasing resource scarcity leads to increases in human violence among pastoralists in northern Kenya / southern Ethiopia, with their results indicating that no correlations were found. In fact, they concluded that violent events were most often associated with periods of adequate rainfall and relative prosperity. Although Witsenburg and Roba's study is the most relevant to this thesis, as there is overlap of ethnic groups, of geographic location, and of central research question (relationship between resource scarcity and conflict incidents), there are a number of distinctions that need to be highlighted. Table 6.1 below summarises these vital differences:

Table 6.1: Differences in research design for statistical analysis of drought and conflict in two studies of north Kenyan pastoralists

| <b>Witsenburg and Roba (2003, 2007)</b>                                                                                                                                                              | <b>This Study</b>                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| All raids, murders, and armed attacks were included between ethnic groups and non-ethnic group entities. Politically-motivated attacks, police brutalities, army abductions, etc. were also included | Only conflict incidents occurring between ethnic groups                        |
| 1 data source for rainfall was chosen (Marsabit Mountain), which typically receives between 800 – 1000 mm of rainfall annually                                                                       | 4 data sources for rainfall were chosen, distributed throughout the study area |
| Discrete relationships were assessed                                                                                                                                                                 | Temporal lag-time and behavioural lag-time variables are included              |
| Each data point is a 3 year average, therefore smoothing any perturbation effects                                                                                                                    | Data for each year are used in the analysis                                    |

This current analysis builds on and extends that of Witsenburg and Roba in important ways by incorporating the complexities of rangeland dynamics within arid ecosystems and associated human behaviours necessary to test the relationship between resource scarcity and conflict.

## **6.3 Statistical Analysis**

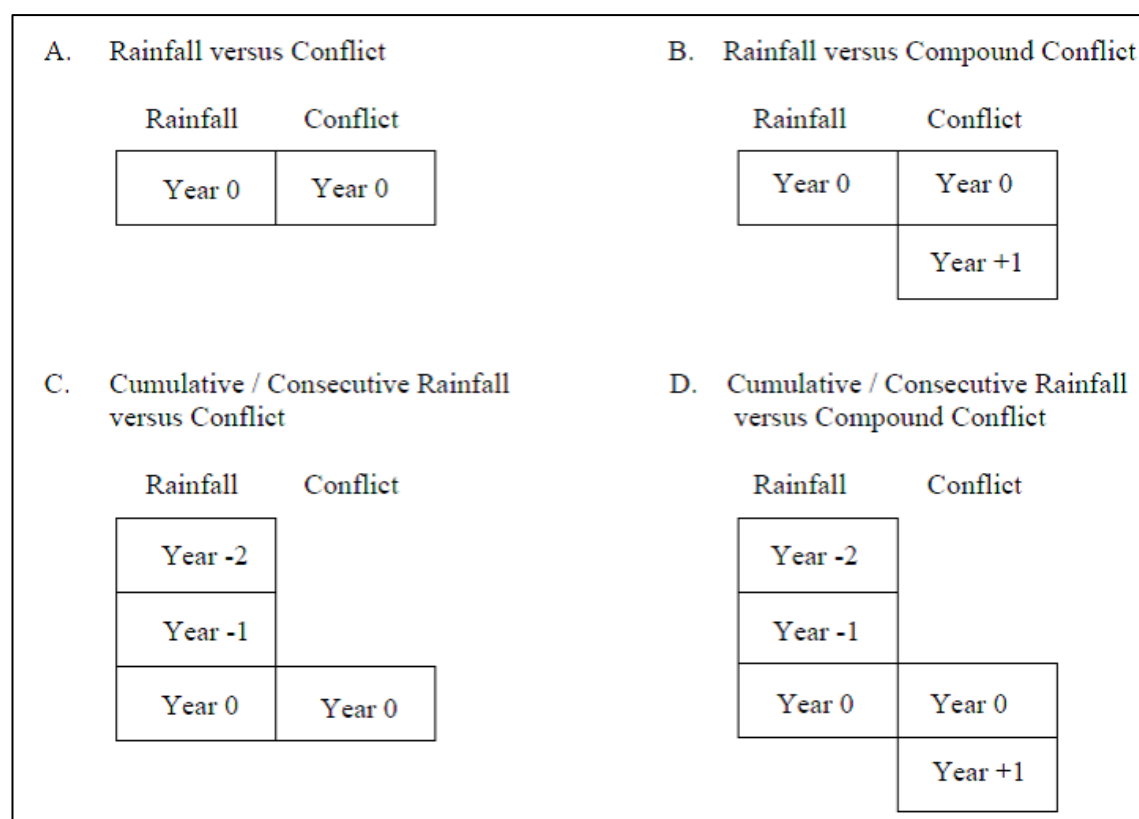
### **6.3.1 Hypotheses and Relationships**

Taking the above approach into consideration, this study will test the following hypotheses regarding the relationship between drought-induced resource scarcity and conflict incidence levels:

- 1) Years with extreme low rainfall have higher levels of inter-ethnic conflict than years without extremely low rainfall.
- 2) Years with extremely high rainfall have higher levels of inter-ethnic conflict than years without extremely high rainfall.
- 3) Years with extremes of rainfall (both high and low) have higher levels of inter-ethnic conflict than years without extreme rainfall.

The methods employed in testing these hypotheses needed to take into consideration the complex nature of rangeland dynamics within disequilibrium systems, the spatial and temporal heterogeneity of rainfall found in northern Kenya, the behavioural flexibility of pastoral populations to opportunistically utilise available resources, and the concept of “lag-time” as previously discussed in the above sections. Again, the concept of “lag” here refers to both “rainfall lag” (i.e., cumulative effects of insufficient rain over a number of years producing drought-like conditions) and “behavioural lag” (i.e., drought-like conditions found in one year affecting behaviours found in that year and behaviours found in the following year). Figure 6.1 provides a graphic representation of the different relationships that will be discussed in this chapter.

Figure 6.1: Four types of relationships to be tested by the eight hypotheses



|                |                                                                                                                                                                             |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relationship A | Rainfall in a discrete year affects the number of conflicts found in the same year (non-lag relationship)                                                                   |
| Relationship B | Rainfall in a discrete year affects the number of conflicts found in the same year plus the number of conflicts found in the subsequent year (behavioural lag relationship) |
| Relationship C | Cumulative insufficient rainfall over a period of 2 or 3 years affects the                                                                                                  |



|                |                                                                                                                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | number of conflicts found in the terminal year of insufficient rainfall (rainfall lag relationship)                                                                                                                                                      |
| Relationship D | Cumulative insufficient rainfall over a period of 2 or 3 years affects the number of conflicts found in the terminal year of insufficient rainfall plus the number of conflicts found in the subsequent year (behavioural and rainfall lag relationship) |

Hypotheses 1 – 3 are all represented in the relationship as described in Relationship A (no lag). These same three hypotheses can be further tested using the lag relationship as described in Relationship B (behavioural lag) with the following three hypotheses:

- 4) Years with extremely low rainfall have higher levels of inter-ethnic conflict in the same year and in the following year than years without extremely low rainfall.
- 5) Years with extremely high rainfall have higher levels of inter-ethnic conflict in the same year and in the following year than years without extremely high rainfall.
- 6) Years with extremes of rainfall (both high and low) have higher levels of inter-ethnic conflict in the same year and in the following year than years without extreme rainfall (high or low).

Furthermore, lag relationships C (rainfall lag) and D (behavioural and rainfall lag) can be used to test the following two hypotheses:

- 7) Consecutive years with insufficient rain have higher levels of inter-ethnic conflict than consecutive years that have sufficient rain (Relationship C).
- 8) Consecutive years with insufficient rain have higher levels of interpersonal conflict in the same year and in the following year than consecutive years that have sufficient rain (Relationship D).

### 6.3.2 Datasets

A summary of the rainfall and conflict data, including sources, is listed below in Table 6.2. As the table demonstrates, colonial records were not included in this analysis due to some of the issues raised in reference to the Witsenburg and Roba (2003, 2007) study. Primarily, there are too few data sources available for rainfall records, and the colonial records include all known conflicts, not just inter-ethnic conflict. The conflict data that were collected for the purposes of this study were derived from semi-structured interviews conducted in the field (please refer to chapter four for details).

Table 6.2: Datasets consulted and used for the purposes of this analysis

| <b>DATASET</b>               | <b>SOURCE</b>                          | <b>DATA</b>                                                                                                                                                                                                               | <b>THIS ANALYSIS</b> |
|------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Rainfall Data<br>1921 – 1958 | National Archives,<br>Colonial Records | 38 years<br>Marsabit Annual Rainfall<br>• Median = 805 mm                                                                                                                                                                 | Not Used             |
| Rainfall Data<br>1959 – 2007 | Kenyan<br>Meteorological<br>Department | 49 years<br>Marsabit Annual Rainfall<br>• Median = 858 mm<br><br>North Horr Annual Rainfall<br>• Median = 131 mm<br><br>Wamba Annual Rainfall<br>• Median = 665 mm<br><br>Garba Tula Annual Rainfall<br>• Median = 306 mm | Used                 |
| Conflict Data<br>1921 – 1958 | National Archives,<br>Colonial Records | 38 years<br>98 conflict incidents reported                                                                                                                                                                                | Not Used             |
| Conflict Data<br>1959 – 2007 | Handley fieldwork                      | 52 years<br>300 conflict incidents reported                                                                                                                                                                               | Used                 |

Despite best efforts in trying to obtain the most complete datasets, there were some omissions in years recorded. It was necessary to try to approximate these missing rainfall months because without them, the data for the entire year for that site would

have to be removed, which would affect the accuracy of the overall estimates for a given year across the four sites. In order to fill in these missing months of rainfall data, I decided to take the following steps:

1. If there were 3 or more missing months of rainfall data within any of the 6 rainy-season months (March, April, May, October, November, December), then the entire year for that site was removed.

Reasoning: In any given year, these 6 rainfall months account for approximately 85% of the total annual rainfall. In order to accurately estimate the amount of rainfall a rainy month is expected to receive, it was necessary to base this calculation on the total of at least half of the rainy months for a given year. By applying this criterion, three years were removed from the analysis.

2. For the remaining years, I looked at each site individually to determine the median rainfall for each month.

Reasoning: Medians were used instead of means so that years with uncharacteristically higher than average amounts of rainfall wouldn't inflate the amount of rainfall *typically* found within a given month. As previously stated by (Low 1979; Behnke and Scoones 1993), medians rather than means are a more meaningful measure of typical rainfall within areas that are prone to extremes of climate.

3. For months where the median measured 0 mm of rain, the missing data were entered also as 0 for those months.

Reasoning: As alluded to in point 1, the 6 dry season months account for only 15% of the total annual rainfall. In looking through the data by year and plotting average rainfall amounts by month over time, where medians measured 0 for a given month, an overwhelming majority of years measured 0 for the given month. If rainfall was recorded in these months in a given year, it was usually a very small amount, not at all approaching expected rainfall for a rainy season month. Therefore, due to the low variability of rainfall found in dry season months, with a median value of 0 mm of rainfall, the missing values for these months were also entered as 0.

4. Then for each year that remained, I determined how much the rainfall in a given year deviated from the expected median for each month by applying the following equation:

$$\left[ \frac{\text{existing known data month}_1}{\text{median of the month}_1} + \frac{\text{existing known data month}_2}{\text{median of the month}_2} \dots \right] \div \# \text{ of months}$$

Reasoning: This ratio would provide an index of *relative* rainfall [i.e. relative to the long-term medians].

5. The results from (4) were multiplied by the median for a given month in order to provide an expected amount of rainfall for the missing data.

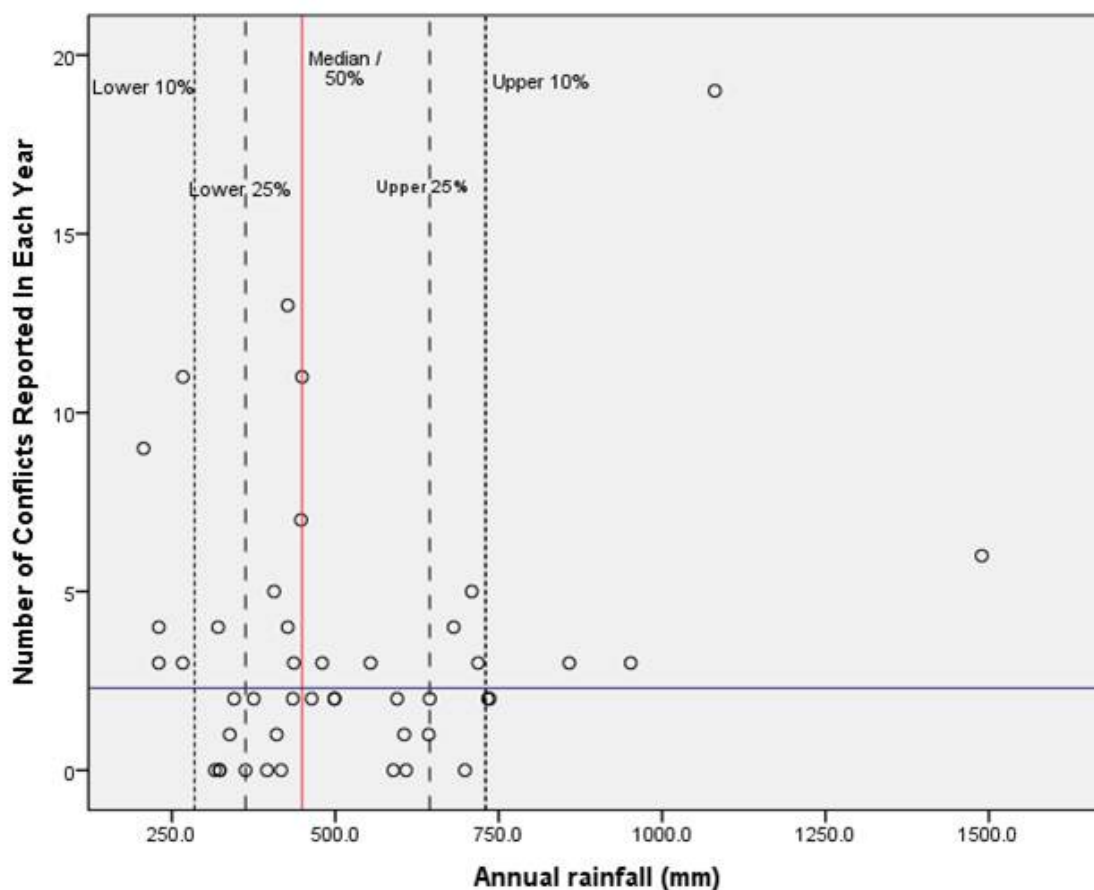
After applying this method as appropriate to the dry season and wet season months, a complete dataset was finalised, and a database was then constructed in SPSS for the period 1959 – 2007, which were the years having the most complete rainfall data. Averages of rainfall (in mm) over the 4 sites were recorded for each year (Table 6.3 shows a sample) along with 32 other variables that were created in the database for each year, which consisted of the rainfall variables, lag variables, and conflict variables.

Table 6.3: Sample of annual rainfall in millimetres for each of the four sites

| YEAR | MARSABIT | NORTH<br>HORR | WAMBA  | GARBA<br>TULA | AVERAGE |
|------|----------|---------------|--------|---------------|---------|
| 1978 | 1163     | 130.5         | 1040.9 | 609.8         | 736.1   |
| 1979 | 1104     | 191.5         | 610.1  | 527.5         | 608.3   |
| 1980 | 391      | 229.6         | 265.6  | 33.2          | 229.9   |
| 1981 | 1151     | 218.1         | 1092.4 | 332.0         | 698.4   |
| 1982 | 1398     | 172.1         | 1041.2 | 322.2         | 733.4   |
| 1983 | 625      | 53.8          | 440.7  | 174.1         | 323.4   |
| 1984 | 398      | 2.8           | 445.3  | 220.2         | 266.6   |
| 1985 | 1284     | 236.1         | 497.6  | 197.7         | 553.9   |
| 1986 | 518      | 90.1          | 672.0  | 220.9         | 375.2   |
| 1987 | 687      | 78.1          | 388.7  | 136.8         | 322.7   |

After completing the database, a scatter plot was produced to provide a visual representation of the number of conflicts recorded for each year against rainfall, as shown in Figure 6.2:

Figure 6.2: Scatterplot of number of conflict incidents reported each year against annual rainfall (mm). The vertical reference lines show rainfall quartiles and 10% / 90% thresholds. The horizontal reference line shows the median number of conflicts reported (median = 2).



Looking at the scatterplot, the hypothesised relationships between rainfall and conflict appear plausible and worthy of further statistical analysis. At first reading of this graph, one can see that conflict is found in all rainfall conditions, generally at low levels (< 3 conflicts per annum). What is potentially the most interesting feature of this plot is that all years recording *extreme* rainfall [in the upper and lower 10% of rainfall] showed conflict levels higher than the median (>2 conflicts per year, represented by blue horizontal reference line), and there were no zero-conflict years recorded in these rainfall ranges. This plot appears to demonstrate that conflicts *can* occur at all times; however, it is in the upper and lower ranges of rainfall that conflict *always* occurs, and conflict levels are consistently above the median. These observations therefore lend tentative support to hypotheses 1 – 3, and potentially also to hypotheses 4 – 6.

### 6.3.3 Hypotheses Testing

#### Hypotheses 1 and 4: Low Rainfall and Number of Conflicts

In order to test hypotheses 1 and 4 (that extreme low rainfall is associated with high numbers of conflicts), it was necessary to determine thresholds of extremely low rainfall. As previously discussed, there are no standard ecological cut-off points for the amount of rainfall that constitutes a drought (USGS 2012). In the following analyses, I set two separate thresholds for extremely low rainfall: one at the lowest 10% of rainfall, representing the climatic extreme, which had been further corroborated as an indicative threshold in Figure 6.2. Another threshold was set at the lowest 25%, in order to increase the sample size and to offer greater comparability with other statistical analyses based on quartiles. Each year was thus categorically defined (Yes / No) as being found within:

- the lowest 10% of rainfall
- the lowest 25% of rainfall

Both of these are subsequently referred to as ‘1 Year’ variables because they refer to rainfall in a single, discrete year.

Both variables [lowest 10% and lowest 25% of rainfall years] were tested against the following two conflict variables:

- Conflicts – the discrete number of conflicts recorded for that year
- ‘Compound Conflicts’ – the number of conflicts found in that year plus the number of conflicts recorded in the subsequent year (i.e., behavioural lag-time variable, as previously discussed)

To reiterate, ‘compound conflicts’ were used in order to capture conflicts that happened as a result of rainfall amounts found in the preceding year (i.e., drought in 1984 could have bearing on number of conflicts reported in 1985).

#### Tests – Hypothesis 1 and 4 (4 tests)

|                 |   |           |              |                |
|-----------------|---|-----------|--------------|----------------|
| Lowest 10% rain | x | Conflicts | Hypothesis 1 | Relationship A |
|-----------------|---|-----------|--------------|----------------|

|                 |   |                    |              |                |
|-----------------|---|--------------------|--------------|----------------|
| Lowest 10% rain | x | Compound Conflicts | Hypothesis 4 | Relationship B |
| Lowest 25% rain | x | Conflicts          | Hypothesis 1 | Relationship A |
| Lowest 25% rain | x | Compound Conflicts | Hypothesis 4 | Relationship B |

The comparator group for each of these tests are the upper 90% and upper 75% of rainfall years respectively for the two thresholds. .

#### Hypotheses 2 and 5: High Rain Conditions versus Number of Conflicts

In order to test these hypotheses, as presented by Witsenburg and Roba (2003, 2007), showing years with higher amounts of rainfall have significantly higher levels of reported conflict, each year was also categorically defined (Yes / No) as being found within:

- the highest 10% of rainfall
- the highest 25% of rainfall

The rationale for choosing these particular upper thresholds (10% and 25%) were for the same reasons as stated above for hypotheses 1 and 4. These two variables were also tested against both the number of conflicts in that year and the number of compound conflicts for similar reasons as stated in the tests for hypotheses 1 and 4.

#### Tests – Hypothesis 2 and 5 (4 tests)

|                  |   |                    |              |                |
|------------------|---|--------------------|--------------|----------------|
| Highest 10% rain | X | Conflicts          | Hypothesis 2 | Relationship A |
| Highest 10% rain | X | Compound Conflicts | Hypothesis 5 | Relationship B |
| Highest 25% rain | X | Conflicts          | Hypothesis 2 | Relationship A |
| Highest 25% rain | X | Compound Conflicts | Hypothesis 5 | Relationship B |

The comparator group for each of these tests are the lower 90% and 75% of rainfall years respectively.

#### Hypotheses 3 and 6: Extreme Conditions (high and low) versus Number of Conflicts

In order to examine the effect of extremes (both upper and lower limits) on the number of conflicts reported, each year was categorically defined (Yes / No) as being found within:

- the lowest 10% of rainfall *or* the highest 10% of rainfall

- the lowest 25% of rainfall *or* the highest 25% of rainfall

These two variables were also tested against both the number of conflicts and the number of compound conflicts for each year.

Tests – Hypotheses 3 and 6 (4 tests)

|                                  |   |                    |              |                |
|----------------------------------|---|--------------------|--------------|----------------|
| Lowest 10% + Highest 10% of rain | x | Conflicts          | Hypothesis 3 | Relationship A |
| Lowest 10% + Highest 10% of rain | x | Compound Conflicts | Hypothesis 6 | Relationship B |
| Lowest 25% + Highest 25% of rain | x | Conflicts          | Hypothesis 3 | Relationship A |
| Lowest 25% + Highest 25% of rain | x | Compound Conflicts | Hypothesis 6 | Relationship B |

The comparator group for each of these tests are the middle levels of rainfall (i.e., middle 80% and middle 50% respectively).

#### Hypotheses 7 and 8: Insufficient Rain in Consecutive and Cumulative Years versus Number of Conflicts

In order to look at the cumulative effects of consecutive years having insufficient rainfall (rainfall lag) on levels of conflict, further variables were created to determine if a certain year could be categorically defined (Yes / No) as:

- 2 **consecutive** years – two consecutive years where **both** are within the 25% or 50% lowest amounts of rainfall (2 variables)
- 2 **cumulative** years – two consecutive years where both are within the 25% or 50% lowest amounts of rainfall **when averaged** over the 2 years (2 variables)

These variables will henceforth be referred to as ‘2 Year’ variables as they pertain to rainfall conditions that happen over a period of two years.

Cumulative and consecutive effects of insufficient rain were also created over three year timespans, also categorically defined (Yes / No) as:



- 3 **consecutive** years – three consecutive years where **all** are within the 25% or 50% lowest amounts of rainfall (2 variables)
- 3 **cumulative** years – three consecutive years where all are within the 25% or 50% lowest amounts of rainfall **when averaged** over the 3 years (2 variables)

Likewise, these variables will henceforth be referred to as ‘3 Year’ variables as they pertain to rainfall conditions that happen over a period of three years.

The thresholds of 25% and 50% were chosen as insufficient rainfall over consecutive years because: 1) they utilise a standard statistical approach in using quartiles, and 2) the thresholds for ‘insufficient’ rain over multiple years can be raised above the thresholds for extremes because insufficient rain is the compound effect of low levels of rain over a number of years, bringing about drought-like conditions, that are important in this particular analysis.

These rainfall lag-time tests are combinations of either:

- The ‘1 Year’ variables + the ‘2 Year’ variables; or
- The ‘1 Year’ variables + the ‘3 Year’ variables; or
- Simply the effect of the ‘2 Year’ variables or ‘3 Year’ variables on their own

Again, variables were defined categorically (Yes / No), with a “Yes” classification being determined if either of the conditions (1 Year or 2 Year; 1 Year or 3 Year) were below the 10% or 25% for the 1 Year variable and 25% or 50% for the 2 Year or 3 Year variables. Like the previous analyses, these variables were tested against both the number of conflicts and the number of compound conflicts for each year. The following table illustrates a sample of these tests.

Tests – Hypothesis 7 and 8 (sample provided here, 48 tests in total)

|                     |   |                                   |   |                    |              |                |
|---------------------|---|-----------------------------------|---|--------------------|--------------|----------------|
| Lowest 10% rainfall | + | 2 consecutive years at lowest 25% | x | Conflicts          | Hypothesis 7 | Relationship C |
| Lowest 10% rainfall | + | 2 consecutive years at lowest 25% | x | Compound Conflicts | Hypothesis 8 | Relationship D |
| Lowest 25% rainfall | + | 2 consecutive years at lowest 25% | x | Conflicts          | Hypothesis 7 | Relationship C |

|                     |   |                                   |   |                    |              |                |
|---------------------|---|-----------------------------------|---|--------------------|--------------|----------------|
| Lowest 25% rainfall | + | 2 consecutive years at lowest 25% | x | Compound Conflicts | Hypothesis 8 | Relationship D |
| Lowest 10% rainfall | + | 2 consecutive years at lowest 50% | x | Conflicts          | Hypothesis 7 | Relationship C |

Etc...

|                     |   |                                   |   |           |              |                |
|---------------------|---|-----------------------------------|---|-----------|--------------|----------------|
| Lowest 10% rainfall | + | 3 consecutive years at lowest 25% | x | Conflicts | Hypothesis 7 | Relationship C |
|---------------------|---|-----------------------------------|---|-----------|--------------|----------------|

Etc...

|                     |   |                                  |   |           |              |                |
|---------------------|---|----------------------------------|---|-----------|--------------|----------------|
| Lowest 10% rainfall | + | 2 cumulative years at lowest 25% | x | Conflicts | Hypothesis 7 | Relationship C |
|---------------------|---|----------------------------------|---|-----------|--------------|----------------|

Etc...

|                     |   |                                  |   |           |              |                |
|---------------------|---|----------------------------------|---|-----------|--------------|----------------|
| Lowest 10% rainfall | + | 3 cumulative years at lowest 25% | x | Conflicts | Hypothesis 7 | Relationship C |
|---------------------|---|----------------------------------|---|-----------|--------------|----------------|

Etc...

|      |  |                                   |   |                    |              |                |
|------|--|-----------------------------------|---|--------------------|--------------|----------------|
| None |  | 2 consecutive years at lowest 25% | x | Conflicts          | Hypothesis 7 | Relationship C |
| None |  | 2 consecutive years at lowest 25% | x | Compound Conflicts | Hypothesis 8 | Relationship D |
| None |  | 2 consecutive years at lowest 50% | x | Conflicts          | Hypothesis 7 | Relationship C |

Etc...

The comparator group for each of these are the years that were categorised as ‘No’ in relation to the above criteria. Using the first test in the table above as an example, the comparator group included the years that were in the upper 90% of rainfall, or that didn’t have two consecutive years in the lowest 25% of rainfall. Essentially, this is a comparison of the number of conflicts found in 1 discrete or 2 – 3 years periods having insufficient rainfall to the number of conflicts found in 1 discrete or 2 – 3 year periods having sufficient rainfall.

### 6.3.4 Statistical Tests

All of the statistical tests for hypotheses 1 – 8 were run using SPSS statistical analysis software. All tests compared a continuous dependent variable (conflicts or compound

conflicts) against a categorical independent variable (1 Year, 2 Year, or 3 Year variables), each having two categories (Y / N). Because the sample size of each group is small, non-parametric Mann-Whitney tests were used for all analyses (Agresti and Finlay 2009). This approach was preferred over the use of standard linear regression because there is no indication [either from chapter five or other literature] that conflict and rainfall are associated in a linear way.

## 6.4 Results

Of the statistical tests conducted, the following Figure 6.3 and Table 6.4 highlight the significant results:

Figure 6.3: Each of the highlighted cells represents a significant result ( $p < 0.05$ ). Each individual colour in the charts represents a separate result. Where colours are matching (for instance, 2 pale blue cells or 2 pale green cells), the combination of these cells represents a significant result. For example, pale blue cells = lowest 10% at one year + 3 year cumulative lowest 50% tested against compound conflict.

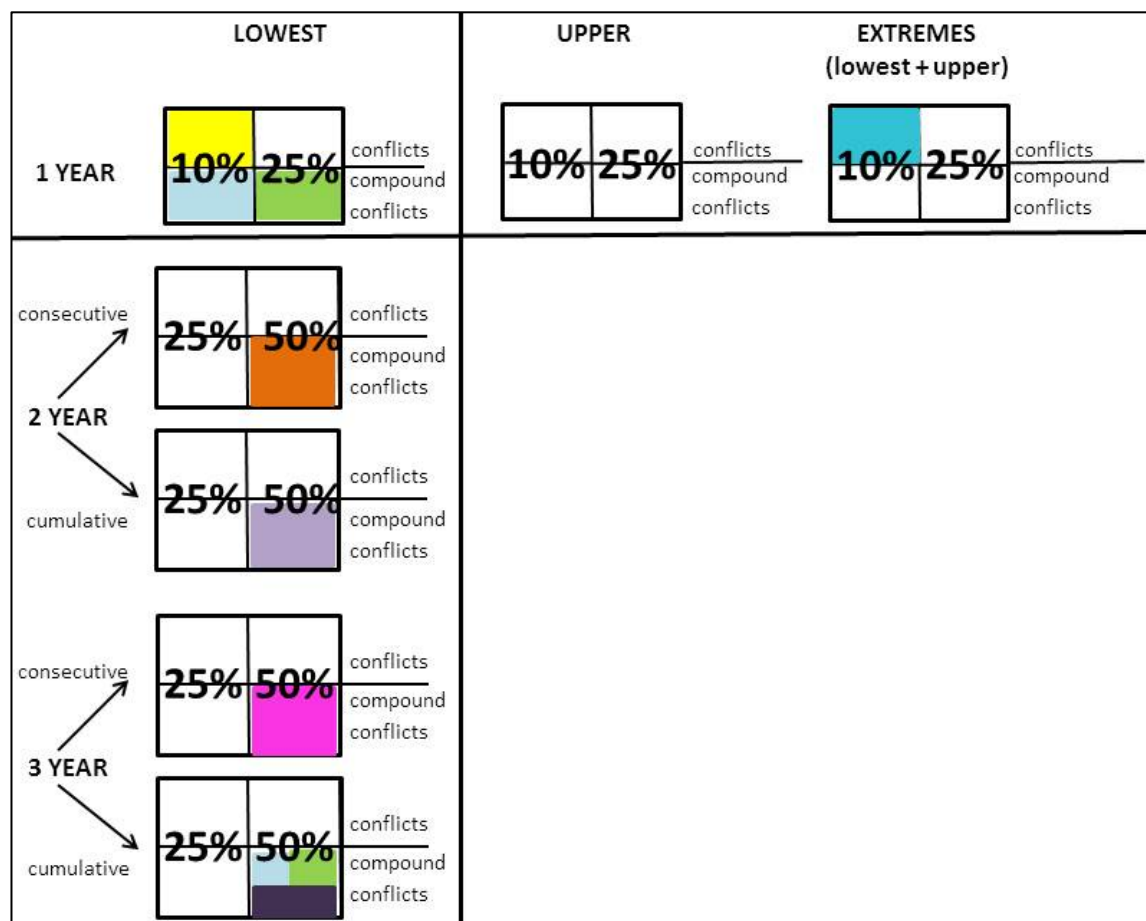


Table 6.4: Each of the significant results explained, colours refer to results in Figure 6.3

| Variables                                        |   |                                             |   |                    | N              | P      | Hypothesis |
|--------------------------------------------------|---|---------------------------------------------|---|--------------------|----------------|--------|------------|
| 1 Year Variable                                  | + | 2 Year or 3 Year Variables                  | x | Conflict Variable  |                |        |            |
| Lowest 10% of rainfall                           | + | None                                        | x | conflicts          | n =44<br>Yes=5 | 0.031  | 1          |
| Lowest 10% of rainfall + Highest 10% of rainfall | + | None                                        | x | conflicts          | n=44<br>Yes=10 | 0.004* | 3          |
| Lowest 10% of rainfall                           | + | 3 Years cumulative, lowest 50% of rainfall  | x | compound conflicts | n=41<br>Yes=19 | 0.042  | 8          |
| Lowest 25% of rainfall                           | + | 3 Years cumulative, lowest 50% of rainfall  | x | compound conflicts | n=41<br>Yes=20 | 0.027  | 8          |
| None                                             | + | 2 Years consecutive, lowest 50% of rainfall | x | compound conflicts | n=41<br>Yes=12 | 0.041  | 8          |
| None                                             | + | 2 Years cumulative, lowest 50% of rainfall  | x | compound conflicts | n=41<br>Yes=17 | 0.039  | 8          |
| None                                             | + | 3 Years consecutive,                        | x | compound conflicts | n=40           | 0.010  | 8          |

|      |   |                                                     |   |                       |                    |       |   |
|------|---|-----------------------------------------------------|---|-----------------------|--------------------|-------|---|
|      |   | lowest 50%<br>of rainfall                           |   |                       | Yes=6              |       |   |
| None | + | 3 Years<br>cumulative,<br>lowest 50%<br>of rainfall | x | compound<br>conflicts | N=40<br><br>Yes=17 | 0.042 | 8 |

\*highly significant

In this analysis a total of 60 tests were run in order to produce the results listed in Figure 6.3 and Table 6.4. Due to the high number of tests involved, and to ensure that significance was not achieved by chance alone, the p-values were adjusted to correct for multiplicity. The Bonferroni correction has been criticised for producing overly conservative estimates of corrected p-values (Storey 2002); therefore, this analysis uses a False Discovery Rate correction as suggested by Benjamini and Hochberg (1995). For this type of correction, significant p-values are ordered from smallest to largest, and the original p-values will retain their significance if they are less than  $0.05 \div$  the rank of the p-value. For instance,  $0.010 < 0.05 \div 2$ , therefore this result remains significant. The adjusted p-values are referred to as q-values (Benjamini and Hochberg 1995). After completing the False Discovery Rate correction, the following two results remained significant:

- 1) Number of conflicts in the years having the lowest 10% of rainfall + highest 10% of rainfall compared to the number of conflicts in the years of middle 80% of rainfall ( $q < 0.05$ ), (see Relationship A in Figure 6.1 and hypothesis 3 for a full description).
- 2) Number of compound conflicts found in the terminal year of three consecutive years having the lowest 50% of rainfall (insufficient rain), compared to the number of compound conflicts found in the terminal year of three consecutive years, where at least one year is not in the lowest 50% of rainfall (sufficient rain) with  $q < 0.025$ . (Please see Relationship D in Figure 6.1 and hypothesis 8 for a full description).

Results for hypotheses 1 and 4: When comparing the number of conflicts in years having the lowest 10% of rainfall in the four sites against the number of conflicts found in all other years, there is significance at the  $p < 0.05$  level; however, with correction, the q-value only approaches significance ( $q > 0.0125$ ). This result addresses the primary hypothesis that higher amounts of conflict are experienced during periods of extreme drought. In this study, with correction, no such correlation exists. Also, assessing the lowest amounts of rainfall in respect to compound conflicts showed no significant correlations, meaning in this case, that behavioural lag is not a significant factor in response to drought conditions. It is important to note here that extraordinarily high conflict levels that were found in 2009 (141 conflicts) do not have any bearing on this result, as this year was excluded in the examination due to a lack of corresponding accurate rainfall data.

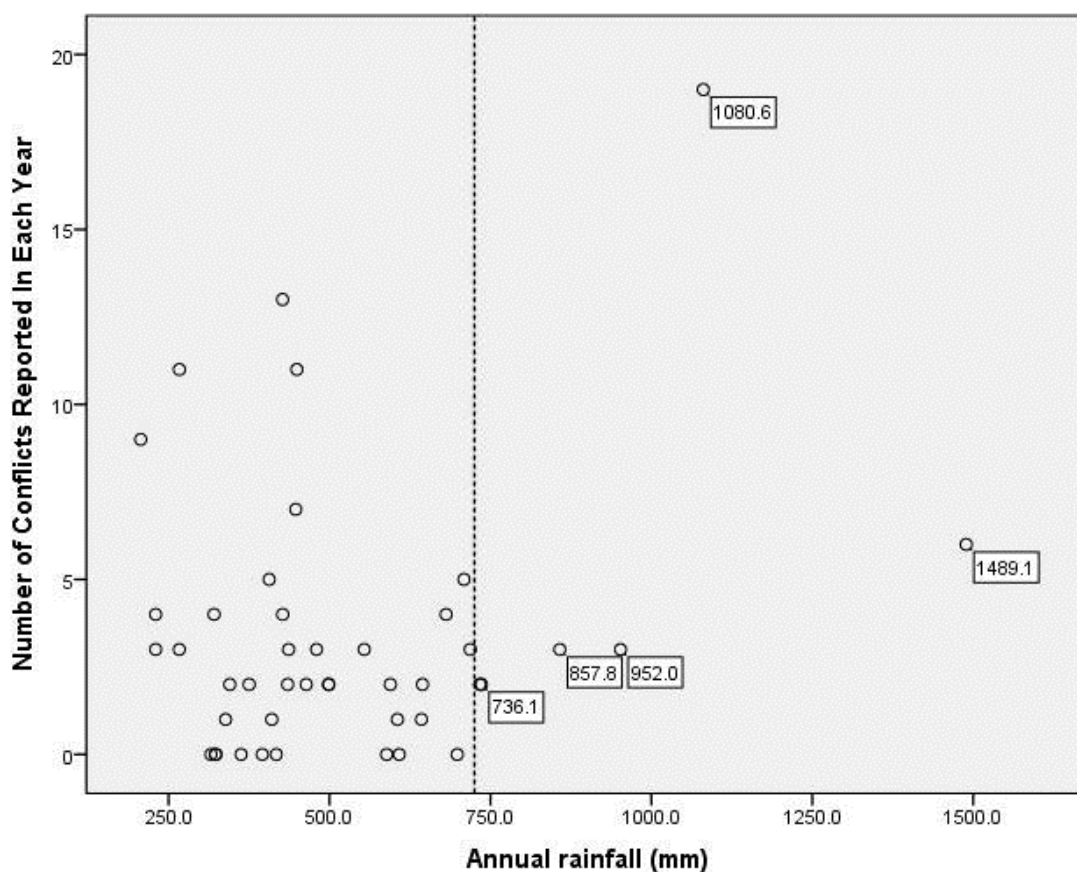
Because significance was found in comparing the upper and lower 10% of rainfall to the middle 80% of rainfall, a further test was run in order to isolate the effect of the lowest 10% of rainfall without interference from the upper 10% of rainfall. In this case, the test compared conflicts found in the lowest 10% of rainfall to the amount of conflict found in the middle 80% of rainfall in order to see the effect of low rainfall on conflict without the influence of the highest 10% of rainfall values. The result was approaching significance, even with correcting for multiplicity ( $p = 0.019$ , with correction significance is  $q > 0.016$  level). Although not quite a significant result for the q-value, this result indicates that the relationship between the amount of conflict reported in the lowest 10% of rainfall years compared with conflict in the middle 80% of rainfall (see Figure 6.4 below for reference) approaches significance.



the effect of rainfall on conflict without the influence of the lowest 10% of rainfall values. Although the p-value approached significance at  $p = 0.052$  before correction, after correcting for multiplicity, then this result is no longer significant ( $q > 0.005$ ). This result does not provide any support for the argument that high amounts of rainfall are correlated with increased conflict episodes.

When examining the result of this hypothesis further, Figure 6.5 below indicates that a lack of significant results from the data in the upper limits of rainfall may be due to the disparity and range in rainfall distribution in the upper 10%. The rainfall varies widely within this range between the lowest three points and the upper two (please refer to Figure 6.5 below). It may be that this variation *within* high-rainfall years masks any difference between high-rainfall and other years. Furthermore, there is some indication from the two uppermost data points that when annual rainfall is *extremely* high [over 1000 mm], this may be associated with increased levels of conflict. The small sample size means that this is clearly only conjecture, but if a dataset were available with more years of >1000 mm of rainfall, this could be an interesting avenue for further analysis.

Figure 6.5: Chart showing rainfall in millimetres plotted against number of conflicts per year, detailing highest 10% of rainfall data points.





Result for hypotheses 3 and 6: The relationship, as presented by Low (1979), that populations respond to the extremes of climate rather than to the means of climatic conditions, was supported. The test compared the levels of conflict found in years having the lowest 10% of rainfall or the highest 10% of rainfall against the number of conflicts found in all other years. Significance is at the  $q < 0.05$  level and represents the most significant result of all the relationships that were tested. Assessing the lowest 10% and highest 10% of rainfall in respect to compound conflicts showed no significant correlations, therefore indicating again that including compound conflicts in the statistical analysis has little bearing on the strength of the proposed relationships.

Result for hypotheses 7 and 8: The number of compound conflict incidents during periods of three years of insufficient *consecutive* rain at the lowest 50% differed significantly from the number of compound conflicts found in sufficient rainfall years ( $q < 0.025$ ). However, compound conflict incidents taking place during insufficient rainfall over two years did *not* differ significantly from compound conflicts found during sufficient rainfall. Furthermore, the *cumulative* effect of insufficient rainfall years (for two years or three years) was not significant. The results from these tests are illuminating for a number of reasons. From the data, we would expect to see greater differences in *consecutive* effects of insufficient rainfall than the effect of *cumulative* insufficient rainfall; the reason for this being that *each* year of the two- or three-year period needs to be below a certain rainfall threshold (either lowest 25% or lowest 50%) in the case of consecutive insufficient rain. However, in the case of cumulative insufficient rain, it is only the *average* of the two or three years that must be below the rainfall threshold (again, either lowest 25% or lowest 50%). As discussed earlier in light of the Witsenburg and Roba (2003, 2007) study, the averaging of multiple years of rainfall can have a smoothing effect. In this latter case, even one year of extremely low rainfall out of three years can bring down the average so that it meets the threshold criterion of insufficient rain. In practice, ethnographic data recorded in the field suggest that ethnic groups can cope with the effects of one year droughts, a point supported in research by Ellis and Swift (1987), as long as there is sufficient rainfall after drought conditions have passed in order for the environment to recuperate. Due to this smoothing effect, the results from the cumulative tests support the expectation that they would produce less of an overall effect than consecutive effects of insufficient rainfall.

### 6.4.1 Discussion

The results from the statistical analysis give strong support to the claim that single years with extreme rainfall (below 10% or above 90%) are more prone to conflict episodes than years having non-extreme rainfall (middle 80% of rainfall range). We can also see this relationship represented in Figure 6.4, where increases in conflict are shown in the upper and lower 10% of rainfall when compared to the middle 80%.

This finding corroborates the ethnographic material from chapter five, in which research participants discussed conflict episodes in relation to either rainy conditions or drought conditions, with a particular emphasis on drought. Although not conclusive in the statistical analysis, there is some indication that the relationship between climate and conflict is experienced at the lowest 10% of rainfall and [less so] at the upper 10% of rainfall. With improved climatic records increasing the sample size, this represents a promising area for future statistical analysis.

In examining the second significant result of this analysis, periods of insufficient rain have a significant effect on increased levels of compound conflict, however only in relation to consecutive rather than cumulative insufficient rain years. In looking more closely at this result, one would expect that the most severe case of insufficient rainfall (therefore, likely having the greatest effect on levels of conflict) would be the case of 3 years of consecutive insufficient rainfall at the lowest 25% rainfall threshold. However, when running this test, the relationship between this variable and an increase in conflict was not significant. The reason for this outcome may simply be due to small sample size: there were only two years that qualify in the data to be included in this particular analysis. By contrast, when using a 50% threshold [which increased the number of positive cases to 6] the relationship between 3 years of consecutive insufficient rainfall and conflict was significant. Although not conclusive, because of the limited dataset, this result is consistent with the claim that insufficient rainfall over consecutive years may be associated with higher compound conflict levels.

Although these two results provide some statistical evidence to explain the relationship between climatic conditions and conflict levels, they certainly do not explain the entire picture. For example, referring to Figure 6.5, the year associated with the greatest

amount of conflict, occurred when rainfall was at 1080.6 millimetres for the year, which is in the upper 10% of the rainfall record. This data point is in agreement with the idea that increased levels of conflict are associated with extreme climatic conditions (both high and low). However, can this claim really be made? The year associated with this data point is 1961. In examining a number of colonial records taken at this time, there are two historical factors that may have bearing on the increased levels of conflict seen during this particular year. One is that a large meeting was held in Isiolo in 1961 between the DC's office and the local area chiefs (both Samburu and Borana) where grievances from both sides were raised, raiding episodes discussed, and multiple fines were levied between the two ethnic groups in payment of stolen livestock (DC/ISO/4/7/11). The high level of conflict reporting may simply be a function of there being a formal avenue for reporting from both ethnic groups, rather than reflecting an actual increase in conflicts that year. In other words, the increase in reported conflict in 1961 may have less to do with the climatic conditions and more to do with improved record-keeping. Furthermore, a telegraph was sent to the Isiolo DC's office stating that all of the Samburu chiefs would be circumcising their sons in 1962 (DC/ISO/4/7/11). Circumcision of the new *morans* signals a 'retirement' of the standing *morans*, at which point they would become junior elders and would be expected to behave as such. 1961 would therefore have been the final year in which these *morans* would be able to participate in large-scale raids as part of the warrior class before the circumcision of the new age-set in 1962. It may be that these *morans* were capitalising on this final year as warriors to steal animals and potentially increase their herd size. Although this suggestion is speculative, the point is that increased conflict in 1961 cannot simply be ascribed to the result of climatic conditions. There are potentially more processes at work here that could also influence conflict levels seen at this time.

## 6.5 Conclusions

In light of this last point, results from this statistical analysis and from chapter five are starting to build a picture of the relationship between drought and conflict. The first aspect of this picture is that the relationship between these two variables is vastly more complex than a lot of the current literature would lead the reader to believe (e.g., Markakis 1994). Statistically, the variation in conflict episodes cannot be fully explained by climatic conditions alone. This point raises two issues. The first is: how important, relative to other factors, is climate [or rainfall] in generating conflict? Based

on data presented in chapter five, I would argue that climatic conditions (either periods of substantial rain or increased drought) create the *ideal* opportunity for conflict, rather than being the sole impetus. The second point is: if climate is not the sole impetus for conflict, then what are the other motivations and causal factors that contribute to conflict for north Kenyan pastoralists? The following chapter will address this question and therefore begin to build on the complexity found in the relationship between drought-induced resource scarcity and conflict.

## Chapter 7: Motivations for Conflict

---

### 7.1 Introduction

As demonstrated in chapters five and six, conducting research regarding the effects of resource scarcity on behavioural adaptations within subsistence populations runs the risk of over-simplifying the nature of this relationship and implying that pastoral populations are environmentally-determined: making warfare, raiding, and violence inevitable characteristics of these communities. Authors such as Markakis (1994), Cousins (1996) and Behnke and Scoones (1993) go so far as to state that chronic, endemic conflict is a central feature of populations living in non-equilibrium ecosystems. However, this chapter is looking to build complexity into the understanding of pastoral conflict by exploring beyond the ‘simple’ relationship as described in the above literature. Research of this type cannot be a-historical or a-political in its investigation; it must be inclusive of underlying social and cultural processes that can influence behavioural outcomes. For instance, Lamphear (1992) highlights the role of the colonial government and international politics exacerbating ethnic tensions to the point of conflict in his study of Turkana and Pokot pastoralists, who had previously shared a significant period of inter-ethnic collaboration, alliance, and intermarriage. Climatic stress may in fact be the condition by which ethnic tensions are created, but government policy, amongst other factors, may provide the platform upon which violence is carried out, or vice-versa.

Over-simplification of the causes of conflict amongst pastoralists in northern Kenya helps to further stereotypes of pastoral communities long-held by outsiders. During my fieldwork, I spoke informally with a number of expatriate, European ranchers from the fertile Mt Kenya region regarding their views on northern pastoral conflict. From the perspective of someone who spent a considerable period of time within the north, the European ranchers’ opinions were rather shocking to me. However, they were beneficial to hear as I believe that they didn’t just represent the viewpoints of a few protected, seemingly callous individuals, but rather they may be representative of many non-northern, non-pastoralist attitudes within Kenya. Some of the comments I heard were, “Fighting is the national sport up there,” or “At least the killing helps to control the population - both of the animals and the people,” or “why should anyone care why

these people fight? If they want to kill each other, then let them get on with it.”

Although it was difficult to hear these opinions being expressed, I came to understand them as the result of people's lack of exposure to northern populations, part of the pastoralist rhetoric, and as a product of views expressed in the media where conflicts are reported, and it is “brutality” or “senselessness” that is emphasised rather than a speculation on the causes of a particular conflict incident.

Even within the government when I interviewed a number of District Commissioners (DCs), District Officers (DOs) or commanders of the Anti-Stock Theft Unit (ASTU) (who are all charged, in some capacity, with the protection and security of herders, and if necessary the prosecution of stock raiders), their views tended to be single-minded and reinforced established stereotypes. Their attitudes generally fell into one of two camps: either “these people raid just to restock their animals after the drought has wiped them” (ASTU Commander, Lolmisigiyoioi, 17 October 2009), or “these people are rich by any standards. They raid in order to gain wealth” (DO, Laisamis, 9 July 2010). It would initially appear that these individuals would be well-placed to make an assessment of the factors that contribute most to inter-ethnic raiding and conflict due to their position and supposed access to local communities, however upon closer examination, I did not find this to be the case. This may, in part, be a product of the DCs, PCs, DOs, ASTU Commanders, and the Officer Commanding Police Station (OCS) not originating from the areas under their jurisdictions, nor are they ethnically related. It is quite typical to find an officer from the majority Kikuyu or Luo ethnic groups who is presiding over a predominantly Borana or Somali district, for instance. This arrangement, although seemingly sensible in terms of reducing the possibility of favouritism or “tribalism,” means that the officers are not well-acquainted to the needs and behaviours of the people within their areas and may come to the position with particular prejudices. Furthermore, in order to combat the pervasive nature of corruption within Kenyan government institutions, officers are moved from one district to another after a post of only one year purposely to reduce exploitative relationships amongst their charges. This type of management may (or may not) help to reduce corruption; however, it denies the opportunity for individuals in power to build up institutional knowledge of the area's constituents, their needs, identify areas of insecurity, or observe seasonal / recurring behaviours that may be associated with certain events or phenomena. Finally, I would question the amount of exposure an

officer has to the local community as, by my observations, the officers' daily duties tend to be confined to the realms of their camp, office compound, or domestic compound and rarely out amongst the pastoral grazing or settlement areas. For these reasons, I question whether government officers understand the manner in which pastoral people operate, the underlying motivations behind observed behaviours, or how to address their local needs adequately. As a result, officers tend to do little more than reaffirm established stereotypes, albeit 'dressed up' in the veneer of being in a position to "know the real story."

