ASCAP August 1993

29 June 1993 Odintune

Professor Russell Gardner
UTMB
Fax: 0101 409 772 4288

Dear Russ,

On this and the following three pages is a report from our recent activities. I really wished you could have been at both events. The world is getting smaller, but it is not yet small enough.

Please feel free to edit it if you think appropriate, e.g., to cut out the guest list if you think it too personal. I also give permission for you to make it clear that Victoria is Dan's baby and not his mistress! I don't think Sandy would have tolerated that definition of the relationship.....and there would have been a lot of "non-redundancy of the definitional components of their communications" (see my paper on the two modes that I sent you).

It was good to talk to you on the phone the other day and Dan was pleased too - and the assembled company sent warm greetings to their much valued Editor.

Yours most anathetically,

London School of Economics, June 1993

What could mark the coming of age of evolutionary biology more symbolically than a meeting at LSE on "Evolution and the Human Sciences"? Only a few of the Birmingham Group were able to get to it - Brian Heard, Dorothy Lake, John Birtchnell and your reporter, but after the conference we came down to Odintune for the weekend (thanks be to Antonia) and were joined by Michael Chance, Dave Stevens, Anthony Stevens, Sarah White and John Birtchnell's wife Sandy, also a psychiatrist. Paul and Jean Gilbert could not come as Paul had still not thrown off a bad attack of whooping cough, and they were much missed. We were joined by Dan and Sandy Wilson who were just about on their way back to Boston after their year at Cambridge (with a beautiful English girl called Victoria). Also from the LSE meeting came Alan Lloyd from Ohio, Randy Nesse from Michigan and Christopher Badcock from no lesser place than the Sociology Department of the LSE itself. We were able to debrief ourselves from the meeting and share items from the conference in June sunshine which indicated the favour of the Gods.

The LSE answered a question which has bugged me for a long time. In Milton Keynes I had to treat a lot of one-parent mothers who were lonely, short of cash and could not afford baby sitters to go out in the evening. They had miserable lives on their own and I could not understand why they did not get together and share. But now I think it was a matter of the incest taboo which was discussed at the LSE by John Tooby from the University of California. He presented evidence from Israel, Taiwan and other places that children or adults who share a household with children in the years up to age six develop a relationship characterised by incest taboo (called the Westermark effect, after its discoverer). (Recently Mark Erickson suggested that these relationships are also characterised by kin altruism (1)). This seemed to solve my Milton Keynes problem. Over the course of evolution one role of mothers has been to find mates for their children, and these chosen ones (not always accepted, of course) are usually to be found among the children of their close friends or even of their sisters. Therefore, intuiting the Westermark effect, no woman wants to bring up her children in the same household as those she might want them in future to marry, and this may have been the self-sacrifice which kept those Milton Keynes mothers in such an isolated state. John Tooby thinks that the function of the incest taboo is to reduce homozygosity, which makes it more difficult for parasites to track and imitate their host antigens - perhaps it also has a social role in encouraging exogamy and kinship alliances. In case the Westermark effect is transmitted by olfaction, seafaring men and other deserters of their young children should take the swaddling clothes for a pillow, and leave their sou'-westers at home for their daughters to learn the smell of. Otherwise the girls at home may seem just like those in another port, and a visiting Daddy may appear like a romantic troubadour.

Martin Daly and Margo Wilson (Psychology, McMaster) pointed out that humans are much nicer to step-children than most animals are. Nevertheless, in the USA a child is 100 times more likely to be murdered by a step-parent than by a biological parent. Surprisingly, in Canada and the UK the increase in risk is only two-fold. Among a tribe of South American foragers the death rate by the age of fifteen was 19% for children raised by two biological parents but 43% for those raised by a parent and step-parent. In Germany in

olden times, for children who had lost a parent, survival was reduced if the surviving parent re-married. Unfortunately, they did not present data on step-parents who had lived with the child for the first three years of life when the incest taboo and kin affiliation are thought to be imprinted - is the better treatment of biological children due to this presumably unconscious process or to the conscious knowledge about paternity?

Several speakers stressed the difficulty of teaching evolutionary biology. In a recent survey, less than 50% of Americans agreed to the proposition that humans have a common ancestor with animals. Even among those who are more sophisticated about pedigrees, there is hostility to Darwinism which is mistaken for the Social Darwinism of Herbert Spencer and those who teach evolutionary biology are thought of as right wing and as giving politicians the ideological justification for oppressing and exploiting the masses. There seems to be a belief that those who study the "dog eat dog" aspects of human life in some way approve of the behaviour they are studying, a belief which does not apply to those who study the tubercle bacillus and other less social scourges of mankind, and here we may be seeing an example of the innate differences in perception which are applied to social and non-social phenomena, which were described to the conference by Leda Cosmides (University of California; also alias Mrs John Tooby).

