alliance? and what was the selective rationale for increased paternal and maternal investment in offspring (in terms of both intensity and duration)?

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By scouting the boundaries between social anthropology, primatology, and human sociobiology, this attempt to "encourage the kind of intergroup affinity that advances scientific understanding" does not consider the boundaries physical anthropology shares with these disciplines. Perhaps this is for the best. Just slightly more than 25 years ago it was a physical anthropologist who suggested that a very productive way to understand humans might be to take an "ape's-eye view of human evolution" (Washburn 1965). Now we have come a full lap around the track, as this independent scouting trip trots out the same proposal.

Washburn's attempt was very insightful and its influence far-reaching. His idea was to examine the great apes to outline where humans became different, with the intent of using the paleoanthropological record to hypothesize about why these differences appeared. Rodseth et al. use the comparison with the higher primates in a subtly different way, taking the primate context as an explanatory basis for human variation.

Perhaps an analogy with locomotor analysis can clarify the difference. All primates use a complex and varied locomotor repertoire, with the variability depending on ecological, social, and, yes, no doubt inclusive-fitnessrelated variables. The Washburn approach would be to use comparative studies to discover what is truly unique about human bipedalism. Here it proves to be not the behavior itself, as many primates are regularly bipedal, but the fact that human bipedalism is obligate, with consequences influencing the understanding of its origins. Rodseth et al.'s comparative approach would seem to use the pattern of primate variation to understand human bipedalism, assuming that the causes of the human pattern are to be found in the commonalties underlying bipedalism in other primates.

While this sounds reasonable, it ignores a fundamental difference. Humans are necessarily always bipedal, not bipedal by choice under certain circumstances, and this undermines the comparative approach for explaining its function because the universality of this locomotor pattern makes it the context rather than one possible consequence. Any locomotor pattern, including obligate bipedalism, could of course be described in terms of its constituent elements, along "speciesneutral" dimensions, but this would be reductionism at its worst (Gould and Lewontin 1979) and is probably the only sure way to misunderstand human locomotion.

Turning to the behavioral comparision, while Rodseth et al. recognize that language (and, I would add, more generally culture, which in humans is language-

dependent) is unique to humans, this has greater importance than the absence of language from the behavioral repertoire of other primates might suggest. Human language provides the context for the human behaviors these authors endeavor to compare and is not simply a unique aspect of "another unique species" that allows one to explain how humans maintain social relationships in the absence of spatial proximity. The human community is based on stratified roles whose definitions, expectations, and relationships are languagedependent, with the result that gender rather than sex is a primary variable, and kinship is a social institution rather than a categorization of relationships due to common ancestry.

Why not "Primate Society as a Human Community"? Shouldn't what's good for the goose be good for the gander? I believe that it is clear why not and prefer the conclusion that primates may be validly regarded as a fascinating group of species, deserving of study for perfectly good reasons, without the necessity of using those studies better to understand ourselves.

[Rodseth et al.'s reply will appear in the August-October issue. —EDITOR.

References Cited

ABEGGLEN, J.-J. 1984. On socialization in hamadryas baboons. Cranbury: Associated University Presses.

ABU-LUGHOD, L. 1986. Veiled sentiments. Berkeley: University of California Press.

ALEXANDER, R. D. 1971. The search for an evolutionary philosophy of man. Proceedings of the Royal Society of Victoria (Melbourne) 84:99-120.

. 1974. The evolution of social behavior. Annual Review of Ecology and Systematics 5:325-83.

. 1979. Darwinism and human affairs. Seattle: University of Washington Press.

-. 1987. The biology of moral systems. Hawthorne: Aldine. . 1989. "Evolution of the human psyche," in The human revolution: Behavioural and biological perspectives on the origins of modern humans, vol. 1. Edited by P. Mellars and C. Stringer. Edinburgh: Edinburgh University Press.

1990a. Epigenetic rules and Darwinian algorithms: The adaptive study of learning and development. Ethology and Socio-

biology 11:260-304. [PWT]

. 1990b. How did humans evolve! University of Michigan Museum of Zoology Special Publication 1. [PWT]

ALEXANDER, R. D., AND K. M. NOONAN. 1979. "Concealment of ovulation, parental care, and human social evolution," in Evolutionary biology and human social behavior: An anthropological perspective. Edited by N. A. Chagnon and W. Irons. North Scituate: Duxbury Press.

ALTMANN, J. 1980. Baboon mothers and infants. Cambridge: Harvard University Press.

ALTMANN, S. A. 1967. "The structure of primate social communication," in Social communication among primates. Edited by S. A. Altmann. Chicago: University of Chicago Press.

ANTOUN, R. 1968. On the modesty of women in Arab Muslim villages: A study in the accommodation of traditions. American Anthropologist 70:671–97.

AYRES, B. 1974. Bride theft and raiding for wives in cross-cultural perspective. Anthropological Quarterly 51:238-52.