Given the above limitations in perspective, my fieldwork was purposely designed to incorporate considerable ethnographic depth by working and living between all three ethnic communities across 17 different sites, and by interviewing a range of individuals: from young to old, males and females, interior and border region inhabitants, and from "peri-urban" settlements to make-shift mobile satellite camps. I endeavoured, as much as possible within a 17-month fieldwork period, to gain the widest variety of perspectives regarding how people felt about conflict and the factors that people identify as motivations resulting in conflict events within their communities. The results that I present in this chapter demonstrate that engaging in conflict can rarely be motivated by a 'simple' or mono-causal effect, but rather as a result of a complex suite of factors and dispositions promoting aggressive behaviours. When asked for an explanation as to the cause or motivation for violence, research participants, with very few exceptions, did not hesitate in their responses and were quite clear about the reason conflict exists within their communities; however, they rarely cited a singular cause. It is specifically this multi-causal nature of conflict within pastoral societies that I would like to focus on in this chapter and try to provide a way of thinking about how each motivation can be assessed.

### **7.1.1 A Note on Methods**

Although I have explained the interview methods for discussing conflict events quite extensively in chapter four, there are a few details to include here that are specific to understanding the motivations that research participants cited during fieldwork. Primarily, qualitative data for this purpose was gathered using both individual interviews and focus groups.

For reasons cited earlier in chapter four, the focus groups mainly engaged women and male youth. For the interviews, I used two different approaches in trying to identify and record individuals' motivations for engaging in conflict events. The first method was to ask people rather directly what they felt were the main reasons inter-ethnic conflict occurs, has occurred in the past, has spurred them specifically to participate in or support a conflict event, or theoretically would make them engage in conflict. This type of questioning was very open-ended, where participants were able to express how they themselves viewed conflict and what they felt were its primary causes. From this method, I tried to understand the reasons why the participant him / herself has, or would have, for engaging in or supporting inter-ethnic conflict. This method will be referred to throughout this chapter as the "Open-ended Interview Method."

The second method used during the interviews was part of the conflict incident recording, as described in chapters four and six. These are conflict episodes that had actually occurred, with real material outcomes. In the course of recording the 'who, what, when, where' aspects of the conflict event, I would ask why the participant felt that the raider(s) had committed an aggressive act towards him / her. The responses that I recorded from this line of questioning helped me to understand the belief systems that one group has regarding the motivations of another group and also, it is more practically-focused on events that actually happened, couched within a context of a specific time, a specific place, under specific conditions, rather than speaking wholly theoretically. More often than not, the responses that I received to the first line of questioning differed from those that were recorded during the second line of questioning, which will be discussed in detail within this chapter. This method will be referred to henceforth as the "Incident Interview Method."

### **7.1.2 A Note on "Culture"**

The reader will see here that I make use of the term "culture" throughout this chapter as a way to distinguish between "cultural" traditions, which are those aspects of society that have long-standing histories. As described to me by participants, "cultural" aspects, as they identify them, are said to be deeply-ingrained in the community and more permanent and unswerving. People described their "culture" as those aspects that convey intrinsic elements of how an individual identifies oneself and is represented. In opposition to culture are those things that have been taught, learned, or that people have



adopted through recent exposure. In light of modern anthropological literature regarding “culture,” I understand that this term and its usage here may be seen as problematic; however, I am using it here simply because it is the language that was used by the local people, with local meaning, when certain aspects were being described to me. Where this term appears, it is a result of the most direct translation into English as “culture,” and this was also the term used by participants who were able to converse in English without the use of a translator. However, its use is not trying to impose a bounded, rigid structure on the behaviours found within these pastoral communities. In this case, we may be able to think of its meaning as “custom” rather than the more immutable term “culture.” I recognise in this thesis that local community behaviours seen today are a ‘snapshot’ along a continuing process of change (Spear and Waller 1993); however, in order to try to represent the feelings of local people most faithfully, it may be necessary to accept this usage of “culture” as it is presented here.

## **7.2 Results**

Utilising these methods in the field, over 275 individuals were interviewed using the Incident Interview Method, of which 194 of them recalled specific conflict incidents, which accounted for 300 unique conflict events. Results from this method were compiled using a basic statistical analysis and are presented in Figure 7.2. From using the Open-ended Interview Method, results were coded using basic Word functionality to separate responses into a document that could then be read and analysed for emerging themes surrounding conflict motivations. It is important to clarify here that these themes came directly from the data without imposing categories on the data before having the opportunity to fully analyse the participants’ responses.

When looking at this second category of data and the themes that emerged from it, a natural distinction began to form for me between the motivations cited that appeared to be “dispositions” for conflict and those which appeared as “triggers” for conflict events. A disposition would be a motivation that stemmed from feelings or sentiments that participants expressed as having long-standing histories, were slow to change over time, or that demonstrate a natural inclination or attitude towards a certain belief or behaviour within the communities. Conversely, a trigger would be those things that people referred to as having a more temporary condition that are acted upon if and when they arise within and between two communities. In this regard, a ‘trigger’ is a more fleeting

circumstance that can be highly situational. Homer-Dixon (1999) also makes reference to triggers, saying that they are the proximate causes to conflict, rather than underlying explanations. Making the distinction between dispositions and triggers is not a central theme of this chapter; however, it is provided as a way of separating the causal factors in order to aid the analysis and discussion. After making this distinction, the results of the interviews based on the Open-ended Interview Method and the Incident Interview Method were used in Figures 7.1 and 7.2, respectively.

Figure 7.1: Results of the conflict motivations cited from using Open-ended Interview Method, separated into dispositions and triggers. I did not quantify these responses; however, the pie chart below demonstrates the proportional distribution of motivations that were cited during interviews. A larger section means that the corresponding motivation was cited in more interviews than a motivation that corresponds to a smaller section of the pie chart.

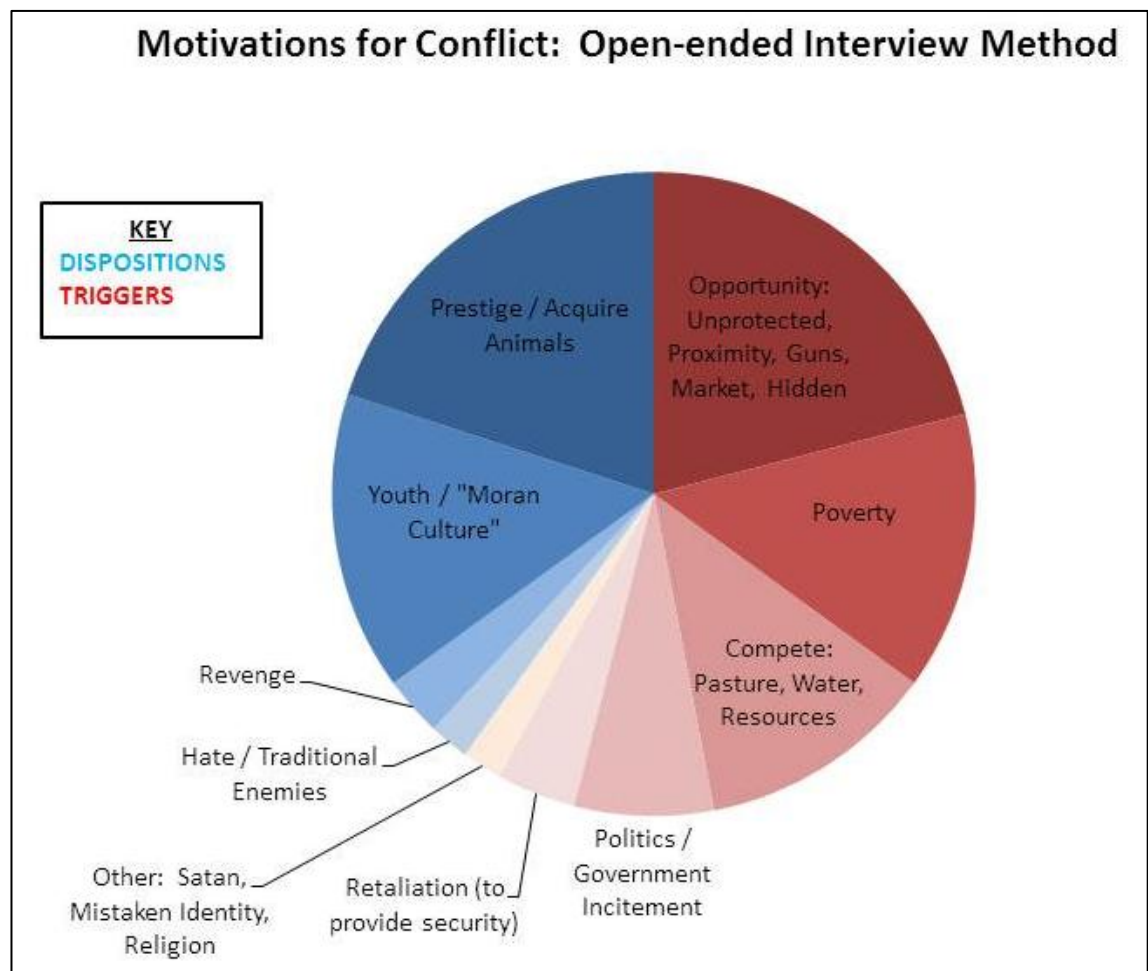
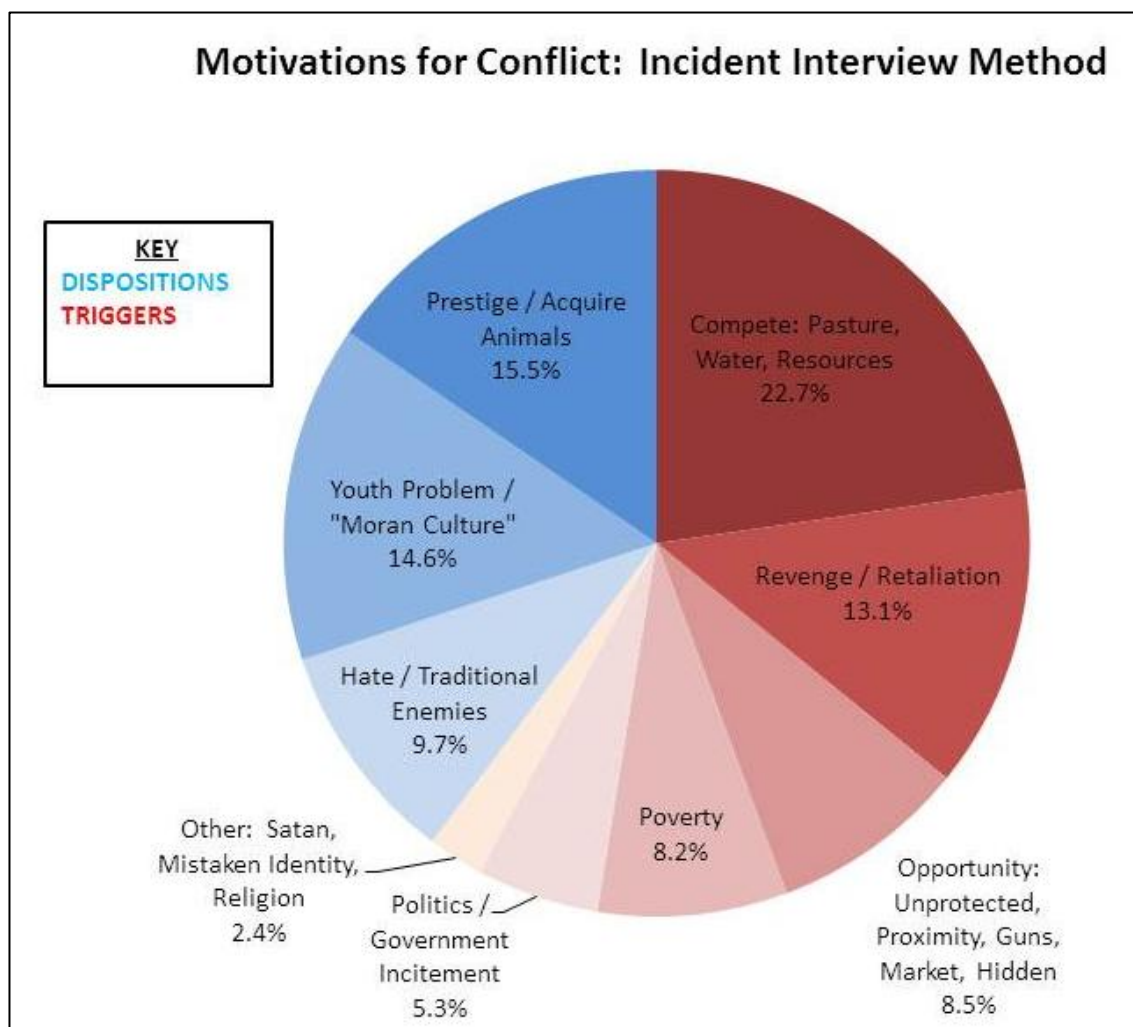


Figure 7.2: Pie chart showing the percentage distribution of motivations cited by the participants after analysing the 300 unique conflict incidents (Incident Interview Method), separated into dispositions and triggers. The corresponding percentages here are the proportion of times a motivation was reported out of all responses that were given.



Other than the differences in proportions found between the two charts, the only other distinction is that “revenge” and “retaliation” are separate in the Figure 7.1, where revenge is a disposition and retaliation is a trigger, and they are combined as both triggers in Figure 7.2. The reason behind this will be explained in greater detail later in the chapter; however, a simple explanation provided here is that the terminology used in the interviews during the conflict incident reporting made no distinctions between revenge or retaliation. However, during the more in-depth discussions regarding motivations, from using the Open-ended Interview Method, I understood that this concept functions in two very distinct ways, simply: one that refers to a “revenge culture,” and the other as a way of providing security. Details expanding on this distinction will be presented in the following pages.

## 7.3 Dispositions of Conflict

### 7.3.1 “Prestige Culture”

The disposition most often cited by research participants in relation to the recorded conflict incidents is one that I refer to as “prestige culture,” where stealing animals is a sign of power and masculinity. Part of the prestige is wrapped up in the ability to acquire and maintain large numbers of animals. As this concept was explained to me,

“Getting the property of a defeated person is the Borana culture. It shows that you are a man – that you have truly defeated them as you take away their property. Animals are taken as a sign of power and manliness, strength, and superiority that you have depleted someone else’s property.” (Borana, elder man, Gotu)

Another man makes the point that,

“the reason for stealing animals is a quest for wealth. Even people with animals want to increase their numbers. Each tribe doesn’t always steal for the same reasons, but tribes are all pastoralists and they have the heritage that they love animals. This is cross- cutting.” (Borana, youth male, Kambi Garba)

As demonstrated by these quotes, people explain that the accumulation of livestock is entwined with a cultural context based on the significance of owning animals. Animals are truly beloved amongst pastoralists as, particularly for males, they represent financial worth, power / influence, security, heritage / inheritance, and also the ability to attract partners. As I heard one man say during an interview,

“When a man gets animals, his life starts there.” (Samburu, elder man, Lolkerded)

Truly, at the core of each of the northern ethnic groups, people describe themselves first and foremost as pastoralists, and without animals, they indicate that they would cease to be a part of these communities. Having animals, maintaining animals, and accumulating animals are an intrinsic part of their very existence. Taking animals from one’s enemy challenges and jeopardises another’s existence, and therefore people report that it is extraordinarily damaging, not only financially but also to one’s own sense of being. The “prestige culture” motivation for taking animals is two-sided. On the one

hand, it increases one's own worth, wealth, and power, while on the other hand it jeopardises another's.

This duality was repeatedly reported to me during interviews with people saying that their enemies were constantly trying to “make us poor, and make themselves rich.” I came to realise over time that this was not just in reference to financial gains and losses, but instead it also meant making people poor of spirit and poor in influence, which also had repercussions for each side's claim for the land and the resources in the area. As one side gains power and influence, many people report that on the losing side of these exchanges, individuals become ‘deflated’ and ‘fearful’ of their enemy's growing strength. This being the case, it is much easier to push the diminished side off of their land or utilise their resources with impunity. This was a reason that was often cited for the back and forth small stealing that occurred during drought conditions, as discussed in chapter five, when it would seem like wasted effort to steal animals during a time that they are more likely to die as a result of drought. People often said that the stealing of animals during this time was a way of gaining prestige and influence over the other side, which benefitted them in “pestering” their enemy in the on-going jostle for access to sufficient pasture and water.

As briefly discussed in chapter five, I found that both men and women saw the intrinsic value and use of conflict within their societies in a similar manner. During interviews, I was just as likely to hear a woman calling for the violent ‘obliteration’ of an opposing ethnic group as I would a particularly aggressive man. Likewise, both sexes were just as likely to extol the benefits of peaceful coexistence and the promotion of open dialogue between themselves and another ethnic group. The discernible difference between men's and women's feelings regarding conflict is only really apparent when examining the concept of prestige. Men tended to be more nostalgic and proud when discussing their youth and their own raiding activities where women didn't have this same type of first-hand response to conflict. Women can be a part of the collective pride that results from one's own ethnic group being successful in a raid; however, they themselves do not necessarily experience feelings of increased self-worth and improved status. Box 7.1 below illustrates this concept of prestige connected to raiding activities.

Box 7.1: Taken from field notes, example demonstrating prestige associated with raiding, particularly amongst males. (Lolkerded, July 2010)

*I had been up since before 4 this morning, making sure to give myself enough time to walk the 4 or 5 miles to the marriage ceremony before the sun peaked over the horizon, and the day's events got underway: events which started with the circumcision of the young bride, the slaughtering of the wedding bull, the division of choice pieces of meat taken into the bride's mother's home, and the constant, copious amounts of tea being leisurely sipped and slurped by the elder males of this Samburu community as they perch upon their tree stumps and carved stools. With the formalities out of the way, the festivities really begin to gain momentum as groups of morans gather slightly outside of the manyatta, drawn together by one hypnotic, guttural chorus. As the rhythm takes shape, the high-pitch notes of the soloist start to dictate the unfolding of their story. He sings of beautiful animals, of thirst that knows no end, of landscapes he and his brothers have travelled, and the friends and foes that they have met along the way.*

*It is at this time that I am about an hour into my interview with an Lkishili elder of the community, estimated to be in his early 60s. Our conversation has already taken us over the ethnic origins of his family, the names and characteristics of all types of rains within the Samburu territory, and we have just now begun to discuss the migration pattern of his animals during the 2009 drought. With pen poised at my paper, I ask him to describe for me when his cows first left their home territory. Sitting on a low stool under the shade of a sprawling acacia tortillis 100 meters from the wedding site, the man breathes in deeply, his back arches as he closes his eyes and lifts his head towards the sky. The breath remains in his body, his chest expanded and frozen, seemingly transfixed in that position for a number of minutes. Confused and concerned, I turn to Raphael and ask in English, "Raphael, do you know what's going on? Have I offended him? Is he not clear on the question? Do you think he's tired," running through the usual laundry list for abrupt disruptions to my incessant probing. Raphael just sits and waits with his eyes on the man, and finally with his characteristic politeness, he addresses the man, still with his eyes closed, respectfully inquiring as to his current state. The man slowly opens his eyes, and just as slowly, a warmth spreads across his face, all the wrinkles of his mouth turning upwards into an infectious smile. His now open eyes are dancing, and for this moment, his body appears light, and there is freedom there that had not existed at the start of our interview. He responds deliberately to Raphael in Kisamburu, shaking his head without apology, saying simply,*

*“The music is just too sweet.” Now, there is no need to turn back to recording migration histories and names of plants that his animals like to eat. His simple smile has dictated the remaining hour of our interview, which is spent engaged in stories of his youth, testing his fledgling moran strength, and reliving the perils of encountering enemies in the bush. Raphael and I leave him to roam and wander through the transcendent descriptions of his memories, concluding as the black eyes encircled by watery blue perimeters focus squarely on us, with the declaration “I am feeling proud.”*

### **7.3.2 “Youth / Moran Culture”**

#### **7.3.2.1 Youth: Prestige**

Very closely linked to the concept of a “prestige culture”, youth or “*moran* culture” is another disposition within each of these communities that contributes greatly to the discharge of inter-ethnic aggressive acts. One key point to keep in mind is that raiding and conflicts are almost solely within the realm of the youth. This has some practical basis, namely that raiding requires a certain level of physical stamina that would preclude many of the older members of the society, but there are also other considerations for this being the case. As one elder man simply put,

“*Morans* don’t have children to lose them.” (Samburu, elder man, Lenchokut)

which means that the youth members of the community are not yet married, and therefore they don’t have the responsibilities of a wife and children to care for during this time. Should the youth perish in a battle, his family would suffer his loss; however, it would not be as catastrophic as had he been the head of the household with many individuals relying on him. Across the three populations under study, it was the youth who were the perpetrators of all of the raids; the only distinction being that the term “youth” could also be applied to a junior elder within Borana communities. As discussed in chapter three, while the Samburu and Rendille have definitive age-sets which determine whether or not individuals are classified as youths, the Borana do not have as strong a distinction, and therefore junior elders (up until about the age of 40) may participate on raids alongside their younger compatriots. It is the younger members of the society that have the most to prove and are in need of building up their reputations within the community. As one elder explains,

“If you are a *moran*, and you don't steal cows, you are less of a *moran*. All of their prestige is in praise from stealing cows. Secretly the *moran*'s father is happy and proud of his son for stealing.” (Samburu, elder man, Lenchokut)

This raises another point that people describe raiding as being a part of one's “cultural heritage,” wrapped up in the “prestige culture,” which is part of a disposition towards conflict, separate from any apparent triggers.

“Culture makes a *moran* steal even if he's not poor, particularly if the father of the *moran* used to steal, and that *moran* hears the story so he thinks that stealing is good.” (Samburu, elder man, Lolkerded)

Acquiring animals and increasing the size of one's herd is a good thing at any age, but there is disproportionately more pressure on the youth of the community to do so, as they need to prove themselves as individuals who are able to acquire, manage, and maintain substantial herd sizes. As explained to me by one *moran*,

“You also want a lot of animals to show that you are hard-working, and you can survive during a drought. You're trying to show the community that you are a hard worker. It is good when you are trying to find a wife. When you have a lot of animals, it is easier to get a wife. You steal even if you have a lot of cows, but if you have a few cows, then stealing helps to accumulate the herd size.” (Samburu, *moran*, Kitich)

#### 7.3.2.2 Youth: Ladies' Praise and Incitement

This idea leads onto the next concept that part of the youth / “*moran* culture” is very much tied with the ability to be able to attract young ladies during one's youth with the ultimate goal of securing enough animals to attract a future wife / number of wives.

One young Samburu girl told me,

“Girls will say that they will sing to praise them. They praise certain colours of the stolen cows and where they brought the cows from. The songs happen outside of the home when herding animals or even at night they can sing close by. If a *moran* is unsuccessful, he will still be praised, but he will try his luck again. If a *moran* loses all his animals in the border, he won't come home – he will hate himself, and he will be ashamed. The shame he feels will be coming from the girls and from his parents. If I were to choose my marriage, I would choose a *moran* who has gone on raids because he is precious because he has



tried to get cows. Everybody likes the cows that are brought back. In order to make the *morans* stop raiding, the girls need to stop praising them. I praise them all the time. Nothing can stop me from praising the *morans*. I want a boyfriend who raids.” (Samburu, female youth, Resim)

In speaking with groups of women regarding raiding activities, the marriageable women tended to focus on the number of animals a potential suitor owns, whereas the young (unmarried) girls focused more on the aggressive nature of the *moran* / youth – whether he has gone on raids or not. However, whether he was successful in capturing animals during the raid was less of a concern for the young girls. As it has been explained to me by multiple informants, generally an “aggressive nature” and showing aggression are not particularly prized characteristics amongst these communities. However, in the case of the young unmarried girls, they honour those *morans* and youth who have raided not to honour their aggression, but rather, as a sign that a particular individual may be hard-working and capable of providing in the future. Many girls have pointed out that these individuals have the potential to acquire animals, grow them up, and maintain / protect them.

Conversely, while the ladies’ songs can be used as praise, they can also be used to ridicule or incite youths to engage in conflict. Likewise, Spencer comments, “It is the taunts of girls and their praises which are largely responsible for inciting many *moran* to steal stock” (Spencer 1965: 127). For such male-dominated communities, I found this concept to be very interesting as it placed a lot of power within the women’s hands to incite or influence such serious behaviours as raiding. Many times, I heard the women jesting and having fun with this concept. A Borana woman told me,

“Women here feel that there is no place for raiding behaviour in today’s society. Also, we don’t feel as though our men are brave enough to do it” (Borana, elder woman, Mata Arba),

which was followed up with some laughing from the other women. On the one hand, women may be aware that in “modern times” they should not be promoting aggressive behaviour amongst the male youth; however praising and inciting conflict is part of their identification as women in these societies and perhaps, one of the ways that they can exercise their influence in a cultural sphere that can leave few opportunities to do so.

The existence of the youth / *moran* culture gives women a sanctioned space in which to assert themselves and their personal desires.

#### 7.3.2.3 Youth: Employment

Youths also steal because, without animals to take care of, they feel that their role in society would be undefined. Many youths that I spoke with said that the reason they took their animals to graze in insecure areas during the 2009 drought, despite their fathers' concerns for the safety of the animals, was to maintain their role in society. This means that if the animals died from starvation while they remained in the interior away from adequate grazing, then the herder would have to come home, have to leave behind his other fellow age mates, and he would be without a job or purpose. With animals, the young male herder has a purpose; without them, he is unemployed, and his role is diminished or eclipsed within the society. Simply, without animals, the male youth report that they would feel worthless. Although the colonial government tried to tackle this 'problem' of youth / "*moran* culture," a criticism that I heard on a number of occasions was that the colonial government,

"thought that abolishing '*moran*-hood' would stop the fighting. The policy failed because *morans* were a Samburu tradition, and also the colonialists didn't give any alternative of what to do with our *morans*. They didn't have education or alternative income or jobs so they were not guided in what to do." (Samburu, elder man, Remote)

The pressure of being employed and maintaining one's role and status is strong enough that should a youth lose all of his animals, he will use other means to get them back.

#### 7.3.2.4 Youth: Group Belonging

Group-belonging is a strong motivating force reported by the male youth for engaging in conflict. As one Borana male, who was known within the community for his prowess in raiding, explained to me,

"If your age-mates go, then you can't stay because you will have an inferiority complex. I went to raid for pride, not wealth...I wasn't a coward." (Borana, male youth, Girissa)

A number of other youths lamented that they wanted to hear their names called out and praised in the songs of the young ladies when they were to come back from herding in distant places and that it was natural to feel left out if others are called, and you are not.

This “group mentality” also has practical origins that are not tied up in the desire to conform to a group. Logistically speaking, in order to increase one’s chances of success during a raid, it is necessary to ensure that there are more people on your own side than there are on the other side. A Rendille elder explained to me,

“When it comes to Samburu *morans*, one steals and the other doesn’t because the ones who steal are ones who have had animals stolen from them. For the ones who steal without being stolen from first, it’s because *morans* need reinforcement from friends who will help them go for the retaliation.” (Rendille, elder man, Farakaren)

In this sense, young men are motivated to participate on a raid and steal animals as a way of reinforcing his compatriots in order to ensure a greater chance of success.

#### 7.3.2.5 Myths

Here may be an appropriate place to discuss the dangers of an outsider “buying into” the myths and rhetoric about ethnic groups, as told by the neighbouring ethnic groups. I have chosen to write about this aspect here in talking about youth culture because the biggest myth by far that I heard was in relation to how the Borana view the Samburu and Rendille *morans*. On a daily basis, generally more than once a day, I would hear a statement akin to the following:

“Samburu have the culture of the *moran* where they have to steal to get married so this will never stop.” (Borana, elder woman, Malka Daka)

On a number of occasions, I asked the respondents where they had heard this information or what evidence they had on which to base this supposition. Many responded that it is a notion that has been passed down through the generations, or simply that “it is known.” The ethnic myths were not reserved solely for the Samburu *morans*, but I found that each side had their own beliefs of the “other.” For the Turkana, the

“Turkana’s purpose of trying to steal cows is just that they are thieves. A Turkana man will even try to steal children. Stealing is their culture.” (Samburu, elder man, Resim)

In this vein, the Pokot are fierce and undeniably cruel warriors, the Meru are sleeping pacifists, the Somali kill their own brothers to advance themselves, the Rendille are wiley, covert warriors, and so forth. Part of the motivation for working within 17 different sites across three culturally and linguistically distinct populations was to unpack this type of rhetoric and local mythology. During my time in the field, I was likely to interview as many Samburu *morans* who hadn’t raided as those who had, Turkana who were charitable, Meru who were opportunistic, etc. If a well-founded understanding of conflict within these communities is to be achieved, a monumental task is to try to overcome and undo what has been done by colonial isolationist policies. The exclusion of one ethnic group from another creates the ideal conditions by which these myths can be created and propagated, thus making them very difficult to dispel.

#### 7.3.2.6 Differences in Perspectives, Separated by Age

A final aspect to discuss here when assessing the role of youth culture in conflict is that there is a sharp distinction between how youths view conflict and the views of the elder community members. As explained to me by one young Borana male,

“The conflict that I was involved in before, the elders knew of; they didn’t sanction it, but they let it go on anyway. The youths organised themselves, and the elders found out by chance. We didn’t have the elders included because the youths were bitter, and the elders are always worried about the repercussions. The youths were bitter because they believe it was the youths on the other side causing havoc, and it is their job to serve their community. It is becoming more prevalent that the youths are not consulting the elders. The community is becoming disenchanted with the security, and the elders are acting like a roadblock because they fear the government.” (Borana, male youth, Girissa)

From this statement, it is clear that the youths of the community want to do what they feel is part of their responsibility as young, able men within the community by providing security. However, in speaking with the elders, they are more apt to preach moderation towards neighbouring tribes, cooperative behaviour when travelling to border regions, and are fearful of retribution from the government or from the opposing

side. This has created a schism within the community to the point that elders are rarely being consulted, and the youths are characterised by many of the elders as “not even having ears” to hear the advice of their parents. This contemporary view may be somewhat different to the colonial era in which Paul Spencer conducted his fieldwork when he wrote that much of his attentions were “paid to the over-riding push and pull of cooperating and conflicting sub-divisions within the community that are ultimately held together and maintained by the respect given to and dominance of society elders. Ultimately, it is the elders of the community who structure social expectations and regulations that achieve resilience against internal and external forces that may threaten the Samburu way of life” (Spencer 1965: 87). Based on his depiction of Samburu culture at this time, I would suggest that the voice of the elders, in terms of their role in preventing conflicts, has diminished greatly. Both male and female elders pointed out that the modern culture and exposure to education has reduced the importance of the elders to the point that the youths of today feel that their parents have very little to teach them about the world and how to behave.

On the one hand, this may be the case; however, it would be an oversimplification of the matter to state that the youth are the aggressors without ears, paying no attention to the elders who only preach restraint and peaceable cooperation. In fact, a number of youths told me of how their parents sang their praises or slaughtered animals for them in celebration of a successful raiding event, gave them ceremonial combs for killing members of the opposing ethnic group, or graciously accepted stolen animals into their own *boma*, while lecturing them in secret not to join any further raids. During a number of the elder female focus groups, each woman within the group was asked how she would feel and respond to a son who came back to the home territory having stolen animals, with the caveat that there would be no retribution from the original owners and their own animals would be safe. The responses were mixed; however, a significant number of women said that they would accept the animals graciously, thank their sons for what they had done for the family, but then tell them not to go on another raid. There is this apparent duality here that it seems elders preach moderation because they know that raiding will ultimately bring harm to their own herds / people through acts of retaliation or government intervention, and also they do not want to see their sons engaging in behaviours where they could lose their lives. On the contrary, it is difficult to adhere to these principles when parents are quick to praise stolen animals, quick to

ridicule those who do not go on raids or violently defend one's territory or property, or have themselves engaged in raiding activities, from which they are either still reaping the financial benefits (animals) or the social benefits (prestige) from these endeavours.

### 7.3.3 “Revenge Culture”

A third disposition that has a bearing on motivations towards conflict behaviour is that of “revenge culture.” Although people cited “retaliation” as a major cause of conflict when reviewing the conflict incident reporting, with more contextual information taken from the open discussions on conflict in general, a second meaning to this word developed. People talked about a strong, deep-seated belief that a grave wrong-doing such as killing or stealing *must* be revenged. Many individuals stated this as though the concept of revenge was a law or compulsion that they must follow regardless of their own personal beliefs, or even a debt that must be repaid back to one's community if a member has been wronged. As one man explains,

“The Borana have a taboo according to their culture that if a Samburu kills one of them, then they must revenge, even if 3 or 4 years have passed without revenging. Even an old dying man can tell his sons that there is a debt that they have to revenge for him.” (Samburu, elder man, Lolkerded)

One Borana said that the revenge is “like a formality” and that “you don't necessarily have to get the animals back” that have been taken (Borana, elder man, Gotu).

The revenge itself is based on an almost visceral belief that your community's strength or prestige has been damaged, and time and time again, people referred to the ‘pain’ associated with aggressive attacks. Some views I heard to highlight this point were,

“I've had brothers killed, and [revenge] is to return the pain for their death” (Samburu, *moran*, Resim),

or

“Having animals taken by drought is not painful like the pain of an animal being stolen. You don't steal unless you're stolen from.” (Borana, elder man, Kambi Garba),

or

“I would want to be part of a raiding party because I still feel the pain of my fellow Borana and I being raided by the Turkana. My priority is settling how I feel in order to relieve the pain, but this is also connected to getting back animals that relieves pain.” (Borana, male youth, Kambi Garba)

Revenge in this way is a cathartic experience, relieving pain and paying debts back to the community when it has been wronged. One question I had was what is the role of taking animals if one is revenging? Are the animals central or incidental to the revenge? If a kinsman is killed but no animals are taken, can his death be revenged with killing or is the taking of animals essential? As we can see from quote above from the elder Borana man, the taking of animals is not essential during an act of revenge. However as my Borana field assistant explained to me when I asked him this question,

“In [revenge], animals are not the major objective of the raids – it is just to hit back at the enemy. Animals are taken as a sign of power and manliness or strength and superiority that you have depleted someone else’s property.” (Borana, male youth, Kambi Garba)

The taking of animals for revenge represents something superior to just getting one’s animals back or reducing the other side’s financial well-being. It is about ‘hitting them where it counts’ with a view to actually depleting the opposing side’s worth as people.

It is here when talking about revenge that I would like to try to explain the distinction between the way in which these communities live and what they considered to be their “culture.” This distinction was pointed out to me on a number of occasions; however, I think discussing the concept of revenge is the most illustrative for this purpose. I would sometimes ask participants why they would act in a way that was, by observation, seemingly counterintuitive to what I had learned about their understanding and “world view” over the course of an interview. When something struck me as being in opposition to what I came to understand as an individual’s fundamental belief system, I would question why this was the case. Time and again, I received the same answer, “Ah, this is just culture.” One example of this was when I was conducting fieldwork in Farakaren, a remote mixed Samburu and Rendille community in the far northern reaches of Samburu territory. I had been interviewing the only school teacher in the area, himself a highly educated man having been schooled in larger, cosmopolitan areas, such as Meru. Our conversation spanned many topics, and it was clear to me that he

had been heavily exposed to modern Western culture, both in his dress and in many of his views. Later that same day, I interviewed his mother, who was a kind and accommodating elder Rendille lady. Inside her house was a girl of no more than 9 years old who had her ears pierced like that of a married woman. I inquired about the earrings, to which I was told that the girl was married to the school teacher, making her the daughter-in-law to the woman I was interviewing. She said that the girl was to stay in her home until she reached an age whereby she could go to live as a wife in her husband's home. I asked the lady whether the marriage to a young girl had caused any problems for her son or was judged inappropriate for a school teacher, to which she responded, "No, it is just culture." (Rendille, elder woman, Farakaren)

In terms of revenge, for the Borana, the role of "culture" plays a part seemingly juxtaposed to the rules and mores by which people live, in this case to their Islamic practice. As a Borana Imam explained to me,

"In Islam, if someone is attacked and has his property stolen, then it is justified to retaliate against the exact person who stole from you and get back your animals...You cannot take just anybody's from that group – it needs to be exact to the individual in the eyes of Islam. Eye for eye, tooth for tooth is just a culture of the Borana. Their revenge is different from the Islamic religion...Borana retaliate against anyone, which is not living up to tenants of the Islamic religion, and this is not allowed." (Borana, elder man, Malka Daka)

"Culture" here has very deep roots – ones that are not overcome easily, even with the influence of the Islamic faith, which is a relatively new introduction into the Borana community.

#### **7.3.4 "Tribal" Hate**

Hate between one ethnic group to another is the final "disposition" cited as a motivation behind conflict. A question that I asked very young children (from approximately age three and above) quite frequently was whether or not they would play with a child of an opposing ethnic group if they were to meet. Generally, if the child had heard of the ethnic group, and that group was deemed to be bad according to their elders, then they would not play together; if they had heard of the ethnic group, and that group was



deemed to be good, then they would play together; and if they didn't know of the ethnic group that I referenced, then they would also play together. The impression that I got from this exercise was that children within these communities are exposed at quite an early age to who the 'enemy' is and the feelings that one should have towards an opposing ethnic group. These feelings persist throughout childhood, are strengthened during adolescence (particularly for the young males), and remain throughout adulthood, with very few exceptions. I met a Samburu woman who had a Borana mother, which is quite rare; however, it was a product of her Samburu father being a police officer working in the Borana region of Garba Tula, where he met her mother, and where the woman herself was born and lived during her childhood. She is now married to a Samburu man and identifies herself as Samburu. The woman explained to me her feelings on the relationship between the Samburu and Borana:

"I haven't seen my uncles on my mother's side since I was a little girl because I'm married now, and when I visit my mother's home, my uncles can't visit because other Samburu don't like Borana. I have the same feelings as other Samburu have because I am on the side of the Samburu. If my uncles came to visit, I would receive them in both hands. If other Borana not related to me came to visit, then I wouldn't receive them. All Borana are bad, but my uncles are OK because they did nothing bad to me. They are only good because they are related to me." (Samburu, elder woman, Remote)

It may be important to note here that children always identify themselves as having the same ethnic affiliation as their fathers and, should an inter-ethnic marriage occur, the wife will identify herself as having the same ethnic affiliation as her husband – a common practice amongst many East African pastoral populations (e.g., Galaty 1993; Hodder 1982; Spencer 1973). Furthermore, women leave their natal area and go to that of their husband; therefore, it is only the female ethnic affiliation that must change. In the above case, despite being raised in Borana surroundings to a Borana mother, the woman was identified as a Samburu because of her father, and therefore was indoctrinated to attach negative feelings towards the Borana in general, despite the fact that half of her family line is Borana. What this example seeks to highlight is that although ethnic affiliations, in the case of women, can be flexible, there are established expectations as to how one ethnic group should feel towards another ethnic group, whether this be positive or negative. One essential point is that these feelings don't necessarily have to be, and are more often not, based on reasoning. As one *moran* states,

“I feel about the Borana that they are all bad, even the little tiny children.”  
(Samburu, *moran*, Sereolipi)

For opposing ethnic groups, the ‘hate’ that they feel for one another is a reason given for why conflict events occur. As one man simply put,

“Turkana tried to take our animals just because we hate each other. This is normal.” (Samburu, elder male, Farakaren)

I think part of the reason why hate is cited as a motivation for conflict, or even why indoctrinated feelings of hate exist within these groups is that uniting behind ‘hate’ helps to promote intra-group solidarity, and consequently, also helps to identify the enemy as part of the out-group. Reinforcement of this in-group – out-group bias, as discussed in chapter two, provides a pathway to aggressing against ‘the other.’

## **7.4 Triggers of Conflict**

Moving from dispositions to triggers for conflict, a trigger is a temporary condition that initiates conflict when it arises within and between two communities. Broadly, the triggers to be discussed below are: competition for water and pasture resources, retaliation, opportunity, poverty, and politics.

### **7.4.1 Competition for Land, Water, and Pasture**

One trigger of conflict is when there is an increase in competition for water and pasture. As explained to me,

“The biggest contributing factor to inter-tribal conflict is due to pushing Borana off our land. The Samburu and Turkana want this land due to the fact that this area is better than their land because it has sufficient pasture and water. We Borana don’t want the land on the Samburu side.” (Borana, elder male, Gotu)

Owning livestock comes with the necessity to be able to provide sufficient pasture and water for the animals – a demand that keeps herd owners moving in search of productive land, which may ultimately not be found within one’s own territory. Clearly, this pressure increases during times of environmental hardship, such as drought, which may therefore escalate the likelihood of triggering inter-ethnic conflicts.

“The conflicts we’re hearing of [during drought] happen because of scarcity of water and competition over water. Animals are being stolen now because it’s incidental to the fighting.” (Samburu, Lkichami *moran*, Kitich)

One woman further explained the relationship between resource competition and livestock theft when she said that conflicts happen particularly in a drought

“when the animals have just gone to the boundary because they are fighting for grass. They are fighting to compete for grass, but they take animals. This is a given. They don’t fight without taking animals. The taking of animals is to get animals and to chase away other groups from good grazing.” (Samburu, elder woman, Farakaren)

The objective here is ultimately to gain access to valuable grazing land in order to obtain scarce resources for one’s own animals rather than the taking of animals being the motivating factor. Taking animals is incidental to the resource conflict; however, it facilitates moving competitors off of the land.

This particular trigger is actually closely connected to the “prestige culture” disposition, as explained to me that

“Raids have been a cultural tradition to show supremacy over the other ethnic group. You need to show supremacy so that you can stake your claim easily on the land.” (Samburu, elder male, Lolkerded)

By building up one’s “prestige” and influence by acquiring animals, this increases fear in the minds of the opponent. As I saw many times amongst border populations, fear is a strong motivating factor in “running away” or moving off of the land. Rumours begin to circulate that the enemy may be in the area, or that they may have superior resources and firepower, which tends to result in the domestic population moving from the land until the situation “calms down” – an indeterminate amount of time that can last anywhere from a few weeks to a few years in some cases.

“In drought, people are fighting due to poverty and access to grass and water. Each ethnic group wants to push the other one back from the border. The retreater knows that there is no water and pasture back in the interior, which means certain death so they have to fight if they want to stay in the border. Conflict in the border is more to do with having access to grass rather than stealing animals. If they fight, though, they have to try to take animals always. Even though accessing land and grass is the number one reason, they want to make the other group have fear, tension, and feel harassed so that they leave the area.” (Samburu, elder woman, Lolkerded)

### 7.4.2 Retaliation

Retaliation is the second “trigger” which can lead to conflict. The condition here is contingent upon an aggressive act already having been brought against the retaliator. In theory, without the initial attack, then retaliation cannot happen. A most basic function of retaliation is simply for security and protection of one’s land, life, and property when there may be no other official security measures in place. It stems from the “frustration of the government not listening to our cries and helping” so people claim that they are left with no choice but to retaliate and push back on the offending group (Borana, elder man, Malka Daka). This was a sentiment that I heard many times: that official security (government, military, police) is inadequate and ineffective throughout the northern territories. During the conflict incident reporting, I asked people whether or not they reported the incident to any authorities, of which 25% of the incidents went unreported, with the chief reason being that people found the government to offer little or no support, so they felt that reporting the crime wouldn’t make a difference to their circumstances. For the incidents that were reported, 64% of respondents said that they were unsatisfied with the efforts made on the part of the security forces to rectify the situation. Even personally, I came to understand that if I had any grievances where the police should become involved, I didn’t alert them, as experience proved that they were unreliable, completely ineffective, and furthermore, the plaintiff was likely to incur further financial loss in having to pay bribes to the police in order for them to deal with the matter with even a minimal amount of effort. Experiencing the lack of support of the security forces first-hand, it is not surprising that local pastoral communities tended to take matters of security into their own hands. As one Samburu woman explained to me,

“The reason for going [to raid] was for retaliation. [The *morans*] had no stealing in their minds, and they had no poverty, and they had no admiration of animals in their minds. It’s just we lost more than fifty people that year so we needed to push the Somali out or be killed ourselves. This was supposed to be Samburu territory.” (Samburu, elder woman, Lolkerded)

The same principle can be applied in the protection of one’s own wealth by trying to get back *at least* the number of animals that have been taken.

“What the Borana are doing, the Samburu should also do. The Borana steal so one side keeps on taking animals and no one is getting your animals back – what should you do? If the police could get the animals back, then there is no need to raid. We will just stay and accumulate our own animals.” (Samburu, Lkichami *moran*, Sereolipi)

In this way, it ‘balances the scorecard’ between the two sides. Unfortunately, as demonstrated previously regarding the discussion on revenge culture, the specific perpetrator almost never becomes the victim of a conflict incident in retaliation for his crime. An unfortunate reality of retaliation is that innocent people are drawn into retaliation activities, who may eventually become perpetrators themselves, thus contributing to the escalating and cyclical nature of retaliation that makes it very difficult to break.

A central feature of retaliation that should be discussed here is that out of all of the dispositions and triggers described in this chapter, retaliation is seen by these three communities as being the most legitimate motivation for engaging in conflict. In general, people told me that aggression, or an aggressive nature, are not qualities that are seen as being favourable within these groups. Instead, people tended to speak of moderation, a level head, or strong powers of reasoning as being highly valued characteristics. In many interviews, when I queried why an individual participated on a raid, the first response was likely to be ‘just for retaliation.’ However, when digging a bit deeper and discussing the web of surrounding issues, respondents would begin to cite other contributing factors. Rarely, if ever, did a single respondent remain with his / her stance that a conflict incident was motivated solely for retaliation purposes. In referring back to Figure 7.1, this is one of the main reasons why I separated “revenge culture” from “retaliation for security purposes” because although they are thematically linked (see Figure 7.4 later in this chapter), they have very different origins. When thinking about these two concepts separately, “retaliation” as a stand-alone, driving force for conflict doesn’t end up registering as a substantial motivation, even though it is reported with great frequency, likely due to its legitimization. Retaliation for security purposes would be the “stand-alone” trigger, and therefore, this concept is recorded in Figure 7.1.

#### 7.4.2.1 Collectivism in Retaliation

Legitimisation of conflict and the collective nature of these three communities are essential elements to discuss when looking at concepts of retaliation. An important aspect to keep in mind when discussing retaliation is that communities tend to view a loss and blame for an attack in a collective sense. For instance, if one Samburu is stolen from, then it is as though all Samburu have somehow suffered a loss / been attacked. Likewise, if a group of Samburu have perpetrated a theft against another ethnic group, then all Samburu are to blame for the attack. A more formalised collective responsibility has been described among ‘dia-paying groups’ of northern Somalia, where blame / consequences for actions and payment from other dia-paying groups for wrongdoings are shared by the members at large (Lewis 1961). In northern Kenya, this blame can even extend to members of other complementary ethnic groups. For instance, I was witness to a raiding event where a small group of Samburu had attacked a group of Borana, stealing a number of camels and killing a herder. When I spoke to the Borana chief of the area, he told me that in the coming days they would likely be retaliating against a group of Rendille who were settled close to that particular Borana community. When I asked why they would be attacking the Rendille and not the Samburu, as the chief was fully aware that the Rendille had not been involved in perpetrating the attack, the chief responded,

“It doesn’t matter – they are together. If you hit one, it is like hitting the other.”

(Borana, elder male)

In the eyes of the community, the act of retaliation against the Rendille would be condoned as there was a justifying event (“halo” in Kiborana) that the community could point to as the legitimisation for their behaviour. The timeframe of the *halo* can typically range anywhere from a few days to a few months from the original attack, or in rare occasions, it can last several decades or can be passed on to subsequent generations. Also, particularly amongst the Borana communities, one individual can retaliate in the name of another individual who has been wronged, even if the transgressed individual is not known personally to the retaliator. The *halo* that is cited as a reason for attack can be a collective element that brings together all members of a raiding party under one unifying justification for the retaliation event, even if each individual’s motives for joining the raiding party are different. As one man explains,

“Borana steal animals because of retaliation for animals taken from them. Also they steal out of poverty. People can join a raiding party if they want to get

animals even if it's not for retaliation, but the basis of the raiding party is retaliation. I must revenge the death of my stepfather, Mohammed Roba, who was killed. If Borana far away hear of the attack here, then they can attack on behalf of the Borana here. Retaliation on our behalf is fine, and they don't have to report back here that they have revenged for us or give the people here any animals. There can be multiple revenges at all different locations or one large raiding party coming from all over." (Borana, elder male, Kambi Garba)

### 7.4.3 Opportunity

#### 7.4.3.1 Optimal Conditions: Proximity and Obscurity

For populations living within dynamic environments, necessitating a high degree of adaptability, it is logical that they may display opportunistic behaviours. From my time in the field, I saw that opportunism in many forms is a strong motivating characteristic. As discussed in chapter five, there are optimal times to engage in conflict based on seasonal conditions that influence communities' locations in relation to one another and contribute to environmental pressures that may influence behaviour. In this vein, seasonal conditions can help to trigger the social conditions in which individuals may be motivated to engage in conflict events. One such opportunity that may trigger a conflict event is when people are found close to one another in the territorial boundary areas. During this time, taking animals is

"opportunistic stealing when [people] are in the boundary searching for water and pasture." (Borana, elder man, Malka Daka)

Conflict during this time may not be highly strategized, but rather, it is a result of proximity to one another creating the opportunity to take animals with a reduced amount of effort, resource investment, and planning. A number of herders that I spoke to talked about their "admiration" of another community's animals when they are in the border together due to the herd's beauty and size. Being persistently close to one another, this admiration may grow over time to the point that it can spill over into "trying one's luck" and "snatching" animals while they are close.

