ORANGUTAN CULTURES?

TOOL USE, SOCIAL TRANSMISSION AND POPULATION DIFFERENCES

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by

Michelle Yvonne Merrill

Department of Biological Anthropology and Anatomy
Duke University

Date:_____

Approved:

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Carel P. van Schaik, Supervisor

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor
of Philosophy in the Department of
Biological Anthropology and Anatomy
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ABSTRACT

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This dissertation considers the evidence for orangutan (*Pongo pygmaeus*) cultures. Eight long-term orangutan research sites were compared using the geographic approach. Correlation between rare behavior count and observation intensity showed innovation is fairly consistent across sites. Lack of correlation between observation intensity and number of cultural behaviors indicates that something else explains this variation. Cultural behaviors were classified into subsistence skills, weal skills, reference variants, display variants and those whose function remains unknown. Types of behaviors that vary culturally in orangutans were similar to those reported for chimpanzees (*Pan troglodytes*).

Further evidence for the role of social learning and proximity is based on data from focal animal follows of wild orangutans at Ketambe and Suaq

Balimbing on Sumatra. Suaq Balimbing had more cultural variants requiring close proximity for observational learning, including tool use. Adult female orangutans at Suaq Balimbing (particularly in the sub-group with greater tree-hole tool-use specialization) spent more time with independent conspecifics and had more diverse social partners at close proximity.

Behaviors related to nest building were examined in detail. Data from nests built with or without the nest raspberry (ubiquitous at Suaq Balimbing, absent at Ketambe) were investigated. Duration of nest-building activities is related to nest raspberry production. Nest raspberries were not related to nearest neighbor proximity or nest position; their adaptive function is not apparent. Adult females at both sites tended to be alone (no independent conspecifics within 50m) more often when building a night nest than during the rest of the active day, but this trend was stronger at Ketambe.

Evidence for vertical social transmission of a limited traditional behavior was based on published work, interviews with previous field researchers, and videotape and data collected during fieldwork at Ketambe. The persistence of unusual behaviors within rehabiltant matrilines, and the failure of these behaviors to spread throughout the wild population, may result from

selectivity in social learning.

The presence of complex cultural variation in orangutans and chimpanzees suggests that the capacity for such behavior was present over 12 million years ago, in the last common ancestor of the great apes.

DEDICATION

For Erik, without whose incredible patience, understanding and support I could never have done this, and for the orangutans Abby, Agus, Andai, Ani, Ans, Arno, Ati, Beki, Bestel, Binjei, Brus, Budi, Caca, Chris, David, Diana, Doba, Elisa, Hanes, Herdi, Ida, Karen, Mira, Musa, Ngon, Novi, Olly, Pelet, Pluis, Sela, Tevi, Tomi, William, X, Yet, Yinta, Yenni, Yop, Zuar and especially Payung – hang in there, guys!

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ACKNOWLEDGMENTS

I wish to thank the L.S.B. Leakey foundation for sponsoring my field research and the "Orangutans Compared" workshop, and the National Science Foundation for sponsoring my field research.

I thank Dr. Ir. Abdi Abdul Wahab and Dra. Sunarti of Universitas Syiah Kuala, and Dr. Kathryn A. Monk from the Leuser Management Unit for logistical support. I thank the Indonesian Institute of Sciences (LIPI) and the directorate general of Forest Protection and Nature Conservation Service in the Ministry of Forestry for permission to work in Indonesia.

For assistance in the field, spectacular videography work, patience and kindness, I thank Nuzuar S. Hut. I thank Mohammed Isa for his enthusiasm, diligence, team spirit and effort in collecting data. I thank Bakrijas for remarkable bravery and persistence after his ordeals with the bees. Thanks also to Asril, who helped me to find and communicate with this great team. For all their hard work in data collection, and general conviviality and good cheer, I thank the 1999 staff of the Suaq Balimbing research station, especially Yasra, who was always ready to boost our spirits and fill our tummies. For helping me get to know Ketambe, and for her kindness and reassurances, I thank Sri Suci Utami Atmoko. Thanks also to Serge Wich, Ivona Foitova, Sue Thorpe and Beth Fox for moral support in the field and R-and-R in Medan.

For contributions to the "Orangutans Compared" database and/or discussion during the workshop, I thank C. Boesch, G. Borgen, M. Brown, I. Foitova, E. Fox, N. Ghaffar, S. Husson, A. Johnson, T. Laman, C. McLardy, J. Mitani, I.

bin’Muhammad, H. Murrough-Bernard, M. Setia, H. Peters, and S. Wich.

Thanks to Merideth Bastian for her inspirational ambition to continue developing these ideas and putting them into practice in the field.

Thanks to Derek Johnson and Simon Habegger for making those first years in grad school a bit more entertaining. Special thanks to Elena Davis for a home-away-from-home in Durham, and for far more assistance and sugary baked goods than I deserved – you are a true friend, and I never would have made it without your help (especially the day of the format check!).

Thanks to Ken Glander, Steve Churchill and Liz Brannon for suggestions and remarks during the defense. For insightful commentary and extremely constructive criticism on early drafts, I thank Leslie Digby. For conversational co-creation of the ideas and practical direction on completion of this project I thank my advisor, Carel P. van Schaik.