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+ The lectures are not included in this volume. The lecture by M. Wertheimer is contained in the volume "History of Psychology", edited by Eckardt and Sprung, Deutscher Verlag der Wissenschaften, Berlin 1981

* The abstracts of the film contributions are not included in this volume

DETACHMENT: THE BREAKING OF BONDS AS A BIOCULTURAL PHENOMENON

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I. The universal rule

The special position held by man in the animal kingdom is usually defined within the framework of the terms "culture" and "nature" Lévi-Strauss (1970) gives two criteria for this differentiation: 1. Only culture establishes rules, natural behaviour being spontaneous; 2. Cultural characteristics depend on historical coincidence, while only that which is natural in man is observable universally.

"In the light of these criteria," the author continues, "we are faced with a scandal: we refer to the prohibition of incest. It constitutes a rule, but a rule which possesses at the same time a universal character", and so "presents a formidable mystery to sociological thought".

Lévi-Strauss attempts to solve this mystery as follows: "The prohibition of incest is in origin neither purely cultural nor purely natural. It is the fundamental step in which the transition from nature to culture is accomplished: the prohibition of incest is where nature transcends itself" (ibid., p. 8, 10, 24, quotations shortened).

At the present time comparative ethologists are interested in making the study of nature available for the comprehension of cultural phenomena. This being so, it is evident that the supposition of a point of transition of nature into culture should awaken their interest. This interest gave rise to an investigation on which the following report is based. It should be mentioned in advance that those results so far obtained run roughly counter to the prevailing anthropological, sociological and psychoanalytical theories.

II. Theories on the incest taboo

As with the distinction made originally between the terms "nature" and "culture", the possible explanations of the incest taboo are usually classified under the headings "biological" and "sociological". It must be borne in mind, however, that such explanations may answer questions of different type. In particular, they may relate either to the functional advantages, or to the causal conditions, of the incest taboo.

1. Possible functions of the incest taboo

a) Biological advantages

When motivating the prohibition of incest "biologically", one generally thinks of the danger connected with the increased probability of homozygosity in incest, namely the manifestation of harmful recessive characters. Empirical evidence of "incest depression", i.e. deficiency symptoms such as retarded growth, lowered immunity and deceased resistance to disease, under-size, short life expectancy and reduced fertility among inbred progeny has not only been repeatedly observed in animal experiments (for survey see Lindzey, 1967), but has also been gained from systematic records of humans (Schull and Neel, 1965; Adams and Neel, 1967).

b) Sociological advantages

Alternatively, comprehension of the incest taboo may be attempted through its value in the ready functioning of social institutions. Freud (1924) and Malinowsky (1927) have postulated that the taboo on sexual promiscuity within the nuclear family was necessary to protect the family from internecine strife caused by mutual jealousy.

Other theories see an advantage for the social units one step higher, that is, for

those larger groups which, under the effects of the taboo, have been promoted to providing partners. The best-known such theory has it that with unbridled incest no larger social structures could be built up, as overreaching cultural achievements could certainly not survive in the atmosphere of selfish particularism created by small nuclear families (Murdock, 1949; Lévi-Strauss, 1970; Parsons, 1954).

2. Possible causes of the incest taboo

a) Biological conditions

In terms of causal mechanisms, the "biological" theory contends that man has an instinctive abhorrence of incestuous mating, and the corresponding taboo is a cultural ritualization of this inherited emotional aversion. According to Westermarck (1889) innate sexual repulsion is not felt automatically for blood relatives as such, but rather for persons with whom one has been closely associated in childhood.

b) Sociological conditions

While the biological theory postulates an inhibition of incestuous activity primarily "from within", there are "sociological" theories which predicate repressions which may be internalized secondarily, but originating through the intervention of social partners.

As agent of this repressive activity either the entire society may act or else - to name the most prominent example of this group of theories - the jealousy of the same-sexed parent in the Oedipus situation after Freud (1924).