Likewise, another seasonal condition that creates the opportunity to take animals is during the rainy season when vegetation and foliage cover are high. As discussed in

chapter five, the plant cover provided during the rainy season optimises a raiding party's ability to travel across areas undetected and to catch the opposing side unaware – a strategy that greatly diminishes the likelihood of casualties within the raiding party and increases the likelihood of success in taking animals.

#### 7.4.3.2 Vulnerability: Unarmed, Unprotected, or Imbalance in Manpower

The second opportunity that may trigger a conflict incident is when vulnerabilities amongst one community weaken their defences or their ability to protect themselves adequately. The offending party may seize the opportunity to attack and capitalise on their opponent's weaknesses. In this case, the conflict itself need not be a particularly aggressive act. I was told on many occasions, a motivation for taking animals is when one side can see that the opposition offers very little defence, as would be the case when children are herding animals. As one Samburu man told to me,

“Today seven camels were taken in Loojorin by Turkana. These were Samburu camels. They were taken by stealth from children. The Turkana took the camels just due to opportunity. It doesn't matter if they are poor or rich.” (Samburu, elder man, Farakaren)

Also, in one Samburu community when I was recording conflict incident reports, people time and again reported that their animals were taken in 2004. After recording this date multiple times, I began to make inquiries as to whether 2004 held any real significance or if there was something particularly special about that year that may contribute to the levels of conflict that people were experiencing at that time. What I found out is that this particular community circumcised their new Lkichami *morans* in 2004, of which the neighbouring Pokot community were aware. One man explained to me that the crossover between the out-going *moran* age set and the in-coming *moran* age set can be precarious as defences are low, and the new *morans* need some time to adjust to their new roles within the community. He said that the Pokot capitalised on this vulnerability by attacking incessantly during 2004, managing to capture a substantial number of animals from their neighbours.

When deciding where to raid, it is typical for the raiding party to discuss the location of the government, if they are present. The government, in this sense, is any state-level security force – whether an Administrative Police post (AP), local policing unit, the



General Service Unit (GSU), an Anti-Stock Theft Unit camp (ASTU), or a military post, such as the Kenyan Army or Air Force. Although from talking with people, a government unit offers relatively little protection to the communities that it is serving. However, it still stands to reason that a raiding party would be looking to optimise their chances of capturing animals, reducing casualties within their group, and would hope to retain the stolen animals until they can safely return to their home territories. It is logical that in order to achieve these three goals, the raiding party would be more apt to focus on communities where there is little / no government presence rather than those that are located near a government outfit.

“The place chosen to attack is all about the government – as long as the government is not present. Even if the place is far- we will go and attack there,”

Although, to reinforce the earlier point, this individual goes on later to criticise the government by saying,

“It’s very bitter that the government pretends to intervene. [When my animals were stolen] six trucks of police came, but they did nothing because they are cowards even though they could see the dust of the animals.” (Borana, elder man, Kambi Garba)

What should be highlighted here is that although the government is ineffective in practice, their presence, or more importantly their lack of presence, can be a motivating factor in whether or not to attack a certain location. If no government resistance is likely, then this can buoy the raiding party into action.

It is possible that the intrinsic ‘fear’ or aversion towards the government despite its inefficacy may to some degree be a remnant of the effects of colonial government security on these communities. During interviews, all sides agreed that the colonial government managed a successful and strict policing regime whereby,

“the colonial government made people fear to do big raids. The government walked with the people all of the time so they felt the presence of the government.” (Samburu, elder man, Lenchokut)

As one elder explains,

“the colonial government gave harsh punishments to keep the peace...the British camped in Marsabit between the Rendille and the Borana so when anybody created a problem, the aggrieved could report to Marsabit and even if the

accused ran away, the colonial government would punish the accused's family so the accused would come back. I think that it was good to do it that way because people didn't repeat their mistakes. It brings peace to everyone and reduces the crime. Then, criminals could not hide. The family had to give over their animals to the police, and when the accused was handed in, they would get their animals back." (Samburu, elder man, Farakaren)

In stark contrast to the current government, people recall that the colonial government was ever-present, enforced strict boundary controls between communities, diligently followed-up on community reports of theft or killings, and dealt heavy punishments to guilty parties. It is important to note that colonial security for pastoralists was not always the case in Kenya. Most notably at the end of the 19<sup>th</sup> century, the British had allied with the Maasai, supporting stock raids against neighbouring groups in order to dampen local resistance against the British government (Waller 1976). However into the mid-20<sup>th</sup> century, Paul Spencer writes that "during the late 1950s and early 1960s, the British administration did impose a system to interfere in any matters which came to its notice in order to keep an uneasy peace between formerly hostile neighbours, such as the Samburu and Boran and intercede in any serious affray within the Samburu itself. Stock thefts, murders, and raids were investigated, and new laws against game killing, damaging forests, and grazing cattle in forbidden areas were introduced," and he goes on to say that in the 1950s, "apart from minor incidents, the *moran* as warriors held no real significance, however, with the coming departure of British administration in 1963, the Samburu saw this as heralding a return to their former way of life for the *moran*" (Spencer 1965: 99). I found during my fieldwork that in describing the past, the three communities agreed in their discussions regarding security during the colonial period in contrast to that of the current government. In the years around 1963, there is a sharp increase in conflict incidents reported, for which people point to the departure of the colonial government, and a subsequent lack of security being provided by the government as the motivating factor behind this increase. This trend has persisted until today that unprotected communities present the opportunity to trigger conflict events as there is little fear of government reprisal and punishment of the offending transgressors when targeting these communities.

#### 7.4.3.3 Gun Ownership

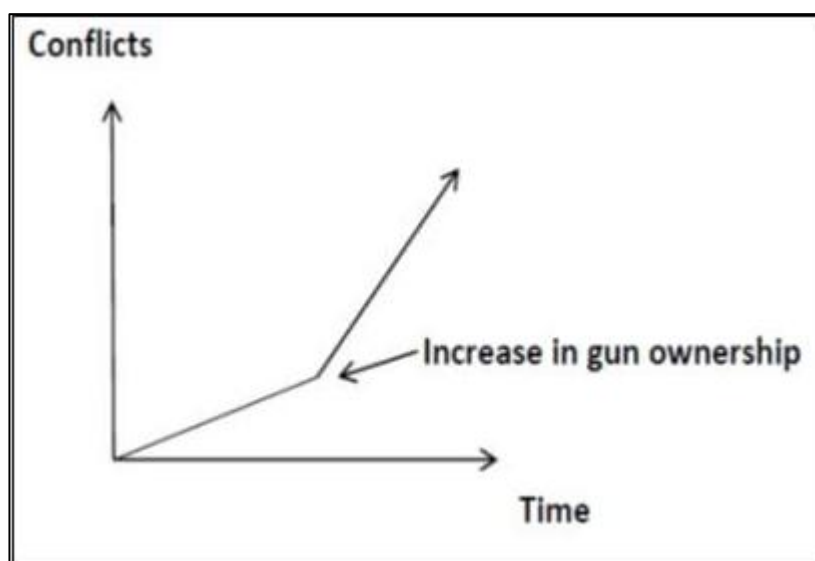
Following on from a lack of security, gun ownership is another opportunistic condition that may trigger conflict events. There has been extensive literature on the detrimental effects gun ownership has had among pastoral populations. Government provisioning of weapons to ethnic groups has allowed for the manipulation of pastoral communities in order to acquire land and gain political influence, as McCabe describes in the consistent raiding of the Turkana by the government-armed Pokot (McCabe 2004). Mirzeler and Young (2000) demonstrate how gun use has the ability to change existing social dynamics within pastoral communities, where weapons proliferation has led to a decline in the influence of elders as warlords expand their authority. Ultimately, many authors agree that disparity in weapons, in terms of number and lethality, is influential in creating the condition that may trigger conflicts (Gray et al. 2003; Gray 2000; Mirzeler and Young 2000; Turton 1994; de Waal 1989).

In speaking with a Samburu teacher living within a border community close to the Borana territory, he described to me the local history of gun ownership amongst the *moran* herders. He said that conflicts have become more prevalent

“Nowadays from 2007 until present being the worst. At this time, Lkichami were initiated and started having their own guns. Conflict has always been there, but it escalated due to gun ownership, starting in Lmooli. Lkishili and Lkuroro had conflicts but not at the level that it’s at now, as with Lmooli.” (Samburu, elder man, Lolkerded)

The teacher then went on to draw a graph for me (Figure 7.3) depicting that conflict over time has not been a steady linear progression, nor did it start with the introduction of guns, but instead it sharply increased when gun ownership became more prevalent during the time of the Lmooli *morans* (approximately 1990 – 2005).

Figure 7.3: Drawing by a Samburu teacher showing a sharp increase in conflict incidents coinciding with an increase in gun ownership



Gun ownership quite drastically changes the nature of conflict and creates the opportunity for conflict, as one man reveals,

“[Gun ownership] changed the nature of the warfare because a man with a gun gets courage because even the coward has strength now, and they start wishing they had more guns so they steal to buy some more.” (Borana, elder man, Malka Daka)

Many people reported that owning a gun can buoy one’s confidence when engaging in conflict, and the increased potential for success can spur individuals into action.

An essential characteristic of gun ownership is not only the mere fact of having a gun, but instead, conflict can be triggered when there is a disparity in the level of gun ownership. If equal firepower exists on both sides of a territorial line, one group is not more likely than another group to engage in conflict, however, if there exists the perception that one’s own firepower exceeds that of one’s neighbour, then the advantageous opportunity is created for a successful raiding event. One woman simply states,

“The purpose for the Somali stealing is because they see that people don’t have guns so it is an easy opportunity.” (Borana, elder woman, Malka Daka)

I saw this to be the case during my fieldwork, when the government began a six month disarmament scheme, starting in December 2009, with the plan of disarming all

northern pastoral communities. In theory, it was a massive undertaking, with varying levels of success, but what I did find is that communities having been “disarmed” reported to me that they could not engage in raiding activities because they themselves were not armed while their enemy remained armed (without empirically knowing the status of the enemy). Furthermore, I heard that youths were rapidly organising themselves to participate in raiding activities when they knew that a neighbouring ethnic community had been disarmed while they themselves remained with their weapons. There was a sense that they were striking before the government had the opportunity to disarm them, and they themselves capitalised on the opportunity presented to them while they were in possession of superior firepower in relation to an opposing group.

#### 7.4.3.4 Markets and Commercialisation of Conflict

The final opportunity that may trigger conflicts is the creation of ready-made markets and the commercialisation of conflict which benefits the raider by providing a profitable outlet for stolen animals. A member of the Samburu community living on the border with the Pokot explained to me that,

“When a Pokot raids and steals animals, they tend to pack them into lorries and sell them. This is a new practice that started about 1.5 - 2 years ago...the educated [businessmen] who are the agents give the Pokot raiders contracts to raid animals, pay them, then they take [the animals] to bigger markets to sell them. [The Pokot] get money from the agents for the animals, and with the money, they buy lots of guns that others can rent if they want to go to raid and also they provide bullets...Renting a gun is 1 cow taken from the raided stock...The agents pay the raiders for each stolen animal, which is a throw-away price because the animal is stolen. It is a throw-away price as the raider might be caught.” (Samburu, elder male, Lenchokut)

As this respondent states, commercialisation of conflicts is a relatively new phenomenon that involves unscrupulous businessmen from outside of the community creating a ready market for stolen animals and the means (weaponry) by which to acquire the animals. This ploy has been used to great effect during drought periods where raiding potential is high, but the risk of livestock death due to malnutrition is also high. However, if agents are willing to buy animals and ship them to larger, distant

markets for sale, the problem of keeping stolen animals during a drought is diminished, and therefore increases the likelihood of conflict. In talking to people from Lolmisigiyoioi, who had stolen animals returned to them after persistently pressuring authorities into action, their confiscated livestock had been shipped to markets more than 350 km away from where they had been stolen. It is the agents who are able to create the opportunity for lucrative conflict incidents due to their available wealth (in buying animals / funding weapons), their business sense (in knowing how to broker arrangements with pastoral communities), and their access to markets (in shipping animals and avoiding / bribing authorities).

#### **7.4.4 Poverty and Employment**

Acute poverty as a result of the loss of animals is another trigger that can lead to conflict events between ethnic communities. Most often poverty and livestock loss occur through the effects of prolonged / severe drought, livestock disease, raiding events, or state confiscation of animals. If a family no longer can support its basic needs, the youth may turn to raiding animals in order to restock animal losses when the situation is particularly dire, and the livestock have been lost relatively abruptly. One man relayed to me that a motivation for stealing animals for some is

“poverty. You don’t have animals, and you hear of a raiding party going so you follow.” (Samburu, elder male, Farakaren)

Poverty is pervasive throughout the region where I worked, yet as a motivator for conflict, poverty was more of an individual pursuit. As the quote above suggests, a raiding party typically needs to be formed first, having apparently “legitimate” reasons, and then individuals may join the raiding party in order to strengthen the party’s numbers. However, their individual motivation may simply be to acquire animals when they themselves have been made poor. A number of people told me that restocking animals by theft when you are poor is not their first option, but rather a last resort when all other means have been exhausted. As the respondents mentioned, pastoral communities will try to “bring up” their herds (reproduce them) after catastrophic livestock losses, or they will borrow animals from kinsmen / family members / stock friendships in order to breed them, or they will seek alternative contract employment to support their families and to purchase animals for further reproduction. Raiding to restock is not mentioned as the primary strategy one would utilise under these

circumstances; however, it does happen, with increasing frequency as alternatives may be exhausted or unavailable. After a catastrophic event, people may not be left with any animals to breed and replenish lost stock. Furthermore, with the increase in co-risk from droughts, stock alliances and family members may all be left poor and in need of animals at the same time. Finally, the acute loss of animals may overwhelm the number of temporary contract positions that are available when there is high demand for employment. With few alternatives, pastoralists may be forced into raiding animals in order to support their families. Respondents were somewhat reluctant to discuss raiding as a strategy to combat poverty, which gave the impression that this trigger for conflict is seen as “illegitimate,” and as pastoralists, there is also some amount of shame in stocklessness (e.g., Waller 1976).

Due to a lack of legitimacy and associated shame, I felt that the motivations behind poverty avoidance were more subverted and more personal. The public face of conflict events may be sanctioned in the name of retaliation or as a way to provide security to the community, however a desire for poverty relief may exist in the hearts and minds of some of the raiding party’s members. As one Samburu elder, who was a prolific raider during his days as a *moran*, told me,

“When *morans* from Samburu go to steal animals, they do so because of poverty. If people are starving and idle and have no other alternative, then they will steal. Stealing animals to combat poverty is not the first thought. He will look to others first for help. If exhausted, then he will go to stealing. In the *moran*’s mind, they don’t share their secrets with the elders.” (Samburu, elder male, Lolkerded)

This quote also helps to explain the inherent relationship between “*moran* / youth culture” as a disposition and poverty / lack of employment as a trigger for conflict (see Figure 7.4 later in this chapter). As previously discussed, if the male youth within the community find themselves lacking animals, and therefore inherently unemployed, then they are not serving their role / filling their designed purpose within the community. As a result, they may try to steal animals in order to regain their employment and reinstate their identity. Likewise, a lack of employment makes the youth idle, which provides them with the opportunity to turn their attentions towards conflict. An administrator for one of the community madrasas commented to me that when poverty strikes,

“the youth become idle, which makes them gangsters.” (Borana, elder male, Isiolo),

and one sub-location chief told me that,

“the Lkichami *morans* are stealing now because they are not employed and have no animals to herd and are in poverty problems. Lkichami is the only generation that was initiated without animals in the bank. They are the poorest and also the most aggressive. Their aggression is due to poverty and idleness.” (Samburu, elder male, Lolkerded)

Without viable alternatives, and a lack of employment and purpose, the youth will use their time and energy to engage in conflicts in order to reinforce their identity, gain employment, and thus help to ensure the financial security of their families.

Another motivating factor that shouldn't be neglected in this discussion is hunger. For the young males of the family, during times of resource stress, the burden of labour is disproportionately greater for them than any of the other family members, although labour increases substantially during this time for all members. Malnutrition and associated illnesses due to hunger can be highly problematic for the young men at this time. I myself witnessed the physical transformation of many of the herders when they returned from distant pastures during the drought to their home areas – often times, individuals were unrecognisable to me as their bodies adapted to significantly greater calorie intake once they had left the bush and were able to relax during the rains. It was only then that I could gain an appreciation for the effects of malnutrition and the toll that hunger takes on the herders during periods of resource scarcity. For the Samburu *morans*, their cultural eating restrictions place an additional burden on them during this time. *Morans* are not allowed to eat alone, meaning they have to be in the presence of a fellow age-mate in order to consume food or drink, and they are not allowed to eat anything but milk in the home of their mothers, which is their preferred staple diet. As one elder explains,

“Because *morans* can only eat milk at home and not maize, it is only the cows that make them free and make them able to come home. If after the drought, there are no cows, then the *morans* will have to look for them if they want to be free. Otherwise, they will always be in the bush.” (Samburu, elder woman, Remote)



After periods of prolonged resource scarcity and associated nutritional hardship has passed, the *moran* herders are looking to come home and be able to live more freely and regain much of the strength that they have lost over the months of migration and hardship. However, without animals to milk, the *morans*' time at home will not be free, and individuals without animals will have to eat supplementary foods in the bush, away from the settlements. As a *moran* cannot eat alone, this will place additional stress on him if he cannot eat within the home and has to wait for available age-mates. In this respect, poverty and continued hunger, particularly in the case of the Samburu *moran*, are very much motivating factors triggering youth to engage in conflicts with a view to replenish decimated livestock levels.

#### **7.4.5 Politics and Government Incitement**

Pastoral communities in the north have remained largely independent of government oversight and government intervention, both to their benefit and to their detriment. Although, from what I saw, these northern ethnic groups are very much interested in political issues on a national level, access to impartial, official information can be difficult. Not only is illiteracy very high in this region, but for the average person, there is no access or limited access to television or radio. In August 2010, I was located in a remote Samburu community during the referendum vote for the new Kenyan constitution. At the end of the day, I asked an elder woman if she had voted, to which she said that she had. I asked her what she voted for, and she responded, "Red." When I asked her what 'red' stood for, she responded, "Kibaki." The woman was under the impression that the vote was to elect a new president and did not know that a vote for red was to reject the new constitution. When I asked around the rest of the community that same evening, the picture became quite clear that despite the government distributing pamphlets for a number of months prior to the vote and trying to ensure that there was sufficient access to remote communities such as this one on the day of the vote, the information wasn't accessible, and most people were ill-informed regarding the purpose of their vote.

In this kind of setting, it is no surprise to hear numerous stories of government corruption, exploitation, manipulation, and coercion – far too many to document adequately here. However, the unifying nature of these stories of political manipulation is that local politicians or government bodies were fully implicit in either: 1) inciting

conflict between communities specifically for their own direct political gains, or 2) administering excessive punishment on communities, which incited conflict in the form of retribution against neighbouring communities.

The jostling for land and power by local politicians illustrates the first. In the cosmopolitan area of Isiolo, an area inhabited mostly by Borana and Somali, but with a growing Turkana presence, there exists a tense struggle for power and influence. In 1996,

“Turkanas supported Romano Losike Nasur, and the Borana supported Mokku. [The Turkanas] took advantage of the breakdown in relations to attack. After the 1997 election, the relationship became even worse because the Turkanas were incited by their leaders to stand up for their rights. The Turkanas were killing people in vehicles travelling the road so the relationship in Kambi Garba became bad too. Between 1993-1996 more Turkanas came. In 1997, the Turkana population continued to grow...The small stealing escalated until the pinnacle in 2009. This is due to the elections in 2007. 2008 was a time for rumours where the Borana were blaming the Turkana, and the Turkana passed the blame onto the Samburu who passed it back to the Turkana, then real violence happened in 2009. Also, in June to October, the government gave KPR guns to the Borana and to the Turkana, which escalated the fighting. The government gave the guns so that people could protect themselves, but people weren't even trained. You just go to the chief or police or OCS and say you have animals that you want to protect and so they give anyone a gun – especially if you pay a little bit of money as everyone wanted one.” (Borana, elder male, Kambi Garba)

Tales such as these of political corruption and incitement all happen in border areas having a significantly mixed population, such as near Isiolo or Maralal or Marsabit. MPs are vying for land, power, and most importantly, re-election. Politicians require a solid voter-base having close ethnic ties, therefore they must also ensure that these ethnic groups have strong claims to the land within their constituency and will not be moved on easily by competing ethnic groups. In order to help ensure claims to land, I heard a number of accusations from the communities that they had been supplied with weapons, food, and money by the local MPs and were also told the “plans” of the other side that there were designs, fuelled by the opposing MP, to take over their land,

animals, and resources. In this instance, the MPs and local government officials didn't necessarily have to 'dirty their own hands.' However, with the clever use of rumours, fear, and support, they were able to trigger conflict events within their area, with a view to their own political gains.

The second type of government trigger and incitement occurs through excessive collective punishment of a community. A famous example of this in the north was during *Daba*, where the Borana united with the Somali *shifta* against the independent government due to fear of the Kikuyu political leaders spreading Christian influence amongst these northern Muslim populations. However,

“Eventually shiftas were defeated because the government attacked many Borana and put their animals in concentration camps and burned them down or shot them. This was actually the *Daba*. People were also put in concentration camps and killed...Many people were left in poverty, and there was no government relief then.” (Borana, elder male, Malka Daka)

For the majority of Borana and Somali that I spoke to who were alive during this time and remember the early 1960s *Daba*, it was an event that left a lasting impression that much wealth and financial security was lost at this time. An extended family's entire assets may have been decimated at this time, leaving people in abject poverty. Many people had to turn to alternative means, such as joining raiding parties, to try to rebuild their herds as there was no other assistance or places to turn after the government destroyed their animals as a show of force and community punishment. Likewise, in March 2009, the Isiolo MP, Dr Kute, led a successful campaign against the Samburu claiming that the Borana, whom he represented, had been hapless victims of the Samburu's incessant raiding behaviour, and he requested that the government step in to deliver punishment upon the Samburu and to return the thousands of animals that the Samburu had taken from the Borana. As a result, the GSU and Kenyan policing units launched a series of attacks on the Samburu along the Samburu-Borana border areas, where with the aid of automatic weapons, vehicles, and helicopters, they killed a substantial number of Samburu, drove people from their grazing land, and managed to capture approximately 4000 – 5000 animals from Samburu families living in the area. These animals were taken from the Samburu community collectively – from families, widows, the elderly, the innocent, and the poor. The captured livestock were to be returned to Borana families who had had animals stolen from them by the Samburu in

the past, however in reality, these animals were distributed to families at random, or they were kept / sold by the officers and members of the police in large numbers. When I discussed this incident with a number of Borana respondents, even they agreed that the government used excessive force, and their actions were illegitimate as a blanket punishment against an entire community. As can be expected, these Samburu communities themselves felt extremely bitter towards the government, towards Kute, and by default, towards the Borana people for what had happened to them and to their livestock. A number of people cited this particular incident to me when discussing why they took animals during the 2009 drought as they were seeking retribution against what they saw as illegitimate government intervention. Events like the *Daba* and the 2009 seizure of Samburu animals by the government help to trigger further conflict events between communities as a form of retribution and as a redistribution of wealth.

## **7.5 Discussion**

### **7.5.1 Population**

A number of authors, including Homer-Dixon (1999), have argued that population growth is linked to increasing resource scarcity and is therefore an essential component that contributes to the resource scarcity – conflict relationship. This argument reflects a Malthusian view of unchecked population growth resulting in contentious human relationships as societies compete for scarce resources (Fraser et al. 2003). However, a number of other authors have pointed out that warfare is not an inevitable product of high population densities (Johnson and Earle 2000). This thesis, in light of the ethnographic data, supports the latter view and rejects Homer-Dixon's claim that population growth is a key contributor to resource-based conflicts. During interviews, population growth was never cited as one of the underlying motivations for conflict. Although it is true that competition over land and resources was one of the most recognised contributors to conflict, the competition the informants were referring to was a result of drought diminishing water and fodder availability rather than an increase in the human or livestock populations. In fact, people now note that the livestock populations have dwindled to very few animals compared to the herd sizes of previous generations. Little et al. (2001) also recognise this general trend. Because of the small herd sizes, many participants comment that the capacity of the land is sufficient for their needs. As one Borana man explains in regards to sharing lands with the Somali,

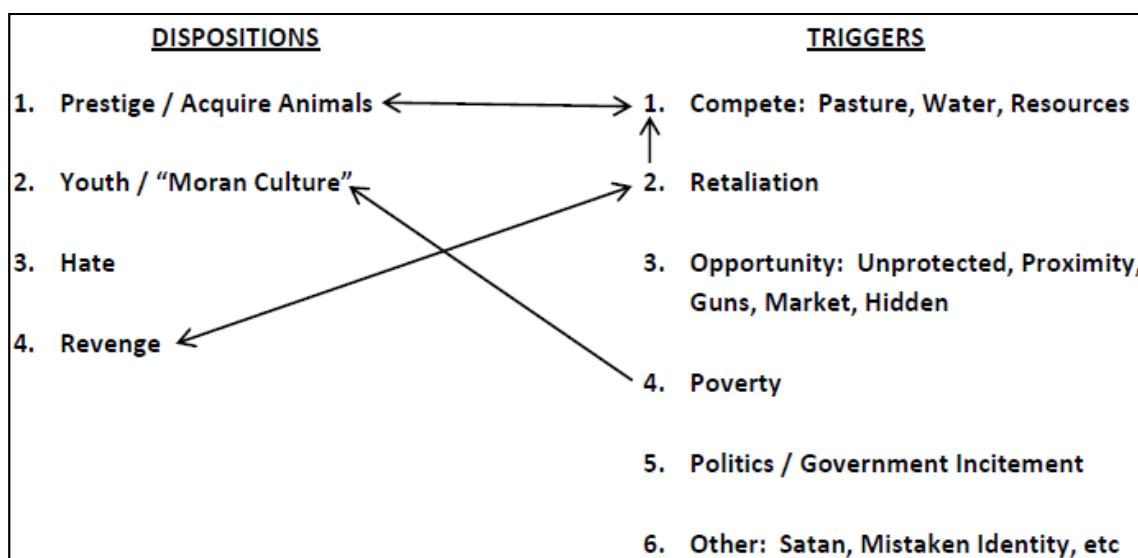
In 1995 and 1996, the Somali started coming back because they love this land here. The land in Isiolo District is particularly good for pastoralism. There are two rivers here...there is plenty to share here.” (Borana, elder male, Kambi Garba)

Based on comments such as these and an understanding that livestock stocking densities are kept at levels below ecological carrying capacity due to the effects of drought (Behnke and Scoones 1993), these results support the argument that population growth is not a necessary component of resource-based conflict.

### **7.5.2 Relationships between Triggers and Dispositions**

As alluded to in section 7.3.1, many of the dispositions and triggers discussed in this chapter are not working in isolation from one another. For instance, insights offered by the discussion on “prestige culture” support this understanding and also acknowledge that the nature of these associations can either be one factor contributing to an escalation or decrease in another factor, or they can equally influence one another. Not only does the level of prestige on one side affect one’s ability to compete for valuable resources, but also being successful in competing for resources can increase one’s influence and prestige. Figure 7.4 below visually demonstrates the inherent relationships that exist between the described dispositions and triggers. Here, we can see that prestige contributes to one’s ability to compete for resources, just as one’s ability to compete for resources further reaffirms one’s prestige. Finally, a community having a high prestige value in comparison to a neighbouring group may actually reduce overall competition for pasture and water through driving the opposing community from their land due to fear before actual conflict incidents can occur.

Figure 7.4: Associations between dispositions and triggers demonstrating that these factors do not operate independently of one another



### 7.5.3 Multi-Causal Nature of Conflict

As discussed at the beginning of this chapter, the motivation behind conflict is rarely, if ever the result of a single cause, but instead it is a complex suite of factors (dispositions or triggers) that lead up to a conflict event. Despite making this point clear in the introduction, in the rest of the chapter for the sake of clarity and thoroughness, I have discussed the dispositions and triggers of conflict individually. However, at this stage, I would like to draw the reader's attention back to the essential argument that conflict motivations are not stand-alone conditions, and the quotes that have been chosen in the previous sections are only very small parts of much longer interviews where the respondents typically discuss a number of motivations, and through reading the complete interview, a picture begins to emerge that reflects the multi-causal nature of conflict. The following extended excerpt taken from an interview with a Samburu *moran* (Box 7.2) helps to illustrate the point that these motivations, both triggers and dispositions, should not be taken in isolation, and the reader may get a sense of how these particular aspects work together.

Box 7.2: the multi-causal nature of conflict (Interview with Samburu Lkichami *moran*, Lenchokut)

*In the last drought, I was herding cows and shoats for my father only. Before I left home, my father gave me advice. He told me to take responsibility of the cows and that they were solely my responsibility so I must try my best. My father is of the Lkishili.*

*When I knew that I had full responsibility of the animals, I felt that I needed to be positive in my behaviour and must take responsibility. I liked the idea of having the responsibility, and at that point there were no worries or concerns. Before I left, I knew the drought was going to be as bad as it was. To prepare for my departure, I made preparations by getting a gun, getting bullets, and cleaning the gun. [Opportunity: gun] I didn't buy the bullets from anywhere; I just picked them up from the ground and got ten bullets in this way. The gun was an M16. I had bought the gun already along with some bullets. The gun was bought from some Somalis at the border. I paid for the gun with four cows. I left home with six other morans. From the six of us, all of us had guns. I've actually had my gun for over three years.*

*One of the hardships that we faced was the conflict with the Borana stealing animals. Food and water was a big problem because animals move and spend days out and even go to the river the next day so there is no time to search for food. These things were a problem. [Poverty: hunger] We slaughtered about six cows from my herd. There were about one hundred cows in my herd at that time. I did ask for permission from my father. The first place we took the animals was my decision, not my father's. [Youth / Elder Perspective] We eventually went to Losesia. Going to the border like that gave us concerns for our safety, but we had to go because it had plenty of grass. If all of my cows died of starvation, it would have made me feel completely bad because I would have had nowhere else to go so I would have just had to have come home. [Youth: employment] If I had come home with all the cows being raided, I would have felt even more pain than if they had just starved. [Animals: meaning] I would have had to retaliate. [Retaliation] Towards the young ladies, I would have felt shame if the animals were raided but not if they had died of drought. [Youth: ladies incitement] There is no shame there.*

*When we got to Losesia, the Borana were grazing their animals so close, less than 200 meters away. [Opportunity: proximity] We didn't speak with them. As long as we had guns, we could ensure that the cows were safe while in the border. The Samburu met and had patrols moving ahead of the cows in order to keep a security line until the cows were able to come back home. The animals that we were herding were attempted to be stolen – not in Losesia but in Daraja – Mungu (close to Kom). We had been there for two months before the incident happened. In those two months, we also admired the Borana animals, but we didn't want to steal them because the Borana were too close, and we could have lost our own animals. We waited until the fall of the first rain before*

*taking any animals and going home. This is when we are further from each other.*

[Raids: conditions – see chapter 5]

*We met together to talk about stealing and decided to go for a raid. We raid first and then decide what each of us gets. The primary reason for stealing animals is problems – when we don't have animals. [Poverty] When we had the meeting to steal, at that point, I had lost all but six cows. If I had had all one hundred cows left, I would not have gone for the raid. Some morans who joined hadn't lost that many animals, but we just wanted reinforcement from them. [Collectivism] We were not able to capture any cows in our attempt though. I came home with only six. In choosing which area to raid or which Borana to raid, we chose a direction and hit just the first ones that we met.*

[Opportunity: proximity]

*My father has told me not to raid, but I turned a deaf ear [Youth / Elder Perspective] because I didn't want to be left without animals to herd when other morans have them.*

[Employment] *If I had been successful and bought back ten raided cows, my father would say nothing because he has no authority over what I do. [Youth / Elder Perspective] I would give the cows to my father, and he would say thank you. He couldn't give the cows back to the owners because it would cause a fight with me and my father. If I wasn't herding animals, maybe I would just go to school. I would prefer herding over school because there is no one else in my family to herd. [Solution: education]*

*In order to stop the conflict between the Samburu and Borana, both sides need to be disarmed simultaneously. [Solution: security] The season that has the most conflicts is lari because we are free to go and raid then. [Employment: idleness] I raided in the beginning of lari when the Borana were still close. [Opportunity: proximity] Now is not a good time to raid because it is drying up so we are not free – we need to take care of our animals. If riai becomes more frequent in the future, we wouldn't think of raiding because we would just want to keep peace so that we can graze our animals. We wouldn't want to raid and incite more conflict because our animals would be too weak to run away continuously if the Borana kept on attacking them. [Raids: conditions] I will only listen to my father's advice and hear him if he is telling me good things. The young ladies here praise raiders – I also want to be praised too. [Youth: ladies' praise]*

*No one has managed to keep a gun here. Armed people were reported by a spy (yimyim) from within the community, and the government paid him. Everyone knows*



who he is, and they hate him now. Yimyim has no relationship now with even his own family. He's only alive because he's being protected by the government in Isiolo. He wrote a list and handed it in and then the operation [disarmament] came with yimyim to the community. The operation here took three months, and no one ran away or stashed their gun because they are known people, and the government makes people suffer to produce the guns by kicking and beating the family, taking money, and burning clothes. [Solution: security] My gun got taken by handing it over to the chief, and then your name gets crossed off the list. Without our guns, we feel more tension because the Samburu don't have guns and the Borana do have them still. [Opportunity: guns]

If the drought hits again, we will still go to border but with great fear. We will behave differently there – we won't go to the exact places as before. We won't be on the 'touch line' of the border with the Borana, and we will graze far from them. We want to have our guns back. We're not planning on buying guns because we don't have the cows for it. If they come up, then we will buy guns and will go to the Somalis to buy them.

[Opportunity: guns]

Borana steal animals for the same reason as us. The size of the Borana herds is bigger than the Samburu's. The fight isn't just about cows; it's also about pasture and water.

[Compete: pasture and water] Fighting helps because the Borana leave their area due to fear so the Samburu can expand their pasture, and they also don't have to wait for water. If I went to the border and lost the ninety-four animals solely due to drought but never saw a single Borana, I wouldn't still try to raid. I can't go looking for them if I haven't seen them. Even if I just grazed my animals here and lost all ninety-four of them here, I still wouldn't go looking for the Boranas'. [Opportunity: proximity]

There was tons of small stealing in border. Small 1 – 1 stealing continues until it escalates into a big raid. If the small 1 – 1 stealing didn't happen, the big raids wouldn't happen. [Retaliation: escalation] When we go on a raid together, we feel very good – a bit light. It makes us bond. [Collectivism] Being a Samburu and raiding is part of our cultural right. [Prestige Culture] The Borana saying that morans must raid to marry is false. [Myth]

The government should not interfere with us. We also want to have plenty of animals so that we can be independent and live our sweet life. We will be happy when we graduate and have our own family because I will be resting and others will take on responsibility.

*A Borana who is the same age as me is different from me just from the grudge we have that we repel from each other. [Hate]*

#### 7.5.4 Disposition for Cooperation

In writing a chapter on motivations contributing to conflict events, it is easy to lose sight of the argument that pastoralists in northern Kenya also have a tremendous motivation towards cooperative behaviour between different ethnic groups. Saying that one group of people has a disposition that may contribute to engaging in conflict is not synonymous with saying that they have a *tendency* towards aggressive conflict. Under the appropriate conditions, pastoralists will engage with their dispositions and triggers that contribute to cooperative behaviour. One such disposition is the pastoral practice of reciprocity, that due to the unpredictable environment in which pastoralists live, if an individual or group asks for assistance in the form of water, resources, or access to grazing, the request should never be denied. The basic premise here is that ‘I may have today, and so I will give to you, as tomorrow I may need, and you will have to provide.’ The disposition towards cooperative communal living is very strong within and between these communities and between individual interactions. As long as both sides come together in peace, then no one will be denied water or access to grazing if there is hardship on their side. As one Borana man said,

“We allow other tribes in to graze because we cannot have people die due to lack of food or water. We all face common problems, and we have a sense of belonging to each other. We also want reciprocity that we could graze on the Samburu side if there are problems on this side.” (Borana, elder man, Girissa)

A crucial element to this type of communal reciprocity is that both sides need to come together with the intention of peace (whether temporary or permanent) in order for the exchange to be successful. It is customary that the elders from both ethnic groups will first come together and discuss the terms of sharing resources, on which both sides will agree. Livestock and herders will then converge in the same region with the hope that peaceful conditions will carry them through the hardship months; however, the ‘dispositions’ of the youth and the triggers of opportunity through proximity, guns, and poverty, for example, may take their toll after some time. There is a balance that must be struck as communities modulate between cooperative and competitive behaviours, acting on communal dispositions or individual dispositions that may lead to conflict.

Even amongst the youth, despite urges described in the preceding pages as “youth / *moran* culture,” there is also a disposition within this sub-group of society that is inclined towards cooperative behaviour. For the *moran*, the hardship of eating prohibitions also promotes beneficial behaviour amongst the youth members as

“not eating alone makes it essential that you maintain cooperative relationships with fellow *morans*, that you’re never alone in the bush, and that there is always someone else to rely on. One may have food to share on one day, and then the other may have food to share the next day. This maintains the bonds between the *morans* as they are sharing food.” (Samburu, *moran*, Kitich)

It can be argued that such strong internal bonds create a distinction between ‘us’ and ‘them’ which may encourage competition with others; however, these communities do recognise that at their most basic levels, they are all pastoralists, and they all have the same struggle for survival. During my time in the field, I did hear a number of stories of youth from both sides digging wells together, sharing grazing areas, or exchanging veterinary medicines during the drought when they were in the border areas together. This is not completely exceptional behaviour, and the older generations all told stories of sharing a significant amount of time, anywhere from a few months to a couple of years, living in close proximity to apparent “enemies” and sharing times of relative peace.

A reinforcement of the disposition towards a pastoral communal belief system is if two ethnic groups share a number of cultural practices or common beliefs, both of which aid groups in rectifying periods of tension or unease. Many of the Rendille respondents that I spoke with told me that the Samburu regularly small steal (1-1) livestock from them when the two sides come together, however the Rendille never respond with any form of retaliation. This was confirmed by the Samburu who say the Rendille never take animals from them. When I asked the Rendille informants why this was the case, the response was always the same. The Rendille identify themselves as cultural brothers to the Samburu, having a similar appearance, a shared use of beads and decoration, and generations of intermarrying has resulted in Rendille family names being found amongst the Samburu. They simply say that they are all brothers, and as such, they cannot retaliate for instances of small stealing against the Samburu.

Likewise, the relationship between the Somali and the Borana is complex, and seemingly turbulent from an outside perspective. On a number of occasions, the Somali have asked permission to move into Borana territory due to severe and prolonged drought within their home areas. Due to the pastoral communal belief system, the Borana have always granted access to the Somali into their territory to utilise the water and pasture that is available there. Based on information that I received from a number of Borana communities, the Somali have most recently been hosted within Borana territory from 1970 – 1986, 1990 – 1992, and 1995 – present, however they were forcibly removed by the Borana through large-scale fighting in 1986 and 1992. The progression of events appears to be repetitive, as told by the Borana, each time: 1) the Somali suffer scarcity of pasture and water in their area, 2) they ask permission from the Borana to co-occupy the Borana territory, 3) the Borana accept, 4) the Somali graze for a period of time without major incidents occurring, 5) the drought ends in the Somali territory, 6) the Somali refuse to leave as they are partial to the resources available within the Borana territory, 7) the Somali begin a series of attacks and aggressive acts towards the Borana in order to try to push them from their land, 8) after some time, the Borana retaliate in a full-scale war and manage to push the Somali back into their own territory, 9) the Somali apologise for their aggressive behaviour. After a few years, the process repeats itself, and the Borana again allow the Somali to enter their territory for grazing and access to resources when they are asked for assistance. It is interesting to note that the Borana, in living memory, have not requested permission to graze or use resources within the Somali home areas. Given the tumultuous history that exists between these two ethnic groups, one may assume that the Borana, based on prior knowledge of the Somali's behaviour, would eventually deny the Somali access to their home territory; however, this is not the case. This example highlights the strong disposition for pastoralists to act cooperatively when a group is faced with hardship and scarcity; however, in the case of the Borana and Somali, a cooperative disposition is reinforced by their shared belief system. As one Borana woman explains,

“Somali have been forgiven for stealing where the Samburu have not because Somali are Muslims, and they pray together for peace and so they are forgiven, but Samburu are not Muslims” (Borana, elder woman, Malka Daka)

In this case, it is the shared religion that helps to reinforce and repair cooperative relationships between the two groups when there is a temporary disagreement or period of tension. The nature of cooperation and the strategies that help to mediate potentially

competitive relationships are discussed further in the following chapter. This chapter has helped to demonstrate, through using detailed ethnographic data, that the causes of conflict in light of increased resource scarcity are rather more complex than the direct relationship examined in chapter five and six. Instead, it is a relationship that is mediated by inter-related, multi-causal factors. Building on this insight, chapter eight will discuss the mechanisms, or strategies used, that help to understand how social and causal factors influence the drive towards aggressive or peaceable interactions between ethnic groups.

## Chapter 8: Conflict and Cooperation in Pastoral Populations

---

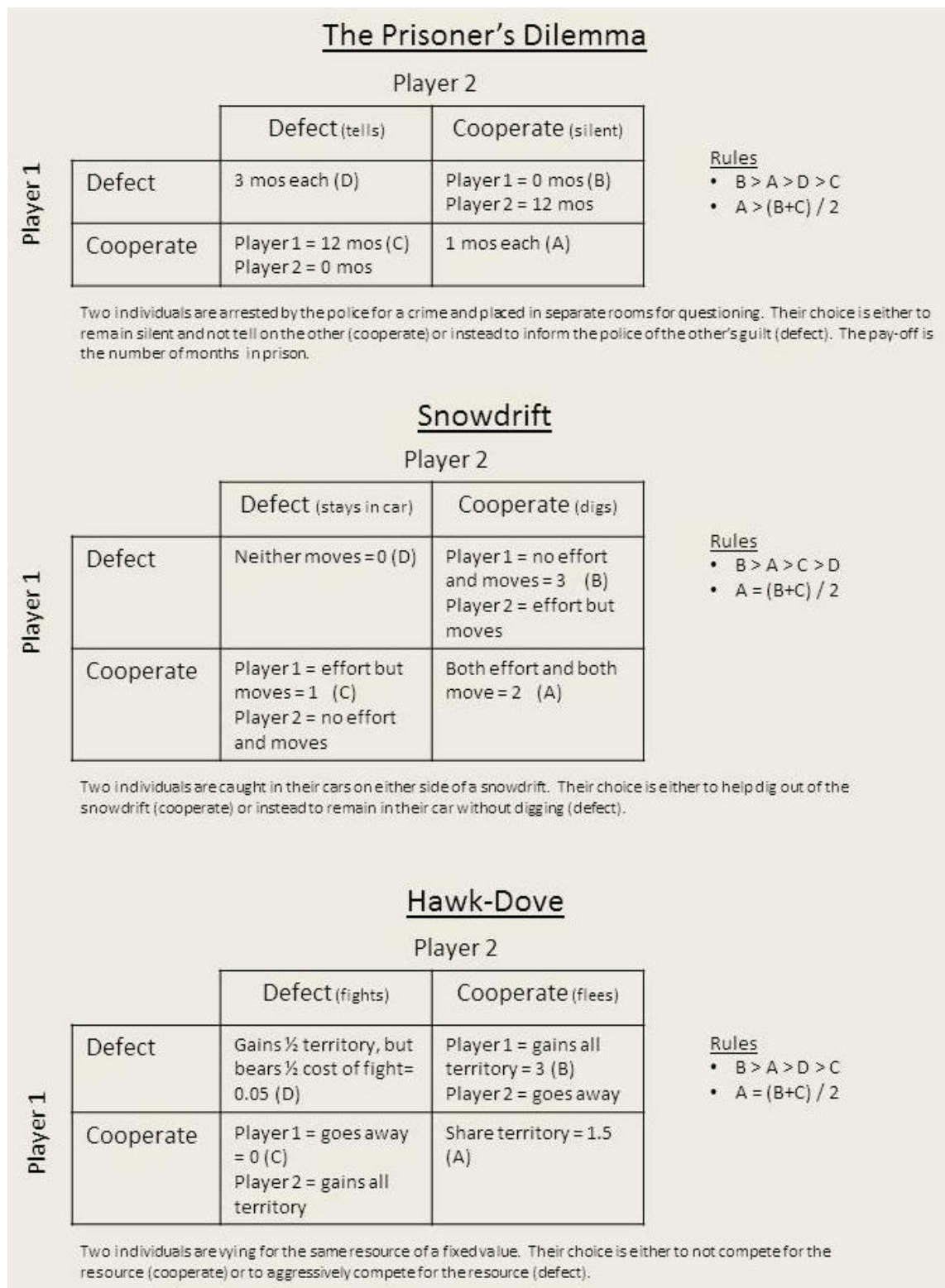
### 8.1 Introduction

All human populations have the potential for aggression, and none are entirely devoid of conflict; however, cooperation is a fundamental component of human societies that allows us to live as a social species (de Waal 1992). As previously discussed, if both conflict and cooperation are part of the human toolkit, both potentials can be realised and are selectively and dynamically utilised as beneficial tactics in inter- and intra-group interactions (Johnson and Earle 2000; Dentan 1992). The result is not only great behavioural and cultural variability between populations but also among populations, depending on their particular historical and geographical circumstances. This chapter addresses the conditions and context in which conflict and cooperative tactics are utilised by the three ethnic groups, using game theory as an analytical framework.

### 8.2 Applying Games to Empirical Data

Game theory has been applied broadly to a vast array of disciplines, from economics to mathematics, biology and sociology, and as such, there are a great many model games that have been developed to explain relevant concepts. In fact, there are more than 30 games that have been used to understand optimality of strategies in multi-person interactions. The three games that I focus on in my analysis are the Prisoner's Dilemma, being the most-widely discussed game in the literature, the Hawk-Dove game, also widely discussed and relevant to questions of competition over resources, and the Snowdrift, which places greater emphasis on cooperative relationships. Each of these games is constructed in a similar manner: there are two players, and they have two possible choices (defect or cooperate), and dependent on the choice that each makes and the choice of the opponent, there is an associated pay-off. Figure 8.1 details each game and their associated pay-off matrices.

Figure 8.1: Diagram describing pay-off matrices and scenarios for the Prisoner's Dilemma, Snowdrift game, and Hawk-Dove game



For clarity, a comparison of each of the games' pay-off matrices is provided in Table 8.1.

Table 8.1: Comparison of the pay-off matrices for three games

|                                                                                                                                         |                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BOTH DEFECT (D)</b><br>Prisoners: medium cost for telling<br>Snowdrift: 0<br>Hawk-Dove: (benefit resource – cost of fighting) / 2    | <b>DEFECT, OPPONENT COOPERATES (B)</b><br>Prisoners: receive all benefit<br>Snowdrift: receive all benefit<br>Hawk-Dove: receive all benefit |
| <b>COOPERATE, OPPONENT DEFECTS (C)</b><br>Prisoners: large cost for silence<br>Snowdrift: benefit – all cost of digging<br>Hawk-Dove: 0 | <b>BOTH COOPERATE (A)</b><br>Prisoners: small cost for silence<br>Snowdrift: benefit – (cost of digging / 2)<br>Hawk-Dove: all benefit / 2   |

As discussed in chapter two, the pay-off matrix for the Prisoner's Dilemma indicates that during a single iteration of the game, the most rational decision is one of defection, primarily due to the prohibitively high cost of cooperation in the face of defection (C). For the Snowdrift game, the proportion of cooperative acts is expected to be substantially higher than the other two games because even cooperation in the face of defection still provides a benefit (i.e., digging leads to moving the car) to the cooperating individual (Kummerli et al. 2007). In the Hawk-Dove game, there is less of an incentive towards defection because: 1) it can be costly in terms of injuries if both players defect (D), and 2) cooperation in the face of defection (C) results in no injury to the individual as the dove will peacefully give up claims on any resource in this situation (Maynard Smith 1982).

Assessing each of these games in light of their individual pay-off matrices and reward schemes is a crucial step when applying such models to empirical data as the composition of these elements has been shown to have a significant effect on the proportion of cooperative to competitive acts (Ledyard 1995). Table 8.2 below illustrates the associated costs and benefits (in light of real data taken from each population) for inter-group interactions between the Samburu / Rendille, and the Borana mapped onto a game pay-off matrix. The scenario of the game, based on conditions similar to fieldwork in 2009 and 2010 is as follows: one of the yearly rains has failed in northern Kenya and the dry season continues without any reprieve in sight. The elders from two neighbouring, disparate ethnic groups have come together to broker an



agreement for both of their communities to come together in a boundary area where they can share overlapping grazing areas and watering points until such a time as the rains come, and the two groups can return to the interior of their territories. Whilst in the boundary area for an undetermined amount of time, they can either choose to continue to cooperate with one another and share the resources peacefully, or they have the opportunity to defect on one another, forcefully taking over land, resources, and the other ethnic group's livestock.