BACHMANN, C., AND H. KUMMER. 1980. Male assessment of

- female choice in hamadryas baboons. Behavioral Ecology and Sociobiology 6:315-21.
- BADRIAN, A., AND N. BADRIAN. 1984. "Social organization of Pan paniscus in the Lomako Forest, Zaire," in The pygmy chimpanzee. Edited by R. L. Susman. New York: Plenum Press.
- BALCOMB, K. C., AND M. A. BIGG. 1986. "Population biology of the three resident killer whale pods in Puget Sound and off southern Vancouver Island," in Behavioral biology of killer whales. Edited by B. Kirkevold and J. S. Lockard. New York: Liss.
- BEARDER, S. K. 1987. "Lorises, bushbabies, and tarsiers: Diverse societies in solitary foragers," in *Primate societies*. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: Unversity of Chicago Press.
- BERNDT, R. M. 1964. Warfare in the New Guinea Highlands. American Anthropologist 66:183-203.
- BERTÉ, N. 1988. "K'ekchi horticultural labor exchange: Productive and reproductive implications," in Human reproductive behaviour. Edited by L. Betzig, M. Borgerhoff Mulder, and P. Turke, pp. 83-96. Cambridge: Cambridge University Press. [PWT]
- BETZIG, L. 1986. Despotism and differential reproduction: A Darwinian view of history. Hawthorne: Aldine. [PWT]
- -. 1988. "Redistribution: Equity or exploitation?" in Human reproductive behaviour. Edited by L. Betzig, M. Borgerhoff Mulder, and P. Turke, pp. 49-64. Cambridge: Cambridge University Press. [PWT]
- BETZIG, L., M. BORGERHOFF MULDER, AND P. TURKE. Editors. 1987. Human reproductive behaviour: A Darwinian perspective. Cambridge: Cambridge University Press.
- BISCHOF, N. 1975. "Comparative ethology of incest avoidance," in Biosocial anthropology. Edited by R. Fox. London: Malaby.
- BLACK-MICHAUD, J. 1975. Cohesive force: Feud in the Mediterranean and the Middle East. Oxford: Blackwell.
- BOHANNON, L., AND P. BOHANNON. 1953. The Tiv of Central Nigeria. London: International African Institute.
- BORGERHOFF MULDER, M. 1988. "Kipsigis bridewealth payments," in Human reproductive behaviour. Edited by L. Betzig, M. Borgerhoff Mulder, and P. Turke, pp. 65-82. Cambridge: Cambridge University Press. [PWT]
- BOYD, R., AND P. J. RICHERSON. 1985. Culture and the evolutionary process. Chicago: University of Chicago Press.
- BROWN, J. K. 1970. A note on the division of labor by sex. American Anthropologist 72:1073-78.
- BYGOTT, J. D. 1979. "Agonistic behavior, dominance, and social structure in wild chimpanzees of the Gombe National Park," in The great apes. Edited by D. A. Hamburg and E. R. McCown. Menlo Park, Calif.: Benjamin/Cummings.
- byrne, r. w., and a. whiten. Editors. 1988. Machiavellian intelligence: Social expertise and the evolution of intellect in monkeys, apes, and humans. Oxford: Clarendon Press.
- CADE, W. H. 1979. "The evolution of alternative male reproductive strategies in field crickets," in Sexual selection and reproductive competition in insects. Edited by M. S. Blum and N. A. Blum. New York: Academic Press.
- CAMPBELL, J. 1964. Honour, family, and patronage: A study of institutions and moral values in a Greek mountain community. Oxford: Clarendon Press.
- CANT, J. G. H. 1977. Ecology, locomotion, and social organization of spider monkeys (Ateles geoffroyi). Ph.D. diss., University of California, Davis, Calif.
- CHAGNON, N. A. 1979. "Mate competition, favoring close kin, and village fissioning among the Yanomamö Indians," in Evolutionary biology and human social behavior: An anthropological perspective. Edited by N. A. Chagnon and W. Irons. North Scituate: Duxbury Press.
- . 1981. "Terminological kinship, genealogical relatedness, and village fissioning among the Yanomamö Indians," in Natural selection and social behavior. Edited by R. D. Alexander and D. W. Tinkle. New York: Chiron Press.
- . 1982. "Sociodemographic attributes of nepotism in tribal populations: Man the rule breaker," in Current problems in so-ciobiology. Edited by the King's College Sociobiology Group. Cambridge: Cambridge University Press.

- -. 1983. 3d edition. Yanomamö: The fierce people. New York: Holt, Rinehart and Winston.
- . 1988. "Male Yanomamö manipulations of kinship classifications of female kin for reproductive advantage," in Human reproductive behaviour. Edited by L. Betzig, M. Borgerhoff Mulder, and P. Turke, pp. 23–48. Cambridge: Cambridge University Press. [PWT]
- CHAGNON, N. A., AND P. BUGOS. 1979. "Kin selection and conflict: An analysis of a Yanomamö ax fight," in Evolutionary biology and human social behavior: An anthropological perspective. Edited by N. A. Chagnon and W. Irons. North Scituate: Duxbury Press.
- CHAPMAN, C. A. 1988. Patterns of foraging and range use by three species of neotropical primates. Primates 29:177-94.
- . 1990. Association patterns of spider monkeys: The influence of ecology and sex on social organization. Behavioral Ecology and Sociobiology 26:409-15.
- CHENEY, D. L. 1981. Intergroup encounters among free-ranging vervet monkeys. Folia Primatologica 35:124-46.
- -. 1987. "Interactions and relationships between groups," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- CHENEY, D. L., AND R. M. SEYFARTH. 1982. Recognition of individuals within and between groups of free-ranging vervet monkeys. American Zoologist 22:519-29.
- . 1983. Non-random dispersal in free-ranging vervet monkeys: Social and genetic consequences. American Naturalist 122:392-412.
- 1985. Vervet monkey alarm calls: Manipulation through shared information. *Behaviour* 94:150–66.
- CHENEY, D. L., R. M. SEYFARTH, AND B. B. SMUTS. 1986. Social relationships and social cognition in nonhuman primates. Science 234:1361-66.
- CLARK, A. B. 1978. "Olfactory communication, Galago crassicaudatus, and the social life of prosimians," in Recent advances in primatology, vol. 3. Edited by D. J. Chivers and K. A. Joysey. New York: Academic Press.
- CLARKE, M. R. 1983. Infant-killing and infant disappearance following male takeovers in a group of free-ranging howling monkeys (Alouatta palliata) in Costa Rica. American Journal of *Primatology* 5:241-47.
- CLARKE, M. R., AND K. E. GLANDER. 1984. "Female reproductive success in a group of free-ranging howling monkeys (Alouatta palliata) in Costa Rica," in Female primates: Studies by women primatologists. Edited by M. Small. New York: Liss.
- COLLIER, J. F., AND M. Z. ROSALDO. 1981. "Politics and gender in simple societies," in Sexual meanings: The cultural construction of gender and sexuality. Edited by S. B. Ortner and H. Whitehead. Cambridge: Cambridge University Press.
- CORDS, M. 1987. "Forest guenons and patas monkeys: Male-male competition in one-male groups," in *Primate societies*. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- COSMIDES, L., AND J. TOOBY. 1987. "From evolution to behavior: Evolutionary psychology as the missing link," in The latest on the best: Essays on evolution and optimality. Edited by J. Dupre. Cambridge: M.I.T. Press.
- CRONK, L. 1988. Spontaneous order analysis and anthropology.
- Cultural Dynamics 1:282–308.