The social exchange scenario is roughly as follows (my own example). Say you are hunter-gatherer Smith, and leader of a group of hunters which comprises yourself, Brown and Jones. You have negotiated a rule with the other families by which, whenever a bird is brought home and cooked by the womenfolk, the white meat is divided equally among all the children but the brown meat goes exclusively to the Smith children. When you come home unexpectedly from hunting, who do you check on to make sure the rule was not being broken in your absence? Obviously, you check on the Brown and Jones children to make sure they are not eating brown meat; you don't need to check on your own children because they could be eating either white or brown meat. Or, you check on who is eating brown meat; you don't check who is eating white meat because this could be anybody. This problem is easily solved by the vast majority of people when it is presented in this "detection of cheaters" form, but when exactly the same logical problem is presented in a non-social form, only about ten percent of people get it right, and this includes people who have had a training in formal logic. Leda Cosmides presents this as evidence for modular processing in the brain, and she claims that something similar occurs in the perception of threat signals, but unfortunately her data on this are not published yet.

David Haig from Harvard gave a fascinating talk on maternal-foetal conflict during pregnancy. I had not realised that man shares with bats, sloths and some other mammals an "invasive placenta" whose foetal cells travel up the uterine arterioles and destroy the sympathetic nerve fibres which might constrict them and so reduce the foetal blood supply. Nor did I know that the foetus secretes into the maternal circulation hormones which reduce the mother's sensitivity to insulin and so raise her blood sugar and thus force her to provide more nourishment for the foetus, rather than preserving her resources with the idea of having another baby - and also hormones which raise her blood pressure and so improve the uterine circulation at the risk of maternal eclampsia. Even before birth the mother-infant conflict has been raging in a form of chemical warfare unknown to either of them.

John Archer gave an excellent talk on aggression and I wish I had taken some notes. Data on homicide are being used as an "assay" of domestic aggression, showing, for instance, that step-fathers are much more aggressive to children than fathers, and that wives of 15-20 are killed much more frequently than their older sisters; and although young men are more likely to kill other men, it is the older husbands who kill the young wives. These data seem to bear out the anthropological findings that most domestic homicides are due to sexual jealousy.

Back at Odintune after the conference, we had some good discussion. Randy Nesse, who had been a "Keynote speaker" at the conference and had, with George Williams, presented the idea of Darwinian Medicine (adumbrating their forthcoming book) challenged us with the idea of using the prisoner's dilemma to classify emotions. How do you feel when you have co-operated and the other guy has defected? And what better definition of smugness could you get than when you both co-operate? In the course of his fascinating LSE talk on the adaptive function of various symptoms and diseases, Randy mentioned the idea that the rabies virus preferentially infests the centres controlling aggression and biting so that sister viruses in the saliva will be more readily transmitted; and that certain arthropod parasites so manipulate the brains of their insect hosts that they climb to the top of a blade of grass and grip on their until they are eaten by the mammalian alternative host of the parasite.

Also at Odintune there was some discussion of a recent TV programme about language in chimpanzees, stimulated by Steven Pinker's LSE talk on The Evolution of Language and his reminding us that the spinal neurones controlling the muscles controlling vocalisation in the chimpanzee are not innervated by the pyramidal tract, so that they are not under "voluntary" control, and this would make it difficult to teach them to speak, even if they had other human adaptations such as the descended larynx. In the TV programme a chimp was

offered two plates of sweets, one containing more than the other. When the chimps extended a hand to one plate, they were given the contents of the other plate. Even though it seemed clear that they had learned the rule, they were unable to prevent their hands stretching out to the more attractive plate. However, when they were taught to recognise Arabic numerals, they were able to restrain their hand from stretching out to a plate marked with a 5 and steer it towards the plate marked 2. In some way the rise in level of abstraction in the perceptual aspects of the task allowed a greater degree of "voluntary" control over the executive aspects of the task. (One wondered how they would have fared with plates containing different numbers of, say, matches). Has this any message for those of us who are interested in helping patients to replace an "involuntary subordinate strategy" with conscious "acceptance" and voluntary yielding?

Also at Odintune, Alan Lloyd mentioned some other interesting work on chimps. When baby chimps are subjected to certain orbito-frontal lesions, they lose the capacity for certain higher mental functions such as the ability to delay a response; but at puberty the capacity is regained and their behaviour returns to normal. Conversely, baby chimps who are subjected to certain dorso-lateral frontal lesions suffer no impairment during childhood, but at puberty they develop exactly the same disability which the orbito-frontal lesions caused before puberty. This suggests that at puberty sex hormones switch the execution of certain functions from one part of the brain to another, much as a snake leaves behind an old skin. Recently Christopher Badcock, who organised and spoke at an LSE symposium on "Psychodarwinism", has suggested that the Oedipus complex is resolved by an innate brain programme some time around the start of the "latency period". These chimpanzee findings suggest an alternative: perhaps at puberty it is just left behind in an old abandoned bit of brain.

Next month at the annual meeting of the Royal College of Psychiatrists there is a whole day's symposium on "Evolutionary theories of the origins of psychiatric illness" at which the batting order is Marks, Nesse, Crawford, Troisi, Kellett, Price, Birley and Crow (the organiser); of these, Marks, Troisi and Price had constituted the speaking team at a Marks-organised LSE symposium on "Evolution and psychiatry" (fortunately the audiences at the two meetings will be quite different).

It does seem that psychiatrists and others are beginning to take evolutionary biology seriously.

(Some of the "keynote" talks at the LSE conference have been published in the June 26 issue of the Times Higher Educational Supplement).

1. Erickson, M.T. (1993) Rethinking Oedipus: an evolutionary perspective of incest avoidance. American Journal of Psychiatry, 150, 411-416.