Table 8.2: Table showing the pay-off matrices for the pastoral drought scenario, which reflects a Prisoner's Dilemma game

|                            |                                                     | <b>Borana</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            |                                                     | <b>Defect</b><br>(take land & animals)                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Cooperate</b><br>(graze & share land peacefully)                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Samburu or Rendille</b> | <b>Defect</b><br>(take land & animals)              | <b>Both:</b><br><u>Benefits (+):</u><br>Gain others animals<br>Attract wives<br>Bond w/ agemates<br>Gain territory / resources<br>Gain prestige / reputation<br>Increase security<br><br><u>Costs (-):</u><br>Loss life / injury<br>Loss / confiscation animals<br>Loss continued reciprocity<br>Loss territory / resources<br>Loss prestige / reputation<br>Financial cost of battle<br>Increase retaliation<br><br><b>Value (D) = =</b> | <b>Defector:</b><br><u>Benefits (+):</u><br>Gain others animals<br>Attract wives<br>Bond w/ agemates<br>Gain territory / resources<br>Gain prestige / reputation<br>Increase security<br><br><u>Costs:</u><br>Loss continued reciprocity<br>Financial cost of battle<br>Increase retaliation<br><br><b>Value (B) = + +</b><br><br><b>Co-operator:</b><br><u>Benefits:</u><br>Gain future reciprocity<br><br><u>Costs:</u><br>Loss life / injury<br>Loss animals<br>Loss territory / resources<br>Loss prestige / reputation |
|                            | <b>Cooperate</b><br>(graze & share land peacefully) | <b>Co-operator:</b><br><u>Benefits (+):</u><br>Gain future reciprocity<br><br><u>Costs (-):</u><br>Loss life / injury<br>Loss animals<br>Loss territory / resources<br>Loss prestige / reputation<br><br><b>Value (C) = - -</b>                                                                                                                                                                                                           | <b>Both:</b><br><u>Benefits (+):</u><br>Access land and graze animals peacefully<br>Gain future reciprocity<br><br><u>Costs (-):</u><br>Sharing scarce resources<br><br><b>Value (A) = +</b>                                                                                                                                                                                                                                                                                                                                |

|  |  |                                                                                                                                                                                                                                                                              |  |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  | <b>Defector:</b><br><u>Benefits:</u><br>Gain others animals<br>Attract wives<br>Bond w/ agemates<br>Gain territory<br>Gain prestige / reputation<br>Increase security<br><br><u>Costs:</u><br>Loss continued reciprocity<br>Financial cost of battle<br>Increase retaliation |  |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

The pay-off matrix was generated by looking at data recorded from each of these populations taken from the conflict incident reporting. It takes into consideration what people have cited as benefits to conflict, benefits to peace / passivity, and the associated costs for both. These figures show the relationship between factors, i.e. one quadrant is relatively better or worse than the others for the participant.

The pay-off matrix in Table 8.2 shows a pay-off structure ranked as  $B > A > D > C$  (i.e., [taking land and animals with very few costs] is better than [grazing together peacefully and having to share land] is better than [both sides taking land and animals with costs incurred by both] is better than [having land and animals taken from you]). Referring to Figure 8.1, this ranking would exclude the Snowdrift game – the primary reason being that this game places too high a value on cooperative acts in the face of defection (C) for it to be relevant to the pastoral population matrix. In comparing Table 8.2 to each of the pay-off matrices in Table 8.1 for the Hawk-Dove and Prisoner's Dilemma, there are a few points for consideration:

- 1) The Hawk-Dove fits more closely with the pastoral population matrix for value (D) as both sides will receive some benefit minus some cost to each, both of which are shared between the players.
- 2) Value (B) is applicable to either game.
- 3) Most importantly, the Prisoner's Dilemma fits more closely with the pastoral population matrix for value (C) as the cost of cooperation with the opponent defecting is substantial. In the Hawk-Dove, the cost for passivity is counted as 0, which is unrealistic for the pastoral context.
- 4) The Prisoner's Dilemma is a better fit with the pastoral populations for value A as there is a small associated cost with sharing land and resources, as these

are scarce resources, which therefore become reduced if shared amongst many.

In light of the above assessment, the pastoral population matrix best fits with the Prisoner's Dilemma (PD) model, which will be the game that is referenced throughout this analysis. The PD is rather appropriate for this purpose as "provided that the payoffs to each side satisfy the inequalities that define the Prisoner's Dilemma, the results of the analysis will be applicable" (Axelrod and Hamilton 1981: 1392). Furthermore, although classic game examples are explained with the individual as the unit of analysis, which some social scientists may find problematic, comparisons to iterated play between two endogamous groups is satisfactory for these purposes (Maynard Smith 1982).

### **8.3 The Samburu / Rendille and Borana Relationship**

This analysis will first examine the most "complex" relationship as these were the pairings that came up most frequently during conversations I had with research participants. Actually, there are two relationships described here: a) the Samburu and the Borana, and 2) the Rendille and the Borana; however, the nature and principles governing both of these relationships, as discussed in the previous chapters, are quite similar and therefore will be discussed as Samburu / Rendille and Borana. Primarily, the relationship here is based on one of reciprocal altruism, which is typically characteristic of peasant societies living under uncertain environmental and social conditions, where it cannot be anticipated who will need help in the future and who will be in a position to provide help (Erasmus 1955; Scott 1976; Panter-Brick 1993). Empirical studies by Kaplan and Hill (1985) have shown that food sharing amongst rural communities can increase the overall food availability from 20 – 80%, therefore making reciprocity an attractive strategy for managing resource insecurity. During my fieldwork, shared grazing rights were held as a value in high regard amongst all three ethnic groups in equal measure. As one man explained to me,

"We allow other tribes in [our area] to graze because we cannot have people die due to lack of food or water. We all face common problems, and we have a sense of belonging to each other. We also want reciprocity that we could graze

on the Samburu side if there are problems on this side.” (Borana elder man, Girissa)

The unpredictable climate in which the Borana, Rendille, and Samburu live exerts a great pressure on these communities, yet it also exposes their common ground: they are all pastoralists, and they are all confronting the same challenges. As discussed in chapter two, reciprocal altruism provides an incentive for cooperation to establish itself within group interaction, and given the right conditions, potentially to flourish.

As discussed in the previous chapter, the vast majority of livestock theft and aggravated conflicts between the Samburu / Rendille and Borana can be classified as retaliatory. As one woman describes,

“There has always been a lot of back and forth stealing between the two groups – every year that game has been going on.” (Samburu, elder woman, Sereolipi)

In attempting to classify each of the conflicts that the Samburu and the Rendille brought against the Borana, they can best be described as relatively numerous (in comparison with the Borana), relatively small-scale (smaller groups of raiders, stealing smaller numbers of animals than the Borana), and brought about in response to “right” some perceived “wrong-doings” by the other side. One Samburu elder explains,

“If the animals are taken, you must revenge.” (Samburu, elder man, Lolmisigiyoioi)

A younger Samburu man continues to describe Samburu raiding strategies when he says, “When I was coming back, I stole one Turkana cow and brought it back to my area with me. Then, the Turkana retaliated and stole two cows. Then the owners of those two cows took a number of cows from the Turkana. Then it will go back and forth like this until one group organises a large raid, but eventually we become friends again.” (Samburu, elder man, Lenchokut)

In analysing Samburu and Rendille conflict in relation to Borana conflict strategies, due to their back and forth nature, consistent vigilance and maintenance of incursions into their territories, and insistence that any infractions be rectified absolutely immediately, the Samburu and Rendille in relation to the Borana can be categorised as Tit-For-Tat strategists.

For the Borana, the situation is slightly different. From conflict incident reports taken from both the Borana and the Samburu / Rendille communities, conflicts initiated by the Borana tend to be less frequent, with more raiders involved, adequately planned, and much larger groups of animals being taken in any single raiding event. One of the Imams in the Ewaso area explained to me,

“When I was living in Kom, the border was not entirely peaceful, but it was the colonial period so there were Administrative Police there monitoring the boundaries, but sometimes Samburu would come and cross to graze and sneaky steal 2-5 animals because it is their culture...When the offenses become many, the Borana would hit back with a big raiding party, once. Generally, we were friends to one another.” (Borana, elder man, Malka Daka)

Repeatedly, Borana informants classified their type of conflict behaviour to me as that of a sleeping snake:

“The Borana are like a sleeping *buti* [snake] that doesn’t move easily, but when it does, it strikes once and strikes hard.” (Borana, elder woman, Gotu)

In reviewing this conflict behaviour, the strategy displayed by the Borana is more akin to the Tit-For-Two-Tats (TFTT) strategy. This was developed by Robert Axelrod himself during the second simulation tournament. He developed the TFTT as an improvement on the TFT strategy, which may result in a “death spiral” of echoing defection should the TFT interact repeatedly with an aggressive tactic. TFTT retains cooperation on the first move, just like the TFT, but it will only answer with defection if the opponent defects twice in a row rather than in response to the first defection. In this way, TFTT is a more forgiving strategy which helps to re-establish cooperation within a repeated interaction with a TFT strategist. In Axelrod’s second tournament, the TFTT did very well against the TFT; however, it was not the tournament winner because it can easily be taken advantage of if it faces particularly aggressive strategies with high rates of defection (Axelrod 1984).

The TFT and the TFTT both start with the first move being an act of cooperation, which is reflective of the real behaviours that we see between these pastoral groups. In this case, both sides come together and arrange to graze in one another’s territory; a request that is almost never refused as open access to land is a fundamental right of pastoralists, regardless of ethnic affinity. When assessing the stability of the TFT and the TFTT

strategies in an iterated game of the Prisoner's Dilemma (IPD), the pure strategies would play out as follows:

Table 8.3: Iterated game having TFT and TFTT strategies

|      |   |   |   |   |   |   |   |   |   |   |   |   |   |     |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|-----|
| TFT  | C | C | C | C | C | C | C | C | C | C | C | C | C | END |
| TFTT | C | C | C | C | C | C | C | C | C | C | C | C | C | END |

The table above demonstrates what would take place in a simulated exercise where strategies remain “true” to their designed tactics; however, the real world can be a much different picture. Even for cooperative populations, as described in the above table, unforeseen defections can invade the system in a number of ways in the real world. One way defection enters is through the opportunity that unconditional cooperation (ALL C) can provide. Defectors do very well in these situations and can easily take advantage of a habitually forgiving opponent. Second, quite simply, mistakes can happen. For instance, herders on all sides have reported to me that when large groups of livestock go to drink in shared wells and dams, it is common for animals to become mixed into another herd. It is only later that herd owners realise that some animals are missing or that they have accidentally acquired new animals. When this happens and relations are stable between the benefactor and the loser, then the misappropriated animals can be easily returned to the rightful owner; however, if there is pre-existing tension between the two sides, then communication may not be forthcoming enough to rectify the situation, thus fuelling the tension even further (Maynard Smith 1982). Finally, miscommunication can also lead the intrusion of defections. Miscommunication generally takes the form of blaming an “innocent” ethnic group for another group’s “crime.” During interviews, I recorded this happening repeatedly where Somali were mistaken for Borana, Samburu mistaken for Rendille, Turkana mistaken for Samburu, and even Samburu mistaken for conservancy rangers following incidents where animals had been taken. When information is transmitted orally, over a great distance, and through many individuals, discrepancies and misinformation are likely occurrences. Keeping this in mind and reviewing the above simulation, a more “realistic” version might result as follows:

Table 8.4: Iterated game having TFT and TFTT strategies, with the introduction of unintentional defections

|      |   |   |   |   |   |   |   |   |   |   |   |   |   |     |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|-----|
| TFT  | C | C | C | D | C | C | C | D | C | D | D | D | D | END |
| TFTT | C | C | C | C | C | C | C | C | C | C | D | D | D | END |

As the first move for both the TFT and the TFTT is a cooperative one, these strategies dictate that the play would continue in an all cooperative manner. However, defection (D) may be introduced due to mistakes, miscommunications, or by accident, therefore unintentionally altering the play in the game.

### 8.3.1 Transition from Non-zero Sum to Zero Sum Games

One of the fundamental principles of game theory application, as discussed in chapter two, is that the ESS fluctuates depending on the expected length of the game. Quite simply, if the number of interactions is finite and known by the players, then the only evolutionarily stable strategy is one of all defection (Axelrod and Hamilton 1981; Kummerli et al. 2007). Defection on the last interaction is optimal for both sides (if it is known to be the last), and therefore defection on the preceding interaction would be beneficial, and so forth and so on, all the way back to the initial interaction. For the PD, cooperation will be able to establish itself and persist throughout interactions only as long as both sides can anticipate that they will remain in need of one another for an indefinite period of time. As discussed in chapter five, when two populations come into a boundary area to share grazing and resources, initially this is for an indefinite period of time, and as such it behoves individuals to behave responsibly and cooperatively in order to ensure continued grazing when resources elsewhere are scarce. However, as discussed, when clouds start to gather and both sides realise that the rains will soon be coming to their areas, there is less of a pressure to cooperate, and as such, there is a relative explosion of conflict during this time. This phenomenon can be clearly explained using principles of game theory. Axelrod and Hamilton have written that

“the ability to monitor cues for the likelihood of continued interaction is helpful as an indication of when reciprocal cooperation is or is not stable. In particular, when the value of  $w$  falls below the threshold for stability...it will no longer pay to reciprocate the other's cooperation...Both animals in a partnership would then be expected to become less cooperative...resulting in an incentive to defect so as

to take a one-time gain when the probability of future interaction becomes small enough” (Axelrod and Hamilton 1981: 1395).

For pastoralists, the pattern described above is representative of what one would expect when moving from a non-zero sum game, where multiple strategies are utilised and participants’ gains and losses are aggregated, to a zero-sum game where competition results in the benefit of one group over another. McAdam et al. (2001) highlight this point when describing Russian life under Gorbachev’s reforms where

“Time horizons contracted rapidly. On the large scale and the small, people could no longer count on payoffs from long-term investment in the existing system; they reoriented to short-term gains and exit strategies.” (Layton 2006: 118)

Clearly, whether or not two parties perceive a situation in which interactions will continue has a direct bearing on whether or not cooperation is a sustainable or favoured strategy. In reality, there are three ways in which to conceptualise one’s future interactions with another group:

- 1) I know we will continue to interact into the future for an indefinite period of time.
- 2) I know that we will not continue to interact in the future.
- 3) I do not know if we will interact in the future, but it’s possible.

As already discussed, condition (1) will continue to promote cooperative strategies (i.e., TFT) where there is an emphasis placed on reciprocity. For condition (2), the only stable strategy is one of complete defection (ALL D) in order to ensure optimality. Condition (3) is more nuanced in as much as the resulting behaviour depends on the likelihood that one places on the probability of interactions continuing into the future. Axelrod and Hamilton suggest that the factors affecting this reasoning are: the average lifespan of individuals within the populations, their relative mobility, and the health of the individuals (1981). Boyd (1992) continues on to say that when the expected number of interactions differs between individuals, selection tends to favour cautious strategies, which ultimately delays cooperation between two groups. There is likely little debate that the economic, political, environmental, and social situation in northern Kenya is one of unpredictability and fluctuation. Having a highly mobile herding population that diversifies herding locations depending on the vagaries of rainfall distribution and



international indices pointing to health standards well below average (UN 2005-2010 World Population Prospects indicate the average life expectancy in Kenya at 54.1 years, well below the worldwide average of 67.2 years), it is conceivable that pastoralists in northern Kenya view the future within relatively “short” timespans. In order to test this hypothesis, I asked a number of individuals (~25) the following question: If I offered to give you 100 ksh (£0.80) today or 1000 ksh (£8) three months from now, which one would you take? Without exception, all participants opted for the 100 ksh. The reason being,

“I do not know about tomorrow – I may die tomorrow. You may never come back, and then that money means nothing to me.” (Borana, elder man, Malka Daka)

For these communities, future unpredictability operates in two ways. On the one hand, when benefits and prosperity are unknown, this situation favours reciprocal altruism and cooperative strategies in order to spread and effectively manage risk. On the other hand, when an opportunity presents itself and is assured, an unpredictable environment can pressure individuals into, quite bluntly, “getting while the getting is good” with very little regard for the future. In this case, the likelihood of future interactions ( $w$ ) becomes eclipsed, and as suggested by Boyd, cooperative strategies can be delayed.

### **8.3.2 Mechanisms Promoting Continued Cooperation**

The above discussion demonstrates that the Samburu / Rendille and Borana populations, displaying TFT and TFTT strategies respectively, have the potential for continued, cooperative interactions. However, defection is an ever-present potential due to the effects of miscommunication, misrepresentation, opportunistic benefits of defection, and a reduction of the timescales in which pastoralists operate. Given this reality, what lessons can game theory provide in attempting to favour conditions in which cooperative strategies are optimal? Elinor Ostrom et al. in the book *Rules, Games, and Common-Pool Resource Problems* states that “The Prisoner’s Dilemma is a useful device for demonstrating the conflict between individual rationality and group rationality...when they cannot communicate and establish agreed-upon rules and strategies, and when no other authority has established and enforced effective rules, predictions of suboptimal use...are likely to be correct...individuals will defect on one another, and potential collective benefits will not be achieved” (Ostrom et al. 1994: 5).

Ostrom's plan has three basic conditions that are necessary if defection is going to be limited: 1) communication, 2) establishing rules that are satisfactory to all parties, and 3) enforcing established rules through the sanctioning of defectors.

The primary step in trying to satisfy these three conditions is to first be able to accurately identify who exactly is involved. Strategies can lean towards cooperation if either individual recognition is possible or if the number of potential partners that one interacts with is kept small (Maynard Smith 1982; Axelrod and Hamilton 1981). Knowing who is involved and the nature of their behaviour is absolutely crucial in monitoring outcomes and sanctioning defectors. Second, although Ostrom never explicitly states that group homogeneity is necessary for establishing rules that are collectively agreed upon, she does say that all involved members need to have similar views and values if viable rules are to be effectively maintained (Ostrom et al. 1994).

For pastoralists in northern Kenya, the reality of their current situation can cause difficulties when trying to adhere to the above principles for maintaining cooperative interactions between groups. First of all, it is not always apparent who is involved in a particular interaction. As previously stated in this chapter, due to physical similarities, Rendille can easily be mistaken for Samburu or Borana for Somali. Even within each of these populations, due to the constant shift of individuals over the land, interior populations responsible for a theft incident, for instance, can easily be mistaken for a border population located close to the site of the theft. Defectors' tactics are numerous and varied, for instance, disguising themselves as different ethnic groups, walking stolen animals through the territory of another ethnic group or clan, "stashing" animals in the bush until tensions are calmed, and "laundering" animals through the use of corrupt businessmen who can sell stolen animals at distant markets, just to name a few. Accurate identification in this instance is not as straightforward as it may first appear.

Second, accurate and reliable communication is not always possible during inter-ethnic interactions. There is almost no linguistic overlap between these three groups, and the medium of communication is predominantly through mother tongue. Communication in this instance needs to rely on a limited number of individuals who can express themselves equally well in Swahili. In this regard, spontaneous or more informal communication between group members can be challenging. Even when the medium of language does not provide any obstacles, there is the secondary issue of

miscommunication when information is transmitted and potentially mutated as it goes from one individual to the next, which will have unforeseen repercussions.

Third, group members (between groups and within groups) are not always homogeneous in their views, desires, and values on which rules and adherence to rules are constructed. For instance within populations, group elders and youths may have different views about expected behaviour during interactions with neighbouring communities. When herders go to the border during extended dry periods, the elders from both sides have to negotiate the peace agreements:

“During drought, Samburu go to the border and have meetings with the Borana to ask that they maintain peace because they need grazing...Samburu leaders are told by *moran* that they are approaching the boundary, and the Samburu elders call the peace meeting.” (Samburu, elder woman, Sereolipi)

However, the efficacy of these peace meetings is often times called into question by community members, with many complaining that while the peace meetings are going on and the elders are negotiating peace and grazing agreements, the youth can be concurrently engaged in small stealing, thus undermining the elders’ efforts. Clearly, the desires of one sub-group are not completely in-line with those of another, which can hamper effective communication and group decision-making.

Finally, Maynard Smith made the point that even between groups capable of communication, agreeing on viable rules of interaction, and with effective punishments in place for defectors, these conditions still do not guarantee stability or cooperative behaviours amongst participants. He argued that without punishment for individuals who are tasked with enforcing the rules of the game, individuals would likely accept the benefits of the contract and try to avoid the costs of enforcing it (Maynard Smith 1982). In this regard, enforcement can be delegated to a third party, who may be rewarded for effectively punishing defectors.

In northern Kenya, pastoral elders may be wary of punishing offenders for stock thefts despite agreeing that defectors should be punished. A number of the respected men from these communities told me during interviews that they did not want their youth to be punished if they were complicit in a raid because the authorities would either incarcerate them, or the loss from the theft would be over-reported to the authorities by

the offended ethnic group, which would result in an over-appropriation of stock that would need to be paid back to the aggrieved community. Police authorities in northern Kenya are notorious for their heavy-handed tactics. In fact, in March 2009, many innocent Samburu families living in the Archer's Post region had their livestock populations decimated when the Kenyan government launched a retributive measure against this community for previous, notably small-scale, offenses against the neighbouring Merian, Borana, and Garre. Accounts taken from both the Samburu and the Borana describe the government action as unjust, using lethal force against unarmed individuals, helicopters to round-up stock, and indiscriminate punishments. The results were devastating not only to the Samburu livelihood, but in fact it helped to fuel already-present tensions between the Samburu and Borana.

In relation to the above situation, Axelrod and Keohane (1985) stressed that "when sanctioning problems are severe, cooperation is in danger of collapsing. One way to bolster [cooperation] is to restructure the situation so that sanctioning becomes more feasible" (1985: 236). In moving forward, Elinor Ostrom et al. warn that rules and regulations coming from the outside can be highly dangerous as they may not be sensitive to the needs or understanding of the groups being governed, resulting in suboptimal adherence and benefit (Ostrom et al. 1994). Paul Spencer notes that this was precisely the predicament that resulted from the establishment of the King's African Rifles to patrol the northern frontier on a permanent basis from 1921. He states that "the principle criticism is that [the Samburu elders] did not actively help the British to bring murderers to (British) justice; a justice that was as cold-blooded and inhuman in Samburu eyes as inter-tribal murders were to the British" (Spencer 1973: 162). Quite correctly, Paul Spencer goes on to make the point that as the colonial period advanced, the British government assisted in monitoring and managing borders, however penalties for any wrong-doings were more effectively dealt with when following 'tribal law' governed by the community elders and based on local value systems. Spencer notes that during his fieldwork, any interventions he witnessed that were taken by the elders as a punitive measure were done so "to restore peace rather than to prolong the feud" (1973: 100).

As one Borana woman explained during the drought,

"[The elders] were in Archers Post and held peace meetings and decided that for every 1 cow stolen, 5 would be repaid. This was the agreement made between

the Borana and Samburu. That was decided on in March 2010, but it has not been implemented.” (Borana, elder woman, Malka Daka)

Again, a well-established punitive system for handling any wrong-doings between the communities is already in place and agreed upon as legitimate action by both sides. However, adherence to enforcing the punishment is severely lacking. Throughout the duration of my fieldwork, I was never aware of any payments made between two groups for stock thefts or in payment of injuries / deaths, thus leaving an unpaid debt between communities that needed to be rectified by other, more violent, means.

At first appearance, the rules that Ostrom et al. (1994) present (communication, establishing agreed-upon rules, and punishment for defectors) seem well-constructed and applicable. However, there is one key ingredient that ultimately helps to decide the viability of such application: simplicity. Ostrom herself alludes to this point when she says, “If the interests of the individuals involved are relatively symmetric, face-to-face communication is possible, and the situation is relatively simple, we expect individuals to select rules that are: a) already known to them; 2) easy to learn, follow, and monitor; 3) likely to reduce the complexity of the situation; and 4) perceived as likely to improve joint outcomes” (1994: 323); however, “Field settings are so wrapped up in complexity and uncertainty that satisfactory rules-in-use are a significant achievement, regardless of whether such individuals can actually achieve the optimal solution...the common pool resource problems faced in many field settings – characterized by resources that lack stationarity and storage – are particularly difficult for participants, observers, government officials, or anyone else to solve” (1994: 325).

Putting aside its ethnic diversity for a moment, northern Kenya presents an enormous challenge in managing complexity. It is an area characterised by a constant state of flux: socially, environmentally, politically, and developmentally. With this in mind, there could be a case made that in order to move forward, it may be necessary to work backwards, with simplicity being the necessary condition from which to initiate change.

The current relationship between the Samburu / Rendille and Borana should not be looked upon with pessimism and hopelessness. In fact, these communities have demonstrated their willingness to engage in cooperative relationships *despite* the presence of factors that threaten the establishment and maintenance of cooperation.

Unlike the Yanomamö described by Jürg Helbling (1999) as a population “trapped in a form of the prisoner’s dilemma that discourages the development of reciprocal altruism” (108) which helps to create “a social environment that favours aggressive individuals” (111), these three pastoral populations have negotiated a social system that, in fact, seeks to balance aggressive and cooperative tactics in a sustainable manner, thus limiting excessively aggressive interactions. This last point will be discussed further in section 8.6.1 of this chapter, but the discussion here reinforces the principle that both conflict and cooperation are potentials within the human toolkit, and these three pastoral populations are no exception to this idea. Furthermore, as the following discussion will demonstrate, these potentials are simply that – they are not etched in stone, dooming individuals to a fate beyond their control. Inter-ethnic relationships are flexible and responsive to relevant conditions; relationships that can be changed over relatively short timescales. Maynard Smith (1982) already recognised this point when he said that the vehicle for the spread of cooperation throughout a population is not necessarily genetics, as we can neither be innately cooperative nor aggressive, nor through individual learning, as this would be an entirely inefficient process, but instead he favours cultural inheritance, where copying successful mentors can spread cooperative behaviour patterns rapidly across a population. The following discussions illustrate the spread and maintenance of cooperative behaviours between disparate ethnic groups in northern Kenya.

## **8.4 The Borana and Somali Relationship**

Chapter three discusses the relationship between the Somali and Borana at the establishment of an independent Kenya and the punishment that was dealt almost exclusively onto the Borana communities of northern Kenya. After a period of relative separation between the two ethnic groups as a result of the *Daba* and fleeing of the Somali from northern Kenya, the two groups once again came together within Borana territory due to apparent resource scarcity in Somali during the late 1970s and early 1980s. Many of the Borana that I interviewed stated that the Somali land is known to be an intense hardship area suffering from a severe lack of rainfall and ever-increasing aridity. All of my Borana informants concurred that from independence until today, the Borana have never asked permission to graze or share resources within Somali areas to the north and east of the Borana territory. Instead, it is the Somali who seek refuge amongst the pasturelands of the Borana, to which the Borana have always granted them

entrance. However, this arrangement has certainly not been without its problems.

According to the Borana, starting in the late 1980s and continuing into the early 1990s, the Somali clans living amongst the Borana went from a peaceful arrangement, to some isolated skirmishes, into a full-scale assault on the resident Borana population over a relatively short period of time. The reason that many Borana claim for this change in relationship is that the Somali realised the potential of the land in Kenya, where their homeland offered them very little, and for their superior strength as gun owners, they saw an opportunity to take the land for themselves and for their animals rather than sharing it with the Borana. One elder Borana man describes the relationship during this time:

“The Somali came into Borana land looking for pasture, and the Borana allowed them to stay...the Somali had guns and the Borana feared them...The Somali came for Borana livestock and killed the people to try to chase them away from their land. This was [happening] all over Borana land – even in the interior, not just the border. Up until 1990, this continued until the Borana went to Ethiopia to acquire guns, which brought about the major Borana-Somali war in Ewaso from 1990 to 1993. The Borana defeated the Somali, chasing them to Togi...The Somali were defeated although they had experience because of the Borana’s long-term grievance so it was do or die for the Borana. The Somali came here to Borana land because Somali land is barren – no pasture or water and there are too many people and livestock. It is still like this now – that’s why the Somali are here. Somali have an enterprising and adaptable spirit because the Somali are connected to the government in Somalia. Due to the hardship in their homeland, they have to enterprise. They get guns easily from the government in Somalia and easily move the small arms as there are no regulations over gun merchants.” (Borana, elder man, Mata Arba)

After the war ended in 1993 and the Somali were pushed back to their home territories, the two ethnic groups remained separated for a few years; however, in about 1996 the Somali again asked permission to graze on Borana lands due to the hardships experienced within their areas, and again, the Borana granted them permission. The most often cited reason for the Somali’s forgiveness is one of a common religion,

“The Somali have been forgiven for stealing where the Samburu have not because the Somali are Muslims and they pray together for peace and so they are forgiven, but Samburu are not Muslims.” (Borana, elder woman, Malka Daka)

In a relatively short time the relationship between the Borana and Somali as described above has transitioned radically from cooperative to competitive strategies and back again to one of cooperation. From an outside perspective, the metamorphosis of this relationship can appear perplexing. How can two groups apparently “revolutionise” the nature of their interactions, not once but twice within the course of one generation? Aguilar (1996) notes the importance of the Waso Borana’s diversification of religious and cultural practices in helping to ensure prosperity – adopting Islam during the colonial period, due to increased Somali influence, and reinvesting in traditional Oromo practices in the post-*Daba* period, thus reaffirming ethnic affiliation with their northern brothers. From this understanding, it is possible that Waso Borana social flexibility may allow for the relatively rapid behavioural transitions that characterise the Borana-Somali relationship in northern Kenya.

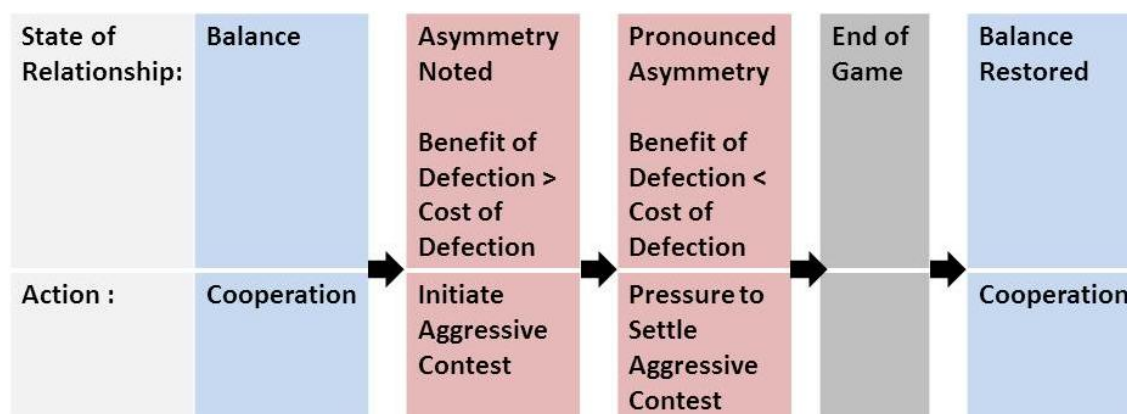
Looking to game theory to help answer this question, we can first examine the transition from cooperation in the 1970s / 1980s to one of conflict in the 1980s / 1990s. One apparent explanation for this transition is that both groups were exhibiting an unconditional cooperative strategy (ALL C) towards one another. As previously discussed, unconditional cooperation allows for the intrusion of defectors into the population, who will thrive within the opportunity that presents itself in an ALL C environment. Once defection is established, the ALL D strategy is extremely stable. Having established a defector strategy, and having the firepower to defend such a strategy, the Somali were in a position to continue benefitting from their relationship with the Borana. However, there are two conditions which ultimately changed the nature of this relationship and put an end to the antagonistic relationship. The first was establishing a marked asymmetry between the two groups. As Maynard Smith explains, “If some difference exists between two contestants, and if this difference can be perceived by the contestants then the perceived asymmetry will typically be used as a cue to settle the contest. Most pairwise contests are likely to be asymmetric in this sense” (Maynard Smith 1982: 76). As alluded to above by the Borana elder from Mata Arba, the Borana aligned with the Ethiopian Oromo and acquired guns from them to increase their power over the Somali. In this instance, the Borana relied on their wider Oromo identity with the Ethiopian Borana (Baxter 1994) for assistance and increased weaponry, furthered by the contentious relationship that has historically existed between the Ethiopian Borana and Somalis over land and water rights in Ethiopia (Bassi 1997).



Furthermore, the quote makes reference to ‘a do or die’ situation for the Borana where other interviewees have supported this claim that the war against the Somali was an all-out effort on the part of the Borana as defeat for them would have meant the loss of their homeland. The increased firepower and “die-hard” attitude of the Borana helped to over-power the Somali where the upper-hand clearly rested with the Borana. This asymmetric relationship between the two sides led to the second condition in that for the Somali, the costs of defection now grew too great to be offset by any benefits of defection. Classic game theory suggests that when the costs of injury increase to the point that they exceed any expected rewards, then neither an ALL D or an ALL C strategy are ESSs (Maynard Smith 1982).

From this scenario, it can be argued that the initial instigation of conflict by the Somali towards the Borana was also a result of an asymmetry (i.e., the Somali having superior firepower). Manson and Wrangham (1991) note that even for animals, differences in group sizes, competitive advantages, body size, etc. are taken into consideration when deciding whether or not to enter into aggressive interactions with conspecifics. Once advantages are assessed, the additional requirement for entering into a fight is that for the instigator, the benefits of defection outweigh its costs. The following figure demonstrates how these two groups can modulate between competitive and cooperative strategies:

Figure 8.2: Diagram demonstrating how two groups can modulate between competitive and cooperative strategies based on an assessment of perceived differences between the two groups



From the figure above, we can see that when pronounced asymmetry with the costs of the contest outweighing the benefits forces the game to be settled, this does not necessarily signal a return to cooperative strategies. Instead, it is simply the end of the

game. As in the case of the Somali and the Borana, the end of the game would have come when the Somali were chased back into their home territories (i.e., were defeated) and the two sides spent a number of years with relatively little interaction. In order to re-establish cooperative relationships, the remaining necessary ingredient is one of trust based on prior knowledge of how a partner is likely to behave during interactions. When the Somali returned to the Borana for a second time in 1996 to ask for the opportunity to graze within their area once more, based on prior experience, it could be assumed that the Borana would decline the Somali's request. However, the two forces that were working at re-establishing relationships between the groups were that of reciprocal altruism (i.e., the Borana may need the Somali at some point in the future) and also that the shared religion between the Somali and Borana was a motivating factor reinforcing trust between the two sides as the Borana viewed themselves as "all Muslims" and therefore "all brothers."

Reciprocity between the two sides has been maintained now for approximately 15 years; as Boehm (1992) notes, such a stable state can be maintained and protected between two groups when power remains balanced between them. However, as witnessed during my fieldwork, there are growing tensions between the Somali and the Borana due to a number of factors which cannot be fully discussed here but include complaints of political favour, resource monopolisation, increased refugee populations from Somalia, disparity in gun ownership, and exclusive trade networks, to name a few.

As one Borana woman living in a mixed Borana – Somali community described to me,

"For the Somali that are here, I don't think they should be here. The best thing to do is for the Borana to fight them and push them out. The argument of some is that the Somali bring trade here so a faction of Borana, generally the leaders, doesn't want them out. I have given up on the government and elders because they are corrupt and bribed by the Somali with animals and money so they are doing nothing. The only thing to do is fight them to get them out. The problems that the Somali bring now are they want to fight the Borana, even over use of shallows wells in Darer Shai, using up the best water and pasture...If the matter went to a vote, I feel most people would want the Somali to leave Borana land...I think the current relationship with the Somali will degenerate because the Somali don't want peace with us." (Borana, elder woman, Darer Shai)

This was the general feeling that I recorded amongst the Borana as to the current state of affairs with the Somali. For the time being, the ‘marriage of convenience,’ as one woman called it, is holding, but this does not appear to be a permanent agreement. One way of strengthening this relationship over the long-term would be for the Borana and Somali to inter-marry, thus establishing bonds of kinship; however, through my interviews, I recorded only two marriages. The future of this relationship is as yet unknown. However, in assessing the history of these two ethnic groups using game theory applications, what becomes apparent is the dynamic nature of these relationships and how strategies can shift depending on perceived asymmetries and changes in pay-off matrices. The following discussion will examine the nature of relatively “stable” cooperative relationships as seen between the Samburu and Rendille.

## **8.5 The Samburu and Rendille Relationship**

The nature of the relationship between the Samburu and the Rendille has been beautifully described by Paul Spencer in his 1973 book *Nomads in Alliance*, where he shows two populations, of disparate origins, coming together into a mutually-beneficial symbiotic relationship born out of a dynamic environment prone to periods of unpredictability and hardship. The Rendille, claiming ethnic origins akin to the Somali due to their linguistic similarities, and the Samburu, as Maa-speakers closely linked to the southern Maasai populations, have not always been in complete allegiance with one another. Chanler, one of the earliest European travellers to northern Kenya in the second half of the 19<sup>th</sup> century, notes that these two ethnic groups were once deadly enemies; however, both Spencer and I have not recorded any Samburu nor Rendille who can recall having heard of such a time. Instead, both sides comment that they are ‘one people just like brothers.’ As such, the predominant strategy that has developed between the two is one of mutual cooperation without a need for retaliatory behaviour (ALL C). This poses the question: how did unconditional cooperation initially emerge between these two groups, and how has it been maintained for more than 100 years?

Although historical accounts taken from early travellers in the pre-colonial period are few, and often times contradictory, most detail a social environment in the north which was highly pressurised by competing factions. Donald Smith talks about a great reduction in the populations of both the Samburu and Rendille by the Borana in 1888, which followed a devastating smallpox epidemic (Smith 1897). By 1893, Chanler

(1896) describes the Samburu as ‘impoverished’ and in need of rebuilding both their human and livestock populations while Arkell-Hardwick (1903) notes that the Rendille were suffering greatly at the turn of the century from the effects of disease, constant raiding, and a drastic reduction in the number of young males within their population. Spencer notes around this time, the Samburu and Rendille “turned their attention to their more traditional enemies (the Boran) and coped with the Turkana as best they could” (Spencer 1973: 153). Although not explicitly stated by Spencer, it is plausible, given the pressures on their populations and continued aggressive tactics used by neighbouring ethnic groups, that the Samburu and Rendille came to see themselves as having a common future and that benefits could be shifted in their favour if they enhanced cooperative strategies between them. This alliance was aided by the fact that there was, and still is, little ecological overlap between their two territories. The Samburu region is cooler with low-lying vegetation and grasses, which are more suitable for grazing cows and mixed small stock, whereas the Rendille inhabit desert-like areas to the north, with vegetation and a landscape suitable for rearing camels. With two livelihoods based on two separate strategies, there was little competitive pressure between these two groups for acquiring the others’ land or animals. What grew from this situation was a strong stock friendship where “for countless generations, Samburu have claimed certain rights in Rendille camels and Rendille have claimed certain rights in Samburu cattle” (Spencer 1973: 142). On the back of this stock friendship, these ties were greatly enhanced through marriage exchange between the Samburu and Rendille which helped to cross-cut any ethnic boundaries. Spencer continues to say that “with every marriage and every individual migration, these [stock] rights are fully exercised and the claims are made good” (Spencer 1973: 142).

In the 300+ individual incidents that I recorded, none of the Samburu ever reported any amount of stock theft or aggressive actions taken by the Rendille towards them. In fact, raising this question during interviews often solicited a laugh from the participant as these communities refer to themselves as ‘one people.’ However, when conducting the same exercise within an exclusively Rendille area, the response was quite different. Although Rendille communities acknowledged that they are still ‘one people’ due to clan ties with Samburu families, both formal interviews and informal conversations highlighted a significant amount of small stealing by the Samburu towards the Rendille (although the reverse was never recorded by either group). Arkell-Hardwick

acknowledges this phenomenon when he writes that fortunes had changed by 1900 as the Samburu had emerged from the disasters of the 1890s as the more dominant ethnic group and “were perfectly willing to protect the Rendili, but in return they considered that they ought to be allowed the right to help themselves from the Rendili flocks whenever they felt so disposed; and to do them justice they fully acted up to this idea without fear of reprisals.” Arkell-Hardwick continues, “It seemed to me a very peculiar state of affairs. The two tribes lived together; yet the Burkeneji [Samburu] constantly raided the Rendili, and though the Rendili did not seem to like it, they never openly resented the depredations” (Arkell-Harwick 1903: 241).

Although full-scale raiding between the two is kept “in-check” due to extensive marriage ties and stock friendships, the presence of any amount of theft between the two, particularly being one-sided, is perplexing. As noted earlier in this chapter, unconditional cooperative strategies are simply easy targets for the intrusion of defectors to take advantage of opportunistic interactions. Small defections such as minor 1 – 1 stealing are likely in this scenario. However, if the likelihood exists for the Samburu to take advantage of an unconditionally cooperative Rendille population, then it stands to reason that the Rendille could likewise do the same. Why then is this not the case?

Again, the answer to this question can be furthered by looking at the effects of asymmetrical games on a competition. Robert Boyd has worked extensively on assessing the effects of changes to pay-off matrices and variations between players on the utilisation of competitive and cooperative strategies during games. He explains that “for a given cost, it is likely that the benefit that results from aid by a subordinate to a dominant is less than the benefit that results from aid from a dominant to a subordinate...it still may be evolutionarily stable for the dominant to cooperate only infrequently, and in return the subordinate cooperates at every opportunity. In this way the dominant can receive sufficient benefit to compensate it for its cooperation” (Boyd 1992: 479). A mutually-beneficial alliance had been established between the two by 1900; however, the Samburu were clearly the stronger of the two groups, which by all accounts has remained so until today. The Kenyan census report taken in 1962 during Spencer’s fieldwork states that there were 8,000 Rendille proper as opposed to 50,000 Samburu. One of the reasons for this disparity in population stems from the practice of

impoverished Rendille men migrating with small stock into Samburu areas, and likewise due to delayed, monogamous marriage practices amongst the Rendille, the excess of marriageable Rendille women found greater benefit marrying into polygamous Samburu households (see Spencer 1973 for further details regarding population dynamics). The results of the 2009 Kenyan national census show increasingly greater numbers of Samburu in comparison to the Rendille. The analysis here, based on Boyd's work, asserts that periodic defection on the part of the dominant group (the Samburu) is to off-set the comparatively high cost of cooperation relative to minimal benefits received. Likewise, the subordinate group (the Rendille) cooperates unconditionally as even with defection, the benefits of cooperation exceed the relatively minor costs of cooperation.

For both groups, total defection is not advisable as conflict between the two would drastically alter the cost to benefit ratio of defection. For the Rendille, out-right conflict with the Samburu would result in the cost of defection out-weighing the benefits of defection for a number of reasons. Primarily as discussed above, it is likely that the Rendille are too small a population to wage an adequate war against the Samburu. Second, regardless of victory or defeat against the Samburu, disbanding such an alliance would subsequently leave them vulnerable to increased attacks from hostile neighbours, such as the Borana. For the Samburu, unconditional defection towards the Rendille would also lead to reduced benefits and increased costs. The Rendille have proven themselves time and again to be valued allies of the Samburu when engaging in conflict with other ethnic groups. Furthermore, stock friendships with the Rendille have allowed for greater diversification of livestock ownership and management for the Samburu. Finally if Samburu victory were achieved, monopolising Rendille land and animals would provide only a minor benefit to the Samburu as: 1) Samburu animals, particularly cows, are not accustomed and adapted to living in the aridity of the Rendille territory, and 2) the Samburu are not "camel specialists" where the intricacies of camel rearing are left to their northern brothers. Without proper management, camels can be highly unproductive and labour-intensive to manage.

A report taken by Spencer illustrates how conflicts are carefully managed between these two groups when he writes of an incident in 1959,

“when the Samburu elders demanded a stricter enforcement of their boundary with the Rendille...provoked by a government employed Rendille who had reported some Samburu trespassers to the Marsabit authorities. This had led to a confiscation of the trespassers’ cattle. It was in retaliation for this that the Samburu elders asked their administration in Maralal to withdraw all grazing concessions to the Rendille and to confiscate any trespassing camels...once the Samburu had expressed their outrage at this unnecessary betrayal of confidence by a Rendille...they quickly returned to a normal relationship with the Rendille in the border area. This was no doubt made more easy by the Rendille, who carefully took no part in trying to provoke the situation any further. On the contrary, at a local level they conferred with the Samburu to restore harmony, and among themselves they took action against the government employee.” (Spencer 1973: 194)

Minor skirmishes between these two groups may occur periodically; however, the relationship is a stable one, assisted by a system of checks and balances that acknowledges relative power relations and is reinforced by cross-cutting marriage ties and stock alliances.

## **8.6 Is Conflict Adaptive?**

The above assessment regarding factors influencing cooperative and competitive strategies between these three populations leads to a broader discussion of whether conflict, as it functions within pastoral societies, is itself adaptive. Initially, this question can be interpreted as: does conflict and the use of aggressive tactics by one ethnic group towards another increase the reproductive fitness of the aggressive party?

There are a number of studies that have addressed this question where data show that reproductive success can be partially determined by social dominance in modern human populations (Jokela and Keltikangas-Jarvinen 2009). Perhaps one of the more famous studies of this kind, Napoleon Chagnon concluded that men who had killed other men had higher reproductive fitness than non-killers in Yanomamö communities (Chagnon 1988). However, there has been some controversy surrounding Chagnon’s work, with it being called into question as highly biased, politically motivated, and even that Chagnon’s intrusive methods helped to ignite some of the inter-community conflicts

that he recorded (Tierney 2000; AAA 2002). To a less extreme degree, a number of authors have demonstrated that aggressive interactions may likely be adaptive when done to protect kin (Queller and Strassman 2002; Smith 1964) or in order to increase influence of one's social kin over others, which may increase mating potential (Ferguson and Beaver 2009).

For north Kenyan pastoralists, at present this question is theoretical as no such empirical data exist on which to test this hypothesis. For livestock, it can be argued that the presence of conflict amongst these groups helps to push animals into new territories, which requires them to have a suite of adaptations for survival, thus increasing the genetic diversity of the population. Furthermore, as demonstrated amongst animal populations (Carlson 2009) fitness can be increased through warfare in that the strongest individuals have a greater likelihood of survival and victory in battle, may gain greater access to women, and therefore pass on aggressive, robust genes at a greater rate than their weaker and less successful compatriots. However, for pastoralists there is an argument to be made that increased influx of lethal weapons is changing the nature of aggressive competition within these communities. It is likely that victory, or even entry into the competition, is not necessarily influenced by the strength of the individual, but rather, by the strength of the individual's weapon.

My fieldwork made no concerted attempts at recording and analysing the number of conflicts that the elder men had engaged in during their youth and the subsequent number of wives or children that they maintained. To do so with any degree of accuracy would require an increased longitudinal study beyond the scope of this research. Anecdotally, I recall with some amusement, when talking with an elder Samburu man in the Laresoro region about the benefits of conflict, he replied, "Raiding! How do you think I paid for all of these wives you see!" In truth, the man had six wives and 29 surviving children. Although this is an interesting observation, it is nothing more than an observation upon which no emphatic conclusions may be drawn.

Given the limitations of the data collection and a relatively scant number of conclusive publications taken from human populations on the subject of conflict and reproductive fitness, this question may be somewhat misguided or, in fact, not the most important question to be asking. In moving forward, I would like to ask instead *how* or *in which*



ways can conflict as it operates within these communities be beneficial? This question challenges the conceptualisation of human aggression as wholly negative where much of the focus is placed on the harm that conflict brings to ‘victims’ rather than understanding how its existence has inherent benefits. War, as defined by Paul Sillitoe, is “a relationship of mutual hostility between two groups where both try by armed force to secure some gain at the other’s expense” (Sillitoe 1978: 252). I have already highlighted in chapter two the pitfalls and problems associated with producing a totally inclusive definition of human conflict; however, Sillitoe’s concept of warfare and our problematic definitions of conflict, aggression, and violence heavily focus on the nature of a relationship that pits A against B rather than exploring the ways in which aggression helps to shape the relationships between A and B, and in some cases it can be argued, for the better. Bohannan (1983) stresses this point that as humans initiate warfare, they are also involved in the process of making peace. To turn this idea further on its head, as previously discussed, cooperation itself can be a costly affair depending on the situation of the parties involved. In speaking with pastoralists facing abject poverty at the end of the 2009 drought, there were few individuals more aware of the costs of passivity.

“Stealing is good...because you have lost many through starvation and disease so you need to restock. You don’t wait because you need to get them back immediately if you have nothing – you cannot wait.” (Rendille, *moran*, Unesco Ririma)

### **8.6.1 The ‘Limited War’ Theory and Extreme Violence**

If the argument is made that conflict can be beneficial, we must seek to understand how and under what conditions this position holds true. A number of authors (Ferguson and Beaver 2009; Ferguson 2008; Smith 2007; Hawley and Vaughn 2003) have argued that human aggression benefits individuals, and to some extent populations, as long as it does not violate one specific rule: it must be moderate. Simply, the virulence of aggressive acts needs to be restrained to a level at which the benefits of aggression continue to outweigh the risks of aggression (Ferguson and Beaver 2009). For these authors, successful employment of aggressive acts lies in the individual’s ability to accurately assess costs and benefits, and when conditions arise where costs outweigh benefits, the individual has a great enough capacity for the self-control required to

inhibit aggressive acts. Therefore, adaptability lies in an individual striking the correct balance between utilising aggressive tactics and restraining violent behaviour.

Although I agree with the general findings of these studies, a criticism I have of this body of work is that the examples used by the authors when describing beneficial aggressive acts (standing up for one's beliefs, sports participation, active pursuit of education, career success, etc.) may be interpreted more as 'assertiveness' rather than aggression. This distinction is a subjective one; however, when compared with the types of conflict witnessed in pastoral populations, these studies are not necessarily appropriate analogies.

Perhaps more appropriate to the discussion, in 1973 Maynard Smith and Price published their seminal work "The Logic of Animal Conflict," providing a game theory model which helps to prove that "limited war" strategies within mixed populations are more evolutionarily stable than "total war" strategies. Their argument is that animals, and by extension humans, have benefited from the evolution of conventional fighting methods which help to limit injurious fighting, as such degrees of violence would "militate against the survival of the species" (Maynard Smith and Price 1973: 15). Briefly, Maynard Smith and Price ran a series of simulations between five different strategies: 1) the Hawk, playing ALL D and representing the "total war" strategy, followed by the four "limited war" strategies: 2) the Mouse, playing ALL C; and 3) the Bully, defecting on the first move, then playing opposite to the opponent's previous move; 4) the Retaliator, playing a TFT strategy; and 5) the Prober-Retaliator, playing a PAVLOV strategy (see chapter two for details). In pairing these strategies through repeated interactions, the results showed which strategies within a population comprised primarily of individuals having the same strategy were the most profitable (ESS). For example, for Hawk to be an ESS, it would need to be the most profitable strategy in a population comprised mostly of Hawks and be uninvadable by other strategies found within the population. Maynard Smith and Price's results showed that the Retaliator was the only ESS in a mixed population, with the Prober-Retaliator approaching an ESS (depending on the percentage of Mouse in the rest of the population). Both of these strategies are limited war strategies. In fact, Hawk as the total war strategy, performed the worst in comparison to all five strategies, which was attributed to the high cost of injury resulting from engaging in repeated aggressive interactions. Silverberg and Gray (1992) echo this finding when they suggest that violence is limited during inter-specific

interactions simply due to the high costs levied on the group or individuals when overtly aggressive tactics are utilised. In this case, the use of extreme violence shifts the payoff between groups into a situation where the costs of battle outweigh both the short and long-term benefits, therefore making extreme violence undesirable from an evolutionary perspective. Ferguson and Beaver (2009) argue that the presence of extremely violent individuals in the population is controlled by the extent to which they are 'reproductively advantageous' and are therefore comparatively uncommon. In light of Maynard Smith and Price's simulations, the Hawk is not advantageous in a population comprised mostly of Hawks because of the likelihood of engaging in violent conflict with high costs; however, extreme violence can be profitable when applied to some very limited situations (i.e., against Mouse or Bully).