 DARE, R. J. 1974. The social behavior and ecology of spider monkeys, Ateles geoffroyi, on Barro Colorado Island. Ann Arbor: University Microfilms. [RD]
- DEVORE, I. Editor. 1965. Primate behavior. New York: Holt, Rinehart and Winston.
- DICKEMANN, M. 1981. "Paternal confidence and dowry competition: A biocultural analysis of purdah," in Natural selection and social behavior. Edited by R. D. Alexander and D. W. Tinkle. New York: Chiron Press.
- -. n.d. Multiple genders and reproductive strategies in humans: Steps toward a radical sociobiology. Paper presented at the Anthropology Colloquium/Warner-Lambert Lecture Series, University of Michigan, Ann Arbor, Mich., October 1986.

- DIVALE, W. T. 1974a. The causes of matrilocal residence: A crossethnohistorical survey. Ph.D. diss., State University of New York at Buffalo, Buffalo, N.Y.
- 1974b. Migration, external warfare, and matrilocal residence. Behavioral Science Research 9:75-133.
- DUMONT, L. 1961. Les mariages Nayar comme faits indiens. L'Homme 1:11-36. [JCM]
- DUNBAR, R. I. M. 1984. Reproductive decisions: An economic analysis of gelada baboon social strategies. Princeton: Princeton University Press.
- . 1986. "The social ecology of gelada baboons," in Ecological aspects of social evolution. Edited by D. I. Rubenstein and R. W. Wrangham. Princeton: Princeton University Press.
- . 1988. Primate social systems. Ithaca: Cornell University Press.
- DUNBAR, R. I. M., AND E. P. DUNBAR. 1976. Contrasts in social structure among black and white colobus monkey troops. Animal Behavior 24:84-92.
- DURKHEIM, E. 1915. The elementary forms of the religious life. London: Allen and Unwin.
- ellison, p. t., n. r. peacock, and c. langer. 1989. Ecology and ovarian function among Lese women of the Ituri Forest, Zaire. American Journal of Physical Anthropology 78:519-26.
- EMBER, C. R. 1974. An evaluation of alternative theories of matrilocal versus patrilocal residence. Behavior Science Research 9:135-49.
- 1978. Myths about hunter-gatherers. Ethnology 17:439-48. EMBER, M., AND C. R. EMBER. 1971. The conditions favoring matrilocal versus patrilocal residence. American Anthropologist
- ESSOCK-VITALE, S., AND R. M. SEYFARTH. 1987. "Intelligence and social cognition," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- EVANS-PRITCHARD, E. E. 1940. The Nuer. Oxford: Oxford University Press.
- FEDIGAN, L., AND M. J. BAXTER. 1984. Sex differences and social organization in free-ranging spider monkeys (Ateles geoffroyi). Primates 25:279-94.
- FISHER, R. A. 1958. 2d edition. The genetical theory of natural selection. New York: Dover.
- FLAP, HENDRICK DERK. 1988. Conflict, loyalty, and violence: The effects of social networks on behavior. (Beiträge zur Gesellschaftsforschung 4.) Frankfurt am Main: Peter Lang. [KFO]
- FLINN, M. 1988. "Parent-offspring interactions in a Caribbean village: Daughter guarding," in Human reproductive behaviour. Edited by L. Betzig, M. Borgerhoff Mulder, and P. Turke. pp. 189–200. Cambridge: Cambridge University Press. [PWT]
- FLINN, M. V., AND B. S. LOW. 1986. "Resource distribution, social competition, and mating patterns in human societies," in Ecological aspects of social evolution. Edited by D. I. Rubenstein and R. W. Wrangham. Princeton: Princeton University Press.
- FODOR, J. A. 1980. "Reply to Putnam," in Language and learning: The debate between Jean Piaget and Noam Chomsky. Edited by M. Piattelli-Palmarini. Cambridge: Harvard University Press.
- FOLEY, R. A. 1989. "The evolution of hominid social behavior," in Comparative socioecology. Edited by V. Standen and R. A. Foley. Oxford: Blackwell Scientific Publications.
- FOLEY, R. A., AND P. C. LEE. 1989. Finite social space, evolutionary pathways, and reconstructing hominid behavior. Science 243:901-6.
- FORTES, M. 1958. "Introduction," in The developmental cycle in domestic groups. Edited by J. Goody. Cambridge: Cambridge University Press.
- FOX, R. 1967. Kinship and marriage. Baltimore: Penguin Books. -. 1972. "Alliance and constraint: Sexual selection in the evolution of human kinship systems," in Sexual selection and the descent of man 1871–1971. Edited by B. Campbell, Chicago: Aldine.
- . 1975. "Primate kin and human kinship," in Biosocial anthropology. Edited by R. Fox. London: Malaby Press.
- -. 1979. "Kinship categories as natural categories," in Evolutionary biology and human social behavior: An anthropological

