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The East African Wildlife Society founded in 1961 is a non-profit, non governmental agency assisting the three East African republics of Kenya, Uganda and Tanzania in the development of game conservation. The facts and figures of its performance may be seen in its numerous activities, such as pollution study, anti-poaching work, research, education and animal rescue. During the 1970 to '72 period, accomplished and projected plans amount to \$185,000.00. Membership and interest in the Society is up, there's none other like it in the animal kingdom! But costs and commitment are recurrent and there's always room for one more in the ark. Your readership proves your interest.

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## Books in Review

# Social Systems, Sex,

AMAZONIAN COSMOS, by Gerardo Reichel-Dolmatoff. *The University of Chicago Press, \$12.50; 290 pp., illus.*

Cultural anthropologists are finally coming around to confirming what ecologists have long felt must be true but have not had the data to demonstrate: that where man lives dependent only on the resources within his tribe's home range, his destiny is set by the carrying capacity of that home range, just as it is for other animals. Most recent cultural anthropology either brings its descriptive guns to bear on the way the tribe harvests its resources or describes the social glue that holds that resource-harvest machine together. Few studies deal with the coevolution of the tribe's social institutions and the properties of the resources in the home range.

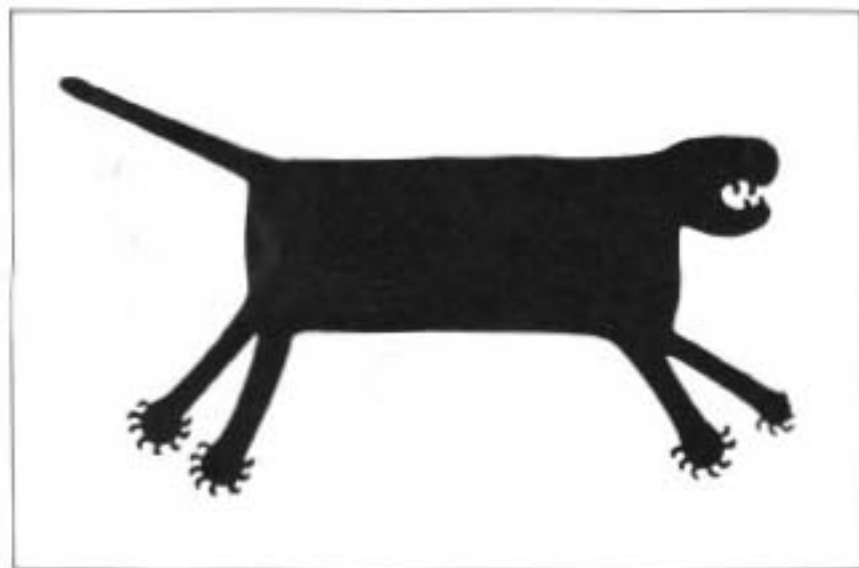
Reichel-Dolmatoff has taken on this difficult task in *Amazonian Cosmos*, and has done a masterful

job of showing us how the sexual sociology and psychology of the Desana Indians of the Northwest Amazon is highly adaptive in the context of maintaining a stable tribal density in a rain forest with a river running through it.

Before digging deeper, I would like to comment on an aspect of resource harvest philosophy that underlies his analysis. Anthropologists often take the low density of primitive human populations as an indication that they are not at their terrain's carrying capacity, and assume therefore that their behavior need not be seen as having co-evolved with that carrying capacity. From an ecologist's viewpoint, this would be like failing to recognize that two species of birds could have different carrying capacities on the same acre of forest, depending on the way each catches insects and depending on what size insects they each need. In this situation, the bird has done most of the evolving and the habitat little.



## and Survival



All the evidence indicates that this is also true of most primitive men. Modern man, however, is very close to the other end of the spectrum. He changes (evolves) his environment to meet his needs and fancies, and himself changes little. However, it is clear that the basic cultural information that he uses to guide his current activities has strong roots in those days when he was intermediate—an organism strongly coevolving with his environment. In *Amazonian Cosmos*, the analytical description of the Desana gets us to the very heart of this coevolution.

As Reichel-Dolmatoff says, he was most fortunate in finding a native informant who had been reared in the tribe under rules unperturbed by the introjection of foreign technologies and social goals. Yet the informant, Antonio Guzmán, had later made the adjustment to Columbian Spanish culture, which is no mean feat as any participant in a cross-cultural marriage can testify.