Likewise, in pastoral populations, extreme violence is also limited where the vast majority of conflict interactions are small scale stealing and acts of retaliation. Spencer commented in 1973 that Samburu conflicts tended to be "small semi-organized skirmishes rather than highly organized attacks. Traditionally the tribe was not organized for carrying out large-scale raids," and he goes on to say that "one effect of this seems to be that the Samburu did not suffer heavy casualties as a result of any specific raid" (Spencer 1973: 96). Boehme (1986) supports this idea that inter-group feuding rather than full-scale warfare is the likely result when populations are in close proximity to one another and are trying to avert all-out disasters that could result from intensive fighting. The progression of conflict between pastoral groups can be classified as an escalating relationship rather than a binary distinction of non-aggression to full-scale warfare. Related to discussions presented in the previous chapter regarding types of conflict, Maynard Smith and Price (1973) note that even species possessing 'dangerous weaponry,' such as the felid claws, are able to limit physical aggression. The authors argue that there is a mechanism for incremental probing between contestants that gradually increases aggressive tactics with a look to carefully balancing costs (injuries) while striving to achieve benefits. After a series of escalations, the previous description of the conflict that took place between the Somali and Borana is an example of warfare being limited only to isolated, selective situations. When discussing conflict events with north Kenyan pastoralists, the 'big wars' as described by research participants can be named, as in "Gan Dul Koore," meaning the 'Year of the Borana-Samburu War.' The purpose of these wars, as described by the people, is 'to finish' the

other side that has been causing problems so that peaceful / tolerable relations can resume.

Interestingly from Maynard Smith and Price's results, Mouse was also outperformed in its own group (comprised mostly of Mouse individuals) by every other strategy due to the advantages taken by the Hawks, Bullies, Retaliators and Prober-Retaliators. The Mouse strategy not only unconditionally cooperates with opponents, but more importantly, it flees at the initiation of defection by the opponent. In reality, this strategy within a mixed population bears extremely high costs to the Mouse as fleeing can translate into loss of territory, loss of access to vital resources, loss of access to mates, etc. Ultimately, a wholly cooperative strategy is also unsustainable given a mixed population.

In light of a game theory approach, it can be argued that the use of conflict strategies amongst pastoralists appears to satisfy most of the requirements for an evolutionarily stable limited war strategy without violating the factors controlling for extreme violence. Chapter nine will discuss in greater detail the values and conditions that may arise in creating an environment conducive to the use of aggressive acts. What should be kept in mind, as discussed in chapter seven, is the role of moderate behaviour in restraining some of the motivations in the complex web of causal factors that lead to violent outcomes. In recording conflict incident reports, these data do not reflect the more numerous incidents stemming from perceived threats or violent reputations, arguably the lowest form of aggressive acts, which have the prosocial effect of keeping disparate groups separate from one another and therefore preventing any actual fighting from taking place. The counsel of the elders, venerated within the community for their moderate ideology, consistently seeks to guide the younger generation of herders, who are potentially lacking in the honed skills required for impulse control, on the non-antagonistic behaviours expected of them whilst interacting with neighbouring ethnic groups along the borders. Generations of cross-cutting marriage ties and the need to employ reciprocal altruistic behaviours continually help to dampen the flames of any potentially incendiary relationships. Conflicts, when they do occur, are escalatory rather than full-blown warfare, helping to ensure that benefits are achieved with only incremental costs. If limited war strategies are beneficial and pastoral populations have evolved to adopt such an approach, chapter nine will address how resilient these

systems are given increasing disturbances, such as extensive drought conditions, lapses in security measures, and increases in gun ownership. The field on which these ‘games’ are being played has been changing drastically in the post-colonial period. The final chapter of this thesis will examine whether or not such adaptive strategies can be maintained under the pressures imposed by these changes.

## **8.7 Limitations of Theory and Scope for Future Research**

In closing, game theory provides an extremely useful framework for potentially taking the discussion beyond the obvious in analysing the utility of strategies employed between human populations, particularly without the need to wage judgement on the associated behaviours. However, as a model, there are inherent limitations when trying to apply it to empirical settings. Not only are real conflicts vastly more complex than any of the models discussed in this chapter, but the models themselves suffer from a tremendous amount of variation when their complexities are increased. Maynard Smith, in his ground-breaking 1982 work on game theory, readily acknowledges that determining evolutionarily stable strategies is contingent on a number of factors, including the location of the contest or spacing between territories (Maynard Smith 1982). Robert Boyd (1992) continues this work to see the effects of variation between the nature of the games played, between the players involved, and fluctuations on the pay-off structures on the evolutionary stability of different strategies participants utilise. This analysis led Boyd to conclude that “the nature of the strategies that support cooperation may vary widely from one context to another. Even the seemingly innocent introduction of variation in costs and benefits among interactions leads to a dizzying variety of outcomes” (486). Furthermore, game theory only operates and explains evolutionary traits as they function within equilibrium states. However, the real world is prone to perturbations and both continuous and step-wise changes. Chapter nine will discuss the relevance of these disturbances in assessing the resilience of pastoral systems in a contemporary context. Moreover, further research in this area necessitates the construction of models that are directly applicable and relevant to observations obtained in the field. To this end and relative to north Kenyan pastoralists, I would endeavour to conduct simulations that adjusted pay-off matrices combining elements of both the Prisoner’s Dilemma and the Hawk-Dove, taking into consideration both low-

level and escalated interactions and making adjustments for the likelihood of injury accordingly in each.

A second, and potentially the strongest, criticism of the game theory approach is that it does very little to take into consideration *who* is interacting, what are their motivations for doing so, and what is the nature of their interaction. The argument here is that these factors are likely to influence the outcome of the “games” – even whether or not the actors elect to interact in the first place and to what end. Youths likely engage in conflicts for different reasons to those of elders – reasons that may address particular desires or offer solutions to their particular problems (Lee and Johnson 1992). Likewise, some empirical tests have shown that there is a pronounced gender bias in game playing where females, depending on the social context, score significantly higher than males in their use of cooperative acts during contests (Kummerli et al. 2007; Simpson 2003; Ledyard 1995; Sell et al. 1993). How social cues are read and interpreted, how values are assessed for outcomes, where motivations are developed, etc. are very much contingent on the identities of the interacting individuals. Respected scholars such as Bourdieu, Giddens, and Schlee have voiced their criticisms of a game theory approach in understanding human conflict for its apparent ambivalence towards sociological considerations, assessing human interactions as though they are ‘culture free.’ This criticism is valid, and one that, I believe, most researchers working on game theory models would acknowledge. However, it bears repeating that models are simply that. To expect a complete explanation of human behaviour based on modelling is misguided and unrealistic. Instead, models help to make the complex simple, and that is their greatest asset. To begin to understand the complexities of human cooperation and conflict, game theory is a useful framework for making sense of the vast array of human potentialities.

Finally, the apparent ‘objectivity’ of the models also needs to be called into question as they themselves require a certain amount of interpretation in their design. Maynard Smith states that “a major difficulty in applying game theory to human conflicts lies in the need to place a numerical value, or ‘utility’ on the preferences the players place on the possible outcomes. How for example does one put the utilities of financial reward and of injury or death on the same numerical scale?...In human conflicts, strategies are chosen by reason to maximize the satisfaction of human desires” (Maynard Smith 1974:

212). When assessing costs and benefits in a real-world situation, how can one begin to assess numerical values for apparent losses and gains? In applying principles of game theory to practicalities, one is forced into thinking about, for instance, how many stolen goats are necessary to outweigh the inherent costs of being significantly injured during a raid? When faced with the reality of the situation, the question seems, at best, absurd. We can never actually directly come to answer a question like this one, regardless of the precision of the models. Game theory is one lens amongst many through which to examine the question of the role of conflict amongst pastoral populations. Acknowledging the weaknesses of this approach clearly demands the need for a more in-depth discussion of human values, desires, motivations, and concerns, which will be addressed in the following chapter.

## Chapter 9: Adaptation and Resilience

---

### 9.1 Introduction

Semi-arid and arid areas in East Africa make up 70% of the total land area (Little 1996), and many reports suggest that the climate in these areas will continue to see greater variability both within and between seasons (Christensen et al. 2007, McSweeney et al. 2007). In northern Kenya, pastoral reports suggest that this phenomenon is on the increase locally, as one Samburu chief reports,

“In terms of predicting the rains, it used to be easier to predict the weather. People used to accurately predict it. They could also predict the intervals between the droughts, and now the droughts seem to follow each other. Previously, the interval between the droughts was a period of about 10 years. Now it’s about every 5 years, and it keeps decreasing.” (Samburu, elder male, Remote)

In light of apparently escalating unpredictability, pastoralists in northern Kenya display a vast range of coping mechanisms and strategies that are responsive and flexible in managing periods of resource scarcity. However, Adger et al. (2007) draw attention to the need to evaluate societies at multiple scales in order to gain a more accurate understanding of the influences and potential constraints being placed on coping strategies, which can inform an assessment of their current efficacy. My data analysis revealed four distinct influences affecting the coping strategies of north Kenyan pastoralists today: environmental changes, development initiatives, political influences, and conflict. My data showed that each of these factors has a marked effect on all of the six pastoralist coping strategies discussed in chapter two (mobility, herd accumulation, herd diversification, social networks, livelihood diversification, and market access) that are employed by the groups that I interviewed in the field. However, within the scope of this chapter, there is not ample room in which to discuss at length the effects of the four identified influences on the six different coping strategies. Instead, I would like to identify one coping strategy, where I provide an in-depth discussion exploring how each of the four influences is having an effect. I further aim to highlight one particular influence and demonstrate the ways in which it affects each of the six coping mechanisms. To the first aim, mobility as a coping strategy was most often discussed amongst research participants, which provided me with a rich source of data. The IPCC



reinforces this point in its 2007 report on climate change when stating that “Mobility remains the most important pastoralist adaptation to spatial and temporal variations in rainfall” (Parry et al. 2007: 5.4.7). To the latter aim, although environmental concerns weighed heavily on people’s minds during the 2009 – 2010 field season, the repercussions of conflict were pervasive and left lasting impressions within the collective conscience over a number of generations. Gray et al. (2003) had similar findings with their research on the Karimojong of north eastern Uganda when they reported that “[d]uring the year-long field season, a modern form of cattle raiding with automatic weapons...appeared to be the chief impediment to established adaptive behavioral responses of Karimojong pastoralists to environmental stress” (S3).

## **9.2 Mobility in Northern Kenya**

Colonial administrative records kept for northern Kenya from the early to mid-20<sup>th</sup> century indicate that colonial officers delimited tribal territories, demarcated and patrolled border areas, and required individuals to apply for an official leave notice if they should wish to visit a territory where they were not a member (e.g., PC/NFD/1/9/1; PC/NFD/1/2/5). During this time, should drought befall a particular territory, the affected pastoral communities would have to apply to the colonial administration for grazing permits that would temporarily allow them to move their animals into a nearby territory where resources were more available. With the departure of the colonial government in 1963, pastoral movement became less restricted with people utilising all open access land, removing colonial herd stocking quotas, and reducing security measures along border areas. In conducting interviews with numerous individuals across all three ethnic groups, there were two principles that I came to understand as forming the bedrock of ‘ideal’ pastoral movement. Primarily, mobility remains closely connected to the concept of communal ownership of rangelands which, as I have discussed, is necessary in unpredictable, risk-prone areas in order to keep migration options open by allowing free movement of people across the landscape. One Samburu man explained to me:

“Access to the community area is open to all from anywhere...we can’t let others die so it is open to all.” (Samburu, elder male, Sereolipi)

This quote refers to migration within the same ethnic group; however, as previously discussed, this form of reciprocity is also applied to inter-ethnic relations during times

of resource stress when permissions are granted for groups to share resources across borders.

Second, I was able during fieldwork to record the migration histories of people from their birth to the present. Furthermore, I recorded in detail their patterns of migration in the context of the 2009 drought, from the time that the animals first left home until the time that they returned home, which for some was a period that spanned almost two years. What I found interesting in recording these detailed, recent migrations was that people may move from one area to another only to return a number of weeks or months later to the same area. I wondered why the herd would migrate when apparently there was still grazing available, as this seemed like unnecessarily movement. However, people explained that they continually sought out the “best” pasture and water for their animals. This qualifier referred to a myriad of conditions, such as resource abundance, availability, intensity, temperature, salinity, nutrition, palatability, diseases present, security, terrain, wind, etc. – in fact, too many to discuss here. A general expression that I heard time and again that helped to simplify these matters was “Pastoralists follow the rain.” I came to understand that herders were not satisfied to stay in one area and exhaust the pasture if there was more “suitable” pasture and water to be accessed elsewhere. Therefore, herds could return to an area more than once in a given season if it was found to be the most satisfactory grazing land, by their standards, at that moment. In continuing the discussion on influences affecting pastoral mobility, it is important to keep in mind these two principles: open access to resources and the desirability to move into the “best” pastures, as described above, were the two over-riding aspects that formulated my understanding of migration amongst research participants in the field.

### **9.2.1 Development Initiatives and Mobility**

Through interviews conducted in the field, it is clear that development initiatives are having a profound impact on mobility patterns for north Kenyan pastoralists. Local reports from government agency workers have pointed out that food rations have been regularly distributed to the people of northern Kenya since the 1984 drought, which affected most of the northern territories. At that time, President Moi set up the National Famine Relief Fund to manage the procurement of ration funds and a nation-wide distribution policy. However, at the end of the 1984 drought, food rationing continued in northern Kenya, which was considered to be a chronically food-insecure region. In

recent years, the largest donors of food aid to this region have been the WHO and USAID, supporting roughly 3.8 million Kenyans as of February 2010 (USAID 2010), representing approximately 10% of Kenya's national population. A food distribution programme spanning more than 25 years and providing for such a large number of people has come with its administrative difficulties in ensuring that assistance reaches the most vulnerable people, for whom it is intended. Local people explained to me that in order to facilitate adequate and proportional distribution of food aid across the region, recipients must be registered as residents belonging to a corresponding division, which will be the only location from which they can claim food rations. Unfortunately, when food rations are most needed (i.e., when drought is at its most severe), this corresponds to a time when livestock will need to range and graze further from home territories in search of suitable pasture and water. Therefore, food ration as a support system is in direct conflict with the need for people to freely move over the land, as one Samburu man from the Lolmisigiyoio region of Samburu Central District demonstrated when he said:

“Ration is coming now about once a month, however we are registered to Maralal Division, my wife is sick, our donkeys have died from the drought, so I have to leave my animals to journey back here as there is no one else to take the food to the children.” (Samburu, elder male, Lolmisigiyoio)

Quite clearly, this man is restricted in terms of how far he may travel with his livestock in search of pasture as it is necessary for him to return to his registered area so that he may regularly claim his family's food ration.

Sinking boreholes and digging earth dams are development practices designed with the intention of opening up areas of land that may have sufficient grazing available yet suffer from insufficient water supplies. During my time in the field, I saw a number of new boreholes being opened by agency officials where no permanent water sources had existed previously. Before these boreholes or dams became available, the people grazing in these areas could rely on two types of water sources mainly: either seasonal water sources (sandy ephemeral streams, rock catchments, etc.) that flow only during the long and short rains (March – May and November – December, respectively), or moving to more substantial water sources (secondary rivers, water pans, etc.) outside of these timeframes until the point where supplies were diminished, thus necessitating

subsequent movement to more productive sources. Many people spoke about the need to move away from seasonal or unproductive water sources in order to allow for the regeneration of surrounding vegetation and fodder species. Depending on the rainfall patterns, the land could be unused for a period of six months or more without interference from grazing livestock. However, borehole and earth dam construction has led to an over-concentration of people and livestock in a given area due to the year-round availability of water, which can have devastating impacts. I witnessed such effects of over-crowding whilst visiting an earth dam in the Girissa area of Isiolo District, which receives 3500+ heads of livestock per day, as represented in Figure 9.1.

Figure 9.1: Girissa earth dam, Borana area, receiving more than 3500 livestock each day



While in the Girissa area, two Borana elders shared stories with me of their fathers, who in their time as herders used the Girissa area for grazing before the earth dam was dug. They recalled that it was once a vital dry season grazing area where water flowed down into a small natural catchment that could often times support them through a portion of the long dry season. However, now people are staying for much longer and at even higher densities. With continuous grazing, the land is becoming dry with no plants or grass growing close to the dam (Girissa, February 2010). Other people whom I spoke to around the dam informed me that the lack of vegetation close to the dam due to the effects of trampling and over-grazing requires them to range further between the pastureland and the water source. I saw this with my field assistant walking daily to the earth dam from our camp, which was a distance of 3.2km. The land over this stretch lacked any vegetation and was extremely dusty, also having no larger shrubs or trees to

provide shade. For animals in transit to or from the dam, there was no vegetation for them to feed on, meaning that their movement in pursuit of the water source was not optimally efficient.

Currently, the Kenyan government is soliciting development assistance from international organisations to sink additional boreholes and earth dams as a way to alleviate water insecurity in the north. I was told by a number of district officers and district livestock managers that the boreholes are intended to open up tracts of unusable grazing land by providing a sufficient water supply, and the design of these programmes recommends that boreholes should be turned off during the wet season when water is found distributed throughout a territory. In design, this appears practical; however, the reality of the situation can be vastly different. For all of the boreholes that I visited (~26), none of them had been switched off since their construction, and they continued to support a human population throughout the year. Studies have also shown that boreholes and reservoirs used only in the driest months support higher livestock biomass than water sources that are exploited year-round or that are spread over a larger area (rather than one terminal), which reduce livestock biomass (Boone, BurnSilver and Thornton 2006).

Finally, mobility has been affected greatly in the north due to government development schemes and various INGOs aimed at promoting childhood education to pastoralists. Development funds are being used to build schools and create awareness programmes encouraging parents to bring their children to school instead of herding animals. The majority of locations that I visited during my fieldwork had at least a nursery school (semi-permanent structure or natural structure) for children between the ages of two and six that hosts a feeding programme and provides some preliminary education, although options for education beyond these ages are still in short supply within the remote northern territories. Despite this, the government has promoted education as the panacea to save northern Kenya, bringing with it the promise of prosperity and further development initiatives. Accepting this claim, many women and children are settling in areas surrounding nursery or primary schools so that their families can have access to the free education provided by the government. However, in the majority of cases, there is very little additional support (i.e., shops, markets, health clinics, water, etc.). Therefore, the herders (usually male family members) must remain grazing their

livestock in pastureland close enough to the women and children to provide them regularly with milk and other animal products for their basic subsistence. From the populations that I sampled, livestock needed to remain within no more than a six hour walking radius to the women and children in order to supply them with enough animal products for use every other day. This migration restriction presents another challenge to herders, who are charged with the task of searching for adequate pasture and water for livestock, but within a circumscribed range acceptable to their dependent families. Balancing these needs is proving to be a serious challenge, as not all objectives are met with equal efficacy.

Government education campaigns have been so successful in northern Kenya that the unintended outcomes are having profound effects. In speaking with a 70 year old Borana woman in Mata Arba village in Isiolo District, she said that she had remained entirely in the Mata Arba settlement for approximately seven years whereas before, she used to regularly follow her herd, receiving meat and milk from her animals. When asked why she no longer migrates with the herd, which is now kept close to Mata Arba, she said it was because a school had been established in Mata Arba, which meant that she needed to be close to it for the sake of education. When she was asked whether she had children, grandchildren, or any other children for whom she was responsible enrolled or previously enrolled in the school, she said that she had none. When questioned about this seeming contradiction, she did not understand the relevance and simply stated that:

“Education is important. The school is here.” (Borana, elder female, Mata Arba)

Although confusing, this was not a sentiment confined to this woman alone as many of my interviews demonstrated the desire people had to engage with the schools and increase education in the area regardless of whether they would directly benefit from the education programmes through their own children or not.

Development initiatives such as these are undoubtedly altering the way that people move over the land and the amount of access they have to all available grazing areas. Gray et al. (2003) also highlight this problem, stressing that “[b]y reducing the mobility of people and herds in response to environmental stress, these initiatives promoted overgrazing and undermined local strategies that facilitated recovery of the rangelands

during the intervals between droughts” (S5) among the Karimojong. What remains to be seen is whether these apparent restrictions can provide some greater long-term benefit or whether pastoralists making use of such development programmes are truly putting themselves at increased risk.

### **9.2.2 Environmental Change and Mobility**

Environmental changes are a second factor altering pastoralists’ access to land and unrestricted mobility in northern Kenya. Moving herds to make best use of resources requires landscapes to be highly variable and spatially heterogeneous in climate, rainfall distribution, seasonality, and fodder abundance. Traditionally, herders established long distance social networks amongst kin groups and stock friendships in order to be able to move animals over various landscapes and successfully employ their strategy of “following the rain.” However, research participants voiced a growing concern over increased covariate risk of drought within northern Kenya, where drought is being experienced by more people, over a greater area and at the same time. This phenomenon homogenises the land that is available to grazing herds, which curtails mobility options (Parry 2007). Time and again while speaking to pastoralists and asking why they had not moved out of their rainy season ranges during the 2009 drought, people answered that there was no benefit to moving animals over vast distances when alternative areas provided little improved productivity. A Samburu elder from Lenchokut summarised these feelings when he said:

“The drought has cleared everything and has equalised everyone. There is nowhere else to go. Our problems are all the same so I may as well stay here and face the drought.” (Samburu, elder male, Lenchokut)

In this case, the grass is not ‘greener on the other side’ and therefore, there is no discernible advantage in moving livestock towards different grazing areas or in search of alternative water sources. Alternatively, herd owners try to make the best use of the land around them in the hope that the drought will eventually break before livestock losses become catastrophic.

As discussed in chapter two, this example of increased covariate environmental risk highlights the interrelatedness of different coping strategies. Primarily, herd mobility is affected in this situation, but as alluded to above, social networks also become

contracted as the benefits of sending animals to distant places are diminished. As one Samburu elder notes, due to droughts like the one experienced in 2008 / 2009, stock exchanges like *paran*, or borrowing animals from alliances when one is left destitute, are diminishing in efficacy:

“If someone loses all of their animals in a drought, when the rains come, they can restock through *paran*. However, now everyone is in the same situation so no one can help. If I had to ask for *paran*, I have uncles in Marsabit...but Marsabit is just as bad as here in terms of drought so they couldn’t really help me though. In the 1984 drought or previous droughts, there were regional differences where some good places were still left within the district so it was not a uniform disaster.” (Samburu, elder male, Remote)

Research conducted by the Dyson-Hudsons (1999) and McCabe (1990) reinforce this point that strategies such as mobility and social networks depend on differential fitness within the family network in order for them to be effective.

Another point raised in chapter two that has relevance to the following discussion is the manner in which risks affect the coping strategies of members of pastoral societies in different ways, depending on age, gender, economics, etc. During my fieldwork, I found this to be the case when assessing environmental hazards on mobility, particularly in relation to women. When I questioned many of the local women in the midst of the 2009 drought as to why they were not moving with their animals to find better pasture and water, a large proportion of women responded that it was because their donkeys had died from malnutrition. At the time, I didn’t fully appreciate the real significance of this response until I spent time with these women and saw how much donkeys are relied upon for their ability to carry household items, water, food, milk, roofing or covering for the houses, and elderly or infirm family members during migrations. I was told that for an average family having 6 – 7 children, the transport requirements would be roughly 4 or 5 donkeys. Most families that I spoke to were left without any donkeys or at most two donkeys by the time the drought broke in October 2009. To transport the household by any other means would prove to be almost impossible due to the high labour demands (particularly on the women) from the vast distances that would need to be covered by the livestock in order to reach adequate grazing land. Interestingly, the death of donkeys, and the subsequent loss of transport, has a large gender element.



Donkeys are seen by north Kenyan pastoralists as the least valuable livestock because: 1) for most ethnic groups they are not a source of meat, 2) they do not produce drinking milk, and 3) for these three pastoral groups, they are not generally bought or sold at markets. Donkeys are used solely by the women for transport and are often referred to as “women’s animals.” Due to their low status and the correspondingly low status of pastoral women, donkeys are not cared for in the same way as small stock, camels or cows, which benefit from managed grazing, facilitated watering, constant vigilance, corralling, protection from wildlife, and controlling for diseases. Donkeys are left to wander, find water and grazing where they may, and they are often vulnerable to getting lost or being eaten by predators. Many women noted that the loss of donkeys had a profound effect on the ability for families to move more frequently and at greater ranges to seek out resource-rich areas:

“I didn’t move in this drought because I don’t have donkeys to use. If in the drought, I was given 10 donkeys, then I would have moved my children with our animals because they are our food.” (Rendille, elder female, Farakaren)

### **9.2.3 Political Influence and Mobility**

Political influences were a third factor identified in interviews affecting the way that pastoralists in northern Kenya utilise land and their ability to make use of communal areas. In speaking with local elders, I came to understand that since independence, they have felt that politicians in northern Kenya have played only a minor role and have had relatively little influence on their lives. However, this opinion is recently changing, as informants are now citing ‘politics’ as one of the crucial aspects affecting their lifestyles, mainly due to increased political power of northern politicians within the presidential cabinet. Resulting from the post-election violence that erupted in 2007 due to alleged vote fixing, civic measures have been taken to ensure that elections are just, transparent, systematic, and are executed in a well-designed manner. As such, voters need to be registered as residents of a specific location. It is also quite difficult for a politician to garner the support of his constituency if the composition of that constituency changes on a seasonal basis. Therefore, informants feel that northern district politicians are benefitting from having an increasingly sedentarised population in order to build support amongst their constituents. Furthermore, they complain that politicians are accepting high numbers of refugees from Somalia, Ethiopia, or Sudan who are allowed to settle within their territories in exchange for political support. For these reasons, they

feel that politicians are supporting policies and development schemes that favour a more sedentary population, such as the construction of boreholes, permanent schools, and healthcare facilities.

Some pastoralists see exploitation of resources by ‘outsiders’ becoming a serious consequence of these policies, with more people entering northern Kenya’s borders, thereby further increasing competition for land and resources. A Borana woman from Malka Daka town in Garba Tula District explained to me that thousands of Somali were allowed to cross into Borana territory and settle by their MP Mohamed Kute, who is competing for re-election in 2012. As she explained, Kute is actively seeking the support of Somali migrants, who will be granted voting permission as residents of northern Kenya by this time. In the meantime, she feels her own family is having difficulties finding adequate grazing land due to the increased competition from large Somali camel herds (Borana, elder female, Malka Daka).

#### **9.2.4 Effects of Sedentarisation**

Whether due to development initiatives, environmental concerns or political manoeuvring, pastoralists in northern Kenya are undoubtedly becoming increasingly sedentarised. Although settling in areas with the ability to access aid and public services can be quite alluring (Fratkin 1992), increased sedentarisation can have a profound negative effect on pastoralists’ overall productivity, social welfare, and basic subsistence strategies, particularly for poorer members of society. Primarily, increased sedentarisation will likely decrease overall animal numbers as livestock will be forced to graze in sub-prime land or will graze in higher concentrations within circumscribed areas, furthering the potential to degrade pastoral landscapes (Solomon, Snyman and Smit 2007). Second, a rising influx of people settling into towns and more urbanised areas, such as Isiolo and Wamba, has also resulted in a growing problem of cosmopolitanism that local leaders have yet to address. As members of disparate ethnic groups increasingly live in closer proximity to one another, leaders in these areas have not considered nor made efforts to design a plan for successful integration. The lack of integration has often times led to continuously high conflict levels as people remain settled near towns. However in more mobile populations, conflict can be diminished as there are dispersal options available to reduce the escalation of isolated conflict incidents.

Finally, as populations settle and reduce their reliance on livestock, they are faced with the need to develop alternative income sources. The Kenyan government, along with a variety of international development organisations, has encouraged pastoralists in northern Kenya to irrigate and farm the surrounding landscapes as a viable alternative to herding animals. However, from information gathered about farming schemes during interviews, this recommendation conflicts with the conventional knowledge of optimising the productivity of arid and semi-arid ecosystems. Farming in this area requires intensive irrigation at seemingly unrealistic levels, where water is already scarce, even in comparatively wet years. Furthermore, when moving into towns, the reality of these densely-populated areas is a high rate of joblessness as there is little infrastructure in place to support a large influx of people into them. Townships often require intense use of resources and persistent water and food aid to be distributed to the occupants. With few alternatives available, informants report that settled populations in towns may engage in low-value and potentially damaging alternative sources of income. Indicated from observations and discussions with pastoralists in the field, activities such as charcoal burning, wildlife poaching, illegal alcohol brewing, drug trade, prostitution, and livestock raiding are steadily increasing in these areas. Permanent town settlement also places additional burdens on herders. Town inhabitants do not allow for livestock to be kept within towns, and therefore animal products must be sent frequently to the families living there. As I observed, particularly amongst Borana groups, who have higher rates of urban and peri-urban living than the Samburu and Rendille, families split between the *ola* (home in town) and *arjal* (home in the bush) tended to keep smaller herds than those who remained together in the *arjal*. Furthermore, the herders of split family homes often complained that they needed to carry milk frequently and at a great distance to their family members in towns. Box 9.1 below illustrates some other aspects of town life.

Box 9.1: Life in a Borana town, taken from Field notes, Ewaso region, August 2010

*At first, I thought that the daytime restrictions of Ramadan had taken their toll on the minds and bodies of this Borana town. Or that Ab and I had been here for too long and by now we were just old news – so much so that people no longer rose from their mats to greet us as we entered their homes. Daytimes took on the monotonous rhythm: mosque, sleep, mosque, relax, mosque, chat, mosque, nap, mosque, chat, sleep, repeat.*

*I missed the work of the arjal, the nightly chorus of animals at milking time, the morning sun pushing us out of bed, herding and weaving silently through the forest, heart pounding with the sight of elephants and crocodiles, leaving us to swap insults of cowardice with our fellow herders, and the nightly ritual of breaking fast together with a warm anjela under a transforming sky.*

*Only a week in town, apparently here to see how 'the other half live,' and the apathy is contagious. A substantial number of the inhabitants greet me in English; we have lengthy conversations on the short-comings of the British parliamentary system and ways in which the newly-created Kenyan constitution will revolutionise government corruption. And yet the idle pace of this town is almost painful. But tonight was different...there was something electric in the air, a palpable change as men moved from house to house, played games in the street, were found chatting lively in doorways, and whose eyes reflected some internal ignition as we walked down the street.*

*"Abdy, what is this all about?" Before he could answer, Hassan replied. He was a reserved, deeply thoughtful herder who had left the arjal to accompany us to town where his family lived and only yesterday lamented, as did we, that he was missing the arjal life. "Tonight the weekly miraa trucks coming from Meru pass through here on their way to Somalia. We will all ware tonight." Chewing the green leaves of the miraa, producing an amphetamine-like stimulation, complemented the late night 'ware' sessions of chatting and sharing stories into the early morning. Then in the distance, we heard the tell-tale low rumbling of a diesel engine, accompanied by the metallic grating of a cobbled gearbox, mashing and crunching its way towards the enlivened town. The Bedford truck crabbed into the awaiting crowd, barely coming to a stop as it flung open its rear door, and the frenzy ensues. Crumpled notes are handed back and forth, difficult to discern their origins, but somehow the small bags of bundled green leaves make their way to their rightful owner, and thus commences a long night of ware. Returning to my tent in view of the chief's compound, I begin the nightly ritual of boiling water, peeling vegetables, making stock. Our consistent dinnertime companions begin to trickle back to my cooking pot, their feet light and mouths stuffed with leafy green stems, but tonight there is no interest in cups of tea or bowls of rice soup. It is only time for ware, and with the close of dinner and some late night jovial banter, I enter my tent, falling asleep as usual within minutes, however tonight to the excited cackles of the young men.*

*In the morning I wake, the sun's heat pushing me out of bed at least an hour too soon. I open my tent, but there's no shout of good morning, no curious child to watch me brush my teeth, not even a misbehaving goat chewing at my guy ropes. And again begins that monotonous rhythm that has been plaguing us all week.*

## **9.3 Conflict Effects on Coping Mechanisms**

The discussion switches now to focus on how one particular influence affects the spectrum of coping mechanisms that pastoralists are known to employ in the face of resource scarcity. A number of studies (e.g., Hendrickson, Armon and Mearns 1998; Pike n.d.) have pointed to persistent conflict playing a major role in numerous human crises of late. The following discussions will focus on the role of conflict as it is affecting Borana, Samburu, and Rendille coping strategies in northern Kenya.

### **9.3.1 Mobility and Conflict**

As previously discussed, when pastoralists 'follow the rain' to opportunistically exploit impermanent resources, there must be open access to all suitable grazing land as and when it becomes available. In order to meet basic needs, pastoralists make use of unpopulated border areas, which are typically resource-rich, but contested (Morton 2006). As numerous respondents noted, with increasing pressure from drought and lack of secure grazing management in the borders, there is a breakdown in effectively using buffer zones that were once essential to pastoral dispersal strategies. There ensues a struggle as drought pushes herds toward the resource-rich border areas, yet the threat of conflict repels them. A decision must then be made to either face the potential consequences of drought or to take one's chances in the borders. As one Samburu man explains:

“As long as the drought continues, and I hear of a place with insecurity due to humans, I will have to take my animals there. I can protect my animals from the raiders, and if I have bad luck, then I will be killed... No one can kill the drought.” (Samburu, elder male, Lenchokut)

This was even a dilemma written about by the colonial government in Kenya in 1931 when discussing Turkana movements towards the Ethiopian border, with one officer writing:

“They prefer to take the risk of raids from Abyssinia rather than the prospect of slow starvation in the country allotted to them, and none can blame them.”  
(DC/ISO/2/1/1: 5 – 6)

But not all pastoralists’ feelings reflect the above two quotes, particularly amongst the women, who from interviews appear more risk-averse than men. One Samburu woman explains:

“The people are saying that the animals are dying [in the interior pasture], and they no longer have things to eat. They are going to come back [home] because there is nowhere else to go. People will come back here to certain poverty rather than risking elsewhere because other places are insecure.” (Samburu, elder woman, Remote)

In this way, the threat of conflict restricts free pastoral mobility as it denies access to resource-rich areas, a phenomenon noted by several scholars (Smith, Barrett and Box 2001; Lusigi 1981; Lamprey and Yusuf 1981).

Furthermore, in order to exploit available border resources under the threat of conflict, herders described to me the practice of waiting until members of their community progressively moved from the interior towards the borders of one’s territory instead of dispersing over a range in order to exploit all possible resources at low densities. In this way, migration is en masse, picking up comrades along the way in order to ensure that by the time the border is reached, settlements are fortified with high concentrations of people of the same ethnic group providing security for one another (Gray et al. 2003; Dyson-Hudson 2000). Pastoralists commented that large herds moving into border areas often results in trampling of pastureland, wasting precious grazing and also contributing to soil erosion. They were also concerned that increased herd concentrations graze out areas quickly, therefore greatly reducing the effective time that a dry season refuge can support the community. As a result, mass migration towards the border due to the threat of conflict ultimately creates further resource insecurity through rapidly grazing out vital rangeland areas.

Second, the threat of conflict differentially affects the unrestricted movement of large portions of society, particularly women, children, and the elderly. Paul Spencer noted

that warfare was not a defining characteristic of the Samburu during colonial administration (Spencer 1965, 1973) and that migrations of the entire settlement would occur roughly every five weeks (Spencer 1973) in order to make use of available pastures and avoid over-grazing in concentrated areas. One elderly Samburu woman reported to me that during this time, they were “addicted to moving” (Samburu, elder female, Remote). With reported increases in resource scarcity, increasing the frequency of migration would appear to be beneficial in order to follow the herds in search of grazing and water sources; however, for vulnerable members of society, this option is not a viable one. As one man notes:

“If the drought worsens and the animals are living in a secure place, I would follow the animals with my family, but if the place was insecure, I wouldn't risk the small children. It is a benefit to follow the cows because the children will have milk if there are calves. There is no other deterrent to moving my family to follow the animals other than insecurity.” (Samburu, elder male, Lenchokut)

The threat of conflict with neighbouring ethnic groups poses too much of a risk to move vulnerable family members) into contested grazing areas. Instead, the responsibility of movement rests with the *moran* and young men who are acting as herders and protectors of the community's assets. Individuals reported that the complete separation of family members from the herd can last from a few months to more than a year, as seen in this most recent 2008 / 2009 drought in northern Kenya. In this situation, family members are not receiving the economic and dietary benefits of their animals.

Finally, the threat of inter-ethnic conflict in northern Kenya is limiting pastoral mobility by forcing herders into sub-prime grazing areas as the only available conflict-avoidance mechanism during times of resource scarcity. These areas are characterised mainly by thick bush, which is typically avoided during prosperous years as they pose a number of associated dangers. Primarily, these are regions with high concentrations of wildlife where the presence of elephants and buffalos pose a security threat to the human population moving into the area, and likewise the cheetah, leopards, lions, hyenas, and wild dogs present a significant risk to livestock. Furthermore, pastoralists report that bushy or forested areas present hazards from vector-borne diseases transmitted from ticks and tsetse flies, which can wipe out livestock populations as effectively as drought or raiding. In conducting livestock off-take surveys with these communities during the

2009 drought, I found that vector-borne diseases rank closely behind drought-induced starvation as a threat to livestock. Spencer discusses these same issues for the Samburu during the colonial period when he writes, “As the dry season advances, the settlements converge on the water points closer and closer to the foothills of the mountainous districts (Ndotos and Matthews Range). These parts are overgrazed and the thick bush adds risks from wild animals and tsetse fly. As soon as the drought breaks, the settlements may disperse into less heavily grazed areas” (Spencer 1973: 24). Migration that avoids inter-ethnic conflict may also require pastoralists to move into protected exclusionary zones, namely national parks, reserves, or conservancies that prohibit grazing in order to provide core conservation areas necessary to support local wildlife populations. Faced with the dilemma of moving towards conflicted border zones or grazing illegally, many pastoralists choose to cross protected boundaries as a last resort when pasture and water are particularly limited. During the 2008 / 2009 drought, respondents reported that they used conservancy areas such as West Gate, Namunyak, Sera, Bisanadi National Reserve, and Meru National Park. However, illegal grazing in conservancy areas often resulted in harassment or brutalities carried out by park rangers, fines or bribes levied for illegal grazing, or ultimately confiscation of animals as a deterrent for entering protected areas. When presented with few other viable options and in trying to avoid conflict with neighbouring ethnic groups, these populations are forced into moving animals into protected land during the night to graze illegally, increase camp movement in order to avoid detection by the park authorities, and ultimately live in a perpetual state of fear that animals may be confiscated or their own personal security threatened.

As discussed in chapter five, conflict differentially affects the movement of north Kenyan pastoralists depending on one’s home area. There is a marked difference in the timing of raiding intensity if living in the border or in the interior areas. During interviews, I asked herders to name the areas where they tended to graze their animals during: a) rainy seasons, b) short dry seasons, and c) prolonged dry seasons / drought. For individuals having home areas in the interior of their ethnic territories, their responses were extraordinarily similar. In the rainy season, herders would remain in the interior around their home areas, returning to the homestead each night. During short dry seasons, they would remain in the interior and return home each night, however as the dry season progressed, they may have to establish satellite camps that prevented them from coming home each night. During the extended dry seasons into drought



periods, the vast majority of interior herders said that they would move into the border areas, remaining there until the rains came, when they could return to the safety of their home area. However, a number of herders also said that they had never taken their herds into border areas during extended dry periods / droughts due to the threat of insecurity and therefore remained in the interior regions during this time. For border populations, there was no clear migration pattern identified. The most common responses from this group were as follows:

Table 9.1: Seasonal patterns of border population migration

| Options | Rainy Season | Short Dry Season | Extended Dry Season / Drought |
|---------|--------------|------------------|-------------------------------|
| 1       | Border       | Border           | Border                        |
| 2       | Border       | Border           | Interior                      |
| 3       | Interior     | Interior         | Border                        |

in comparison with the interior populations who displayed the following:

Table 9.2: Seasonal patterns of interior population migration

| Options | Rainy Season | Short Dry Season | Extended Dry Season / Drought |
|---------|--------------|------------------|-------------------------------|
| 1       | Interior     | Interior         | Border                        |
| 2       | Interior     | Interior         | Interior                      |

As discussed in chapter five, the different patterns of migration between the two groups result from the border populations bearing an additional burden of insecurity in the rainy season as the overall population reduces in the border with the return of the interior population to their home areas. This can be a precarious time for border populations, and therefore, they may move to the interior areas away from their homes during the rains in order to avoid possible conflict.

### 9.3.2 Herd Accumulation / Diversification and Conflict

As Spencer writes, “the Samburu argue that with large herds of cattle, they can afford to lose considerable numbers in a drought or an epidemic. The drought of 1959 – 1961 left the Samburu more convinced than ever that their reasons for over-stocking were

right” (Spencer 1965: 4). Despite the benefit of accumulating herds as an insurance policy against drought losses, accumulation is only viable if herds are left to recover from stock loss or free to multiply without the disruptive influence of external factors. Conflict in the form of livestock raids has clearly been one of the most devastating and direct impacts on pastoralists’ ability to cope with environmental stress. It can strip communities of their wealth, decimate livelihoods, reduce effective breeding stocks, ultimately resulting in further resource scarcity. As one Borana woman explained:

“My animals were taken at Kom along with many others. Now that the rains have come, I am left with not even one cow to support my family. What the drought didn’t take, the Samburu have so I would rather be secure in the town than re-grow my herd only to watch them be taken away again.” (Borana, elder female, Mata Arba)

Lacking an insurance policy in the form of an accumulated herd means that the effects of drought are increasingly catastrophic, leaving people destitute with few remaining options available to successfully manage climatic events.

Likewise, Samburu, Borana, and Rendille communities recognise that diversifying the composition of their herds between small stock, cattle, and camels means that they can exploit a far greater range of environments. Herding with pastoralists is an incredibly rich participatory experience, and I was fortunate to witness a number of practices and hear views from the herders that dispelled some of the preconceptions that I had about livestock rearing while in the field. Primarily, I was intrigued to find out that herds are not necessarily divided between browsers (camels and goats) and grazers (cows and sheep) according to their vegetation requirements, but instead they are divided primarily according to labour considerations. Camels cover a much greater distance at faster speeds compared with goats, and cows also move further and quicker than sheep. Therefore, goats and sheep are kept together in one herd, camels left to browse in a separate herd, and cows graze in a third group. Furthermore, after following multiple shoat herds, I came to find that sheep seem as likely to browse on bushes and trees as goats are to nibble at long grasses during herding.

Figure 9.2: Goat grazing on grass and small shrubs, Garba Tula region



I was also quite surprised to find that each type of animal seemed to thrive in one environment over another, where as an outsider, I first found it difficult to discern the subtle differences between the environments utilised by each type of herd. When I would query the use of one waterhole over another or why certain available tracts of land were not being utilised, the responses would reflect attitudes like “too cold for goats,” or “too salty for cows,” or “too wet for camels.” Under these ‘hardship’ conditions, livestock found in this part of the world can easily be classified as resilient creatures. However, it was vital to see the importance of diversifying animal species in order to optimise the use of varying landscapes to their greatest benefit.

Diversifying herd compositions also assists communities by allowing them to flexibly meet their fluctuating financial needs. As one Borana woman explained, during periods of environmental hardship,

“The animals we sell for upkeep are goats and sheep because they are like current accounts to use.” (Borana, elder female, Girissa),

whereas, to continue the analogy, cows or camels are more like savings accounts that should be protected as high-value assets during times of crisis that may be used to rebuild herds once the threat has ceased. Ultimately, if one particular environment is affected more than others due to drought or the spread of disease, having a diversified herd means that die-off of one particular livestock species is undesirable, however not ultimately catastrophic to a family's livelihood.

Unfortunately, tension between ethnic groups is a significant obstacle to successfully diversifying herds to their greatest potential in northern Kenya. Conflict and distrust among competing ethnic groups means that the beneficial transmission of goods, services, trade, and information between them is lacking. As a district veterinary officer mentioned to me, livestock cross-breeding is extremely advantageous in order to ensure that animals are physiologically suited to bear the potential threats of these extreme northern environments. For instance, herders reported that Borana cattle are particularly robust in surviving resource scarcity and combating pathogens in arid environments. Some Samburu and Rendille herders expressed their desire for greater access to these breeds in order to fortify their own stocks; however, trade with the Borana is non-existent. Therefore, acquiring these animals can only be achieved through force, which in turn further exacerbates tensions between these groups.

Open transmission of goods and information between pastoral groups can also improve herd health and provide access to necessary veterinary medicines that may otherwise be unavailable. Somali living in the North Eastern Province of Kenya and bordering Borana territories have a reputation for their adept camel-rearing abilities and their access to medicines that prevent fatal diseases within the species. Due to the periodic wars between the Borana and the Somali, the Borana are only now fully realising the potential for keeping camels, favoured for their ability to produce large quantities of milk, act as effective transport, and most importantly, withstand severe drought conditions. As one man says:

“I have never owned camels, but I really want to so much. I never converted my cows and small stock into camels because I didn't know enough about camels. I came to know about their benefits only recently, and I learnt this from the Somali.” (Borana, elder male, Malka Daka)

Currently, the Borana are in a state of relative, albeit uneasy, peace with the Somali; however, a history of tensions have left a lasting impression in the minds of the people where they are slow to trade or share knowledge regarding camel rearing, which can be fraught with problems for an untrained camel owner. Conversely, where relationships are peaceful, as is the situation between Rendille and Samburu communities, stock and information about animal rearing practices can be easily transmitted where one group can rely on the ‘specialist knowledge’ of another group to take care of their animals.

“[The cows] don’t stay around here because it doesn’t rain enough so they can’t stay. For the Rendille, cows normally don’t come home because they produce a ‘sigh’ when they sleep. Rendille say that cows will blow away the camels...[Cows] need water always. Cows need Samburu specialists to take care of them, not Rendille camel people.” (Rendille, elder male, Farakaren)

From this quote, we can see that the Samburu and Rendille benefit greatly from their amicable relationship. Multi-species herds can be kept and managed between the two ethnic groups. Ultimately, diversification and expanding livestock herds are beneficial when managing environmental stress; however, persistent tensions impede knowledge exchange.

### 9.3.3 Social Networks, Stock Alliances, Knowledge Transfer and Conflict

Box 9.2 below illustrates the importance of social networks in managing herds effectively.

Box 9.2: Field note demonstrating how social networks inform herd management, Biliqi Dera, February 2010

*After much deliberated discussion night after night around the gose campfire, our ola was to move, and by the end of the day, Hussein and I would be left alone in the dust to carry on mapping what has been our home for the last two weeks. The two small Borana women begin the systematic deconstruction of their house, with hands swiftly guided by their memory. By the time I’m scraping the last spoon of porridge from my bowl with the sun creeping over the horizon, the donkeys are being loaded: weathered reed matting, battered metal sufria, carved damelas bursting with the morning’s camel milk are packed one by one onto the waiting concave backs. And so our caravan sets*

out – at the helm is our gentle patriarch, known to me simply as ‘Ab,’ with a destination for Biliqi Dera almost a day’s walk away. I bring up the rear, notebook in hand, traipsing behind with a glorious view spreading out before me of the packed donkeys, Ab spurring us on, and the women silhouetted by the imposing hillsides ahead, making them appear even more diminutive. With not a word between us, there is hope in the minds of my companions that Biliqi Dera will hold the possibility of some small rains, much needed as the area around my tent has remained disturbingly dry for these last two weeks. In the distance emerges the distinct yet wavy outline of an approaching camel caravan, sun scorching already hot enough to blur my vision, and it’s not yet even 10:00. Ab quickens his pace, showing that his days as a young herder still serve him well in his old age. The distance is covered in blinding speed, and by the time I’ve caught up with my fellow travellers, our leader is immersed in sombre conversation with our new acquaintance. A hush falls over us all, even the camels are silent, as the two men carry on a considerate discussion, listening and talking in turn. And like that, all that needs to be said has been exchanged, and the camels with herder in tow disappear behind us as quickly as they had arrived. All eyes turn to Ab, his own eyes wide with realisation: Biliqi Dera is not the place for us. The promise of rain was a fallacy. It is being abandoned. We must find another way. Ab wipes his brow hot from the sun overhead and weighty with this new information. “I would have brought my animals to death” is all he can manage. With that we turn on our heels, blessedly home in time for fireside soup while watching the women’s nimble fingers reconstruct their cover for the night. The evening wind carries with it the talk from nearby gooses and the smell of rain coming from Luk Buriya and this time the hope of better pastures.

Some studies have suggested that protracted clashes and an escalation in conflict can result in the breakdown of contact between neighbouring communities and the consequent loss of constructed social networks and institutions which have proved to be crucial for coping with uncertainty (Hassan 1997). When I questioned pastoralists about inter-clan marriage networks, and compared them to those found during Spencer’s fieldwork (1963, 1975), it appears that the geographical distance between the bride and groom’s home areas and clans has decreased over time. As discussed in relation to mobility, due to the effects of conflict, family homes are becoming increasingly sedentary and are now located closer to towns. As a result, marriages are being arranged more locally rather than between distant ecological zones. In times of acute

environmental stress, it is becoming increasingly difficult to transfer herds to areas that may not have been as negatively affected by drought because either: 1) families lack affines in distant areas to look after their herds, or 2) the herder is unaware of opportunistic rains or temporary availability of pasture in distant regions as he lacks the social networks through which this type of information has been disseminated in the past.