- perspective. Edited by N. A. Chagnon and W. Irons. North Scituate: Duxbury Press.
- 1980. The red lamp of incest. Notre Dame: University of Notre Dame Press.
- GEERTZ, C. 1973a. "Thick description: Toward an interpretive theory of culture," in The interpretation of cultures. New York: Basic Books.
- -. 1973b. "The impact of the concept of culture on the concept of man," in The interpretation of cultures. New York: Basic
- GHIGLIERI, M. P. 1987. Sociobiology of the great apes and the hominid ancestor. Journal of Human Evolution 16:319-57.
- . 1989. "Hominoid sociobiology and hominid social evolution," in Understanding chimpanzees. Edited by P. G. Heltne and L. A. Marquardt. Cambridge: Harvard University Press.
- GOLDSTEIN, M. C. 1978. Pahari and Tibetan polyandry revisited. Ethnology 17:325-38.
- GOLDSTEIN, M. C., AND P. TSARONG. 1985. Tibetan Buddhist monasticism: Social, psychological, and cultural implications. Tibet Journal 10:14-31.
- GOODALL, J. 1968. The behaviour of free-living chimpanzees in the Gombe Stream Reserve. Animal Behavior Monographs 1:165-311.
- -. 1971. In the shadow of man. London: Collins.
- . 1973. "Cultural elements in the chimpanzee community," in Precultural primate behaviour. Edited by E. W. Menzel. Basel:
- -. 1986. The chimpanzees of Gombe: Patterns of behavior. Cambridge: Harvard University Press.
- GOODALL, J., A. BANDORA, E. BERGMANN, C. BUSSE, H. MA-TAMA, E. MPONGO, A. PIERCE, AND D. RISS. 1979. "Intercommunity interactions in the chimpanzee population of the Gombe National Park," in The great apes. Edited by D. A. Hamburg and E. R. McCown. Menlo Park, Calif.: Benjamin/Cummings.
- GOUGH, E. K. 1959. The Nayars and the definition of marriage. Journal of the Royal Anthropological Institute 89:23-34.
- . 1961. "Nayar: Central Kerala," in Matrilineal kinship. Edited by D. M. Schneider and E. K. Gough. Berkeley: University of California Press.
- GOULD, S. J. 1979. This view of life. Natural History, January. [RD]
- GOULD, S. J., AND R. C. LEWONTIN. 1979. The spandrels of San Marco and the Panglossian paradigm: A critique of the adaptationalist programme. Proceedings of the Royal Society, London B 205:581-98. [MHW]
- GOUZOULES, S., AND H. GOUZOULES. 1987. "Kinship," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- GROSS, M. 1982. Sneakers, satellites, and parentals: Polymorphic mating strategies in North American sunfishes. Zeitschrift für *Tierpsychologie* 60:1–26.
- . 1984. "Sunfish, salmon, and the evolution of alternative reproductive strategies and tactics in fishes," in Fish reproduction: Strategies and tactics. Edited by P. Potts and R. Wotten. London: Academic Press.
- HAMES, R. 1988. "The allocation of parental care among the Ye'Kwana," in Human reproductive behaviour. Edited by L. Betzig, M. Borgerhoff Mulder, and P. Turke, pp. 237–52. Cambridge: Cambridge University Press. [PWT]
- HAMILTON, W. D. 1963. The evolution of altruistic behavior. American Naturalist 97:354-56.
- . 1964. The genetic theory of social behaviour. Journal of Theoretical Biology 7:1-52.
- HARCOURT, A. H., AND K. J. STEWART. 1983. "Interactions, relationships, and social structure: The great apes," in Primate social relationships: An integrated approach. Edited by R. A. Hinde. Oxford: Blackwell.
- HAYANO, D. M. 1973. Sorcery death, proximity, and the perception of out-groups: The Tauna Awa of New Guinea. Ethnology 12:179-91.

- HELTNE, P. G., AND L. A. MARQUARDT. Editors. 1989. Understanding chimpanzees. Cambridge: Harvard University Press.
- HINDE, R. A. Editor. 1983. Primate social relationships: An integrated approach. Oxford: Blackwell.
- 1987. Individuals, relationships, and culture: Links between ethnology and the social sciences. Cambridge: Cambridge University Press.
- HOCKETT, C. F. 1963. "The problem of universals in language," in Universals of language. Edited by J. H. Greenberg. Cambridge: M.I.T. Press.
- HOCKETT, C. F., AND S. A. ALTMANN. 1968. "A note on design features," in Animal communication. Edited by T. A. Sebeok. Bloomington: Indiana University Press.
- HOGG, J. T. 1984. Mating in bighorn sheep: Multiple creative male strategies. Science 225:526-29.
- HUGHES, A. L. 1988. Evolution and human kinship. New York: Oxford University Press.
- HRDY, S. B. 1981. The woman that never evolved. Cambridge: Harvard University Press.
- HSU, F. L. K. 1965. The effects of dominant kinship relations on kin and non-kin behavior: A hypothesis. American Anthropologist 67:638-61.
- IRONS, W. 1975. The Yomut Turkmen: A study of social organization among a Central Asian Turkic-speaking population. Ann Arbor: University of Michigan Museum of Anthropology.
- . 1979. "Investment and primary social dyads," in Evolutionary biology and human social behavior: An anthropological perspective. Edited by N. A. Chagnon and W. Irons. North Scitu-
- ate: Duxbury Press.