3. Arguments against the biological explanations

Up to the recent past, the "biological" theories outlined above have been considered obsolete by most authors. Against a biological function of the incest taboo it was reasoned that genetic disadvantages resulting from inbreeding are certainly not observed with sufficient frequency to justify such a far-reaching prohibition.

The chief argument against the assumption of an instinctive abhorrence of incestuous mating originates from Frazer (1910, p. 97): "It is not easy to see why any deep human instinct should need to be reinforced by law. There is no law commanding men to eat and drink or forbidding them to put their hands in the fire (...). The law only forbids men to do what their instincts incline them to do; what nature itself prohibits and punishes, it would be superfluous for the law to prohibit and punish (...). Instead of assuming, therefore, from the legal prohibition of incest that there is a natural aversion to incest, we ought rather to assume that there is a natural instinct in favour of it."

III. Incest-preventing mechanisms in mammals

1. Individual attachment and the necessity for incest barriers

Most social scientists are unaware of the fact that in the whole animal world with very few exceptions no species is known in which under natural conditions inbreeding occurs to any considerable degree.

This statement is trivial as long as we are dealing with animals showing no individual attachment to conspecifics or to a home range In this case the general diffusion occurring soon after birth makes for ample intermingling, and no instinctive incest barriers have evolved: brother and sister accept each other readily as sexual partner if they happen to meet.

It is, however, quite different with animals having the ability to recognize each other individually, and the inclination to affiliate with acquainted conspecifics. This preference must generally hit family members, and one could expect that the maturing young would practise sexual activity inside this ready-formed zone of sympathy. This, however, is precisely what nature systematically avoids. The measures adopted will be presented below. In the space available we must limit the survey substantially to mammals (for

source material see Bischof 1972a, 1975a).

2. Mechanisms of family dissolution

a) Isolation

If it is primarily the need for attachment to familiar individuals which brings with it the danger of incest, the simplest way to bypass the danger would be to deflate the need before sexual maturity occurred. This is what actually happens in a series of rodents and in most felids. With increasing maturity they segregate themselves and become disagreeable towards conspecifics, save in the differently motivated periods of mating and (in females) brood-care. This lowers the probability of incest to a random level.

The same mechanism functions with the European wild boar and the exhaustively studied coati, but in these cases it is confined to the males; female adolescents remain within the family, so that female hordes are formed, any solitary animals encountered being adult males. Evidently this sex-linked waning of the need for affiliation reduces the chances of incest to the same degree as does a family dissolution in both sexes.

b) Change of object

More frequently among mammals, the need for affiliation persists life-long; the object of the need, however, changes before or during adolescence. Whereas in the infantile stage familiar company is sought and strangers anxiously avoided, with increasing maturity earlier companions evoke less interest or are even rejected, strangers now exerting a fascination which demands active exploration. Thus new, relatively independent groups are formed, each going its own way, and potential incest partners gradually move beyond reach of each other.

1. In the simplest case the change of object remains again within the male sex. Juvenile males segregate themselves increasingly from the group of origin, but at the same time seek attachment to others of like sex, so that typical male "cohorts" are formed. Unlike the familiar and fairly firmly integrated female groups, these are mostly loosely organized and of variable composition. Such cohorts break up each year during the rutting season, and their members seek contact to female groups for the duration of sexual activity. This mechanism seems to be general in cervids. The African elephant can also be reckoned in this group; here the males maintain contact with their cohort even during sexual activity.

2. A second, more involved mechanism resembles the first in that male cohorts are formed initially, which break up in the rutting season; the males, however, do not return afterwards to their fraternity, but enter into a lasting conjugal attachment, independent on sexual periodicity. We are dealing here with a double change of object in affiliative behaviour. The mechanism described has been reported of polygynous (harem forming) and polygamous (group mating) mammals. In the first category belong the zebra, the hamadryas baboon, the patas monkey and the hanuman langur; the second category includes several macaques.