Furthermore, the threat of conflict forces a separation of the community into two groups during times of resource hardship. One group comprises women, children, and most importantly, the elder men in large sedentary settlements, and the second group consists of the highly mobile herding camps composed of the warriors and young men of the community. As drought progresses and the distance between these two groups grows, a knowledge divide results between the young men and the elders. Many elders report that this divide can be catastrophic as they possess the experience and wisdom necessary to counsel the youth in ways to reduce livestock loss during times of hardship. Paul Spencer explains that it was the elders of the community who strengthen pastoral resilience against external threats by controlling herd management (Spencer 1965). As discussed in chapter seven, young men are increasingly making independent decisions regarding herd movement, finding pasture, exploiting water sources, or deciding whether to take herds into conflict areas without the guidance of their fathers. The youth and elders from these groups generally recognise that elders are more moderate in their herd migration decisions, as explained by one *moran*:

“Even if there is insecurity but plenty of grass, I will have to take his animals to [a border area]...My father would likely refuse due to insecurity, but I would take them anyway...because the problem of the cows is in my eyes, and I will feel very bad if the cows are here, and they have nothing to eat.” (Samburu, *moran*, Kitich)

The moderation demonstrated by the elders may ultimately help to minimise risks to the herd in terms of loss from theft. The threat of violence fosters the separation of herders and elder community members, resulting in the breakdown of experiential knowledge transmission between the generations and therefore, perhaps increased risk of violence.

### 9.3.4 Livelihood Diversity and Conflict

In an attempt to diversify income sources, several pastoralist communities in northern Kenya have previously attempted farming in regions of their territories that had the potential to support agriculture. Unfortunately, many of these schemes have ultimately failed as a result of tensions with neighbouring ethnic groups. For example, Samburu located along the Maralal highlands of the Leroghi Plateau within Samburu Central District are agro-pastoralists growing maize, beans, sukuma wiki, and potatoes, as the area benefits from the effects of a rain belt extending from Laikipia into the highlands. However, constant attack, pressure, and harassment from the neighbouring Pokot means that farm plots are often abandoned, crops are left untended, the raiding of fields, food stores, and livestock is prevalent, and ultimately food production is sub-optimal or insufficient in supporting Samburu populations in this zone. During the ten days of fieldwork (intended for 27 days) that I stayed in this border region in November 2009, the Lolmisigiyoio community I was living with was raided or trespassed on by the Pokot on four occasions, resulting in a number of families, myself included, abandoning the area due to fear of attack.

Likewise, organisations such as the Northern Rangelands Trust (NRT) are increasing efforts to establish community conservancies in northern Kenya, aimed at providing wildlife enterprise and tourism in an area that has the ecological capability to support higher densities of wildlife than it currently does. Money generated through wildlife enterprise is designated for reinvestment back into the local communities by providing education bursaries, building nurseries and primary schools, improving healthcare services, providing employment within lodges and wildlife reserves, and constructing roads. Unfortunately in the initial stages of implementing community conservancies, neighbouring ethnic groups are regarding conservancies and agencies such as NRT with suspicion as they are providing local rangers, who are themselves pastoralists within the conservancy area, with vehicles or increased communication (two-way radios and mobile phones), which has in some instances fuelled tensions along border areas, particularly amongst the Borana and Samburu. The following is part of a story that was told to me multiple times by individuals along the Samburu – Borana border after a number of Samburu animals had been taken by the Borana:

“The Kalama Conservancy vehicle was helping the Samburu look for their stolen cows...The Borana ended up stealing a jacket from a Kalama ranger and



took it to their MP who showed it to some journalists to say that the conservancies are supporting the Samburu cattle raiders, which is what made the [General Service Unit] come to take the Samburu cows from innocent people in order to give them back to the Borana.” (Samburu, elder male, Lenchokut)

At present, the potential of wildlife conservancies in northern Kenya is constrained, tourists are often advised not to travel to these areas, and outside investors have been reluctant to build lodges and infrastructure in an area characterised by insecurity and instability.

### **9.3.5 Markets and Conflict**

Livestock market systems are currently not well established in northern Kenya, with the vast majority of participants interviewed complaining about the lack of local markets, the distances they need to travel to larger markets, and the lack of stable pricing. Complicating these issues even further, conflict, or rather the commercialisation of conflict, greatly affects the optimal functioning of markets in supporting pastoral livelihoods during periods of resource scarcity. Research participants in all three ethnic groups made reference to their fear of the government locating and confiscating raided livestock. Raiders therefore may opt to sell stolen animals rather than keeping them amongst their own herds. The quick sale of illegal animals can flood local markets, driving down the market price of all animals in the process. Also, the need to sell off animals within one market day allows dishonest middlemen working in the markets to offer no more than ‘rock bottom prices.’ Livestock prices in northern Kenya are already known to be particularly volatile (Barrett et al. 1999); however, as markets are inundated with stolen livestock, respondents have reported that a cow normally fetching upwards of 10,000/ksh may receive only 3,000 to 4,000/ksh – an acceptable price for raiders trying to off-load stolen animals. Informants also report on the commercialisation of conflict, as highlighted by one Samburu elder when he said:

“Leaders and businessmen are organising guns, from which they have shares on the take from the raids in exchange for their guns and support.” (Samburu, elder male, Remote)

Support can take the form of providing guns, ammunition, and vehicles necessary to move stolen animals quickly away from the border areas and into markets. In an area of

the world where cross-border illegal stock sales (from smuggling) can account for as much as 70% of the market (Homewood and Rodgers 1991; Field and Moll 1987), this lack of control has allowed for conflict to become easily and increasingly commercialised. Pastoralists in northern Kenya note that in order to avoid detection and confiscation by authorities, middlemen quickly transport raided stock to distant urban markets, sometimes as far away as Ethiopia and Somalia where they will be sold at higher profit margins as the risk of detection is reduced. Rather than wealth circulating in local markets through the buying and selling of livestock at fair prices, wealth is removed from local people and taken out of their area, profiting individuals external to the northern pastoral communities.

### **9.3.6 Conflict as Cause and Effect**

An understanding of the relationships between coping mechanisms and outcomes is necessary in formulating a framework in which to examine the adaptive capacity of pastoral populations facing increasing resource scarcity. A simple linear relationship would demonstrate that increased resource scarcity contributes to livelihood insecurity (due to the breakdown in traditional coping mechanisms and catastrophic loss of livestock), which then may result in unsustainable behaviours (in this case, conflict used to replenish lost stock or to increase access to resource-rich environments). However, as described above, conflict acts as both a cause in the breakdown of coping mechanisms and as an eventual outcome resulting from the breakdown of coping mechanisms (Swift 2001; Barnett 2006), which further reaffirms resource scarcity. Conflict, or the threat of conflict, limits pastoral mobility, strongly influences decision-making regarding herd movement or separation, localises and consolidates herd assets, closes essential trade routes, alters the structure of marriage and social networks, interferes with healthcare delivery, and reduces the amount of land utilised for pasture (McCabe 2004; Ecosystems Ltd 1985; Gray et al. 2003) – all things that can negatively affect the successful implementation of traditional pastoralist coping strategies. Conflict, in this case, may be a likely result from the loss in capacity of coping mechanisms. With few alternatives to cope with resource scarcity, herders may look to raiding to try to improve their situation. Despite this, pastoralism as a way of life has survived and continues to do so. Waller and Sobania (1994) describe this phenomenon as the ‘feast and famine’ – the pastoral norm where communities utilise one state so that they may survive the other. However, in light of increasing resource scarcity, additional

pressures having the potential to degrade traditional coping mechanisms, and an apparent escalation in inter-ethnic conflict, how long can this trade-off stand to serve pastoral communities and ensure their survival?

## **9.4 Limits of Coping and Evaluating Resilience**

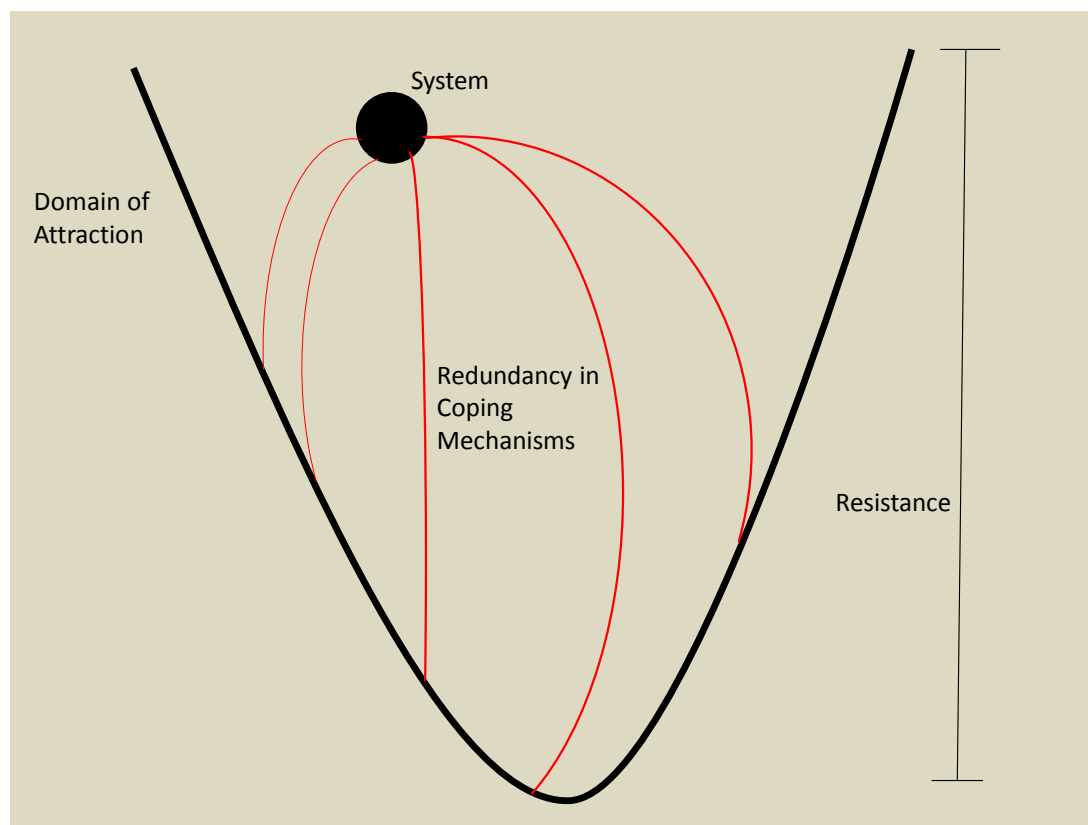
Pastoralism itself developed as a mode of production in response to harsh and unpredictable climates, allowing for flexibility and adaptive land use practices, where flux rather than stability has been the cornerstone of its survival. The question presented in news stories, development reports, by rangeland ecologists, and land managers is whether or not pastoralism as a viable subsistence strategy has reached the limits of its ability to cope and adapt in the rapidly changing environment of northern Kenya. Is this just an alarmist point of view or Western knee-jerk reaction in response to East Africa's escalating impacts of climate change, reduction in annual rainfall and a rise in multi-year droughts (Ellis et al. 1987), increasing livestock off-take during drought periods (Cossins and Upton 1988b; Desta and Coppock 2002), or increasing bush encroachment and reduction in forage production (Oba et al. 2000), or will pastoralists simply continue to manage within such a harsh environment as they have done for the last 4000 years? While insights from Helland (1997) and Solomon, Snyman and Smit (2007) demonstrate a decreased capacity of pastoralists to manage single season droughts effectively, other studies by Galvin (Galvin et al. 2004; Galvin, Thornton and Mbogoh 2000) and Thornton, Galvin and Boone (2003) demonstrate through the use of simulations and models that increased frequency of drought is having little discernible effect on the dietary deficit of Maasai communities in the Ngorongoro region. Furthermore, livestock and vegetation, such as those found within arid north Kenyan regions, display robust physiological adaptations to extreme aridity where animals prone to emaciation exhibit greater energy conversion efficiency (King 1983; Western and Finch 1986), and plants found within similar environments possess a profound capacity to recover after disturbances (Walker et al. 1981). Clearly the question remains: how resilient are north Kenyan pastoral communities in their abilities to withstand the negative effects of increased resource scarcity?

## 9.4.1 Evaluating Resilience

### 9.4.1.1 Persistence

Answering this question becomes extraordinarily complex due to the inter-relatedness, interdependency and interactions that exist amongst pastoral coping mechanisms, which are further influenced by fluctuating social, political, environmental, or economic factors. The Dyson-Hudsons (1980) point out that some ecological interpretations of the 1970s assumed that pastoral systems must be resilient because simply, they exist. Although this argument is tautological, and incomplete, it does point to the first principle of resilience in social ecological systems (SES), as discussed in chapter two. Primarily, resilience is demonstrated by the persistence of the system (Holling 1973; Walker et al. 2004). Holling's work emphasises the idea that populations and behaviours may fluctuate vastly over time; however, the fluctuations themselves as responsive mechanisms are an essential feature that maintains persistence (Holling 1973). Proponents of these socio-ecological theories of resilience argue that in order for a system to remain within a domain of attraction, there must be substantial resistance (R, in Figure 2.2 in chapter two), which is "the ease or difficulty of changing the system" from one domain to another and is represented by the depth of the domain of attraction (Walker et al. 2004: 6). In relating this concept of resistance to an examination of pastoralist resilience in northern Kenya, it can be argued that it is the diversity and redundancy found in pastoral coping mechanisms that allow the system to persist within an ever-changing environment. As the "stability landscape" changes (for example, with increased frequency of drought, reduction in security, bush encroachment, etc.), in order to remain within a particular domain, there must be strong resistance against transferring into a new domain. The resistance for pastoralist systems is borne out of the successful implementation of coping mechanisms, thwarting the effects of change within the "stability landscape," and therefore allowing the system to persist. Figure 9.3 below seeks to illustrate this point.

Figure 9.3: Diagram demonstrating a domain of attraction and the redundancy, or multiple pathways, found in pastoral coping mechanisms (red) which help to keep the SES within its current domain of attraction



Faced with a changing “stability landscape”, the system will move around the domain, as it is not in any way static; however, the redundancy of effective coping mechanisms will keep the system anchored in the domain. Therefore, the more effective coping mechanisms there are, then the greater the resistance against movement into a new domain of attraction.

#### 9.4.1.2 Adaptation

A key term here is ‘effective.’ This term relates to the second principle of resilience in socio-ecological systems as discussed by Walker et al. (2004), which is adaptation. Barton, Morton and Hendy (2001) make a clear distinction between coping mechanisms and adaptive strategies when they say that,

“[s]ome grazing practices and increased charcoal production are examples of ecologically unsustainable practices; sale of breeding stock is an example of a coping strategy unsustainable at a household level (sometimes known as an erosive coping strategy). Adaptive strategies are likely by their nature to be

more sustainable; the adoption of drought-tolerant breeds and species of livestock is a case in point.” (2001: 13)

When faced with diminishing strategies for successfully coping with resource scarcity in northern Kenya, pastoralists may increase their engagement in unsustainable coping mechanisms as adaptation strategies may be lacking, unachievable, or rendered ineffective by external influences. In the short-term, unsustainable coping mechanisms may help to serve immediate needs during serious environmental hardship; however, over longer periods, these same mechanisms may become destructive or result in a degradation of more adaptive strategies (Adger 2006). During fieldwork conducted in the 2009 drought in northern Kenya, I witnessed the following activities amongst the three study populations as methods employed to cope with extreme resource scarcity:

Table 9.3: Diversity of activities / mechanisms pastoralists utilised during the 2009 drought in order to cope with extreme resource scarcity

| ACTIVITY                                       | ADAPTIVE | ACTIVITY                                  | ADAPTIVE |
|------------------------------------------------|----------|-------------------------------------------|----------|
| Increased mobility                             | +        | Grazing schemes                           | +-       |
| Social networks & Knowledge transfer           | +        | Illegal grazing (conservancies, reserves) | +-       |
| Maintaining accumulated herds                  | +        | Transporting goods & people               | +        |
| Diversify herd species                         | +        | Road banditry                             | +-       |
| Arabic gum collection                          | +        | Food ration                               | +        |
| Market access (sell hides, meat, animals)      | - +      | Urban movement to access services         | +-       |
| Shop co-operatives (tea, sugar, tobacco, eggs) | +        | Attend school (give up herding)           | - +      |
| Gov. livestock off-take programme              | +        | Use of boreholes / earth dams             | +-       |
| Conservancy employment                         | - +      | Market restaurants                        | +        |
| Brewing alcohol                                | +-       | Fencepost selling                         | +-       |
| Cutting trees for fodder                       | +-       | Night guards at school                    | +        |
| Prostitution                                   | +-       | Charcoal burning                          | +-       |
| Small-scale farming                            | +-       | Fetching water for pay                    | +        |
| Employment as herder                           | +        | Stealing animals                          | +-       |
| Road construction (work for food)              | +        | Fight for access to land & water          | +-       |
| Supplementary feed (weaver bird nests)         | +-       | Veterinary medicine for animal disease    | +        |
| Selling semi-precious stones                   | - +      | Employment with Catholic mission          | +        |
| Wildlife poaching                              | +-       | Managing a shop                           | +        |

In this chart, I have tried to assess whether each coping mechanism was likely to be of benefit in the foreseeable future and lacked erosive elements, thus contributing to its adaptability (+, highlighted in gray), if the coping mechanism was likely to contribute to long-term vulnerability in these communities and is therefore an erosive coping strategy in the long-term (+-), or if the coping mechanism is currently erosive but might become adaptive in the future if other external factors were to change (-+). An example of this is the practice of young individuals giving up herding in order to attend schools.

Currently, as a number of people are starting to express, this is an erosive coping mechanism when faced with resource insecurity because it takes herders away from their animals, puts pressure on the rest of the family to cope with increased labour requirements, and therefore limits the range to which the family's livestock herd can be sent. Furthermore, education requires families to pay school fees, education in the north is lacking funding and quality investment, and the chances of employment after completing school are distinctly small. However, if investments into northern education were to increase in the future and the government / private businesses were to recruit employees from an educated northern population, then accessing education over herding may be a viable and adaptable coping mechanism.

The strategies that are highlighted as potentially adaptive are ones that centre on the traditional coping strategies discussed in the first half of this chapter; they also include increased access to good and services (aid, rations, veterinary medicines), and further employment diversification. The last point is somewhat contentious as Dercon and Krishna (1996) reinforce the importance of remaining in a pastoral mode of production whilst diversifying into other income-generating scheme rather than abandoning pastoralism in favour of other livelihood strategies. They report that most of these activities generate very little income, particularly for poor families, and therefore have the potential of increasing risk during future periods of scarcity. In this sense, diversification whilst maintaining pastoral production may have greater adaptive potential than abandoning pastoralism altogether.

In light of the range of possible pastoral coping mechanisms utilised during times of resource scarcity, two pertinent issues arise when assessing each mechanism's current and future benefit. The first is that (given the degree of social, cultural, environmental, economic, and political change amongst these communities) it is an almost impossible

task to ascertain future adaptability dependent on so many fluctuating variables. As Holling explains, “it is extremely difficult to detect the precise form of such curves in nature; however, variability is high, typically data are only available for parts of any one curve, and the treatment really only applies to situations where there are no lags” (Holling 1973: 11). In this case, strategies that are adaptive today may not, with a substantial change in situation, be adaptive in the future, and vice-versa, and unfortunately, there is no way of knowing this with any degree of certainty.

Second, the judgement of whether or not a strategy helps to build resilience in the system needs to give attention to the degree of interrelatedness found between strategies and also the areas of the system that they impact. For instance, illegal grazing of livestock in wildlife conservancies during periods of drought helps to strengthen economic resilience in the system as it provides fodder for animals that may otherwise starve under drought conditions, and therefore the herd stock levels remain satisfactory. It also maintains cultural resilience as pastoralism as a mode of production is able to continue despite environmental scarcity. However, illegal grazing can reduce human resilience due to dangerous exposure to wildlife, it may reduce social resilience as it produces antagonistic relationships between pastoralists and conservationists in the area, and it has the potential for reducing ecological resilience as livestock compete with wildlife for access to pasture. Davoudi (2012) summarises this concept of resilience trade-offs for systems and individuals when he says that unlike in nature, where there are no winners nor losers but just consequences,

“in society, there are always rewards and punishments, some people gain while others lose in the process of resilience-building. Resilience for some people or places may lead to the loss of resilience for others. Therefore, in the social context we cannot consider resilience without paying attention to issues of justice and fairness in terms of both the procedures for decision-making and the distributions of burdens and benefits.” (Davoudi 2012: 9)

#### 9.4.1.3 Desirability and Perceptions of Risk

As discussed in chapter two and highlighted by the above example, applying concepts from ecological resilience to socio-ecological systems (SEs) can at times be problematic as natural systems do not necessarily need to account for perceptions of the actors, justice, fairness, or feelings regarding the outcomes of strategies taken. However,



all of these more social attributes must be taken into consideration as they play a substantial part in resilience building within SESs. Baxter makes the point that, although sedentarisation in certain instances may be helpful (i.e., in order to access goods and services), pastoralists may think of the process as regrettable and undesirable (Baxter 1975), which will likely influence their utilisation and management of sedentarisation as a strategy in coping with resource stress. Furthermore, some empirical studies have shown that in a number of populations, there is a psychological divide between a group's perception of the risks that it faces and the perception of its abilities to cope with such risks (Grothman and Patt 2005). In these cases, the gap between the perception of risk and actual adaptive capacity can be an obstacle in successfully employing effective coping mechanisms. In attempting to address the question of whether or not pastoral systems have reached their limits of coping in light of increased resource insecurity or whether they are, in fact, representative of resilient systems, Adger (2006) surmises that "the choice of thresholds is based on values and preferences and hence is both institutionally and culturally determined" (2006).

The following case study, taken from data that I collected during 2009, highlights some of the issues surrounding resilience that have been discussed within this section. For pastoral populations in northern Kenya, cutting tree branches, or in some cases entire trees, when groundcover is sparse provides a significant source of supplementary fodder to livestock as animals browse leaves from the branches. The chart below in Table 9.4 represents results from tree transects that I conducted in seven separate locations within the Samburu and Borana territories (see chapter four for details on methods).

Table 9.4: Results from tree transect data, showing the percentage of trees in each field site that have been cut for fodder usage during the 2009 drought.

| <b>FIELD SITE</b> | <b>% TREES – NEW CUT</b> |
|-------------------|--------------------------|
| Lenchokut         | 61%                      |
| Remote            | 40%                      |
| Lolmisigiyoio     | 62%                      |
| Ntabasi           | 22%                      |
| Girissa           | 9%                       |
| Mata Arba         | 16%                      |
| Darer Shai        | 2%                       |

The results show that up to 62% of trees that are used for supplementary fodder were cut during the 2008 / 2009 drought, resulting in either damage to the tree or complete tree death. Although the practice of cutting trees provided livestock with vital resources necessary to help them survive the effects of the 2008 / 2009 drought, it may be that this coping strategy is contributing to long-term vulnerability in the area as it reduces shade and ground-cover, contributes to erosion (if the tree is lost, particularly near a riverbed), and reduces a source of vegetation (leaves and seed pods from the trees) for the subsequent dry season. In this sense, cutting trees as a coping mechanism in drought cannot be seen as adaptive, and therefore, it is degrading the system's resilience. However, these findings are not definitive as, from this limited perspective, we cannot ascertain whether the trees will cope sufficiently well with this level of disturbance, or if northern Kenya will not experience another drought for a significant period of time, or if conservation efforts will help in re-seeding some of the rangeland areas and actively manage erosion (two programs that are currently underway), etc. Without knowing any of these things with any level of certainty, we cannot now know the future effects of tree cutting that took place in 2008 / 2009, and therefore, we cannot make any assertions regarding the system's resilience. However, in speaking to the people regarding the practice of tree cutting, it was clear from their responses that such a practice, though necessary, is lamentable and undesirable in an "ideal" situation. As one *moran* says:

"If there is another drought next year, and the trees didn't have time to recover, I would feel remorse for cutting the trees and would have wanted to preserve them more." (Samburu, *moran*, Kitich)

The fact that individuals are engaging in practices that they feel are undesirable indicates that these behaviours have the potential to reduce overall system resilience and should be recognised as potentially harmful to long-term sustainability.

#### 9.4.1.4 Reorganisation and Transformability

Although the tree-cutting is seen as a long-term undesirable practice, populations who utilise such short-term coping strategies are not necessarily doomed to a complete breakdown or loss of resilience. Resilience includes "the capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Walker et al. 2004: 6). In this case, human ingenuity and resourcefulness for re-organisation play a large role in a system's

ability to retain its same function post-disturbance (Simon 1981; Boserup 1981). For example, in order to contain and mitigate the potentially negative future effects of tree cutting, an environment management committee was formed for the northern rangelands area by local pastoralists. As one member of the committee describes:

“The responsibilities are making sure people don’t destroy trees because they are important to people and animals. I walk around and see if a tree is cut, then I follow the footprint of the streaks from the branch. When I find [the person responsible], I fine them. It’s 500 Kenyan shillings for shaking the tree. If they have been found cutting the tree, they pay a 3000 Kenyan shilling fine. The fine money goes to the committee, and the committee spends it on community problems paid as a loan to those who need it for sickness or other problems, and it needs to be paid back.” (Samburu, elder male, Farakaren)

Although environmental management committees have not existed in northern Kenya for very long, and the efficacy of these schemes is yet to be seen, their inclusion is a testament to the ability of these communities to assess contemporary needs in response to a changing environment and adjust behaviours accordingly.

Finally, should human ingenuity become eclipsed by mounting vulnerabilities or should people find themselves squarely within the confines of an undesirable domain of attraction, the capacity to establish an entirely new “stability landscape” and way of life is referred to as a system’s transformability (Walker et al. 2004). Transformability represents a monumental change, both in the system and in the “stability landscape.” Walker et al. (2004) cite the agrarian revolution, the industrial revolution, and the emergence of cities as examples of transformative change. Where I disagree with the argument that wealth and infrastructure, such as that found within the West, are necessary components in reducing vulnerability within a system (e.g., Adger 2006) (for reasons cited in this chapter discussing pastoral coping mechanisms), I do, however, concede that wealth and infrastructure play a much greater role in a system’s ability to transform. Transformability represents a fundamental system change, an overhaul of behaviours, an immense supply of ingenuity, and the capacity to withstand the adjustment into and adaptation to an entirely novel domain. Warrick and Riebsame (1981) substantiate this point that transitional developing societies are most vulnerable to new ways of living as, in order to achieve transitions, they have dismantled

traditional coping strategies. However, technology replacement may be lacking, and adaptation into the new domain is precarious. Knowing how and when to initiate transformation and having the capacity (social, behavioural, economic, technological) to do so represent a substantial challenge, particularly for poor communities. Based on the analysis provided in the second half of this chapter, pastoralists in northern Kenya demonstrate considerable resilience in terms of the persistence of their way of life, their adaptive capacity within a dynamic environment, assessment of (un)desirability in behaviours, and ability to deploy human ingenuity to re-organise the system when engaged in erosive coping mechanisms. Therefore, the pressure to fundamentally transform pastoral livelihoods seems relatively weak at present. However, the analysis provided in the first half of this chapter suggests that in order to keep this pressure at manageable levels, stabilising conflict amongst pastoralists is essential for maintaining the efficacy of proven adaptation strategies against resource scarcity.

# Chapter 10: Discussion and Conclusions

---

## 10.1 Introduction

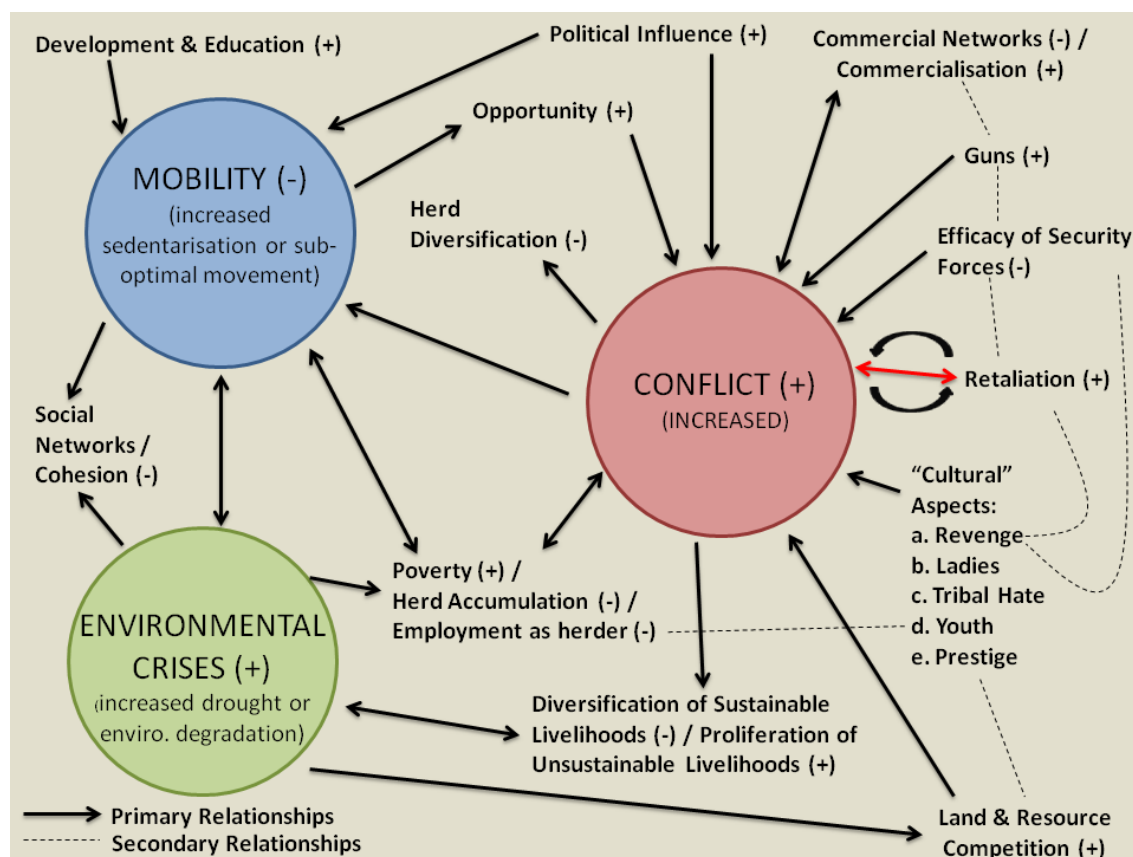
In attempting to explain the relationship between resource scarcity (as represented by drought) and levels of conflict among pastoralists in northern Kenya, the preceding chapters have incorporated a number of methods and types of analyses. Chapters five and six approached this question by investigating the direct relationship between the two variables: drought as the independent variable and conflict as the dependent variable. Chapter five took an ethnographic approach, which was followed by statistical analysis in chapter six. These two chapters covered a lot of empirical ground, both qualitatively and quantitatively, where results were in-line with the hypothesis that escalations in conflict are found during extreme climatic conditions, particularly at low rainfall levels. However, the results from these two chapters were not sufficient in providing the complete picture of how conflict functions in north Kenyan pastoral societies, nor did they explain the entirety of the relationship between the two variables. Chapters seven, eight, and nine built on the simple direct relationship to include greater levels of complexity: identifying the intermediary and additive motivations for conflict, how conflict and cooperative outcomes are moderated, and coming to an understanding of the intervening and interactive coping mechanisms employed during periods of resource scarcity that work to alleviate (although sometimes exacerbating) the negative effects of increased resource scarcity. The purpose of this final chapter is to incorporate and draw upon all of these perspectives in order to provide a comprehensive and holistic understanding of the relationship between drought and conflict in northern Kenya.

## 10.2 Process Tracing

In providing a comprehensive view of the relationship between drought-induced resource scarcity and conflict, a number of authors have acknowledged the complexity of multiple, interacting (social, environmental, political, etc.) causes in mediating this link (Taylor and Buttel 1992; Uvin 1996, 1998; Newbury 1998; Fraser 2003) rather than a simple linear relationship between the two. In order to begin to comprehend the nature of this complex relationship, Homer-Dixon (1995, 1999) draws attention to the method of ‘process tracing,’ in constructing a web or network that places all of the relevant variables into the same framework. Figure 10.1 takes information from

chapters five, seven, and nine to produce a web using the process tracing method in order to represent visually the relationships between variables, as they were discussed by respondents in the field.

Figure 10.1: Process tracing web, including all variables discussed in the relationship between drought and conflict from chapters five, seven, and nine



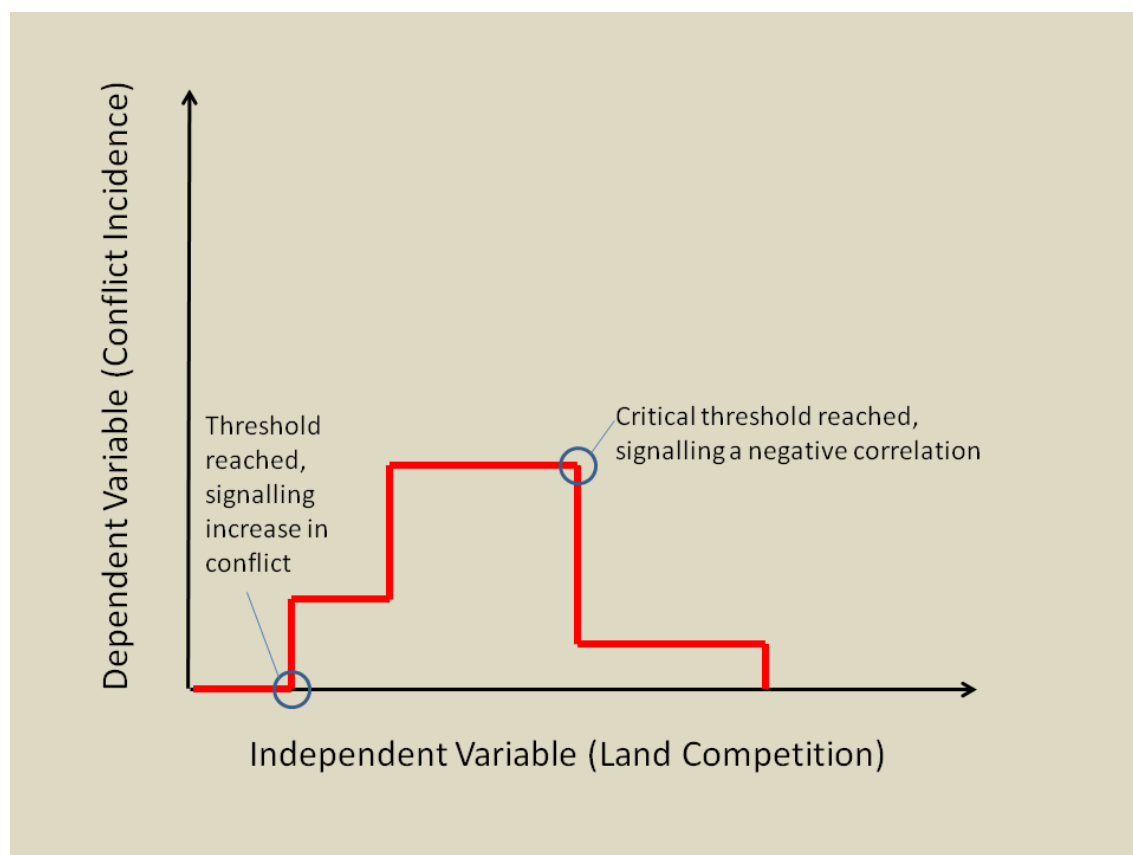
In the figure, increasing frequency of drought is represented by the green circle (referred to generally here as ‘environmental crises’) and increased incidence of conflict is represented by the red circle. Decreasing / sub-optimal mobility is highlighted in the blue circle because, in constructing the web, mobility was the most important coping mechanism referred to, playing a pivotal role in connecting causal factors with intermediate social effects (e.g., increased drought precipitates movement into insecure border areas, which results in increased opportunity to raid). The solid arrows connecting each of the variables should be read as ‘may lead to,’ and the dotted lines should be read as ‘has a close association with,’ as they represent more minor relationships. For example, increased drought may lead to increased land and resource competition. Land and resource competition has a close association with ‘prestige culture’ for raiders, as discussed in chapter seven.

The process tracing web illustrates conclusions also drawn in chapters five and six that there is, in fact, a relationship that exists between increased frequency of drought and increased conflict incidence. However, the process tracing also highlights that the correlation between these two variables is not direct (as there are no direct arrows from increased environmental crises to increased conflict); instead, there are intermediate factors that compound, intensify, and interact with the environmental crisis in order to result in conflict. For instance, increased drought may lead to a loss of animals due to starvation (herd accumulation -), which may ultimately lead to the pressure to raid animals (conflict +). This example also shows that there is redundancy in the pathways that may lead to increased conflict. For example, increased conflict may lead to movement into sub-optimal locations (e.g., movement into towns for protection), which may further lead to increased poverty and stock loss, which again may help to re-affirm greater conflict incident levels. Furthermore, results from the statistical analysis conducted in chapter six demonstrate that there is a correlation between increased frequency of drought and increased conflict incidence. However, it is a weak correlation, as indicated in the process tracing web. As the web shows, one would expect the strength of the statistical correlation to be affected by these intermediate variables. Quite simply, increased conflict incidence cannot be explained entirely by increased frequency of drought alone. There are other factors mediating this relationship (e.g., movement, land competition, increasing poverty, etc.).

An issue that was raised in chapter five, but is difficult to demonstrate using the process tracing web, is the matter of thresholds. Participants' responses demonstrated that the relationship between drought and conflict was not a linear one. Instead, the relationship is characterised by stepwise change, where thresholds must be met in the independent variables (e.g., resource scarcity, land competition, poverty, etc.) in order to precipitate change in the dependent variable (conflict). Furthermore, depending on the threshold reached, the change is not always in the same direction (i.e., increases in the independent variables precipitating an increase in the dependent variables). For example, increases in land competition may be tolerated at low-levels (meaning there is no effect on conflict levels when land competition remains relatively low, likely due to the alleviating effects of multiple coping mechanisms). However, with increasing land competition, there will be a threshold that is reached, precipitating an increase in

conflict incidence events. Recalling from chapter five, a number of respondents suggested that this stepwise relationship will continue until a maximum threshold is reached for land competition that can no longer be tolerated, at which point, there will be a decrease in the level of conflict incidents (see discussion in chapter five on ‘logical’ progressions). Figure 10.2 demonstrates this relationship.

Figure 10.2: Diagram showing stepwise changes in independent and dependent variables depending on thresholds reached. Direction of the relationship changes when critical thresholds are no longer tolerable



In the figure above, the “critical threshold” is a hypothetical situation that, as indicated by the data presented in chapter six and the responses from individuals in chapter five, has not yet been reached as increases in drought are still currently leading to increases in conflict levels.

Complicating matters further, each independent variable will likely be affected by the threshold levels of other variables. For example, thresholds reached for increases in drought episodes may have a stepwise effect on land competition, which might in turn have a stepwise effect on conflict incidence levels. Therefore the answer to the most simple question (is there a correlation between drought and conflict) becomes rather



complex. There is a relationship; however, the relationship is characterised by thresholds, and depending on the magnitude of the effect (e.g., increased drought, increased poverty, increased land competition, etc.), there can be either a positive or negative correlation within the same relationship. The sheer complexity of these relationships, incorporating an understanding of thresholds having positive or negative feedbacks depending on the magnitude of disturbance, makes exact predictions regarding the future of conflict in northern Kenya similarly difficult. The conclusions to be drawn from this analysis are as follows: 1) there is a relationship that exists between extreme low-levels of rainfall and conflict incidence levels, 2) the nature of this relationship is mediated by coping mechanisms and contributing social effects, 3) the relationship between contributing effects and conflict outcomes are characterised by thresholds that precipitate change rather than any smooth, linear relationships, and 4) these thresholds can have positive feedback effects or negative feedback effects depending on the magnitude of the disturbance.

### **10.2.1 Example: Retaliation**

The concept of retaliation provides an excellent example to illustrate some of the points made above (refer to Figure 10.1, highlighted red arrow). It is cited in chapter seven as one of the primary motivations for conflict: the desire to ‘hit back’ at an enemy for previous aggressive acts. Retaliation itself is a form of conflict and, if kept at low-levels characterised by small stealing events, there is a positive feedback cycle between retaliation and increased conflict (i.e., one side retaliating against the other, who counter-retaliates against the perpetrator, etc.) in a back and forth manner. One woman characterised this type of retaliation by saying,

“Every year that game was going on.” (Samburu, elder woman, Sere-olipi)

The type of conflict this woman is describing would be represented on Figure 10.2 by the escalating steps on the left side of the graph. However, at some point in this relationship, a theoretical critical threshold should be met that changes the nature of this relationship between retaliation and increased conflict. Recalling in chapter five, one respondent described conflict by saying,

“The big raid can only occur when the 1 – 1 type of stealing gets to be too much so the two sides will split apart from each other and organise a very big

raid...Big raids can be emergency raids if the community is upset at what the Borana have been doing. (Samburu, elder man, Remote)

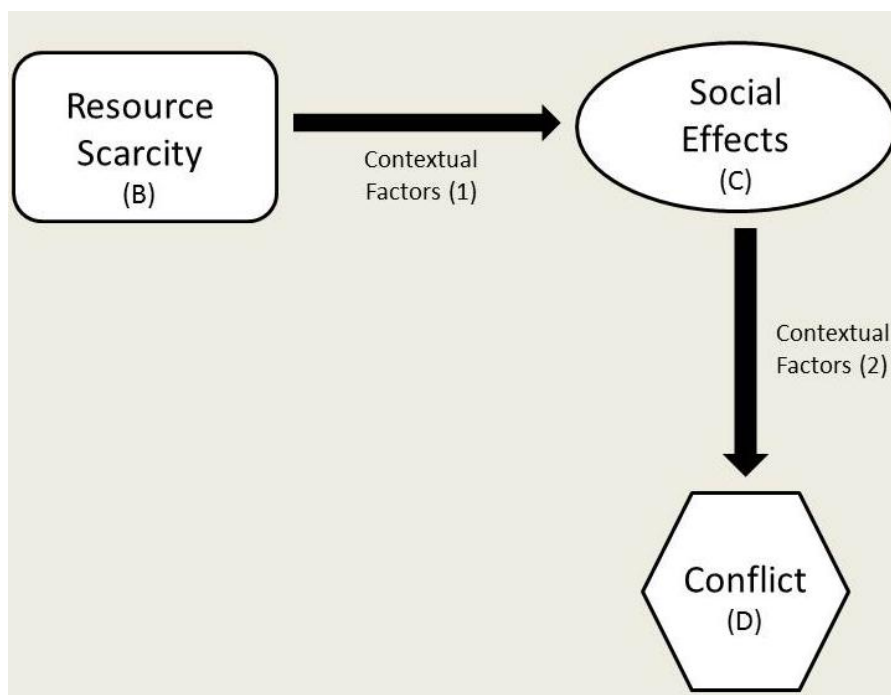
In this case, the small retaliatory stealing has reached a threshold which it is no longer tolerable, and therefore a big raid is organised in retaliation in order to stop the conflict cycle, rather than escalate it further. This is what has been referred to in chapter seven as retaliation for the purposes of security. This type of retaliation is characterised by a negative feedback cycle, or a conflict(s) brought about to decrease overall levels of conflict. In Figure 10.2, the critical threshold met resulting in a decrease in conflict is represented by the declining steps on the right side of the graph. A logical question resulting from this type of analysis is: how can one identify the critical thresholds? What are the critical thresholds that help to moderate the outcome of these relationships? These questions will be addressed in section 10.4, keeping in mind the example of retaliation for security purposes discussed here.

### **10.3 Modelling Resource Scarcity and Conflict**

#### **Variables**

Process tracing, as discussed above, helps to: 1) identify causal factors (e.g., increased drought), 2) identify intermediate factors – either coping mechanisms (e.g., relying on social networks) or social effects that lead from the causal factor (e.g., increased land competition), and 3) demonstrate where there are relationships between the different causal, social, and coping factors. However, within the arrows of the process tracing, there hide many intricate mechanisms, feedbacks, and relationships that influence how the factor(s) interacts with (an)other factor(s). Recalling from chapter two, Homer-Dixon (1999) presents a way in which to think about the relationship between causal factors, contextual factors, social effects, and outcomes when trying to understand the relationship between resource scarcity and conflict. The diagram explaining this analysis is reproduced here in Figure 10.3 (without the effects of population growth (A), for reasons discussed in chapter seven).

Figure 10.3: Diagram illustrating the resource scarcity-conflict relationship model based on Homer-Dixon (1999)

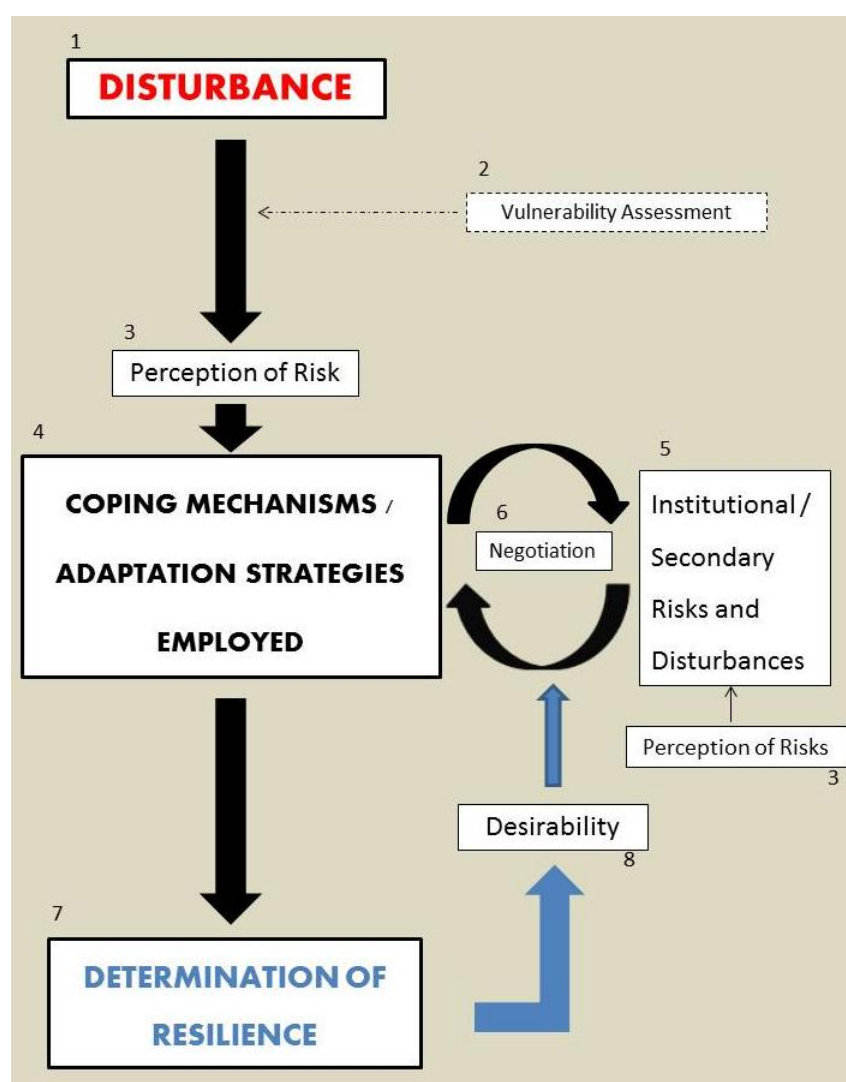


A complete description of this schematic is provided in chapter two; however, it will be explained here in light of the factors and relationships identified in the process tracing (Figure 10.1). In Figure 10.3, (B) represents the causal factor (in this case, drought-induced resource scarcity). The causal factor may lead to certain social effects (C), such as increased resource competition, movement into sub-prime areas, increased poverty, etc. First, however, this pathway from (B) to (C) is mediated by certain contextual factors (1). Coping mechanisms, e.g., relying on social networks, livelihood diversification, etc., can be thought of as contextual factors that help to mediate the relationship between the causal factor (B) and the social effects (C). The social effects (C) may then lead to the conflict outcome (D); however, these effects are moderated by contextual factors (2). This second group of contextual factors represents the processes that mediate the drive towards aggressive outcomes or the drive for non-aggressive / cooperative outcomes. They can be assessed in light of game theory (why one might choose conflict over cooperation as a strategy in iterated interactions, or vice-versa) or biological and social learning theories of aggression, as discussed in chapter two.

Figure 10.3 represents the relationships between these factors as unidirectional, explaining how one causal factor may lead to a particular outcome. Absent from this diagram are the feedback loops, thresholds, etc. Moreover, the apparent immutability of

the arrows tends perhaps to eclipse the importance of humans as active participants in the system. In order to complete the picture of the relationship between drought-induced resource scarcity and conflict, demonstrate multidirectional relationships, and more clearly illustrate the role of human actors in the system, aspects of resilience in socio-ecological systems (SES) need to be included. The resilience diagram for socio-ecological systems is reproduced in Figure 10.4 below, with a full description of the schema provided in chapter two.