If it is to be done well, such an adjustment requires extraordinary introspective ability and psychological awareness, as well as a good deal of practice. Both the ability and the practice contributed greatly to Reichel-Dolmatoff's success in extracting from Guzmán far more than a mere description of the way the Desana run their lives. And it is comforting to note in postscript that Reichel-Dolmatoff was eventually able to visit the Desana and corroborate Guzmán's interpretations of his childhood milieu.

The basic problem faced by the Desana is that of any territorial animal. How do you adjust harvest rates so that only the natural interest is removed? In short, how do you keep from hunting too much? Second, how do you adjust birth-rates so that nobody starves? I may add a reminder here—death by starvation of a preproductive human means not only the loss of an individual from the tribe and a waste of the parents' physical reserves, it

also means the loss of all the material that was used to support the child until its death.

The Desana, like most other tribes with a Stone Age technology and in tune with their environment's carrying capacities, maintain a balance through a complex interplay of sexuality and resource harvest, which is for the most part hunting in the Amazonian rain forest. Perhaps the most telling sentences in the entire book are to be found where Reichel-Dolmatoff summarizes Guzmán's description and analysis of Desana creation mythology: "Spiritually and psychologically, the Desana is not an individual we would call contented, balanced, and adjusted. His sense of being a man is dominated by the constant conflict between his attempts to balance the normal gratification of his sexual impulses and the prohibitions that his culture imposes on him."

So what's new about this? All we have to do is look next door to make the same statement in a modern society. In the other direction, if a male baboon could speak, his analysis would sound about the same. It makes us painfully aware that our incredible advances in resource gathering have not been accompanied by an equally advanced coevolution of psychological awareness with the ability to generate realistic sets of aspirations. Reading about the Desana Indians, and comparing what you see in modern culture, can be a most educational experience.

Guzmán, Reichel-Dolmatoff, and most of modern society seem to have missed the realization that the conflict between a person's desires and his resources is the inevitable result of a social system that allows the depletion of its resources to tell it when to stop—rather than arbitrarily setting the number of people substantially below possible carrying capacity. Only with the human density held significantly below the carrying capacity can we have a system where individuals are allowed to pursue their own whims without constantly coming up against natural controls that say "thou shalt not. . . ."

Reichel-Dolmatoff and Guzmán have done us a great service by documenting a large number of these social and natural controls in

open to men and women. People with many decades of optimum health will find it desirable, if not necessary, to move from one kind of occupation to another. One way in which continual retraining in new skills and professions could well take place would be through a regular system of educational leaves-with-pay, much like the sabbatical system that now operates in universities. Every five or seven years, a person could take a year or so to acquire new skills and to refurbish old ones. Plans should be made now for the restructuring of educational institutions so that a continuing re-education will become the rule rather than the exception.

As machines take over the more onerous and repetitive tasks men have performed, opportunities for new careers in the so-called service area will evolve. It is unfortunate that there is not a better word than *service* (from the same root as the word *servant*) to describe the kinds of creative things people can do to make each other's lives enjoyable. Such efforts range from art, music, poetry, and beautiful gardens, to the care of children, entertainment, and creative conversation. As men escape from a subsistence society, in which work must be done to provide for life's necessities, a much more fulfilling kind of work, one directed toward the improved enjoyment of life, will come to dominate.

In time, all of these joyous prophecies will probably come about anyway, provided we have wisdom, foresight, and a little luck. But they will be available to those who read these pages only if the minuscule investment needed to understand and perhaps control human aging is made in this coming decade. What is commonly termed the Protestant ethic encourages some sacrifice now (work, saving, investment, education, research) in order to derive greater benefits in the future. After nearly a decade of disparagement and eclipse, it seems once again to be revealing its wisdom. One can only hope that this resurgence in the appreciation of investment will extend to what is needed to assure a healthier, longer life for all—basic research on the most universal human affliction, aging itself. ■