3. Finally, in a third form of object shift, the interim unisexual group stage is skipped; after breaking away from the family circle individuals remain alone, more or less of necessity, and launch into matrimony with a stranger as soon as possible. There is a reason to assume that this form of social rearrangement is prevalent among species with long-term monogamy such as the gibbon, the beaver and the dikdik antelope.

c) Abduction

Whereas the foregoing mechanisms of separation depend entirely upon the adolescent's own emancipatory activities, in the two following situations associates play the active part.

In all social structures in which both sexes live together in a permanent conjugal state, the problem of father-daughter incest emerges. In monogamous animals this seems to

be avoided in that the female adolescent undergoes the same process of active emancipation as the male. In polygynous species, however, the females are apparently too passive for this, and that they escape being simply scooped up into the father's harem is actually due to another factor: they are abducted by young males. This may sometimes occur against the father's resistance (as with the zebra); sometimes the owner of the harem is even routed or killed (allegedly in hanuman langurs); sometimes the abduction is effected peaceably at such an early stage of the female's development that no sexual interest is shown by the father (in the hamadryas baboon).

d) Expulsion

In a number of species the separation of the young from the family is coupled with a display of aggressive behaviour by adult members, most often by the parent of the same sex. This applies for adolescents of both sexes in the case of gibbons, dikdiks and marmosets; it has been reported of the howler monkey and the rhesus monkey for male adolescents only.

At first glance it may seem that the young remained virtually passive during such a process, that they for their part cling to the familiar and secure, only to have maturity thrust upon them by the parents' intervention. Closer observation, however, has shown that often enough the juveniles do make their own positive contribution to the brawl: they set the ball rolling by showing waxing aggressivity or at least insubordination, to which the older animals react with increasing impatience. Here too, apparently, the dissolution of the family is triggered by an emancipatory change in the juveniles, by the building-up of a motivational state which can be described as an "autonomy claim".

It makes sense to assume that the "change of object", described above, is also based upon the growth of this motivational state, that is - to use an anthropomorphic expression - one may ascribe it to increasing "self-confidence" if the strange and alien is no longer feared but challenged, and if the familiar, which earlier offered security, now engenders merely boredom and surfeit.

In some animal species group members arrange their autonomy claims by aggressive fighting; ethologists call the result of these interactions "rank-order".

It is characteristic of this phenomenon that victorious aggression of a group member is not answered - as in socially more primitive species - by timid withdrawal, but on the contrary by (submissive) approach.

In such animals, an autonomy claim which is not yet firmly established does not stand up to confrontation with superior aggression, and is temporarily relinquished. As the claim is at the same time a token of maturity, defeat entails regression to an infantile stage, and the consequent retraction from any dawning process of object change: the loser again becomes shy of strangers and dependent on the familiar individual, even when, paradoxically enough, the latter happens to be identical with the aggressor who initiated the whole affair.

If we are dealing, then, with a species having a hierarchical social structure, it follows that parental aggression could scarcely result in family disintegration as long as the young are not yet ripe for this; on the contrary, the effect would more likely be an increase in dependence. If a son's rank-order fight with his father ends with his departure, it shows that for the first time he has not knuckled under; the father may have won the fight, but he has not managed to curb the son's autonomy claim. In describing the spectacle as a "chasing away" of the young, motivational processes of considerable complexity are possibly being ignored.

3. Suppression of intra-familiar sexuality

The mechanisms described in the foregoing section cause a spatial separation of potential incest partners. They can only serve their purpose if they take effect before the onset

of sexual maturity in the young. Yet cases are known in which a complete break with the family is delayed until after sexual maturity is attained. To prevent incest in these circumstances factors come into play which block sexual activity over against family members.

a) Threat

Sexual activity, in those animal species which establish a rank order, is often a way of demonstrating a dominance claim; it is accordingly regarded as a challenge by the dominant animals and triggers aggressive intervention.

Most frequently it is the dominant male who thwarts sexual relationships between other members of the group, at least during the height of the female oestrus: as with Japanese macaques and several baboons.