Figure 10.4: Resilience diagram for socio-ecological systems

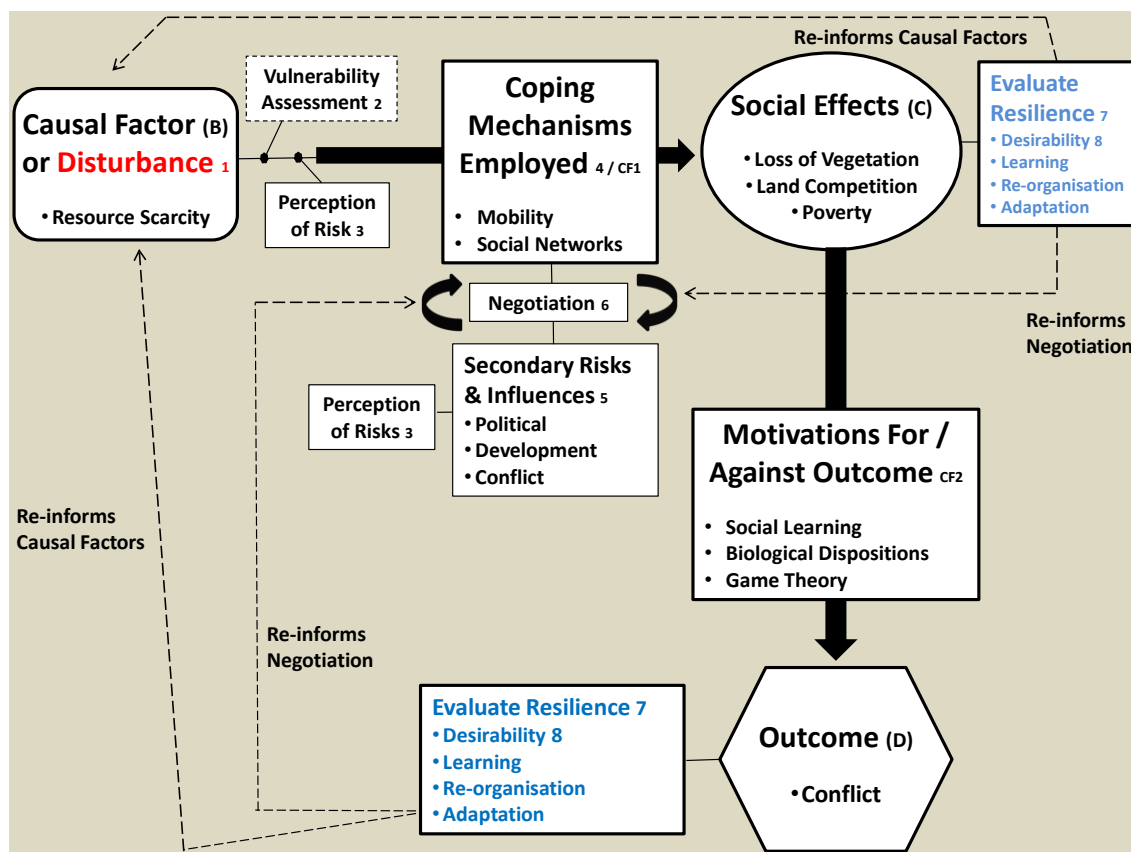


The key contributions of the SES resilience approach to the understanding of the relationship between drought-induced resource scarcity and conflict are: 1) the human **perceptions of risk** that may elicit appropriate human responses, 2) the interactions between **disturbances**, **coping mechanisms**, and **secondary risks** that are **negotiated** by human **adaptive abilities** and human ingenuity, 3) the human assessment of

**desirability** of the outcomes, and 4) the human ability to **re-negotiate** and re-organise elements of the system if the outcomes do not meet the **desirability** criteria. This schema points to the two “goals” of resilience in socio-ecological systems: persistence and desirability, i.e., how sustainable is the system, and how desirable is the system for the population involved?

Figures 10.3 and 10.4 map easily onto one another, as they share many of the same features. The combination of these two models is provided below in Figure 10.5, in what I refer to as the Socio-ecological systems Resilience-Relationship Model (SRRM).

Figure 10.5: The Socio-ecological systems Resilience-Relationship Model (SRRM), combining the resource scarcity-conflict relationship model in Figure 10.3 and the SES resilience model in Figure 10.4. Labels refer to components as they appeared in the original models. The bullet points are provided as examples of the components.



All of the components of the SRRM have been retained from the resource scarcity-conflict relationship model and the SES resilience model, and no new components have been introduced to this framework. However, the SRRM presents a clearer picture of the multidirectional nature of the relationship between resource scarcity and conflict, the

feedback mechanisms that are involved, and most importantly, the human agency involved in assessing vulnerability and perceptions of risk (2,3), negotiating appropriate coping mechanisms (6), evaluating potential outcomes (CF2), judging desirability of the social effects and outcomes (8), learning and re-organising elements in the system (7), adapting to changes (7), and re-informing the process.

The SRRM is a culmination of all of the component parts that have been discussed throughout the chapters in this thesis. It is to be used as an explanatory tool – as a way of distilling the complexity of the relationship between drought-induced resource scarcity and conflict into its component parts and to try to explain how the components relate to one another. The complexity that contributed to the construction of these diagrams lies in the analysis provided in each of the chapters. Making reference to Figure 10.5, chapters five and six directly discuss the coarse-grained relationship between resource scarcity (B) and conflict outcomes (D), without considering in any detail intermediate components. Chapter seven begins to build on the complexity with the addition of multiple causal factors (B) and the inclusion of intermediate social effects (C). Chapter eight looks specifically at the strategies employed in inter-ethnic relationships that moderate the drives toward aggressive or cooperative interactions (CF2). The first half of chapter nine introduces the coping mechanisms utilised by pastoralists to help mitigate the social effects of increased resource scarcity (4 / CF1) and introduces the secondary risk factors and influences (5) that may degrade the effective implementation of traditional coping strategies. Finally, the second half of chapter nine draws attention to evaluating socio-ecological resilience found in pastoral systems, assessing their adaptive capacities, and their reliance on human ingenuity to help re-organise the system in a way that strengthens overall resilience. As described above, I present the SRRM as a tool by which all of these components can be presented and explained together as one cohesive picture, thereby recognising the complexity found in the relationships but aiding in distilling it.

## **10.4 Is Conflict Part of a Resilient System?**

The discussion above helps to address the first question posed in the introduction to this thesis: whether there is a positive relationship between drought-induced resource scarcity and conflict. The second question regarding the capacity of pastoral populations to cope with increased resource scarcity has been addressed in chapter nine

when assessing pastoralists' resilience in managing the effects of resource scarcity. However, the complete answer to this question will need to incorporate an understanding of the third question of this thesis: whether conflict can be a beneficial strategy as part of a resilient system.

The benefits of conflict have explanations in game theory, demonstrating when it may be advantageous to use conflict as a strategy, particularly in helping to bring about cooperative relationships. For pastoralists, conflict may be used to re-enter into livestock ownership after catastrophic animal loss (Gray and Akol 2000), or it may be an effective tool in gaining access to resource-rich land (McCabe 1985; McCabe and Ellis 1987), or it may help to increase genetic diversity amongst mixed herds (stolen and resident animals together), or it may allow land to rest in buffer-zones, thus improving pasture quality. However, as discussed in game theory, conflict can only be a beneficial strategy if the benefits of defection continue to out-weigh the costs of defection. One way of ensuring that the ratio of benefits to costs is kept in positive balance is to only engage in games that employ limited war strategies. As Maynard Smith and Price (1973) demonstrated, in a population composed of all defectors, the worst strategy to take is one of defection (total war strategy) because the costs to the defectors become too great. Many authors have pointed to the catastrophic and revolutionary effects automatic weapons have brought to northern Kenya (Baxter 2001; Gray et al. 2003), with some studies citing gun violence as accounting for 50% of deaths amongst pastoral males (Gray et al. 2003). Conflict at one time may have been an adaptive behaviour for pastoralists (Gifford-Gonzalez 1998) as part of a resilient socio-ecological system. However, the introduction of automatic weapons has quite literally changed the game, where any benefits received from livestock raiding (arguably fewer and fewer due to the effects of drought) risk being dwarfed by the catastrophic effects that armed raiding has had on human resilience. Furthermore, deterioration in the status and role of elders within pastoral communities has also potentially moved the game play from one of limited war strategies to total war strategies. Although not an entirely straightforward characterisation, elders are seen to be a moderating influence on conflict behaviour for north Kenyan pastoral societies. They are charged with counselling young men in their behaviour, brokering peace agreements in grazing arrangements, and negotiating compensation when there has been a break-down in amicable relations. As discussed in

chapter seven, the role of the elder is becoming increasingly down-graded and as such, social restrictions that once limited escalations in conflict are becoming less effective.

Also explained using game theory, and to continue the discussion from section 10.2.1, retaliation may be effective in bringing about peaceful relationships. However, one principle of this theory is that both players in the game are known to one another, and therefore sanctioning can easily be brought about against defectors (Ostrom 1990).

Highlighted in a quote taken from the Borana area of Gotu after a raid by the Samburu had taken place the previous night, one Borana man said,

“We will hit back either the Samburu or the Rendille – it doesn’t matter which one.” (Borana, elder man, Gotu)

Despite knowing that the Rendille were not involved in the original raid, the Rendille became un-witting targets of the Borana retaliation simply because the Borana acknowledge that the Samburu and the Rendille ‘are together.’ In this case, the Borana feel that raiding one is the same as raiding the other due to the perceived similarities between the two ethnic groups. However, what could have been a retaliatory act against the Samburu, with an aim of retrieving animals and perhaps dampening the conflict between the two sides, has resulted in an aggressive act towards the Rendille, bringing them into the fight, with the risk of escalating conflict in the area.

Assessing conflict as part of a resilient system also needs to bring in the four components of resilience in socio-ecological systems (SESs) as discussed in chapters two and nine: persistence, adaptation, desirability, and transformability. While some may argue that raiding activities help in promoting cultural persistence (Gray et al. 2003), chapter nine focused specifically on how conflict effectively degrades the diversity and efficacy of traditional coping strategies used to alleviate the effects of resource scarcity. In this way, conflict reduces redundancy of the coping mechanisms, thus weakening the resistance of the system to remain in a desirable domain of attraction (refer to Figure 9.1). Ultimately, this will negatively affect the chances of the SES persisting. Second, conflict within pastoral populations is not likely to be an adaptive strategy in its current form because, although it may satisfy some short-term goals (acquiring animals, accessing contested land), it has the potential to introduce long-term vulnerabilities, which mean that the costs of conflict are likely to out-weigh the benefits, as previously discussed. Third, the question of desirability is perhaps the



most difficult one to address. Davoudi (2012) raises the point that, when we think about resilience, we have to think about resilience for whom and to what end. Desirability addresses those questions, but it raises another question of whose desirability?

Although I met many male youths and *morans* who had been injured from engaging in conflict, the young members of these populations, both males and females, spoke highly of raiding activities as an important part of their lives. From this point of view, conflict is desirable to this sub-set of the population mainly because of its cultural and social value, and therefore would fit the necessary desirability criteria to be included as part of a resilient SES. Similarly, Keen has argued that famine, although wholly undesirable to those who are victims of it, can be used as an effective weapon of war, can help in controlling the movement of migrant populations, and most importantly, produces many economic beneficiaries (Keen 1994), which would make famine a desirable condition for a select group of people.

However, there is just as strong a case to be made for the undesirability of conflict in pastoral communities, recorded in the many stories recounted by men and women in each ethnic group. A common sentiment that I heard throughout the region was:

“Raiding animals is a bad thing – raiding doesn’t have a place here because war is bad due to the economic and social problems it brings. People die, and they get poor from raiding” (Borana, elder woman, Darer Shai).

It is difficult to reconcile conflicting opinions about the desirability of conflict for pastoral communities; such an endeavour raises philosophical questions about whether the desires of a few outweigh the negative consequences of the many; a question that is beyond the scope of this thesis, but is something that may be considered in further investigations. Although Keen emphasises the benefits of processes, such as famine and conflict, his argument rests on the ‘politically powerful’, or ‘privileged urban’, etc. as beneficiaries at the expense of those who are not. He states that, “processes of famine involved the forced transfer of assets from victim to beneficiary groups in a context of acute political powerlessness on the part of the victims” (Keen 1994: 13). In the case of north Kenyan pastoralists, it is true that the side with disproportionately more firepower, political influence, etc. does benefit substantially from raiding activities; however, the context in which this power is attributed is highly dynamic and tends to shift with the ever-changing winds of fortune. Therefore, these benefits are temporary and more often subject to influences outside of the pastoralists’ control. Governments

arm and disarm ethnic groups, northern politicians fall into and out of favour with frequency, alliances are forged and broken with gun-owning neighbours across borders, drought decimates one area while another remains productive, only to see a shift in the climate shortly afterwards. Among these pastoral communities, 'power' is in a constant state of flux (more often than not controlled by 'real power' of the government, police, international agencies, etc.), and under these conditions, remaining as the beneficiary of on-going conflict is never assured. As many pastoralists in this area say regarding conflict, 'this game has been going back and forth forever.' Over the long-term, there cannot be sustained benefits from conflict among these pastoral groups, as they are matched in equal measure by losses, which are arguably becoming more severe. Therefore for much of the pastoral population in northern Kenya, conflict cannot be seen as a sustainably desirable practice.

Finally, it is difficult for pastoral populations to be transformative in light of increasingly negative effects of conflict. As discussed in the previous chapter, while pastoral populations demonstrate highly adaptive capabilities, increasing transformability can be more challenging. Transformative strategies have been developed in northern Kenya to help manage conflict levels; these include holding inter-ethnic peace meetings and forming district peace committees. However, both suffer from a lack of legitimacy and ability to bring about substantial changes across boundaries (Adan and Pkalya 2006). Furthermore as noted in a number of interviews, police presence, support, and security are severely lacking in northern Kenya, as is the government's apparent will to change the projected outcome of contentious inter-ethnic relationships.

In light of the above discussion, the conclusion drawn here is that conflict cannot be considered a beneficial part of a resilient SES *in the long-term*. To turn this analysis on its head slightly, Walker et al. (2004) make the point that sometimes a population finds itself in a domain of attraction that is not desirable, and then it is necessary to try to overcome the resistance in the SES to move from one domain into one that is more desirable. Conflict is part, albeit a mostly undesirable one, of the domain of attraction that characterises the contemporary north Kenyan pastoralist situation. An aspect that can be seen from the process tracing web in Figure 10.1 is that there is a substantial amount of redundancy leading to conflict outcomes. To translate this into a matter of

resilience, sufficient redundancy towards conflict increases the SES's resistance (R) to remain in its current domain of attraction. Without increasing transformability within the system, it will be difficult to overcome this resistance and move into a more desirable domain of attraction.

## **10.5 Building Resilience in Northern Kenya**

Although not originally intended to be prescriptive, during my fieldwork and in the course of writing up the results, I could not help but think about this question of transformability and how resilience is built into pastoral communities as people try to overcome some of the negative outcomes of drought and inter-ethnic conflict. Having gained some insight into the issues, could I offer some useful perspectives in addressing this situation? The following discussion has been developed in light of information provided by respondents, with attention being paid to the current political and economic situation in Kenya, and with an understanding of approaches that may have been taken in the past by the communities and various development agencies.

I take a similar approach to Ellis and Swift (1988), who cautiously emphasise building on traditional systems rather than suggesting monumental changes or additions to the pastoral way of life. Most of the suggestions here run contrary to the approach that many development agencies have taken, which has typically been to inject 'novel' schemes into pastoral areas. Although usually designed with the best intentions, local people point out that 'novel' development schemes tend to be short-sighted and fail to consider longer-term outcomes. For instance, a campaign was started in the last few years by a European development agency in order to encourage Pokot youth (neighbours to the Samburu) to attend school. The ASTU Commander at Loosuk, on the border between the Samburu and Pokot, reported to me that many Pokot youth had been arrested for trying to sell stolen Samburu animals. When the Commander asked their reasons for stealing the animals, many youth reported the need to find money for school fees. How widespread this practice is, at present, is unknown, and I have not raised it here to debate the pros and cons of education in pastoral areas. Instead, it is a cautionary tale about the risks of imposing 'novel' development approaches on populations where there may be a limited understanding of the pressures that people face and the ways in which they may overcome them. The alternative proposals I offer

here entail two approaches: bottom-up at the community level and top-down with greater state-level involvement.

### **10.5.1 Bottom-up Approaches**

The underlying objective of this bottom-up approach is to support the diversity of coping mechanisms found in pastoral communities. This objective fits closely with recommendations made from a resilience perspective, as discussed by Holling (1973), which places greater emphasis on diversity, heterogeneity, and keeping options open rather than specialising or focusing exclusively on one type of strategy. Taking this approach, I suggest that programmes or initiatives that aim to strengthen the traditional coping mechanisms discussed in chapter nine would be beneficial: encouraging diverse social networks, helping pastoralists to accumulate livestock, supporting economically-profitable livelihood strategies, pursuing ways to increase species diversity within herds and, above all else, programmes that support pastoral mobility. I would recommend that development work within a mobility framework (e.g., Hampshire 2002; Sandford 1978; Swift, Toulmin and Chatting 1990; Meir 1987), offering mobile schooling, mobile markets, mobile banking, and mobile health services rather than localising these facilities. One of the more detrimental development initiatives has been somewhat ‘haphazard’ borehole sinking, which as many local people say, is not responsive to where people actually need water. Namely, boreholes should be in areas that can open up access to sufficient grazing lands that are water-poor. Furthermore, when I queried how boreholes are designed to be used in the community areas, many of the local DCs and DOs informed me that the boreholes are switched off during the rainy season so that people disperse from these areas, leaving the land to rest. However in practice, I did not find this to be the case, and a number of informants testified about the harmful effects on the land they had seen after a borehole had been sunk or an earth dam constructed. In this case, strategic borehole planning is needed, alongside careful monitoring in order to adequately meet the needs of the people and without introducing additional vulnerability (Helland 1997).

A second community-level strategy that could be used to strengthen pastoral coping mechanisms is to improve overall livestock health. Data that I recorded in the field pertaining to livestock off-take rates during 2009 show livestock disease as the second largest cause of livestock death during droughts, after starvation, and in a majority of

cases, the two causes are closely linked. Development initiatives that promote livestock health through mobile veterinary services would be greatly encouraged (e.g., Schelling et al. 2010).

### **10.5.2 Top-Down Approaches**

It is likely that any recommendations made at the local level would have only limited effect if they are undermined or not supported by government policy, or rendered ineffective due to government negligence. The Kenyan government also needs to be engaged in pastoral issues and held accountable for policies that directly impact these communities. I acknowledge that it is easy to make these statements, but much more difficult to achieve them. The new Kenyan Constitution came into effect in 2011, which offers some promise; however, change is slow and not guaranteed, even with formal policies in place for the governance of pastoral areas.

Based on discussions with community herders, the Kenyan government could make significant contributions in the area of pastoral security. Providing security along key border areas and actively (and equitably) reducing illegal gun ownership in northern Kenya would be the first steps in helping to foster greater security for people and their livestock as they move into contested grazing areas (Barton, Morton and Hendy 2001). It is interesting to note that when I asked respondents why they did not report theft attempts to the authorities if they themselves had managed to hold onto their animals or if animals had been returned through community channels, participants stated that if animals are returned, then the matter for them is closed, requiring no further follow-up or retaliation. In this way, government-assisted security and returning animals to rightful owners could result in a significant decrease in retaliatory behaviour. Furthermore, if markets are to provide a reliable alternative source of income for pastoralists, there need to be tighter government regulations and monitoring to combat the overwhelmingly large number of stolen animals being sold.

State policy in the North, including during the colonial period, has generally been one based on exclusionist principles where borders are maintained, ethnic groups remain separate, and incursions carry punishments. Such policies were constructed with the aim of maintaining security; however, they can have a deleterious effect in that they help to foster mistrust, isolationism, and fear. I would argue that government policies

aimed at encouraging inter-ethnic exchange and exposure to one another should be greatly encouraged. I collected a number of stories from the three communities that showed a small group of individuals taking the initiative to exchange veterinary medicines across borders that were in low supply or to cross-breed livestock between the communities. I also had the good fortune of meeting a Samburu individual who has dedicated his efforts to forming an inter-ethnic football league for unemployed northern youths. As a result of his dedication, the league is extraordinarily successful, with teams composed of players from the Samburu, Borana, Somali, Turkana, and Rendille ethnic groups. These team-mates are working together in the pursuit of a common goal that helps to unify them despite their ethnic differences. Currently, these are small, individual efforts; however, over time this type of positive exposure and focus on commonalities may help to combat some of the negative effects of exclusion and ethnic isolation.

Conflict in northern Kenya will not be solved overnight, and it is certainly beyond the scope of this dissertation. However, the discussion provided here argues that a holistic approach must be taken at both the community and state levels and must incorporate an understanding of community desires and adaptive behaviours specific to these populations.

## **10.6 Assessment of Objectives**

This thesis had four primary objectives in investigating the relationship between drought-induced resource scarcity and conflict: 1) exploring and explaining complexity, 2) highlighting cooperation, 3) demonstrating ethnographic depth, and 4) achieving intersubjectivity. Much attention was paid to the first objective, which was achieved through examining the direct relationship between drought-induced resource scarcity and conflict in chapters five and six. The following three chapters built on the complexity of this relationship, which brought to light the compounding or additive causal effects of conflict, the intermediary factors and social effects that influence the relationship between resource scarcity and conflict, the drives towards aggressive or cooperative interactions, and the coping mechanisms that mediate the relationship between climatic events and conflict. Once the component pieces of the complexity in the relationship were identified, the second part of this objective requires a way in which to explain and make sense of the complexity. The frameworks that I have used to

achieve this - statistical analyses, process-tracing, game theory, and applying an SES resilience framework to build upon the resource scarcity–conflict relationship model - have added considerable explanatory power. Wherever possible, having noted the limitations within this thesis, objective two has been met in highlighting cooperation as an integral part of inter-ethnic pastoral interactions, helping to contest environmentally-deterministic analyses of the climate – conflict relationship. Regarding objective three, achieving ethnographic depth from multiple perspectives has been the foundation of this thesis. Without this, the other three objectives could not have been met, particularly when attempting to go beyond simple explanations. Although present throughout the thesis, through chapters three, four, five, and seven in particular, I have endeavoured to foreground the voices and understanding of a wide range of local people and to adhere closely to their interpretations of phenomena as they experience them. This leads to the final objective in achieving intersubjectivity, where I have sought to place myself in an understanding of these phenomena and relationships from the local point of view; moreover, I have explained them in a way that translates to an audience outside of this realm.

## **10.7 Conclusions**

Although discussed at considerable length throughout this chapter and in chapter nine, I would like to review the central questions of this thesis. They are:

- 1) Do episodes of drought-induced resource scarcity correlate with higher levels of human inter-ethnic conflict found within Kenya's pastoral communities?
- 2) What is the current (and theoretical future) capacity of these populations to manage increased levels of drought-induced resource scarcity?
- 3) Is conflict used as a strategy for pastoral groups coping with resource scarcity? Is conflict a beneficial strategy as part of a resilient system?

Results aimed at the first question have demonstrated that there is a relationship that exists between periods of drought-induced resource scarcity and escalated conflict incidents; however, it is not a strong association nor is it a direct one. There are many intermediate steps along this pathway that either compound, exacerbate, moderate, or

alleviate conflict outcomes when pastoralists are faced with increased resource scarcity and drought. The relationship is one of complexity, prone to perturbations, feedback, and interactions, rather than a deterministic one that moves directly from causal factor to expected outcome. Furthermore, results have demonstrated that optimal conditions for raiding can occur either during drought periods or during rainy periods. In either case, both of these relationships are characterised by step-wise change when tolerable climatic or conflict thresholds are reached, at which point, the direction of the relationship may change.

Regarding the second question, north Kenyan pastoral populations have historically demonstrated considerable resilience in managing and coping with drought-induced resource scarcity. This thesis supports the argument that these populations have remained resilient in their social, ecological, and economic persistence and as a direct result of their capacity for utilising effective coping mechanisms when managing resource scarcity. However, I also argue that the current situation in northern Kenya may not be desirable from the communities' perspectives, that erosive coping mechanisms may introduce long-term vulnerabilities, and the efficacy of adaptive strategies aimed at managing resource scarcity may be decreasing due to the effects of multiple influences, but particularly due to the effects of conflict. Despite this, I have also demonstrated how north Kenyan pastoralists assess their own vulnerabilities and are capable of re-organising themselves with an aim to strengthen overall resilience.

To the last question, I have demonstrated that conflict may be used at times as a successful strategy in dampening ethnic tensions and restoring cooperative behaviours through retaliatory responses. It can also be effective in gaining access to valuable yet scarce grazing areas. However, conflict is not part of a resilient socio-ecological system as it ultimately degrades the efficacy of strategies for coping with resource scarcity, it reaffirms human vulnerability, it is largely undesirable to the populations who experience it, and the economic and social benefits of conflict are being vastly outweighed by its costs within the modern context.

I conclude this thesis by saying, despite many aspects discussed within this volume, the situation for north Kenyan pastoralists is not one characterised solely by doom and gloom. Conflict and resource scarcity are integral parts of their everyday lived



experiences; however, these pastoral communities display, and have displayed, tremendous human ingenuity in facing complex, pervasive problems. They are communities whose persistence is a result of their flexibility, adaptability, and dynamism.

Because of these things, we cannot begin to predict what the future will hold as pastoral behaviours may reorganise in ways that one would not expect. Therefore, negative outcomes are not the foregone conclusion. Truly, resource scarcity and conflict are component parts of a complex relationship, but the ingenuity and adaptive abilities that have served north Kenyan pastoral populations for thousands of years will put them in good stead to continue to navigate this complexity. Inter-ethnic conflict, in its current manifestation, is not a desirable part of a resilient system – threatening personal security and devastating livelihoods. It may be true that *no one can kill the drought*, but where actions can be taken, they must, and the proliferation of conflict in northern Kenya needs to be addressed at every level if resilience is to be strengthened within these communities.

## References

- ABBOT, J., CHAMBERS, R., DUNN, C., HARRIS, T., DE MERODE, E., PORTER, G., TOWNSEND, J. and WEINER, D. 1998. Participatory GIS: Opportunity or Oxymoron? Participatory Learning and Action (PLA) Notes, 33, 27-34.
- ADAMS, E. 1990. Boundary Disputes in the Territorial Ant Azteca Trigona: Effects of Asymmetries in Colony Size. *Animal Behaviour*, 39, 321-328.
- ADAN, M. and PKALYA, R. 2006. The Concept Peace Committee: A Snapshot Analysis of the Concept Peace Committee in Relation to Peacebuilding Initiatives in Kenya. Nairobi: Practical Action.
- ADGER, W. 2003. Building Resilience to Promote Sustainability. *IHDP Update*, 2, 1-3.
- ADGER, W. 2006. Vulnerability. *Global Environmental Change*, 16, 268-281.
- ADGER, W., AGRAWALA, S., MIRZA, M., CONDE, C., O'BRIEN, K., PULHIN, J., PULWARTY, R., SMIT, B. and TAKAHASHI, K. 2007. Assessment of Adaptation Practices, Options, Constraints and Capacity. In: PARRY, M., CANZIANI, O., PALUTIKOF, J., VAN DER LINDEN, P. and HANSON, C. (eds.) *Climate Change 2007: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.
- ADGER, W. N. 1999. Social Vulnerability to Climate Change and Extremes in Coastal Vietnam. *World Development*, 27, 249-269.
- AGRESTI, A. and FINLAY, B. 2009. *Statistical Methods for the Social Sciences*. New Jersey: Pearson Prentice Hall.
- AGUILAR, M. I. 1996. Keeping the 'Peace of the Waso Boorana': Becoming Oromo through Religious Diversification. In: BAXTER, P., HULTIN, J. and TRUILZI, A. (eds.) *Being and Becoming Oromo*. Laurenceville: The Red Sea Press, Inc.
- ALMAGOR, U. 1978. *Pastoral Partners: Affinity and Bond Partnership among the Dassanetch of South-West Ethiopia*, Manchester: Manchester University Press.
- ALWANG, J. and SIEGEL, P. 2001. *Vulnerability: A View from Different Disciplines*. Social Protection Discussion Paper Series. Washington, DC: Social Protection Unit, Human Development Network, The World Bank.
- AMERICAN ANTHROPOLOGICAL ASSOCIATION. 2002. The El Dorado Task Force Report. [Online] <<http://www.aaanet.org/edtt/final/preface.htm>>.
- ANGASSA, A. and BEYENE, F. 2003. Current Range Condition in Southern Ethiopia in Relation to Traditional Management Strategies: The Perceptions of Borana Pastoralists. *Tropical Grasslands*, 37, 53-59.
- ARCHIBALD, S. and RICHARDS, P. 2002. Converts to Human Rights? Popular Debate about War and Justice in Rural Sierra Leone. *Africa*, 72, 339-367.
- ARDREY, R. 1967. *The Territorial Imperative: A Personal Enquiry into the Animal Origins of Property and Nations*. London: Collins.

- ARKELL-HARDWICK, A. 1903. *An Ivory Trader in Northern Kenya*. London: Longman.
- AXELROD, R. 1984. *The Evolution of Cooperation*. New York: Basic Books.
- AXELROD, R. and HAMILTON, W. D. 1981. The Evolution of Cooperation. *Science*, 211, 1390-1396.
- AXELROD, R. and KEOHANE, R. O. 1985. Achieving Cooperation under Anarchy: Strategies and Institutions. *World Politics*, 38, 226-254.
- BAECHLER, G. 1999. Environmental Degradation and Violent Conflict: Hypotheses, Research Agendas and Theory-Building. In: SULIMAN, M. (ed.) *Ecology, Politics and Violent Conflict*. London: Zed Books.
- BAKSH, M. and JOHNSON, A. 1990. Insurance Policies among the Machiguenga: An Ethnographic Analysis of Risk Management in a Non-Western Society. In: CASHDAN, E. (ed.) *Risk and Uncertainty in Tribal and Peasant Economies*. Boulder: Westview Press.
- BANDURA, A. 1977. *Social Learning Theory*. New York: General Learning Press.
- BARNETT, J. 2000. Destabilising the Environment-Conflict Thesis. *Review of International Studies*, 26, 271-288.
- BARNETT, J. 2001. *Security and Climate Change*. Tyndall Centre Working Papers. Tyndall Centre for Climate Change Research.
- BARNETT, J. 2006. Climate Change, Insecurity and Injustice. In: ADGER, W., PAAVOLA, J., HUQ, S. and MACE, M. (eds.) *Fairness in Adaptation to Climate Change*. Cambridge, MA: MIT Press.
- BARNETT, J. and ADGER, W. N. 2007. Climate Change, Human Security and Violent Conflict. *Political Geography*, 26, 639-655.
- BARON, R. A. and RICHARDSON, D. R. 1994. *Human Aggression*. New York: Plenum Press.
- BARRETT, C., CHABARI, F., BAILEY, D., COPPOCK, D. and LITTLE, P. 1999. *Livestock Pricing in the Northern Kenyan Rangelands*. Cornell University: Mimeo.
- BARTH, F. 1964. Capital Investment and the Social Structure of a Pastoral Nomadic Group in South Persia. In: FIRTH, R. and YAMEY, B. (eds.) *Capital, Savings and Credit in Peasant Societies*. London: Allen and Unwin.
- BARTON, D., MORTON, J. and HENDY, C. 2001. Pastoralists and Drought Contingency Planning: Overview and Recommendation. In: MORTON, J. (ed.) *Pastoralism, Drought, and Planning: Lessons from Northern Kenya and Elsewhere*. Bristol: University of Greenwich.
- BASSI, M. 1997. Returnees in Moyale District, Southern Ethiopia: New Means for Old Inter-Ethnic Game. In: HOGG, R. (ed.) *Pastoralists, Ethnicity and the State in Ethiopia*. London: HANN Publishing and IFAA.

- BAXTER, P. 1954. *The Social Organisation of the Boran of Northern Kenya*. Oxford: University of Oxford.
- BAXTER, P. 1975. Some Consequences of Sedentarization for Social Relationships. In: MONOD, T. (ed.) *Pastoralism in Tropical Africa*. London: Oxford University Press.
- BAXTER, P. 1991. Introduction. In: BAXTER, P. (ed.) *When the Grass is Gone: Development Intervention in African Arid Lands*. Uppsala, Sweden: Scandinavian Institute of African Studies.
- BAXTER, P. 1993. The "New" East African Pastoralist: An Overview. In: MARKAKIS, J. (ed.) *Conflict and the Decline of Pastoralism in the Horn of Africa*. London: Macmillan.
- BAXTER, P. 2001. Immediate Problems: A View from a Distance. In: SALIH, M., DIETZ, T. and AHMED, M. (eds.) *African Pastoralism, Conflict, Institutions and Government*. London: Pluto Press.
- BAXTER, P., HULTIN, J. and TRUILZI, A. (eds.) 1996. *Being and Becoming Oromo*. Laurenceville: The Red Sea Press, Inc.
- BAXTER, P. T. W. 1979. Boran Age-Sets and Warfare. In: FUKUI, K. and TURTON, D. (eds.) *Warfare among East African Herders*. Osaka: National Museum of Ethnology.
- BEHNKE, R. and SCOONES, I. 1993. Rethinking Range Ecology: Implications for Rangeland Management in Africa. In: BEHNKE, R., SCOONES, I. and KERVEN, C. (eds.) *Range Ecology at Disequilibrium: New Models of Natural Variability and Pastoral Adaptation in African Savannas*. London: Overseas Development Institute.
- BEHNKE, R. H., SCOONES, I. and KERVEN, C. 1993. *Range Ecology at Disequilibrium: New Models of Natural Variability and Pastoral Adaptation in African Savannas*. London: Overseas Development Institute.
- BELLI, R. 1998. The Structure of Autobiographical Memory and the Event History Calendar: Potential Improvements in the Quality of Retrospective Reports in Surveys. *Memory*, 6, 383-406.
- BENDOR, J. and MOOKERJEE, D. 1987. Institutional Structure and the Logic of Ongoing Collective Action. *Journal of Political Science*, 81, 129-154.
- BENJAMINI, Y. and HOCHBERG, Y. 1995. Controlling the False Discovery Rate: A Practical and Powerful Approach to Multiple Testing. *Journal of the Royal Statistical Society Series B Methodological*, 57, 289-300.
- BERKES, F., COLDING, J. and FOLKE, C. (eds.) 2003. *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*. Cambridge: Cambridge University Press.
- BERKES, F. and FOLKE, C. (eds.) 1998. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge: Cambridge University Press.

- BERKES, F. and JOLLY, D. 2001. Adapting to Climate Change: Social-Ecological Resilience in a Canadian Western Arctic Community. *Conservation Ecology*, 5, 18.
- BERKOWITZ, L. 1993. *Aggression: Its Causes, Consequences and Control*. New York: McGraw-Hill.
- BOEHM, C. 1992. Segmentary 'Warfare' and the Management of Conflict: Comparison of East African Chimpanzees and Patrilineal-Patrilocal Humans. In: HARCOURT, A. H. and DE WAAL, F. B. M. (eds.) *Coalitions and Alliances in Humans and Other Animals*. Oxford: Oxford University Press.
- BOEHME, C. 1986. *Blood Revenge: The Enactment and Management of Conflict in Montenegro and Other Tribal Societies*. Philadelphia: University of Pennsylvania Press.
- BOHANNAN, P. 1967. Introduction. In: BOHANNAN, P. (ed.) *Law and Warfare*. Garden City, NJ: Natural History Press.
- BOHANNAN, P. 1983. Some Bases of Aggression and their Relationship to Law. In: GRUTER, M. and BOHANNAN, P. (eds.) *Law, Biology and Culture: The Evolution of Law*. Santa Barbara: Ross-Erikson.
- BOHLE, H., DOWNING, T. and WATTS, M. 1994. Climate Change and Social Vulnerability: The Sociology and Geography of Food Insecurity. *Global Environmental Change*, 4, 37-48.
- BOLLIG, M. 2006. *Risk Management in a Hazardous Environment: A Comparative Study of Two Pastoral Societies*. New York: Springer.
- BOLLIG, M. and GOBEL, B. 1997. Risk, Uncertainty and Pastoralism: An Introduction. *Nomadic Peoples*, 1, 5-21.
- BOONE, R., BURNSILVER, S. and THORNTON, P. 2006. *Optimizing Aspects of Land Use Intensification in Southern Kajiado District, Kenya*. Report to the International Livestock Research Institute (ILRI). Nairobi, Kenya: ILRI.
- BOSERUP, E. 1981. *Population and Technological Change: A Study of Long-Term Trends*. Chicago: Chicago University Press.
- BOURDIEU, P. 1977. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.
- BOYD, R. 1992. The Evolution of Reciprocity when Conditions Vary. In: HARCOURT, A. and DE WAAL, F. (eds.) *Coalitions and Alliances in Humans and Other Animals*. Oxford: Oxford University Press.
- BOYD, R. and RICHERSON, P. 1988. The Evolution of Reciprocity in Sizable Groups. *Journal of Theoretical Biology*, 132, 337-356.
- BOYD, R. and RICHERSON, P. 1989. The Evolution of Indirect Reciprocity. *Social Networks*, 11, 213-236.
- BRAUCH, H. 2002. Climate Change, Environmental Stress and Conflict. In: GERMAN FEDERAL MINISTRY FOR ENVIRONMENT. (ed.) *Climate Change and*

- Conflict. Berlin: Federal Ministry for Environment, Nature Conservation and Nuclear Safety.
- BRIGGS, J. 1978. The Origins of Non-Violence: Inuit Management of Aggression. In: MONTAGU, A. (ed.) *Learning Non-Aggression: Experience of Non-Literature Societies*. Oxford: Oxford University Press.
- BROWN, L. 1971. The Biology of Pastoral Man as a Factor in Conservation. *Biological Conservation*, 3, 93-100.
- BURTON, I., KATES, R. W. and WHITE, G. F. 1993. *The Environment as Hazard*. New York: Guilford Press.
- BUSS, A. 1961. *The Psychology of Aggression*. New York: Wiley.
- CAMPBELL, D. 1975. On the Conflicts between Biological and Social Evolution and between Psychology and Moral Tradition. *American Psychologist*, 30, 113-126.
- CANNON, T. 1994. Vulnerability Analysis and the Explanation of Natural Disasters. In: VARLEY, A. (ed.) *Disasters, Development and Environment*. Chichester: John Wiley.
- CARLSON, N. 2009. *Psychology: The Science of Behavior*. Pearson Education Canada.
- CARMAN, J. 1997. Introduction: Approaches to Violence. In: CARMAN, J. (ed.) *Material Harm: Archaeological Studies of War and Violence*. Glasgow: Cruithne Press.
- CARPENTER, S., WALKER, S., ANDERIES, J. and ABEL, N. 2001. From Metaphor to Measurement: Resilience of What to What? *Ecosystems*, 4, 765-781.
- CASHDAN, E. 1990. *Risk and Uncertainty in Tribal and Peasant Economies*. Boulder: Westview.
- CATLEY, A., LIND, J. and SCOONES, I. (eds.) 2013. *Pastoralism and Development in Africa: Dynamic Change at the Margins*. Oxford: Routledge.
- CHAGNON, N. 1988. Life Histories, Blood Revenge and Warfare in a Tribal Population. *Science*, 239, 985-92.
- CHAMBERS, R. 1989. Editorial Introduction: Vulnerability, Coping and Policy. *IDS Bulletin*, 20, 7.
- CHANLER, W. 1896. *Through Jungle and Desert, Travels in East Africa*. London: Macmillan.
- CHAZAN, N. 1994. Engaging the State: Associational Life in Sub-Saharan Africa. In: MIGDAL, J., KOHLI, A. and SHUE, V. (eds.) *State Power and Social Forces*. Cambridge: Cambridge University Press.
- CHOUCRI, N. (ed.) 1984. *Multidisciplinary Perspectives on Population and Conflict*. Syracuse, NY: Syracuse University Press.
- CHRISTENSEN, J., HEWITSON, B., BUSUIOC, A., CHEN, A., GAO, X., HELD, I., JONES, R. and AL., E. 2007. Climate Change 2007: Regional Climate Projections. In: SOLOMON, S., QIN, D., MANNING, M., CHEN, Z., MARQUIS,

- M., AVERY, K., TIGNOR, M. and MILLER, H. (eds.) *The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel On Climate Change*. Cambridge: Cambridge University Press.
- CLUTTON-BROCK, T. and PARKER, G. 1995. Punishment in Animal Societies. *Nature*, 373, 209.
- COPPOCK, D. 1994. *The Borana Plateau of Southern Ethiopia: Synthesis of Pastoral Research, Development and Change 1980 - 1991*. Addis Ababa: ILCA Systems Study.
- COSMIDES, L., TOOBY, J. and BARKOW, J. 1992. Introduction: Evolutionary Psychology and Conceptual Integration. In: BARKOW, J., COSMIDES, L. and TOOBY, J. (eds.) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. New York: Oxford University Press.
- COSSINS, N. and UPTON, M. 1988a. Options for Improvement of the Borana Pastoral System. *Agricultural Systems*, 27, 251-278.
- COSSINS, N. and UPTON, M. 1988b. The Impact of Climatic Variation on the Borana Pastoral System. *Agricultural Systems*, 27, 117-135.
- COUGHENOUR, M., ELLIS, J., SWIFT, D., COPPOCK, D., GALVIN, K., MCCABE, J. and HART, T. 1985. Energy Extraction and Use in a Nomadic Pastoral Ecosystem. *Science*, 230, 4726.
- COUPER-JOHNSTON, R. 2000. *El Nino: The Weather Phenomenon that Changed the World*. London: Hodder and Stoughton.
- COUSINS, B. 1996. Range Management and Land Reform Policy in Post-Apartheid South Africa. *Land Reform and Agrarian Change in South Africa Occasional Paper*, 2.
- DAHL, G. 1979. *Suffering Grass: Subsistence and Society of Waso Borana*. Stockholm: University of Stockholm.
- DAHL, G. and HJORT, A. 1976. *Having Herds: Pastoral Herd Growth and Household Economy*. Stockholm: University of Stockholm.
- DAHL, G. and HJORT, A. 1979. *Pastoral Change and the Role of Drought*. SAREC Report R2. Stockholm: Swedish Agency for Research Cooperation with Developing Countries.
- DAHL, G. and MEGERSSA, G. 1990. The Sources of Life: Boran Concepts of Wells and Water. In: PALSSON, G. (ed.) *From Water to World-Making: Anthropological Studies of Arid Lands*. Uppsala: Scandinavian Institute of African Studies.
- DAVIES, N. and HOUSTON, A. 1984. Territory Economics. In: KREBS, J. and DAVIES, N. (eds.) *Behavioural Ecology and Evolutionary Approach*. Oxford: Blackwell.
- DAVIS, M. 2001. *Late Victorian Holocausts: El Nino, Famines, and the Making of the Third World*. New York: Verso.

- DAVOUDI, S. 2012. Resilience: A Bridging Concept or a Dead End? *Planning Theory and Practice*, 13, 299-333.
- DC/ISO/2/1/1 1931. Annual Report. Nairobi: British Colonial Record, Kenyan National Archives.
- DC/ISO/4/7/11 1961-1970. Boran / Samburu Affairs. Nairobi: British Colonial Record, Kenyan National Archives.
- DE BRUIJN, M. and VAN DIJK, H. 2003. Changing Population Mobility in West Africa. *African Affairs*, 102, 285-307.
- DE WAAL, A. 1989. *Famine That Kills: Darfur, Sudan, 1984-1985*. Oxford: Clarendon Press.
- DE WAAL, A. 1997. *Famine Crimes: Politics and the Disaster Relief Industry in Africa*. London: African Rights and The International African Institute, in association with James Currey and Indiana University Press.
- DE WAAL, F. 1992. Aggression as a Well-Integrated Part of Primate Social Relationships: A Critique of the Seville Statement on Violence. In: SILVERBERG, J. and GRAY, J. (eds.) *Aggression and Peacefulness in Humans and Other Primates*. Oxford: Oxford University Press.
- DENTAN, R. 1988. Band-Level Eden: A Mystifying Chimera. *Cultural Anthropology*, 3, 276-284.
- DENTAN, R. K. 1992. The Rise, Maintenance, and Destruction of Peaceable Polity: A Preliminary Essay in Political Ecology. In: SILVERBERG, J. and GRAY, J. P. (eds.) *Aggression and Peacefulness in Humans and Other Primates*. Oxford: Oxford University Press.
- DERCON, S. and KRISHNAN, P. 1996. Income Portfolios in Rural Ethiopia and Tanzania: Choices and Constraints. *Journal of Development Studies*, 32, 850-875.
- DESTA, S. and COPPOCK, D. 2002. Cattle Population Dynamics in Southern Ethiopian Rangelands, 1980 - 1997. *Journal of Range Management*, 55, 439-451.
- DIVALE, W. and HARRIS, M. 1976. Population, Warfare and the Male Supremacist Complex. *American Anthropologist*, 78, 521-538.
- DOBASH, R. and DOBASH, R. 1979. *Violence Against Wives: A Case Against Patriarchy*. New York: Free Press.
- DYSON-HUDSON, N. 1966. *Karimojong Politics*. Oxford: Clarendon Press.
- DYSON-HUDSON, N. 2000. Processes of Discovery and Modes of Commentary through Time: Karamoja and Turkana as Illustrative Cases. Abstracts of the 99th Annual Meeting of the American Anthropological Association, 2000 Arlington. American Anthropological Association.
- DYSON-HUDSON, N. and DYSON-HUDSON, R. 1999. The Social Organization of Resource Exploitation. In: LITTLE, M. and LESLIE, P. (eds.) *Turkana Herders of the Dry Savanna: Ecology and Biobehavioral Response of Nomads to an Uncertain Environment*. Oxford: Oxford University Press.



- DYSON-HUDSON, R. 1972. Pastoralism: Self-Image and Behavioural Reality. *Journal of Asian and African Studies*, 7, 30 - 47.
- DYSON-HUDSON, R. and DYSON-HUDSON, N. 1980. Nomadic Pastoralism. *Annual Review of Anthropology*, 9, 15-61.
- ECOSYSTEMS LTD. 1985. Turkana District Resources Survey 1982 - 1984. Report for the Republic of Kenya, Ministry of Energy and Regional Development. Nairobi.
- ELLIS, J. and GALVIN, K. 1994. Climate Patterns and Land Use Practices in the Dry Zones of Africa. *Bioscience*, 44, 340-349.
- ELLIS, J., GALVIN, K., MCCABE, J. and SWIFT, D. 1987. Pastoralism and Drought in Turkana District, Kenya. Report to the Norwegian Aid Agency for International Development. Nairobi.
- ELLIS, J. and SWIFT, D. 1988. Stability of African Pastoral Ecosystems: Alternate Paradigms and Implications for Development. *Journal of Range Management*, 41, 450-459.
- ERASMUS, C. 1956. Culture, Structure and Process: The Occurrence and Disappearance of Reciprocal Farm Labour in Latin America. *Southwestern Journal of Anthropology*, 12, 444-469.
- ERICKSEN, P., DE LEEUW, J., THORNTON, P., SAID, M., HERRERO, M. and NOTENBAERT, A. 2013. Climate Change in Sub-Saharan Africa: What Consequences for Pastoralism? In: CATLEY, A., LIND, J. and SCOONES, I. (eds.) *Pastoralism and Development in Africa: Dynamic Change at the Margins*. Oxford: Routledge.
- FEHR, E. and FISCHBACHER, U. 2003. The Nature of Human Altruism. *Nature*, 425, 785.
- FEHR, E. and GAECHTER, S. 2002. Altruistic Punishment in Humans. *Nature*, 415, 137.
- FERGUSON, C. 2008. An Evolutionary Approach to Understanding Violent Antisocial Behavior: Diagnostic Implications for Dual-Process Etiology. *Journal of Forensic Psychology Practice*, 8, 321-343.
- FERGUSON, C. and BEAVER, K. 2009. Natural Born Killers: The Genetic Origins of Extreme Violence. *Aggression and Violent Behavior*, 14, 286-294.
- FIELD, C.R. and MOLL, G. 1987. Preliminary Report on Livestock Development in the Ngorongoro Conservation Area, Tanzania. Ngorongoro Conservation and Development Project. NCAA.
- FINK, A. 2003. *The Survey Handbook*. Thousand Oaks, California: Sage Publications.
- FLANAGAN, J. 1989. Hierarchy in Simple "Egalitarian" Societies. *Annual Review of Anthropology*, 18, 245-266.
- FLOOD, J. 1980. *Moth Hunters Aboriginal Prehistory of the Australian Alps*. Canberra: Australian Institute of Aboriginal Studies.