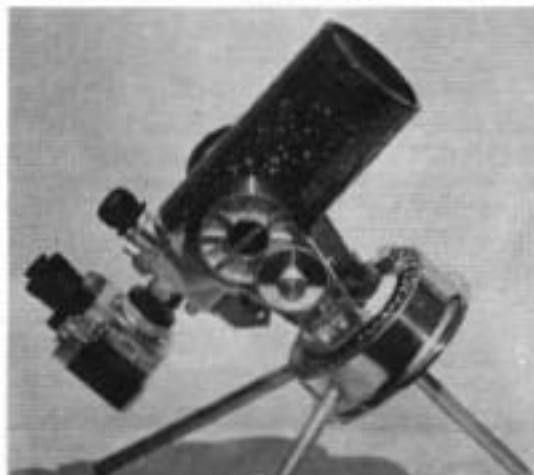
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Desana culture. Some are obvious in their adaptive significance, but many are obscure and may be destined to remain so. Their obscurity often lies in our inability to see the total set of forces operating to keep a Desana tribe at a given consumer level. We cannot see how much resource is really there (even the Desana have difficulty determining this). We will often miss the adaptive meaning of rules that had their origin in dealing with the unpredictable nature of resource fluctuation. We cannot know to what degree social behavior is set by the tools at hand and to what degree the tools at hand are set by social behavior.

We may even be dealing with some traits that were of direct adaptive significance historically, but are now of indirect adaptive significance as convenient symbols. That is, it would cost more socially to remove them than to leave them imbedded in a currently socially adaptive pattern. There are modern analogies galore; Detroit can make a burglarproof car, but the cost is so high that it is cheaper to have a certain number of cars stolen each year.

Some of the social controls in Desana culture are worth emphasizing. Bear in mind that we are looking at hardly more than a Stone Age culture, but nevertheless a culture that has to live off only the natural interest of its home range, leaving the natural capital untouched. "A man who sires more than two or three children will be considered socially irresponsible and contemptible," and "is accused of being a bad husband and of causing too much work for his wife." Birth control is achieved through abstinence and contraception: "The women simply use mixtures of certain herbs that seem to have a very strong contraceptive action."

Abstinence is no simple thing and falls primarily on the shoulders of the male. It is very cleverly related to the amount of meat harvest. To be a successful hunter, it is believed that the man must not dissipate his sexual energy. He must abstain for three or more days before hunting and for several days after. "The hunt is practically a courtship and a sexual act, an event that must be prepared for with great care in accordance with the strictest

norms. The verb to hunt is . . . translated as 'to make love to the animals.'" I might add here that we have a not-so-primitive parallel in the Spanish language—*cazar* meaning to hunt and *casar* meaning to marry.

The amount of game taken has another major control system: the belief that each large game animal represents the soul of a dead person. If there is a shortage of large game, it is up to the shaman (*payé*), through negotiations with higher-order spirits, to determine if more souls (animals) can be released to be taken as game. Since souls are a rather ill-defined unit of barter and can come from deaths in other tribes, the shaman becomes a major evaluator of how much hunting is to be allowed, and has the means at his disposal to control it. It is of interest that all such systems deflect responsibility away from the person who must make the decision to take an action, such as hunting.

As alluded to earlier, much of the tribal social structure generates psychological anxiety. "In various ritual activities man fertilizes nature, but at the price of a great sacrifice in the sphere of his own sexuality. The fundamental rule of the hunter is sexual abstinence, and this rule demands a level of repression that cannot but lead to a state of profound anxiety." After Reichel-Dolmatoff describes a long list of the illnesses that beset the Desana, it becomes clear that they have very few serious pathogens, but they do have "a wide category of psychosomatic diseases with hys-

terical overtones." The majority of the diverse cures involve "symbolic acts of coitus and rebirth" and "demonstrate a perspicacity and insight into the psychological mechanisms that undoubtedly are very efficient in achieving at least a temporary cure." Interestingly, such things as snakebite are treated without the intervention of the shaman.

Reichel-Dolmatoff was able to construct a detailed chart of the Desana's pattern of resource harvest through the year. While we do not know the total environment from which they draw their food and materials, we can say that the pattern is sufficiently complex that its proper execution requires careful adherence to rules by most of the people in the small tribe. Antonio Guzmán has given us the background for a strong inference that much of the control that the group exerts over the individual is mediated through his or her sexuality. May I finish by pointing out that it was in reading *Amazonian Cosmos* that the reasons for the social taboo against masturbation first became clear—and somewhat terrifying. It is clear that our culture is likewise held together in great part through programmed sexual repression and release; the individual who masturbates has discovered a private escape from this sexual repression and in many ways has the potential of being very disruptive to society.

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