In societies forming separate parallel male and female rank orders, the dominant male and the dominant female may each keep members of its own sex in check, this resulting in a quasi-monogamous relationship between these two top-ranking animals. Such a structure has been observed with wolves, marmosets and dwarf mongooses.

b) Inhibition

In some of the above-named species subdominant animals, feeling themselves unobserved, attempt copulation regardless; that is, the need for sexual activity persists in these instances in spite of threat. But in marmosets sub-dominant females who manage to conceive fail to carry the offspring full-term, due to resorption of the zygote or embryo. Here the stress situation occasioned by inferior ranking obviously exerts a deeper-reaching inhibition of the reproductive processes and the assumption is justified that even the motivation to sexual activity may in many species be reduced through rank order stress (as, e.g. in squirrel monkeys).

If, as indicated above, rank position is correlated with general maturity of behaviour, then loss of rank will also become apparent as a trend towards infantilism in certain behavioural spheres. In this sense, the process described could be interpreted as a fixation of sexuality at or regression to the functional disability of an earlier stage. This connection between infantility and impotence is even more evident in the rhesus monkey (Sade, 1968). Among these animals there are, as a rule, a few young males who do not disperse. They show a preference for the proximity of their mothers, with whom they keep intimate social reference. In this association the son displays a permanent childish attitude towards the mother, and as long as he does this all sexual interaction is ruled out.

c) Repulsion

Van Lawick-Goodall (1971) has observed an inhibition of sibling incest in chimpanzees. Among juveniles, sexual play is quite common in these animals, and in this immature stage familiarity, and therefore relationship, presents no obstacle. The author describes, then, how a female who had just reached sexual maturity displayed keen and rather indiscriminate sexual interest in males of casual acquaintance, but at the same time repulsed the advances of her brothers with loud screams, though earlier she had not objected to these.

4. A motivational model

The mechanisms outlined in this section may tentatively be summarized in the model of Fig. 1.

The model assumes two basic motivational states controlling social behaviour - "Security" and "Arousal". Security increases with the proximity of familiar social objects, Arousal increases with the proximity of strangers. Both variables are continuously matched against internal reference values: "Dependency" acts as reference for Security, "Enterprise" as reference for Arousal. An excess of Dependency over Security results in an approach towards familiar objects ("Attachment"), if Security exceeds Dependency, familiar partners are avoided ("Surfeit").