 ——. 1981. "Why lineage exogamy?" in Natural selection and social behavior. Edited by R. D. Alexander and D. W. Tinkle. New York: Chiron Press.
- -. 1983. "Human female reproductive strategies," in Social behavior of female vertebrates. Edited by S. K. Wasser. New York: Academic Press.
- JOHNSON, A. W., AND T. EARLE. 1987. The evolution of human societies: From foraging group to agrarian state. Stanford: Stanford University Press.
- KANG, G. E. 1976. Conflicting loyalties theory: A cross-cultural test. Ethnology 15:201-10.
- . 1979. Exogamy and peace relations of social units: A crosscultural test. Ethnology 18:85-99.
- . 1982. Marry-out or die-out: A cross-cultural examination of exogamy and survival value. Council on International Studies. Special Studies Series 148. [KFO]
- KANO, T. 1982. The social group of pygmy chimpanzees (Pan paniscus) of Wamba. Primates 23:171-88.
- . 1989. "The sexual behavior of pygmy chimpanzees," in Understanding chimpanzees. Edited by P. G. Heltne and L. A. Marquardt. Cambridge: Harvard University Press.
- KAWAI, M., R. I. M. DUNBAR, U. MORI, AND H. OHSAWA. 1983. Social organization of gelada baboons: Social units and definitions. *Primates* 24:13–24.
- KINZEY, W. G. 1981. "The titi monkeys, genus Callicebus," in Ecology and behavior in Neotropical primates, vol. 1. Edited by A. F. Coimbra-Filho and R. A. Mittermeier. Rio de Janeiro: Academia Brasileira de Ciências.
- Editor. 1987. The evolution of human behavior: Primate models. Albany: State University of New York Press.
- KLEIN, L. L., AND D. J. KLEIN. 1977. "Feeding behavior of the Colombian spider monkey, Ateles belzebuth," in Primate ecology. Edited by T. H. Clutton-Brock. New York: Academic Press.
- KONNER, M., AND M. SHOSTAK. 1987. Timing and management of birth among the !Kung: Biocultural interaction in reproductive adaptation. Cultural Anthropology 2:11-28.
- KONNER, M., AND C. WORTHMAN. 1980. Nursing frequency, gonadal function, and birth spacing among !Kung huntergatherers. Science 207:788-91.
- KOTTAK, C. P. 1987. 4th edition. Anthropology: The exploration of human diversity. New York: Random House.
- KOYAMA, N. 1970. Changes in dominance rank and division of a wild Japanese monkey troop in Arashiyama. Primates 11:335-90.

- KUMMER, H. 1968. Social organization of hamadryas baboons. Chicago: University of Chicago Press.
- . 1971. Primate societies: Group techniques of ecological adaptations. Chicago: Aldine.
- -. 1984. "Preface," in On socialization in hamadryas baboons. Edited by J.-J. Abegglen. Cranbury: Associated University Presses.
- KUMMER, H., W. GÖTZ, AND W. ANGST. 1974. Triadic differentiation: An inhibitory process protecting pair bonds in baboons. Behaviour 49:62-87.
- KUNSTADTER, P. 1963. A survey of the consanguine or matrifocal family. American Anthropologist 65:56-66.
- KURLAND, J. A. 1977. "Kin selection in the Japanese monkey," in Contributions to primatology, vol. 12. Basel: Karger.
- KURODA, S. 1979. Grouping of the pygmy chimpanzees. Primates 20:161-83.
- -. 1980. Social behavior of the pygmy chimpanzees. Primates 21:181-97.
- LEACH, E. R. 1954. Political systems of highland Burma. Boston: Beacon Press.
- LEE, R. B. 1976. "!Kung spatial organization: An ecological and historical perspective," in Kalahari hunter-gatherers: Studies of the !Kung San and their neighbors. Edited by R. B. Lee and I. DeVore. Cambridge: Harvard University Press.
- . 1979. The !Kung San: Men, women, and work in a foraging society. Cambridge: Cambridge University Press.
- LEVINE, N. E. 1988. The dynamics of polyandry: Kinship, domesticity, and population on the Tibetan border. Chicago: University of Chicago Press.
- LEVINE, N. E., AND W. H. SANGREE. 1980. Conclusion: Asian and African systems of polyandry. Journal of Comparative Family Studies 11:385-410.
- LEVINSON, D., AND M. J. MALONE. 1980. Toward explaining human culture: A critical review of the findings of worldwide cross-cultural research. New Haven: HRAF Press.
- LÉVI-STRAUSS, C. 1956. "The family," in Man, culture, and society. Edited by H. L. Shapiro. New York: Oxford University Press.
- 1967. 2d edition revised with a new preface. Les structures élémentaires de la parenté. Paris: Mouton. [JCM]
- -. 1969 (1949). The elementary structures of kinship. Boston: Beacon Press.
- LÉVI-STRAUSS, C., AND D. ERIBON. 1988. De près et de loin. Paris: Odile Jacob. [JCM]
- LITTLE, L. K. 1978. Religious poverty and the profit economy in medieval Europe. Ithaca: Cornell University Press.
- LLOYD, P. C. 1965. "The Yoruba of Nigeria," in Peoples of Africa. Edited by J. L. Gibbs. New York: Holt, Rinehart and Winston.
- LOVEJOY, C. O. 1981. The origin of man. Science 211:341-50. LUMSDEN, C., AND E. O. WILSON. 1981. Genes, mind, and culture. Cambridge: Harvard University Press.
- MCFARLAND, M. J. 1986. "Ecological determinants of fissionfusion sociality in Ateles and Pan," in Primate ecology and conservation. Edited by J. G. Else and P. C. Lee. Cambridge: Cambridge University Press.
- MCGREW, W. C. 1981. "The female chimpanzee as a female evolutionary prototype," in Woman the gatherer. Edited by F. Dahlberg. New Haven: Yale University Press.
- MANDELBAUM, D. G. 1988. Women's seclusion and men's honor: Sex roles in North India, Bangladesh, and Pakistan. Tucson: University of Arizona Press.
- MANSON, J. H., AND R. W. WRANGHAM. 1991. Intergroup aggression in chimpanzees and humans. CURRENT ANTHROPOLOGY 32. In press.
- MEGGITT, M. J. 1965. The lineage system of the Mae-Enga of New Guinea. London: Oliver and Boyd.
- MILTON, K. 1984. Habitat, diet, and activity patterns of freeranging woolly spider monkeys (Brachyteles arachnoides E. Geoffroy 1806). International Journal of Primatology 5:491-514.
- MISSAKIAN, E. A. 1973. The timing of fission among free-ranging rhesus monkeys. American Journal of Physical Anthropology 38:621-24.
- MUKHOPADHYAY, C. C., AND P. J. HIGGINS. 1988. Anthropo-