- FOLEY, R. 1997. *Humans Before Humanity*. Malden, Ma: Blackwell Publishers Inc.
- FOLKE, C. 2006. Resilience: The Emergence of a Perspective for Social-Ecological Systems and Analyses. *Global Environmental Change*, 16, 253-267.
- FOLKE, C., CARPENTER, S., WALKER, B., SCHEFFER, M., CHAPIN, T. and ROCKSTROM, J. 2010. Resilience Thinking: Integrating Resilience, Adaptability and Transformability. *Ecology and Society*, 15, 20.
- FRANKE, R. and CHASIN, B. 1980. *Seeds of Famine: Ecological Destruction and the Development Dilemma in the West African Sahel*. New York: Universe Books.
- FRASER, E., MABEE, W. and SLAYMAKER, O. 2003. Mutual Vulnerability, Mutual Dependence: The Reflexive Relation between Human Society and Environment. *Global Environmental Change*, 13, 137-144.
- FRATKIN, E. 1986. Stability and Resilience in East-African Pastoralism: The Rendille and the Ariaal of Northern Kenya. *Human Ecology*, 269-286.
- FRATKIN, E. 1987. Age-Sets, Households, and the Organization of Pastoral Production: The Ariaal, Samburu, and Rendille of Northern Kenya. *Research in Economic Anthropology*, 8, 295-314.
- FRATKIN, E. 1989. Two Lives for the Ariaal. *Natural History*, 98, 39-49.
- FRATKIN, E. 1991. *Surviving Drought and Development: Ariaal Pastoralists of Northern Kenya*. Boulder: Westview Press.
- FRATKIN, E. 1993. Maa-Speakers of the Northern Desert: Recent Developments in Ariaal and Rendille Identity. In: SPEAR, T. and WALLER, R. (eds.) *Being Maasai: Ethnicity and Identity in East Africa*. London: James Currey.
- FRATKIN, E. 1998. *Ariaal Pastoralists of Kenya: Surviving Drought and Development in Africa's Arid Lands*. Boston: Allyn and Bacon.
- FRATKIN, E. and ROTH, E. 1990. Drought and Economic Differentiation among Ariaal Pastoralists in Kenya. *Human Ecology*, 18, 385-402.
- FRATKIN, E. and ROTH, E. 2005. *As Pastoralists Settle: Social, Health and Economic Consequences of the Pastoral Sedentarization in Marsabit District, Kenya*. New York: Springer Publishing Company.
- FREUD, S. 1933. *Why War?* London: Imago.
- FRIJDA, N. 1994. The Lex Talionis: On Vengeance. In: VAN GOOZEN, S., VAN DE POLL, N. and SERGEANT, J. (eds.) *Emotions: Essays On Emotion Theory*. Hillsdale, NJ: Erlbaum.
- FUKUI, K. and MARKAKIS, J. 1994. *Ethnicity and Conflict in the Horn of Africa*. Oxford: James Currey.
- FUKUI, K. and TURTON, D. (eds.) 1979. *Warfare among East African Herders*. Osaka: National Museum of Ethnology.
- GALATY, J. 1993. 'The Eye that Wants a Person, Where Can It Not See?': Inclusion, Exclusion and Boundary Shifters in Maasai Identity. In: SPEAR, T. and

- WALLER, R. (eds.) *Being Maasai: Ethnicity and Identity in East Africa*. London: James Currey.
- GALLOPIN, G. 2006. Linkages between Vulnerability, Resilience, and Adaptive Capacity. *Global Environmental Change*, 16, 293-303.
- GALVIN, K. 1992. Nutritional Ecology of Pastoralists in Dry Tropical Africa. *American Journal of Human Biology*, 4, 209-221.
- GALVIN, K., THORNTON, P., BOONE, R. and SUNDERLAND, J. 2004. Climate Variability and Impacts on East African Livestock Herders: The Maasai of Ngorongoro Conservation Area, Tanzania. *African Journal of Range and Forage Science*, 21, 183-189.
- GALVIN, K., THORNTON, P. and MBOGOH, S. 2000. Integrated Modeling and Assessment for Balancing Food Security, Conservation and Ecosystem Integrity in East Africa. Socio-Economic Modeling Component. IMAS Project.
- GEDI, A., SALAH, O., NDAMBO, C., MOHAMED, A.M., ALI, A.M., KABAKA, W., and FARAH, A.M. 2008. Garissa Livestock Market: A Treasure for Meeting the Millennium Development Goals in Pastoral Based Millennium Municipality. Presentation to the Regional Pastoralism and Livestock Policy Training, Nomads Palace Hotel, Garissa, Kenya. 22 – 26 September 2008, Common Market for Eastern and Southern Africa, Lusaka.
- GEEN, R. 2001. *Human Aggression*. Philadelphia: Open University Press.
- GEEN, R. and DONNERSTEIN, E. (eds.) 1998. *Human Aggression: Theories, Research and Implications for Social Policy*. San Diego: Academic Press.
- GEORGE, A. and MCKEOWN, T. 1985. Case Studies and Theories of Organizational Decision Making. In: COULAM, R. and SMITH, R. (eds.) *Advances in Information Processing in Organizations*. Greenwich, CT: JAI Press.
- GERBER, E. 1985. Rage and Obligation: Samoan Emotion in Conflict. In: WHITE, G. and KIRKPATRICK, J. (eds.) *Person, Self and Experience: Exploring Pacific Ethnopsychologies*. Berkeley: University of California Press.
- GIBSON, T. 1989a. Symbolic Representations of Tranquility and Aggression among the Buid. In: WILLIS, R. and HOWELL, S. (eds.) *Societies at Peace*. London: Routledge.
- GIBSON, T. 1989b. Meat Sharing as a Political Ritual: Forms of Transaction versus Modes of Subsistence. In: WOODBURN, J., INGOLD, T. and RICHES, D. (eds.) *Hunting and Gathering Societies*. London: Berg Publishers.
- GIFFORD-GONZALEZ, D. 1998. Early Pastoralists in East Africa: Ecological and Social Dimensions. *Journal of Anthropological Archaeology*, 17, 166-200.
- GILLES, J. 1990. Nomads, Ranchers, and the State. In: GALATY, J. and JOHNSON, D. (eds.) *The World of Pastoralism: Herding Systems in Comparative Perspective*. New York: Guilford.
- GLASER, B. 1992. *Basics of Grounded Theory Analysis: Emergence vs Forcing*. Mill Valley, CA: Sociology Press.

- GLEICK, P. 1991. Environment and Security, the Clear Connections. *Bulletin of Atomic Scientists*, 13, 66-73.
- GOLDSCHMIDT, W. 1979. A General Model for Pastoral Systems. In: L'EQUIPE ECOLOGIE ET ANTROPOLOGIE DES SOCIETES PASTORALES (ed.) *Pastoral Production and Society*. Cambridge: Cambridge University Press.
- GOODHAND, J. 2003. Enduring Disorder and Persistent Poverty: A Review of Linkages between War and Chronic Poverty. *World Development*, 31, 629-646.
- GRAY, S. 2000. A Memory of Loss: Ecological Politics, Local History, and the Evolution of Violence. *Human Organization*, 59, 401-418.
- GRAY, S. and AKOL, H. 2000. Reproductive Histories and Life History of Bokora and Mathenika Karimojon Women of Northeast Uganda. *American Journal of Physical Anthropology*, supp., 191.
- GRAY, S., SUNDAL, M., WIEBUSCH, B., LITTLE, M., LESLIE, P. and PIKE, I. 2003. Cattle Raiding, Cultural Survival, and Adaptability of East African Pastoralists. *Current Anthropology*, 44, S3-S30.
- GROTHMANN, T. and PATT, A. 2005. Adaptive Capacity and Human Cognition: The Process of Individual Adaptation to Climate Change. *Global Environmental Change*, 15, 199-213.
- GUNDERSON, L. H. and HOLLING, C. S. 2002. *Panarchy: Understanding Transformations in Human and Natural Systems*. London: Island Press.
- HALSTEAD, P. and O'SHEA, J. 1989. Introduction: Cultural Responses to Risk and Uncertainty. In: HALSTEAD, P. and O'SHEA, J. (eds.) *Bad Year Economics: Cultural Responses to Risk and Uncertainty*. Cambridge: Cambridge University Press.
- HAMPSHIRE, K. 2002. Networks of Nomads: Negotiating Access to Health Services among Pastoralist Women in Chad. *Social Science and Medicine*, 54, 1025-1037.
- HANDMER, J., DOVERS, S. and DOWNING, T. 1999. Societal Vulnerability to Climate Change and Variability. *Mitigation and Adaptation Strategies for Global Change*, 4, 267-281.
- HARDIN, G. 1968. The Tragedy of the Commons. *Science*, 162, 1243-1248.
- HASSAN, F. 1997. Nile Floods and Political Disorder in Early Egypt. In: DALFES, H., KUKULA, G. and WEISS, H. (eds.) *Third Millennium BC Abrupt Climate Change and the Old World Collapse*. Berlin: Springer-Verlag.
- HAWLEY, P. and VAUGHN, B. 2003. Aggression and Adaptive Function: The Bright Side to Bad Behavior. *Merrill-Palmer Quarterly*, 49, 239-242.
- HELBLING, J. 1999. The Dynamics of War and Alliance among the Yanomami. In: ELWERT, G. E. A. (ed.) *Dynamics of Violence*. Berlin: Duncker and Humblot.
- HELLAND, J. 1997. *Development Issues and Challenges for the Future in Borana*. Bergen: Chr. Michelsen Institute and Norwegian Church Aid - Ethiopia.

- HELLAND, J. 2001. Participation and Governance in the Development of Borana: Southern Ethiopia. In: SALIH, M. M., DIETZ, T. and AHMED, A. G. M. (eds.) *African Pastoralism: Conflict, Institutions and Government*. London: Pluto Press.
- HENDRICKSON, D., ARMON, J. and MEARNS, R. 1998. The Changing Nature of Conflict and Famine Vulnerability: The Case of Livestock Raiding in Turkana District, Kenya. *Disasters*, 22, 185-199.
- HENDY, C. 2001. Annex: Statistical Frequency of Drought in Northern Kenya and Its Effects on Livestock Population. In: MORTON, J. (ed.) *Pastoralism, Drought and Planning: Experiences from Northern Kenya and Elsewhere*. Chatham: Natural Resources Institute.
- HENIGE, D. 1982. *Oral Historiography*. New York: Longman.
- HERSKOVITS, M. 1926. The Cattle Complex in East Africa. *American Anthropologist*, 28, 633-664.
- HEWITT, K. 1983. *Interpretation of Calamity: From the Viewpoint of Human Ecology*. Boston: Allen.
- HEWITT, K. 1997. *Regions of Risk: A Geographical Introduction to Disasters*. Essex: Longman.
- HJORT, A. 1981. Ethnic Transformation, Dependency and Change. In: GALATY, J. G. and SALZMAN, P. C. (eds.) *Change and Development in Nomadic and Pastoral Societies*. Leiden: E.J. Brill.
- HOBBS, T. 1970. *Leviathan, or the Matter, Form, and Power of a Commonwealth, Ecclesiastical and Civil*. London: Dent.
- HODDER, I. 1982. *Symbols in Action*. Cambridge: Cambridge University Press.
- HOGG, R. 1980. Pastoralism and Impoverishment: The Case of the Isiolo Boran of Northern Kenya. *Disasters*, 4, 299-310.
- HOGG, R. 1983. Destitution and Development. The Turkana of North-West Kenya. *Disasters*, 6, 164-168.
- HOGG, R. 1985. The Politics of Drought: The Pauperisation of Isiolo Boran. *Disasters*, 9, 39-43.
- HOGG, R. 1987. Development in Kenya: Drought, Desertification and Food Scarcity. *African Affairs*, 86, 47-58.
- HOGG, R. 1988. Water, Harvesting and Agricultural Production in Semi-Arid Kenya. *Development and Change*, 19, 69-87.
- HOLLING, C. 1973. Resilience and Stability of Ecological Systems. *Annual Review of Ecology and Systematics*, 4, 1-23.
- HOLLING, C. 1986. The Resilience of Terrestrial Ecosystems: Local Surprise and Global Change. In: CLARK, W. and MUNN, R. (eds.) *Sustainable Development of the Biosphere*. London: Cambridge University Press.

- HOLLING, C. 1996. Engineering Resilience versus Ecological Resilience. In: SCHULZE, P. (ed.) *Engineering within Ecological Constraints*. Washington, DC: National Academy Press.
- HOLLOWAY, R. (ed.) 1974. *Primate Aggression, Territoriality and Xenophobia: A Comparative Perspective*. New York: Academic Press.
- HOLTZMAN, J. 1996. *Transformations in Samburu Domestic Economy: The Reconstitution of Age and Gender-Based Processes of Production and Resource Allocation among a Kenyan 'Pastoral' People*. Phd, University of Michigan.
- HOMER-DIXON, T. 1991. On the Threshold: Environmental Changes as Causes of Acute Conflict. *International Security*, 16, 76-116.
- HOMER-DIXON, T. 1995. *Strategies for Studying Causation in Complex Ecological Political Systems*. Washington, DC: American Association for the Advancement of Science and The University of Toronto.
- HOMER-DIXON, T. 1999. *Environment, Scarcity, and Violence*. Princeton: Princeton University Press.
- HOMEWOOD, K. and LEWIS, J. 1987. Impact of Drought on Pastoral Livestock in Baringo, Kenya 1983-1985. *Journal of Applied Ecology*, 24, 615-631.
- HOMEWOOD, K. M. and RODGERS, W. A. 1991. *Maasailand Ecology: Pastoralist Development and Wildlife Conservation in Ngorongoro, Tanzania*. Cambridge: Cambridge University Press.
- HOWELL, S. 1988. Total Prestations as the Life-Giving Acts among the Chewong. 87th Annual Meeting of The American Anthropological Association. Phoenix, Arizona.
- HOWELL, S. and WILLIS, R. 1989. Introduction. In: HOWELL, S. and WILLIS, R. (eds.) *Societies at Peace: Anthropological Perspectives*. London: Routledge.
- HUNTINGTON, E. 1915. *Civilization and Climate*. New Haven, CT: Yale University Press.
- JOHNSON, A. and EARLE, T. 1987. *The Evolution of Human Societies: From Foraging Group to Agrarian State*. Palo Alto: Stanford University Press.
- JOHNSON, A. W. and EARLE, T. K. 2000. *The Evolution of Human Societies: From Foraging Group to Agrarian State*. Stanford, CA: Stanford University Press.
- JOHNSON, D. and ANDERSON, D. (eds.) 1988. *The Ecology of Survival: Case Studies from Northeast African History*. London: Lester Crook.
- JOKELA, M. and KELTIKANGAS-JARVINEN, L. 2009. Adolescent Leadership and Adulthood Fertility: Revisiting the "Central Theoretical Problem of Human Sociobiology". *Journal of Personality*, 77, 213-230.
- JOSHI, N. 1987. Evolution of Cooperation by Reciprocation within Structured Demes. *Journal of Genetics*, 1, 69-84.
- KAPLAN, H. and HILL, K. 1985. Food Sharing among Ache Foragers: Tests of Explanatory Hypotheses. *Current Anthropology*, 26, 223-246.

- KAPLAN, R. 1994. The Coming Anarchy: How Scarcity, Crime, Overpopulation, Tribalism, and Disease are Rapidly Destroying the Social Fabric of our Planet. *The Atlantic Monthly Magazine*, Feb, 273.
- KASPERSON, J. and KASPERSON, R. 2001. *Global Environmental Risk*. Tokyo: United Nations University Press.
- KASPERSON, J., KASPERSON, R. and TURNER, B. 1995. *Region at Risk: Comparisons of Threatened Environments*. Tokyo: United Nations University Press.
- KASPERSON, R., DOW, K., ARCHER, E., CACERES, D., DOWNING, T., ELMQVIST, T., ERIKSEN, S. and AL., E. 2005. Vulnerable People and Places. In: HASSAN, R., SCHOLLES, R. and ASH, N. (eds.) *Ecosystems and Human Well-Being: Current State and Trends*. Washington DC: Island Press.
- KAUFMANN, S. 2000. *Investigations*. New York: Oxford University Press.
- KEEN, D. 1994. *The Benefits of Famine: A Political Economy of Famine and Relief in Southwestern Sudan, 1983-1989*. Princeton: Princeton University Press.
- KENN, D. 2000. Incentives and Disincentives for Violence. In: BERDAL, M. and MALONE, D. (eds.) *Greed and Grievance: Economic Agendas and Civil Wars*. London: Lynne Rienner.
- KENYAN BUREAU OF STATISTICS. 2010. 2009 Kenyan Census. Nairobi.
- KIEFER, T. 1972. *The Tausug: Violence and Law in a Philippine Moslem Society*. New York: Holt Rinehart Winston.
- KING, J. 1983. *Livestock Water Needs in Pastoral Africa in Relation to Climate and Forage*. Addis Ababa: International Livestock Center for Africa.
- KINZIG, A., RYAN, P., ETIENNE, M., ALLISON, H., ELMQVIST, T. and WALKER, B. 2006. Resilience and Regime Shifts: Assessing Cascading Effects. *Ecology and Society*, 11. [Online] <<http://www.ecologyandsociety.org/vol11/iss1/art20/>>.
- KNAUFT, B. 1987. Reconsidering Violence in Simple Human Societies: Homicide among the Gebusi of New Guinea. *Current Anthropology*, 28, 457-482.
- KUMMERLI, R., COLLIARD, C., FIECHTER, N., PETITPIERRE, B., RUSSIER, F. and KELLER, L. 2007. Human Cooperation in Social Dilemmas: Comparing the Snowdrift Game with the Prisoner's Dilemma. *Proceedings of the Royal Society*, 274, 2965-2970.
- LAMPHEAR, J. 1992. *The Scattering Time: Turkana Responses to Colonial Rule*. Oxford: Clarendon Press.
- LAMPREY, H. 1976. *The UNEP-Mab Integrated Project in Arid Lands: Phase III Kenya 1977-1980. Regional Project Document Fp/1101-77*. Nairobi, Kenya: United Nations Environment Programme.
- LAMPREY, H. 1983. Pastoralism Yesterday and Today: The Overgrazing Problem. In: BOURLIERE, F. (ed.) *Tropical Savannas: Ecosystems of the World*. Amsterdam: Elsevier Science Ltd.

- LAMPREY, H. and YUSSUF, H. 1981. Pastoralism and Desert Encroachment in Northern Kenya. *Ambio*, 10, 131-147.
- LAMPREY, R. and WALLER, R. 1990. The Loita-Mara Region in Historical Times: Patterns of Subsistence, Settlement and Ecological Changes. In: ROBERTSHAW, P. (ed.) *Early Pastoralists of Southwestern Kenya*. Nairobi, Kenya: British Institute in Eastern Africa.
- LANE, C. R. (ed.) 1998. *Custodians of the Commons: Pastoral Land Tenure in East and West Africa*. London: Earthscan.
- LAYTON, R. 2006. *Order and Anarchy: Civil Society, Social Order and War*. Cambridge: Cambridge University Press.
- LEARY, N., ADEJUWON, J., BAILEY, W., BARROS, V., CAFFERA, M., CHINVANNO, S. and AL., E. 2006. For Whom the Bells Tolls: Vulnerability in A Changing Climate. A Synthesis from the AIACC project. AIACC Working Paper No 21. Florida: International START Secretariat.
- LEDYARD, J. 1995. Public Good: A Survey of Experimental Research. In: KAGEL, J. and ROTH, A. E. (eds.) *The Handbook of Experimental Economics*. Princeton, NJ: Princeton University Press.
- LEE, P. and JOHNSON, J. 1992. Sex Differences in Alliances, and the Acquisition and Maintenance of Dominance Status among Immature Primates. In: HARTCOURT, A. and DE WAAL, F. (eds.) *Coalitions and Alliances in Primates and Other Animals*. Oxford: Oxford University Press.
- LEGESSE, A. 1973. *Gada: Three Approaches to the Study of African Society*. New York: The Free Press.
- LEGESSE, A. 1980. Human Rights in African Political Culture. In: THOMPSON, K. W. (ed.) *The Moral Imperative of Human Rights: A World Survey*. Washington DC: University Press of America.
- LEVIN, S. 1998. Ecosystems and the Biosphere as Complex Adaptive Systems. *Ecosystems*, 1, 431-436.
- LEVINE, R. and CAMPBELL, D. 1972. *Ethnocentrism: Theories of Conflict, Ethnic Attitudes and Group Behavior*. Oxford: John Wiley and Sons.
- LEWIS, I. 1961. *A Pastoral Democracy: A Study of Pastoralism and Politics among the Northern Somali of the Horn of Africa*. London: Oxford University Press.
- LITTLE, P. 1985. Absentee herdowners and part time pastoralists: The political economy of local resource development in Baringo District, Kenya. *Human Ecology*, 13, 131-151.
- LITTLE, P., CELLARIUS, B., BARRETT, C. and COPPOCK, D. 1999. *Economic Diversification and Risk Management among East African Herders: A Preliminary Assessment*. GL-CRSP Pastoral Risk Management Project, Technical Report No 02/99. Logan, Utah: Utah State University.



- LITTLE, P., SMITH, K., CELLARIUS, B., COPPOCK, D. and BARRETT, C. 2001. Avoiding Disaster: Diversification and Risk Management among East African Herders. *Development and Change*, 32, 401-433.
- LITTLE, P. D. 1992. Traders, Brokers and Market 'Crisis' in Southern Somalia. *Africa: Journal of the International African Institute*, 62, 94-124.
- LITTLE, P. D. 1996. Cross-Border Livestock Trade and Food Security in the Kenya/Somalia Borderlands. Binghamton: Institute for Development Anthropology.
- LIVERMAN, D. 1990. Vulnerability to Global Environmental Change. In: KASPERSON, R., DOW, K., GOLDING, D. and KASPERSON, J. (eds.) *Understanding Global Environmental Change: The Contributions of Risk Analysis and Management*. Worcester, MA: Clark University.
- LORENZ, K. 1966. *On Aggression*. London: Methuen.
- LOW, B. 1979. The Predictability of Rain and the Foraging Patterns of the Red Kangaroo (*Megaleia Rufa*) in Central Australia. *Journal of Arid Environments*, 1, 61-76.
- LOW, B. 1990. Human Responses to Environmental Extremeness and Uncertainty: A Cross-Cultural Perspective. In: CASHDAN, E. (ed.) *Risk and Uncertainty in Tribal and Peasant Economies*. Boulder, Colorado: Westview Press Inc.
- LUERS, A., LOBELL, D., SKALAR, L., ADDAMS, C. and MATSON, P. 2003. A Method for Quantifying Vulnerability, Applied to the Agricultural System of the Yaqui Valley, Mexico. *Global Environmental Change*, 13, 255-267.
- LUSIGI, W. 1981. *Combating Desertification and Rehabilitating Degraded Population Systems in Northern Kenya*. Nairobi: UNESCO-UNEP Integrated Project in Arid Lands.
- LUTTRELL, C. 2001. *An Institutional Approach to Livelihood Resilience in Vietnam*. Phd, University of East Anglia.
- LEVI-STRAUSS, C. 1969. *The Elementary Structures of Kinship*. Rev. Ed. Boston: Beacon Press.
- MACE, R. 1993. Nomadic Pastoralists Adopt Subsistence Strategies That Maximise Long-Term Household Survival. *Behavioural Ecology and Sociobiology*, 33, 329-334.
- MALTHUS, T. R. and THOMSON GALE. 1798. *An Essay on the Principle of Population, as It Affects the Future Improvement of Society. With Remarks on the Speculations of Mr. Godwin, M. Condorcet, and Other Writers*. Eighteenth Century Collections Online. London: Printed for J. Johnson.
- MANSON, J. and WRANGHAM, R. 1991. Intergroup Aggression in Chimpanzees and Humans. *Current Anthropology*, 32, 369-390.
- MARKAKIS, J. 1994. Ethnic Conflict and the State in the Horn of Africa. In: FUKUI, K. and MARKAKIS, J. (eds.) *Ethnicity and Conflict in the Horn of Africa*. Oxford: James Currey.

- MARKAKIS, J. 1998. Resource Conflict in the Horn of Africa. London: Sage.
- MAYNARD SMITH, J. 1974. The Theory of Games and the Evolution of Animal Conflicts. *Journal of Theoretical Biology*, 47, 209-221.
- MAYNARD SMITH, J. 1982. *Evolution and the Theory of Games*, Cambridge, Cambridge University Press.
- MAYNARD SMITH, J. and PRICE, G. 1973. The Logic of Animal Conflict. *Nature*, 246, 15-18.
- MCADAM, D., TARROW, S. and TILLY, S. 2001. *Dynamics of Contention*. Cambridge: Cambridge University Press.
- MCCABE, J. 1985. Livestock Management among the Turkana: A Social and Ecological Analysis of Herding in an East African Pastoral Population. PhD, State University of New York-Binghamton.
- MCCABE, J. and ELLIS, J. 1987. Beating the Odds in Arid Africa. *Natural History*, 96, 32-41.
- MCCABE, J. T. 2004. Cattle Bring Us to Our Enemies: Turkana Ecology, Politics, and Raiding in A Disequilibrium System. In: MORAN, E. F. (ed.) *Human-Environment Interactions*. Ann Arbor: The University of Michigan Press.
- MCCABE, T. 1987. Drought and Recovery: Livestock Dynamics among the Ngisonyoka Turkana of Kenya. *Human Ecology*, 15, 371-389.
- MCCABE, T. 1990. Success and Failure: The Breakdown of Traditional Drought Coping Institutions among the Pastoral Turkana of Kenya. *Journal of Asian and African Studies*, 25, 146-60.
- MCCABE, T. 1997. Risk and Uncertainty among the Maasai of the Ngorongoro Conservation Area in Tanzania: A Case Study in Economic Change. *Nomadic Peoples*, 1, 54-65.
- MCCALL, G. and SHIELDS, N. 2008. Examining the Evidence from Small-Scale Societies and Early Prehistory and Implications for Modern Theories of Aggression and Violence. *Aggression and Violent Behavior*, 13, 1-9.
- MCCARTHY, J., CANZIANI, J., LEARY, O., DOKKEN, D. and WHITE, K. (eds.) 2001. *Climate Change 2001: Impacts, Adaptation and Vulnerability*. Cambridge: Cambridge University Press.
- MCCAY, B. and ACHESON, J. 1987. *The Question of the Commons: The Culture and Ecology of Communal Resources*. Tucson: The University of Arizona Press.
- MCGUIRE, R. 2008. Marxism. In: BENTLEY, R. and MASCHNER, H. (eds.) *Handbook of Archaeological Theories*. Lanham: Altamira.
- MCPEAK, J. 2005. Individual and Collective Rationality in Pastoral Production: Evidence from Northern Kenya. *Human Ecology*, 33, 171-197.
- MCSWEENEY, C., NEW, M. and LIZCANO, G. 2007. *UNDP Climate Change Country Profiles: Kenya*. Oxford: University of Oxford.

- MEIR, A. 1987. Nomads, Development and Health: Delivering Public Health Services to the Bedouin in Israel. *Geografiska Annaler*, 69B, 115-126.
- MIRZELER, M. and YOUNG, C. 2000. Pastoral Politics in the Northeast Periphery in Uganda: AK-47 as Change Agent. *The Journal of Modern African Studies*, 38, 407-429.
- MKUTU, K. 2001. *Pastoralism and Conflict in the Horn of Africa*. Bradford: University of Bradford in partnership with Africa Peace Forum and Saferworld.
- MOCHIZUKI, K. 2004. Conflict and People's Insecurity: An Insight from the Experiences of Nigeria. In: SHINODA, H. and JEONG, H. (eds.) *Conflict and Human Security: A Search for New Approaches of Peace-Building*. Hiroshima Institute for Peace Science: Hiroshima University.
- MORGAN, D. 1997. *Focus Groups as Qualitative Research*. Thousand Oaks: Sage Publications, Inc.
- MORTIMORE, M. and ADAMS, W. 2001. Farmer Adaptions, Changes and 'Crisis' in the Sahel. *Global Environmental Change*, 11, 49-57.
- MORTON, J. 2006. Pastoralist Coping Strategies and Emergency Livestock Intervention. In: MCPEAK, J. and LITTLE, P. (eds.) *Pastoral Livestock Marketing in Eastern Africa: Research and Policy Challenges*. Warwickshire: Intermediate Technology Development Group Publishing.
- MORTON, J. and MEADOWS, N. 2000. *Pastoralism and Sustainable Rural Livelihoods*. NRI Policy Series No. 11. Chatham: Natural Resources Institute.
- NEWBURY, D. 1998. Understanding Genocide. *African Studies Review*, 41, 73-97.
- NIAMIR-FULLER, M. 1998. The Resilience of Pastoral Herding in Sahelian Africa. In: BERKES, F., FOLKE, C. and COLDING, J. (eds.) *Linking Social and Ecological Systems: Managing Practices and Social Mechanisms for Building Resilience*. Cambridge: Cambridge University Press.
- NIAMIR-FULLER, M. 2000. Managing Mobility in African Rangelands. In: MCCARTHY, N., SWALLOW, B., KIRK, M. and HAZELL, P. (eds.) *Property Rights, Risks and Livestock Development in Africa*. Washington, DC: International Food Policy Research Institute.
- NIAMIR-FULLER, M. 2005. *Managing Mobility in African Rangelands*. UNDP.
- NISBETT, R. and COHEN, D. 1996. *Culture of Honor*. Boulder: Westview Press.
- NOAA. 2006. Drought Public Fact Sheet 2006. [Online] <<http://www.drought.noaa.gov>> 2012.
- NORTON-GRIFFITHS, M., HERLOCKER, D. and PENNYCUICK, L. 1975. The Patterns of Rainfall of the Serengeti Ecosystem, Tanzania. *East African Wildlife Journal*, 13, 347-374.
- NOWAK, M. 2006. Five Rules for the Evolution of Cooperation. *Science*, 314, 1560-1563.

- NOWAK, M. and SIGMUND, K. 1993. A Strategy of Win-Stay, Lose-Shift That Outperforms Tit-For-Tat in the Prisoner's Dilemma Game. *Nature*, 364, 56-58.
- NOWAK, M. A. and SIGMUND, K. 1998. Evolution of Indirect Reciprocity by Image Scoring. *Nature*, 393, 573.
- O'LEARY, M. F. 1990. Drought and Change amongst Northern Kenya Nomadic Pastoralists: The Case of the Rendille and Gabra. *From Water to World-Making*. Sweden: Nordiska Afrikainstitutet.
- OBA, G. 1985. Perception of Environment among Kenyan Pastoralists. *Nomadic Peoples*, 19, 33-57.
- OBA, G. 1992. Ecological Factors in Land Use Conflicts, Land Administration and Food Insecurity in Turkana, Kenya. ODI Pastoral Development Network Paper. London: Overseas Development Institute.
- OBA, G. 1996. Shifting Identities Along Resource Borders: Becoming and Continuing to Be Booran Oromo. In: BAXTER, P., HULTIN, J. and TRILUZI, A. (eds.) *Being and Becoming Oromo: Historical and Anthropological Inquiries*. Uppsala: Nordiska Afrikainstitutet.
- OBA, G. and LUSIGI, W. J. 1987. An Overview of Drought Strategies and Land Use in African Pastoral Systems. London: Pastoral Development Network.
- OBA, G., POST, E., SYVERTSEN, P. and STENSETH, N. 2000. Bush Cover and Range Condition Assessments in Relation to Landscape and Grazing in Southern Ethiopia. *Landscape Ecology*, 15, 535-546.
- OHLSSON, L. 2000. Livelihood Conflicts: Linking Poverty and Environment as Causes of Conflict, Stockholm, Environmental Policy Unit, Swedish International Development Cooperation Agency.
- OSTROM, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- OSTROM, E., GARDNER, R. and WALKER, J. 1994. *Rules, Games, and Common-Pool Resources*. Ann Arbor: The University of Michigan Press.
- OTTERBEIN, K. and OTTERBEIN, C. 1965. An Eye for an Eye, a Tooth for a Tooth: A Cross-Cultural Study of Feuding. *American Anthropologist*, 67, 1470-82.
- OVERING, J. 1986. Images of Cannibalism, Death and Domination in a 'Non Violent' Society. In: RICHES, D. (ed.) *The Anthropology of Violence*. Oxford: Basil Blackwell Ltd.
- PAIGE, K. and PAIGE, J. 1981. *The Politics of Reproductive Ritual*. Berkeley: University of California Press.
- PANTER-BRICK, C. 1993. Seasonal Organisation of Work Patterns. In: ULIJASZEK, S. and STRICKLAND, S. (eds.) *Seasonality and Human Ecology*. Cambridge: Cambridge University Press.

- PARRY, M., CANZIANI, O., PALUTIKOF, J., VAN DER LINDEN, P. and HANSON, C. (eds.) 2007. *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Cambridge: Cambridge University Press.
- PC/NFD/1/2/5 1952-1956. Marsabit Annual Reports. Nairobi: National Archives of Kenya.
- PC/NFD/1/9/1 1914-1928. Samburu Annual Reports and Handing Over Report. Nairobi: National Archives of Kenya.
- PENDALL, R., FOSTER, K. and COWELL, M. 2010. Resilience and Regions: Building Understanding of the Metaphor. *Cambridge Journal of Regions, Economy and Society*, 3, 71-84.
- PERCIVAL, V. and HOMER-DIXON, T. 1995. *Environmental Scarcity and Violent Conflict: The Case of South Africa*. Occasional Paper of the Project on Environment, Population, and Security. Washington, DC: American Association for the Advancement of Science and The University of Toronto.
- PICARDI, A. and SIEFERT, W. 1976. A Tragedy of the Commons in the Sahel. *Technology Review*, 78, 42-51.
- PIKE, I. 1999. Age, Reproductive History, Seasonality, and Maternal Body Composition during Pregnancy for Nomadic Turkana Pastoralists of Kenya. *American Journal of Human Biology*, 11, 658-672.
- PORTER, G., HAMPSHIRE, K., ABANE, A., MUNTHALI, A., ROBSON, E., MASHIRI, M. and MAPONYA, G. 2010. Where Dogs, Ghosts and Lions Roam: Learning From Mobile Ethnographies on the Journey to School. *Children's Geographies*, 8, 91-105.
- PRICE, J. 1975. The Integration of Intimate Economies. *Anthropologica*, 71, 3-26.
- PURI, R. K. 2007. Responses to Medium-Term Stability in Climate: El Nino, Droughts and Coping Mechanisms of Foragers and Farmers in Borneo. In: ELLEN, R. (ed.) *Modern Crises and Traditional Strategies: Local Ecological Knowledge in Island Southeast Asia*. New York: Berghahn Books.
- QING, D. 2006. *The Global Environmental Outlook Report 3*. New York: United Nations Environmental Program.
- QUELLER, D. C. and STRASSMAN, J. E. 2002. Quick Guide: Kin Selection. *Current Biology*, 12, R832.
- RABBIE, J. 1982. The Effects of Intergroup Competition on Intragroup and Intergroup Relationships. In: DERLEGA, V. and GRZELAK, J. (eds.) *Cooperation and Helping Behavior: Theories and Research*. New York: Academic Press.
- RABBIE, J. and HORWITZ, M. 1969. The Arousal of Ingroup-Outgroup Bias by a Chance Win or Loss. *Journal of Personality and Social Psychology*, 69, 223-8.
- RABBIE, J. M. 1992. The Effects of Intragroup Cooperation and Intergroup Competition on In-Group Cohesion and Out-Group Hostility. In: HARCOURT, A. H. and DE WAAL, F. B. M. (eds.) *Coalitions and Alliances in Humans and Other Animals*. Oxford: Oxford University Press.

- RAIMBAULT, M. and DUTOIR, O. 1990. Decouverte De Populations Mechtoides Dans Le Neolithique Du Sahel Malien: Implications Paleoclimatiques Et Paleoanthropologiques. *CR Academy of Sciences*, 310, 631-638.
- REUVENY 2007. Climate Change-Induced Migration and Violent Conflict. *Political Geography*, 26, 656-673.
- RICHARDS, P. 1996. *Fighting for the Rain Forest: War, Youth and Resources in Sierra Leone*, London, International African Institute.
- RICHES, D. (ed.) 1986. *The Anthropology of Violence*. Oxford: Blackwell Publishing.
- RIEBSAME, W. E. 1985. *Research in Climate-Society Interactions. Scope 27: Climate Impact Assessment*. John Wiley.
- RISSING, S. and POLLOCK, G. 1988. Pleometrosis and Polygyny in Ants. In: JEANNE, R. (ed.) *Inter-Individual Behavioural Variability in Social Insects*. Boulder: Westview Press.
- ROBARCHEK, C. and ROBARCHEK, C. 1988. Reciprocities and Realities: World Views, Peacefulness and Violence among Semai and Waorani. 87th Annual Meetings of The American Anthropological Association. Washington, DC.
- ROSEMAN, M. 1988. Self, Other and Land: Temiar Rainforest Dwellers (Good Exchange Is Good Health). 87th Annual Meeting of The American Anthropological Association. Phoenix, AZ.
- ROSS, M. 1986. Female Political Participation: A Cross-Cultural Explanation. *American Anthropologist*, 88, 843-858.
- ROTH, E. 1996. Traditional Pastoral Strategies in a Modern World: An Example from Northern Kenya. *Human Organization*, 55, 219-224.
- RUDEL, T. and ROPER, J. 1996. Regional Patterns and Historical Trends in Tropical Deforestation. *Ambio*, 25, 160-166.
- RUTTAN, L. M. 2006. Sociocultural Heterogeneity and the Commons. *Current Anthropology*, 47, 843-853.
- SAHLINS, M. 1976. *The Use and Abuse of Biology: An Anthropological Critique of Sociobiology*. Ann Arbor, Michigan: University of Michigan Press.
- SANDFORD, S. 1978. Welfare and Wanderers: The Organisation of Social Services for Pastoralists. *ODI Review*, 70-87.
- SANDFORD, S. 1983. *Management of Pastoral Development in the Third World*. Chichester: John Wiley and Sons.
- SCHELLING, E., BÉCHIR, M., DAUGLA, D., BONFOH, B., TABLEB, M., ZINSSTAG, J. and WYSS, K. 2012. Health Research among Highly Mobile Pastoralist Communities of Chad. *Society, Biology, and Human Affairs*, 75, 95-115.
- SCOONES, I. (ed.) 1994. *Living with Uncertainty: New Directions in Pastoral Development in Africa*. London: Intermediate Technology Publications.

- SCOONES, I. 1995. New Directions in Pastoral Development in Africa. In: SCOONES, I. (ed.) *Living With Uncertainty: New Directions in Pastoral Development in Africa*. Exeter: Intermediate Technology Publications.
- SCOTT, J. C. 1976. *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. New Haven: Yale University Press.
- SELL, J., GRIFFITH, W. and WILSON, R. 1993. Are Women More Cooperative Than Men in Social Dilemmas? *Social Psychology Quarterly*, 56, 211-222.
- SEN, A. 1981. *Poverty and Famines. An Essay on Entitlement and Deprivation*. Oxford: Clarendon Press.
- SHERIF, M. 1996. In *Common Predicament: Social Psychology of Intergroup Conflict and Cooperation*. Boston: Houghton Mifflin.
- SIANN, G. 1985. *Accounting for Aggression: Perspectives on Aggression and Violence*. Boston: Allen and Unwin.
- SILLITOE, P. 1977. Land Shortage and War in New Guinea. *Ethnology*, 16, 71-81.
- SILLITOE, P. 1978. Big Men and War in New Guinea. *Man*, 13, 252-271.
- SILVERBERG, J. and GRAY, J. (eds.) 1992. *Aggression and Peacefulness in Humans and Other Primates*. Oxford: Oxford University Press.
- SIMMIE, J. and R, M. 2010. The Economic Resilience of Regions: Towards an Evolutionary Approach. *Cambridge Journal of the Regions, Economy and Society*, 3, 27-43.
- SIMON, J. 1981. *The Ultimate Resource*. Princeton: Princeton University Press.
- SIMPSON, B. 2003. Sex, Fear, and Greed: A Social Dilemma Analysis of Gender and Cooperation. *Social Forces*, 82, 35-52.
- SLOBODKIN, L. 1964. Strategy of Evolution. *American Scientist*, 52, 342.
- SMITH, A. 1897. *Through Unknown African Countries*. London: Arnold.
- SMITH, D. and VIVEKANANDA, J. 2007. A Climate of Conflict: The Links between Climate Change, Peace and War. IPCC.
- SMITH, J. 1964. Group Selection and Kin Selection. *Nature*, 201, 114-1147.
- SMITH, J. 1979. Biogeographical Considerations of Colonisation of the Lower Tilemsi Valley in the 2nd Millennium B.C. *Journal of Arid Environments*, 2, 355-361.
- SMITH, J. 1997. Setting Priorities for Adapting to Climate Change. *Global Environmental Change*, 7, 251-264.
- SMITH, K., BARRETT, C. and BOX, P. 2001. Not Necessarily in the Same Boat: Heterogeneous Risk Assessment among East African Pastoralists. *Journal of Development Studies*, 37, 1-30.
- SMITH, P. 2007. Why Has Aggression Been Thought of As Maladaptive? In: HAWLEY, P., LITTLE, T. and RODKIN, P. (eds.) *Aggression and Adaptation: The Bright Side to Bad Behaviour*. Mahway, NJ: Lawrence Erlbaum.

- SOBANIA, N. 1991. Pastoralist Migration and Colonial Policy: A Case Study from Northern Kenya. In: GALATY, J. and BONTE, P. (eds.) *Herders, Warriors and Traders: Pastoralism in Africa*. Boulder: Westview Press.
- SOLOMON, T., SNYMAN, H. and SMIT, G. 2007. Cattle-Rangeland Management Practices and Perception of Pastoralists towards Rangeland Degradation in the Borana Zone of Southern Ethiopia. *Journal of Environmental Management*, 82, 481-494.
- SOMMER, G. and VOSSEN, R. 1993. Dialects, Sectiolects, or Simply Lects? The Maa Language in Time Perspective. In: SPEAR, T. and WALLER, R. (eds.) *Being Maasai: Ethnicity and Identity in East Africa*. London: James Currey.
- SPEAR, T. and WALLER, R. (eds.) 1993. *Being Maasai: Ethnicity and Identity in East Africa*. London: James Currey.
- SPENCER, P. 1965. *The Samburu: A Study of Gerontocracy in a Nomadic Tribe*. London: Routledge and Kegan Paul.
- SPENCER, P. 1973. *Nomads in Alliance: Symbiosis and Growth among the Rendille and Samburu of Kenya*. London: O.U.P.
- SPENCER, P. 1988. *The Pastoral Continuum: The Marginalization of Tradition in East Africa*. Oxford: Oxford University Press.
- SPENCER, P. 1998. *The Pastoral Continuum: The Marginalization of Tradition in East Africa*. Oxford: Clarendon Press.
- SPERLING, L. 1989. Food Acquisition by the Samburu Herders during the Drought of 1983/1984. In: DOWNING, T., GITU, K. and KAMAU, C. (eds.) *Coping with Drought in Kenya: National and Local Strategies*. London: Reinner.
- STEINBERG, S. and STEINBERG, S. 2006. *GIS: Geographic Information Systems for the Social Sciences: Investigating Space and Place*. Thousand Oaks, CA: Sage Publications, Inc.
- STOREY, J. 2002. A Direct Approach to False Discovery Rates. *Journal of the Royal Statistical Society*, 64, 479-498.
- STRAIGHT, B. 2006. *Miracles and Extraordinary Experience in Northern Kenya*. Philadelphia: University of Pennsylvania Press.
- SUICH, H. 2012. Conceptual Framework: Poverty. ESPA. [Online] <<http://www.espa.ac.uk/files/espa/Povertyframework.pdf>>
- SUMMER, W. 1906. *Folkways*. New York: Ginn.
- SUTHERLAND, W. 1996. *Ecological Census Techniques: A Handbook*. Cambridge: Cambridge University Press.
- SWIFT, J. 1979. The Development of Livestock Trading in Nomad Pastoral Economy: The Somali Case. In: L'EQUIPE ECOLOGIE ET ANTROPOLOGIE DES SOCIETES PASTORALES (ed.) *Pastoral Production and Society*. Cambridge: Cambridge University Press.



- SWIFT, J. 2001. District-Level Drought Contingency Planning in Arid Districts of Kenya. In: MORTON, J. (ed.) *Pastoralism, Drought and Planning: Lessons from Northern Kenya and Elsewhere*. London: The University of Greenwich.
- SWIFT, J., TOULMIN, C. and CHATTING, S. 1990. Providing Services for Nomadic People: A Review of the Literature and Annotated Bibliography. UNICEF Staff Working Papers, No. 8.
- TAYLOR, O. and BUTTEL, F. 1992. How Do We Know We Have Global Environmental Problems? *Geoforum*, 23, 405-416.
- THEBAUD, B., GRELL, H. and MIEHE, S. 1995. Recognising the Effectiveness of Traditional Grazing Practices: Lessons from a Controlled Grazing Experiment in Northern Senegal. Drylands Programme, International Institute for Environment and Development. London.
- THORTON, P., GALVIN, K. and BOONE, R. 2003. An Agro-Pastoral Household Model for Rangelands of East Africa. *Agricultural Systems*, 76, 601-622.
- TIERNEY, P. 2000. *Darkness in El Dorado*. New York: Norton.
- TOOBY, J. and COSMIDES, L. 1992. The Psychological Foundations of Culture. In: BARKOW, J., COSMIDES, L. and TOOBY, J. (eds.) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. New York: Oxford University Press.
- TRIVERS, R. 1971. The Evolution of Reciprocal Altruism. *Quarterly Review of Biology*, 46, 35.
- TURTON, D. 1994. Mursi Political Identity and Warfare: The Survival of an Idea. In: FUKUI, K. and MARKAKIS, J. (eds.) *Ethnicity and Conflict in the Horn of Africa*. London: James Currey.
- TURTON, D. 1977. Response to Drought: The Mursi of Southwestern Ethiopia. *Disasters*, 1, 275-287.
- TYLOR, E. 1903. *Primitive Culture*. London: Murray.
- UN 2005-2010 World Population Prospects. [Online] <<http://esa.un.org/wpp/other-information/faq.htm>> 2012.
- USAID 2010. Kenya - Food Insecurity. Situation Report #5, Fiscal Year (FY) 2010.
- USGS. Definitions of Drought. [Online] <<http://md.water.usgs.gov/drought/define.html>> 2012.
- UVIN, P. 1996. Tragedy in Rwanda: The Political Ecology of Conflict. *Environment and Security*, 38, 1-15.
- UVIN, P. 1998. *Aiding Violence: The Development Enterprise in Rwanda*. Hartford: Kumarian Press.
- VALE, L. and CAMPANELLA, J. (eds.) 2005. *The Resilient City: How Modern Cities Recover from Disaster*. New York: Oxford University Press.

- VAN HOOFF, J. and VAN SCHAIK, C. 1992. The Ecology of Primates. In: HARCOURT, A. and DE WAAL, F. (eds.) *Coalitions and Alliances in Humans and Other Animals*. Oxford: Oxford University Press.
- VAN VELZEN, H. U. E. T. and VAN WETERING, W. 1960. Resilience, Power Groups and Intra-Societal Aggression. *International Archives of Ethnography*, 49, 169-200.
- VETTER, S. 2005. Rangelands and Equilibrium and Non-equilibrium: Recent Developments in the Debate. *Journal of Arid Environments*, 62, 321-41.
- WALKER, B., HOLLING, C. S., CARPENTER, S. and KINZIG, A. 2004. Resilience, Adaptability and Transformability in Socio-Ecological Systems. *Ecology and Society*, 9. [Online] <<http://www.ecologyandsociety.org/vol9/iss2/art5/>>.
- WALKER, B. H., LUDWIG, C. S., HOLLING, C. S. and PETERMAN, R. M. 1981. Stability of Semiarid Savanna Grazing Systems. *Journal of Ecology*, 69, 473-498.
- WALLER, R. and SOBANIA, N. W. 1994. Pastoralism in Historical Perspective. In: FRATKIN, E., GALVIN, K. A. and ROTH, E. A. (eds.) *African Pastoralist Systems: An Integrated Approach*. Boulder: Lynne Rienner Publishers.
- WALLER, R. 1976. The Maasai and the British 1895-1905. *Journal of African History*, 17, 529-553.
- WARRICK, R., TRAINER, P., BAKER, E. and BRINKMAN, W. 1975. Drought Hazard in the United States: A Research Assessment. In: *Program on Technology, Environment and Man*. Boulder: University of Colorado Institute of Behavioral Sciences.
- WARRICK, R. A. and RIEBSAME, W. E. 1981. Societal Response to CO<sub>2</sub>-Induced Climate Change: Opportunities for Research. *Climatic Change*, 3, 387-428.
- WATTS, M. and HEWITT 1983. On the Poverty of Theory: Natural Hazards Research in Context. In: HEWITT, K. (ed.) *Interpretations of Calamity from the Viewpoint of Human Ecology*. Boston: Allen and Unwin.
- WESTERN, D. and FINCH, V. 1986. Cattle and Pastoralism: Survival and Production in Arid Lands. *Human Ecology*, 14, 77-94.
- WESTOBY, M., WALKER, B. and NOY-MEIR, I. 1989. Opportunistic Management for Rangelands Not at Equilibrium. *Journal of Range Management*, 42, 266-274.
- WILSON, E. O. 1975. *Sociobiology: The New Synthesis*. Cambridge, MA: Belknap P.
- WINKELS, A. 2004. *Migratory Livelihoods in Vietnam: Vulnerability and the Role of Migrant Livelihoods*. PhD, University of East Anglia.
- WINTERHALDER, B. 1986. Diet Choice, Risk and Food Sharing in a Stochastic Environment. *Journal of Anthropological Archaeology*, 5, 369-392.
- WINTERHALDER, B. 1990. Open Field, Common Pot: Harvest Variability and Risk Avoidance in Agricultural and Foraging Societies. In: CASHDAN, E. (ed.) *Risk and Uncertainty in Tribal and Peasant Economies*. Boulder: Westview Press.

- WISNER, B., BLAIKIE, P., CANNON, T. and DAVIS, I. 2003. *At Risk: Natural Hazards, People's Vulnerability and Disasters*. New York: Routledge. [Online] <[http://www.preventionweb.net/files/670\\_72351.pdf](http://www.preventionweb.net/files/670_72351.pdf)>
- WITSENBURG, K. and ADANO, W. R. 2003. *The Use and Management of Water Sources in Kenya's Drylands: Is There A Link between Scarcity and Violent Conflicts?* Copenhagen: Centre for Development Research.
- WITSENBURG, K. and ROBA, A. W. 2007. *The Use and Management of Water Resources in Kenya Drylands: Is There A Link between Scarcity and Violent Conflicts?* In: DERMAN, B., ODGAARD, R. and SJAASTAD, E. (eds.) *Conflict Over Land and Water in Africa*. Oxford: James Currey Ltd.
- WOODBURN, J. 1982. *Egalitarian Societies*. *Man*, 17, 431-451.
- WRANGHAM, R. and PETERSON, D. 1996. *Demonic Males: Apes and the Origins of Human Violence*. New York: Houghton Mifflin Company.
- YELLEN, J. and HARPENDING, H. 1972. *Hunter-Gatherer Populations and Archaeological Inference*. *World Archaeology*, 4, 244-253.
- YOHE, G. and TOL, R. 2002. *Indicators for Social and Economic Coping Capacity: Moving Towards A Working Definition of Adaptive Capacity*. *Global Environmental Change*, 12, 25-40.
- ZAAL, F. and DIETZ, T. 1999. *Of Markets, Meat, Maize and Milk: Pastoral Commoditization in Kenya*. In: ANDERSON, D. M. and BROCH-DUE, V. (eds.) *The Poor Are Not Us: Poverty and Pastoralism in Eastern Africa*. Oxford: James Currey Ltd.
- ZIMBARDO, O. G. 1969. *The Human Choice: Individuation Reason, and Order versus Deindividuation, Impulse and Chaos*. In: ARNOLD, W. J. and LEVINE, D. (eds.) *Nebraska Symposium on Motivation*. Lincoln: University of Nebraska Press.