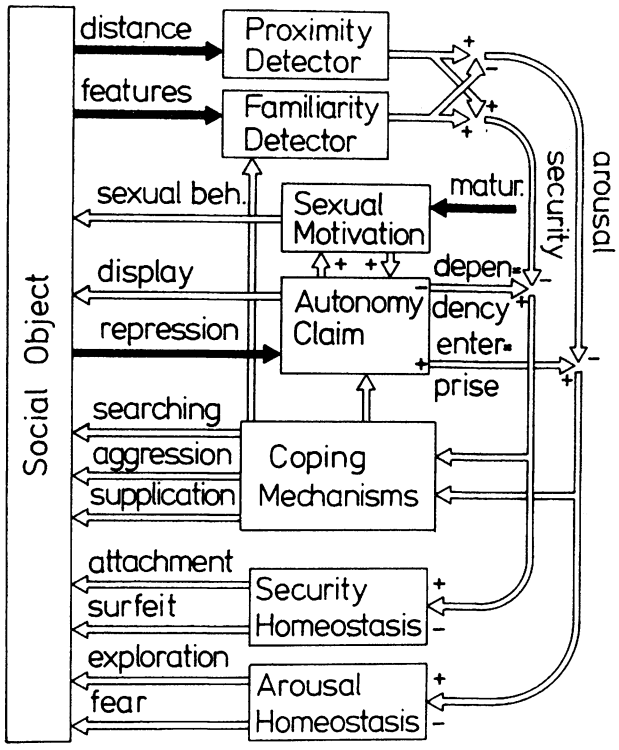

Fig. 1

Arousal exceeding Enterprise results in avoidance of the stranger ("Fear"), the opposite situation produces approach towards the stranger ("Exploration"). Dependency is suppressed, and Enterprise facilitated, by another central state variable, "Autonomy Claim". Autonomy Claim and Sexual Motivation are mutually facilitating: reduction of any one of them also reduces the other. Both increase, through maturation, during adolescence. Both are suppressed by powerful aggressive threat from outside, as in rank-order fights. If the homeostasis of Security and Arousal is prevented by external barriers, "Coping Mechanisms" take over. They work either externally by way of "Searching behaviour" (trying to find a detour), "Aggression" (destroying the barrier) or "Supplication" (requesting someone else to remove the barrier). Or they work internally by adapting the Autonomy Claim, or by biasing the mechanisms which assess the Familiarity of social objects.

All incest-preventing processes mentioned earlier can be accounted for on the basis of this model. To give but one example: Close son-mother proximity in adolescence is incompatible with the high Autonomy Claim typical for this stage: It produces a disequilibrium between high Security and low Dependency. An effective internal coping strategy would be to reduce Autonomy Claim to a lower (infantile) level. Thus homeostasis is reestablished, but because of the close connection between Autonomy Claim and Sexual Motivation, at the expense of sexual impotence. (For a more detailed analysis of the model, see Bischof 1972b, 1975b).

IV. The biological import of incest avoidance

1. The selectional advantage of biparental reproduction

The occurence of mechanisms restraining incest in the animal kingdom compels us to reconsider the possible existence of a biological function of this phenomenon. "Biological function" cannot be identified with "chance of survival" Such simplifications have fostered the habit of thinking only of hereditary disease in weighing the biological disadvantages attendant upon incest.

In actual fact, another, basically different selection pressure appears to attach to the incest barriers. This selection pressure is identical with that which favours biparental reproduction above all other forms of propagation. Propagation can indeed occur without mating throughout the world of organisms (by budding, parthenogenesis or self-fertilizing hermaphroditism). Nevertheless, uniparental reproduction is remarkably rare throughout the vegetable and animal kingdoms. Therefore biparental reproduction must have been the outcome of substantial selective forces, as its obvious vulnerability entails so many disadvantages. Although modern sociobiological reasoning (cf. Maynard Smith, 1978) has not yet conclusively substantiated this thesis, the

biological significance of biparental reproduction must lie in the increase of variety through the recombination of genetic material. Without genetic variety there is, for obvious reasons, no adaptive plasticity under selection pressure and hence, no evolution.

2. The selectional advantages of outbreeding

If, in a given population, only siblings would mate, then they were exposed to all the disadvantages of biparental reproduction, without being able to profit from a single one of its advantages. The population's genetic variety would sink to the low level of self-fertilization, and its evolutionary rate would accordingly be so halting that it could stand up against competition only under highly favourable conditions of life; as a general rule the lack of adaptive plasticity would act as a death warrant. This means in effect: existing species are those which have somehow escaped the danger of obligatory incest.

Incest preventing mechanisms, however, in the animal species concerned, are integral parts of the instinctive structure, and it would be astonishing if there were not at least rudimentary traces left in man. If so, the biological function expounded above would also ultimately be responsible for the universal appearance of the cultural incest taboo.

It must be borne in mind that explaining cultural features as being influenced by natural selection in no way necessarily implies that cultures without these features are doomed. We are confronted here with a selectional force which had been operating for untold ages prior to man's emergence, and which had led to the development of genetically adapted motivational structures already in the animal kingdom. If any vestiges of these structures still lurk in man's emotional make-up and he, as with so much that baffles him, has interpreted them culturally, then the cultural taboo emerges indirectly, from biological advantages, without these last having had a chance to bear fruit in the short span of cultural history.