- logical studies of women's status revisited: 1977-1987. Annual Review of Anthropology 17:461-95.
- MURDOCK, G. P. 1949. Social structure. New York: Macmillan. 1967. Ethnographic atlas. Pittsburgh: University of Pittsburgh Press.
- MURPHY, R. F. 1957. Intergroup hostility and social cohesion. American Anthropologist 59:1018–36.
- NADEL, S. F. 1942. A Black Byzantium: The kingdom of Nupe in Nigeria. London: Oxford University Press.
- NIMKOFF, M. F. 1965. "Types of family: The social system and the family," in Comparative family systems. Edited by M. F. Nimkoff. Boston: Houghton Mifflin.
- NISHIDA, T. 1968. The social group of wild chimpanzees in the Mahali Mountains. Primates 9:167–224.
- NISHIDA, T., AND M. HIRAIWA-HASEGAWA. 1987. "Chimpanzees and bonobos: Cooperative relationships among males," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- NISHIDA, T., M. HIRAIWA-HASEGAWA, T. HASEGAWA, AND Y. TAKAHATA. 1985. Group extinction and female transfer in wild chimpanzees in the Mahale Mountains. Zeitschrift für Tierpsychologie 67:284-301.
- OATES, J. F. 1977. The social life of a black-and-white colobus monkey (Colobus guereza). Zeitschrift für Tierpsychologie 45:1-60.
- OTTERBEIN. KEITH F. 1968a. Internal war: A cross-cultural study. American Anthropologist 70:277-89.
- 1968b. Cross-cultural studies of armed combat. (Studies in International Conflict, Research Monograph 1.) Buffalo Studies 4(1):91-109 [KFO]
- -. 1968c. Higi armed combat. Southwestern Journal of Anthropology 24:195-213. [KFO]
- -. 1977. 2d edition. Comparative cultural analysis: An introduction to anthropology. New York: Holt, Rinehart and Winston. [KFO]
- -. 1979. A cross-cultural study of rape. Aggressive Behavior 5:425-35. [KFO]
- -. 1989. 3d edition. The evolution of war: A cross-cultural study. New Haven: HRAF Press. [KFO]
- OTTERBEIN, K. F., AND C. S. OTTERBEIN. 1965. An eye for an eye, a tooth for a tooth: A cross-cultural study of feuding. American Anthropologist 67:1470-82.
- PAIGE, K. E., AND J. M. PAIGE. 1981. The politics of reproductive ritual. Berkeley: University of California Press.
- PAUL, R. A. 1982. The Tibetan symbolic world. Chicago: University of Chicago Press.
- PERISTIANY, J. G. Editor. 1966. Honour and shame: The values of Mediterranean society. Chicago: University of Chicago Press.
- PUSEY, A. E., AND C. PACKER. 1987. "Dispersal and philopatry," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- RAPPAPORT, R. A. 1979a. "Ecology, adaptation, and the ills of functionalism," in Ecology, meaning, and religion. Richmond, Calif.: North Atlantic Books.
- -. 1979b. "The obvious aspects of ritual," in Ecology, meaning, and religion. Richmond, Calif.: North Atlantic Books.
- . 1979c. "Sanctity and lies in evolution," in Ecology, meaning, and religion. Richmond, Calif.: North Atlantic Books.
- RICHERSON, P. J., AND R. BOYD. 1989. The role of evolved predispositions in cultural evolution: or, Human sociobiology meets Pascal's wager. Ethology and Sociobiology 10:195-219.
- ROBINSON, J. G. 1986. Seasonal variation in use of time and space by the wedge-capped capuchin monkey, Cebus olivaceus: Implications for foraging theory. Smithsonian Contributions to Zoology 431:1-60.
- ROBINSON, J. G., AND C. H. JANSON. 1987. "Capuchins, squirrel monkeys, and atelines: Socioecological convergence with Old World primates," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- RODSETH, L. T. 1990. Prestige, hunger, and love: Plumbing the