V. Incest barriers in man

1. Emotional avoidance of incest

Two questions remain to be asked: firstly, whether incest inhibiting mechanisms of the kind discussed can be shown to exist in man, too; if so, secondly, given a background of such mechanisms, how we are to understand the development of corresponding cultural norms.

a) Endogenous tendencies towards family dissolution

It is easy to find parallels between the psychological alterations of human puberty, on the one hand, and the phenomena of increased "autonomy claim" and "change of object", as formerly described, on the other. The more or less radical emancipation of adolescents of both sexes from the child's referential structure of security and obedience - the surfeit with the established order, the lure of the distant and dangerous - all this is common knowledge in developmental psychology. Even without citing parallel features among animals there can be little doubt that these phenomena are due by and large to maturation, although social forces can facilitate, inhibit or channel them.

b) Endogenous suppression of intra-familiar sexuality

The phenomena of "inhibition" and "repulsion" of intra-familiar sexual activity are also observable in man. This has been demonstrated in societies in which prospective spouses are thrown together as children and grow up together. Such cultures have been examined by Mead (1935) in New Guinea, by Wolf (1966, 68) in North Taiwan, and by Shepher (1971) in Israel. All these investigations point in the same direction: There is a conspicuous tendency to avoid marriage with persons who were intimate companions during early childhood.

When given no choice, the partners of such a marriage experience a damping or disturbance of sexual activity.

2. Nature and culture

a) Cultural ritualization

In a comprehensive monograph Cohen (1964, p.54 sq.) places the ritualized incest barriers in two groups which are very nearly analogous to the two mechanisms identified above, viz. "family dissolution", and "suppression of intra-familiar sexuality".

Under the title of "extrusion", Cohen describes the daily or nightly removal of children (mostly boys) from their parental homes, and their quartering either with a strange family, in a men's house, a separate hut or simply in the open.

The term "brother-sister avoidance" he uses to denote restriction of contact between siblings remaining in the household, as soon as they attain pre-puberty. Siblings may communicate, for example, only through a third person, may not touch or look at each other, etc.

Cohen points out that these rites are not merely imposed upon the child, but fall within a stage of development which meets them half-way. Here we see the cultural norm tracing a rather close copy of natural inclinations.

Another peculiarity of the cultural incest proscription looks somewhat more complicated: its occasional reversal into an incest prescription, as in the instances of dynastic or ritual incest. But the experience of psychoanalysis has revealed that, in coming to terms with emotional tendencies, it seems easier to adopt a contrary attitude than to silence them completely. An explicit command to incest is therefore closer to the universal taboo than is an indifferent tolerance. Moreover, according to Sidler (1971, p. 9), "In a monistic world-view, conceiving good and evil as emanating from the same numinous source (...) any forcible intrusion upon this numinous sphere, as occurs in the violation of the incest taboo (...) can also mobilize healing powers". One can therefore break a taboo to become taboo, and at least in the case of the incestuous practice still persisting in parts of the Bantu dynasties, it is possible to evidence this motivation (De Heusch, 1958).

b) On the function of cultural norms

So far Frazer's question has been left unresolved: why, if natural inhibitions are effective, do cultural ones exist at all?

The answer seems to be that due to evolutionary changes in the cognitive outfit of man, natural inhibitions, as also natural propensities, do not determine but only motivate our behaviour (Bischof, 1978). How we realize them with respect to a given situation, has on the whole to be settled by our own initiative, and we are free enough to act contrary to our own nature; but we are not free enough to do so with impunity. This danger makes us inclined to narrow down the newly gained fulness of scope to within bearable boundaries by means of collectively created norms. Again, however, these norms should keep the emotional field of tension in a sufficiently stable state of equilibrium; and such states cannot be decreed, but must be found.

The creation of cultural norms, therefore, can be regarded as a cognitive achievement, an act of self-interpretation, and these norms will only then remain satisfactory and stable if man is able to recognize his own natural image in this interpretation.

As a rule, to be sure, it will no longer be possible to fathom the original meaning of inherited inhibitions and drives; culture will therefore seek other, more plausible explanations for the emotions which are, after all, there, and demanding their rights; and culture will moreover try to attain other ends by their means. Thus it is quite possible that the various "sociological" functions mentioned earlier have all played their part, on a higher level, in the shaping of the incest

taboo.

The cogitations of structuralists may therefore prove to be an adequate delineation of a superstructure, to lay bare the biological foundations of which has been the object of this report.

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