- psychology of Sexual Meanings. Michigan Discussions in An-
- thropology 9:107-27.
 ROSALDO, M. Z. 1974. "Woman, culture, and society: A theoretical overview," in Woman, culture, and society. Edited by M. Z. Rosaldo and L. Lamphere. Stanford: Stanford University Press.
- RUBENSTEIN, D. I., AND R. W. WRANGHAM. Editors. 1986. Ecological aspects of social evolution. Princeton: Princeton University Press.
- SANDAY, P. R. 1981. Female power and male dominance: On the origins of sexual inequality. Cambridge: Cambridge University Press.
- SCHNEIDER, D. M. 1968. American kinship: A cultural account. Englewood Cliffs: Prentice-Hall.
- 1972. "What is kinship all about?" in Kinship studies in the Morgan Centennial Year. Edited by P. Reining. Washington, D.C.: Anthropological Society of Washington.
- -. 1984. A critique of the study of kinship. Ann Arbor: University of Michigan Press.
- SERVICE, E. R. 1962. Primitive social organization: An evolutionary perspective. New York: Random House.
- SHERMAN, P. W. 1977. Nepotism and the evolution of alarm calls. Science 197:1246-53.
- -. 1980. "The limits of ground squirrel nepotism," in Sociobiology: Beyond nature/nurture? Edited by G. W. Barlow and J. Silverberg. Boulder: Westview Press.
- SHORT, R. v. 1984. Breast feeding. Scientific American 250:35-41. SIGG, н. 1980. Differentiation of female positions in hamadryas one-male units. Zeitschrift für Tierpsychologie 53:265-302.
- SIGG, H., A. STOLBA, J.-J. ABEGGLEN, AND V. DASSER. 1982. Life history of hamadryas baboons: Physical development, infant mortality, reproductive parameters, and family relationships. Primates 23:473-87.
- SMUTS, B. B. 1985. Sex and friendship in baboons. Hawthorne: Aldine.
- . 1987a. "Sexual competition and mate choice," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- -. 1987b. "Gender, aggression, and influence," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- SMUTS, B. B., D. L. CHENEY, R. M. SEYFARTH, R. W. WRANG-HAM, AND T. T. STRUHSAKER. Editors. 1987. Primate societies. Chicago: University of Chicago Press.
- SMUTS, B. B., AND J. M. WATANABE. 1990. Social relationships and ritualized greetings in adult male baboons (Papio cynocephalus anubis). International Journal of Primatology 11:147-72.
- SPIRO, M. E. 1982. 2d edition. Buddhism and society: A great tradition and its Burmese vicissitudes. Berkeley: University of California Press.
- STAMMBACH, E. 1987. "Desert, forest, and montane baboons: Multilevel societies," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- STEWARD, J. 1955. Theory of culture change: The methodology of multilinear evolution. Urbana: University of Illinois Press.
- STEWART, K. J., AND A. H. HARCOURT. 1987. "Gorillas: Variation in female relationships," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.
- STRIER, K. B. 1989. Effects of patch size on feeding associations in muriquis (Brachyteles arachnoides). Folia Primatologica 52:70-77.
- 1990. New World primates, new frontiers: Insights from the woolly spider monkey (Brachyteles arachnoides). International Journal of Primatology 11:7-19. [KBS]
- STRUHSAKER, T. T. 1975. The red colobus monkey. Chicago: University of Chicago Press.
- STRUHSAKER, T. T., AND L. LELAND. 1987. "Colobines: Infanticide by adult males," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago Press.

- SYMINGTON, M. 1988a. Demography, ranging patterns, and activity budgets of black spider monkey (Ateles paniscus chamek) in Manu National Park, Peru. American Journal of Primatology 15:45-67.
- . 1988b. Food competition and foraging party size in the black spider monkey (Ateles paniscus chamek). Behaviour 105:117-34.
- SYMONS, D. 1979. The evolution of human sexuality. New York: Oxford University Press.
- . 1987a. "An evolutionary approach: Can Darwin's view of life shed light on human sexuality? "in Theories of human sexuality. Edited by J. H. Geer and W. T. O'Donohue. New York: Plenum Press.
- -. 1987b. "If we're all Darwinians, what's the fuss about?" in Sociobiology and psychology: Ideas, issues, and applications. Edited by C. Crawford, M. Smith, and D. Krebs. Hillsdale: Lawrence Erlbaum Associates.
- . 1989. A critique of Darwinian anthropology. Ethology and Sociobiology 10:131-44.
- TAMBIAH, S. J. 1976. World conqueror and world renouncer: A study of Buddhism and polity in Thailand against a historical background. Cambridge: Cambridge University Press.
- TANNER, N. M. 1981. On becoming human: A model of the transition from ape to human and the reconstruction of early human life. Cambridge: Cambridge University Press.
- THOMAS, D. H. 1983. "On Steward's models of Shoshonean sociopolitical organization: A great bias in the Basin," in The development of political organization in North America. Edited by E. Tooker. Washington, D.C.: American Ethnological Society.
- THOMPSON-HANDLER, N., R. K. MALENKY, AND N. BA-DRIAN. 1984. "Sexual behavior of Pan paniscus under natural conditions in the Lomako Forest, Equateur, Zaire," in The pygmy chimpanzee. Edited by R. L. Susman. New York: Plenum Press.
- TOOBY, J., AND L. COSMIDES. 1989. Evolutionary psychology and the generation of culture. 1. Theoretical considerations. Ethology and Sociobiology 10:29–49.
- n.d. The evolution of war and its cognitive foundations.MS TOOBY, J., AND I. DEVORE. 1987. "The reconstruction of hominid behavioral evolution through strategic modeling," in The evolution of human behavior: Primate models. Edited by W. G. Kinzey. Albany: State University of New York Press.
- TRIVERS, R. L. 1971. The evolution of reciprocal altruism. Quarterly Review of Biology 46:35-57.
- . 1972. "Parental investment and sexual selection," in Sexual selection and the descent of man 1871-1971. Edited by B. Campbell. Chicago: Aldine.
- TURKE, P. 1988a. "Helpers at the nest: Childcare networks on Ifaluk," in Human reproductive behaviour. Edited by L. Betzig, M. Borgerhoff Mulder, and P. Turke, pp. 173-88. Cambridge: Cambridge University Press.
- . 1988b. "Concealed ovulation, menstrual synchrony, and paternal investment," in Biosocial perspectives on the family. Edited by E. Fisinger. Newbury Park, Calif.: Sage.
- -. 1990a. Which humans behave adaptively, and why does it matter? Ethology and Sociobiology 11:305-39.
- -. 1990b. Just do it. Ethology and Sociobiology 11:445–63. TURNBULL, C. M. 1968. "The importance of flux in two hunting societies," in Man the hunter. Edited by R. B. Lee and I. DeVore. Hawthorne: Aldine.
- TURNER, v. 1969. The ritual process. Chicago: Aldine.
- TYLOR, E. B. 1888. On a method of investigating the development of institutions: Applied to the laws of marriage and descent. Journal of the Royal Anthropological Institute of Great Britain and Ireland 18:245-72.
- VAN RHIJN, J. G. 1983. On the maintenance and origin of alternative strategies in the ruff Philomachus pugnax. Ibis 125:482-98.
- VAN ROOSMALEN, M. G. M. 1980. Habitat preferences, diet, feeding strategy, and social organization of the black spider monkey

- (Ateles p. paniscus Linnaeus 1758) in Surinam. Arnhem: Rijksinstituut voor Natuurbeheer.
- VAN VELZEN, H., AND W. VAN WETERING. 1960. Residence, power groups, and intra-societal aggression. International Archives of Ethnography 9:169-200.
- WASHBURN, S. L. 1965. "An ape's-eye view of human evolution," in The origins of man. Edited by P. L. DeVore, pp. 89-96. New York: Wenner-Gren Foundation. [MHW]
- WELLS, R. S. 1986. Structural aspects of dolphin societies. Ph.D. diss., University of California, Santa Cruz, Calif.
- WELLS, R. S., M. D. SCOTT, AND A. B. IRVINE. 1987. "The social structure of free-ranging bottlenosed dolphins," in Current mammalogy, vol. 1. Edited by H. H. Genoways. New York: Plenum
- WHITE, F. J. 1988. Party composition and dynamics in Pan paniscus. International Journal of Primatology 9:179-93.
- 1989. "Social organization of pygmy chimpanzees," in Understanding chimpanzees. Edited by P. G. Heltne and L. A. Marquardt. Cambridge: Harvard University Press.
- WHITE, F. J., AND N. A. BURGMAN. n.d. Social organization of the pygmy chimpanzee (Pan paniscus): Multivariate analysis of intracommunity associations. American Journal of Physical Anthropology. In press.
- WHITE, L. A. 1949. The science of culture. New York: Grove Press. -. 1959. The evolution of culture. New York: McGraw-Hill.
- WHITEHEAD, H. 1987. "Fertility and exchange in New Guinea," in Gender and kinship. Edited by J. F. Collier and S. J. Yanagisako. Stanford: Stanford University Press.
- WILLIAMS, G. C. 1966. Adaptation and natural selection: A critique of some current evolutionary thought. Princeton: Princeton University Press.
- WILSON, E. O. 1975. Sociobiology: The new synthesis. Cambridge: Harvard University Press.
- . 1978. On human nature. Cambridge: Harvard University
- WOODBURN, J. 1968. "Stability and flexibility in Hadza residential groupings," in Man the hunter. Edited by R. B. Lee and I. DeVore. Hawthorne: Aldine.
- WRANGHAM, R. W. 1980. An ecological model of female-bonded primate groups. Behaviour 75:262-300.
- -. 1982. "Mutualism, kinship, and social evolution," in Current problems in sociobiology. Edited by the King's College Sociobiology Group. Cambridge: Cambridge University Press.
- . 1987a. "Evolution of social structure," in Primate societies. Edited by B. B. Smuts, D. L. Cheney, R. M. Seyfarth, R. W. Wrangham, and T. T. Struhsaker. Chicago: University of Chicago
- -. 1987b. "The significance of African apes for reconstructing human social evolution," in The evolution of human behavior: Primate models. Edited by W. G. Kinzey. Albany: State University of New York Press.
- WRANGHAM. R. W., A. P. CLARK, AND G. I. BASUTA. 1991. "Female relationships and social organization of Kibale Forest chimpanzees," in Human origins. Edited by T. Nishida. Tokyo: University of Tokyo Press.
- WRANGHAM, R. W., AND B. B. SMUTS. 1980. Sex differences in the behavioural ecology of chimpanzees in the Gombe National Park, Tanzania. Journal of Reproduction and Fertility supp. 28:13-31.
- YALMAN, N. 1963. On the purity of women in the castes of Ceylon and Malabar. Journal of the Royal Anthropological Society 93:25-58.
- YANAGISAKO, S. J. 1979. Family and household: The analysis of domestic groups. Annual Review of Anthropology 8:161-205.
- YANAGISAKO, S. J., AND J. F. COLLIER. 1987. "Toward a unified analysis of gender and kinship," in Gender and kinship. Edited by J. F. Collier and S. J. Yanagisako. Stanford: Stanford University Press.