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Norbert Bischof

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NORBERT BISCHOF

The biological foundations of the incest taboo *

1. A cross-cultural comparison

1. *The anthropological significance of the incest taboo*

The special position held by man in the animal kingdom is usually defined within the framework of the terms "culture" and "nature". The anthropologist 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 series of facts which are not far removed from a scandal: we refer to that complex group of beliefs, customs, conditions and institutions described succinctly as the prohibition of incest, which presents [...] and inseparably combines, the two characteristics in which we recognize the conflicting features of two mutually exclusive orders. It constitutes a rule, but a rule which, alone among all the social rules, possesses at the same time a universal character" (Lévi-Strauss, 1970, p. 8). He continues: "Here therefore is a phenomenon which has the distinctive characteristics both of nature and of its theoretical contradiction, culture", and so "presents a formidable mystery to sociological thought" (*ibid.*, p. 10).

Lévi-Strauss attempts to solve this mystery as follows: "The prohibition of incest is in origin neither purely cultural nor purely natural, nor is it a composite mixture of elements from both nature and culture. *It is the fundamental step because of which, by which, but above all in which, the transition from nature to culture is accomplished: the prohibition of incest is where nature transcends itself*" (*ibid.*, p. 24, italics added).

* Dedicated to Professor Dr. Jürgen Aschoff on the occasion of his 60th birthday. Paper given at the twenty-seventh Conference of Deutsche Gesellschaft für Psychologie, Kiel, 1970. Translated by Phyllis Rechten.

With this idea Lévi-Strauss is clearly following in Sigmund Freud's tradition (see Freud, 1924). Considering the influence exerted on cultural anthropology by these two authors, it is not surprising that similar trains of thought are nowadays prevalent (e.g. Maisch, 1968; Wyss, 1968).

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 based¹. It should be mentioned in advance that those results so far obtained run roughly counter to the prevailing anthropological, sociological and psychoanalytical theories.

2. *Cross-cultural universals of the incest taboo*

In a comparison of 250 different societies at all cultural stages, G.P. Murdock (1949) arrived at eight comprehensive characterizations for the incest taboo. The statements do not all allow unlimited generalization, the main points however are adequately portrayed.

1) The incest taboo applies universally to all potential sexual partners within the *nuclear family*, naturally with the exception of the marriage partners; it covers, that is, a person's own parents, siblings and children.

Exceptions to this rule are extremely rare, when they do occur it is mostly *a*) in the form of *privilege* of small groups (e.g. royal families), or *b*) in conjunction with certain *rituals*. Reports published occasionally of a wider practice of nuclear-family incest are, with two exceptions (old Iran and Roman Egypt), either insufficiently founded or demonstrably incorrect, as Sidler (1971) has shown in a very thorough study.

2) Outside the nuclear family there is *no degree of relationship* which falls universally under the incest taboo.

3) Incest taboos, however, are not exclusively confined to the nuclear family. Most often they extend to at least a few relatives of the second and third degrees of consanguinity.

4) The strictness of the taboo decreases with the degree of consanguinity; the decrease is less pronounced, however, whenever nuclear family kinship terms are extended to more remote degrees of relationship.

5) Applied to persons outside the nuclear family, the incest taboos show a marked lack of conformity to the *biological* degree of relationship.

1. T. Schottenloher and Herr H. Böttger have contributed to this investigation substantially, within the course of their diploma theses at Munich University. My thanks are also due to the Deutsche Forschungsgemeinschaft for their generous backing of the project.

6) On the other hand, the taboos are highly correlated with purely *conventional* kinship grouping.

Incest prohibitions, in fact, often pass over some close blood relatives, (as for example certain cousins), but strictly bar marriage with adopted, step, or milk-siblings, in-laws or persons related by ceremony. According to Westermarck (1889) for example, the African Bohindu regard all children born on the same day in the same village as twins, who may not marry. In this connection the canonical law obstructing alliance between god-parents and god-children should be mentioned.

7) Incest taboos and exogamy decrees, compared with other sexual prohibitions, are characterized by particularly intense emotional engagement.

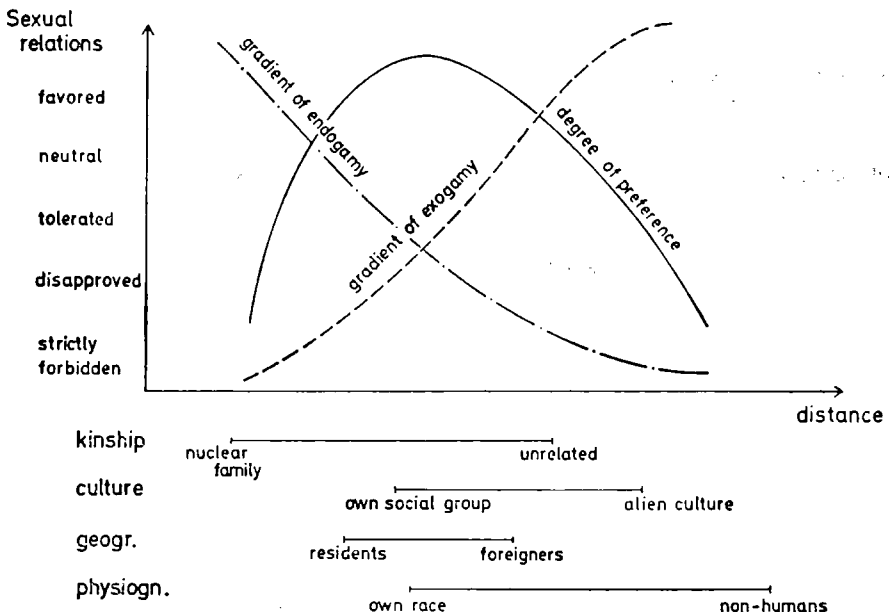
Referring to such a comparison, however, Lévi-Strauss (1970, p. 10) mentions an important parallel which in some respects represents the very counterpart of the incest taboo, namely the proscription of sexual relationship between representatives of different *races*; according to Lévi-Strauss, extreme endogamy and extreme exogamy are "the two most powerful inducements to horror and collective vengeance" (*cf.* Figure 1).

8) In all cultures, nevertheless, violations of the valid incest taboos do occur, although they may often be secretive and sporadic.

3. Incest prohibition within the general framework of marriage rules

1) "Distance" as category for the classification of marriage prescriptions

Figure 1 attempts to illustrate the substance of these eight points. The abscissa is to be understood as a rank scale of increasing "distance" from Ego,



the ordinate then showing increasing suitability as sexual or marriage partner.

The concept "distance" in the graph can be interpreted in various ways, chiefly the following (see Murdock, 1949, p. 314 *sq.*):

a) Kinship distance. The scale begins with first-degree relatives, *i.e.* members of the nuclear family. Next come relatives of the second and third degree, followed by members of a "Lineage", *i.e.* those persons whose relationship to Ego is still just traceable, and finally, all such persons with whom Ego still feels himself (more or less mystically) related, without however being able to substantiate this feeling — so-called sibs or clans. The abscissa range further to the right represents all those persons not felt to be related.

b) Cultural distance. Grouped on the left are members of Ego's own tribe or nation, with whom he identifies, also from a cultural point of view. There follow, within his own society, varying sub-cultures (*e.g.* social classes) and cultures (*e.g.* castes), and members of an alien nation and culture.

c) Geographical distance. The term "distance" can also be taken literally. The scale then begins with members of Ego's own community, "neighbours" in the strict and wider senses of the word, and extends to the right expressing increased geographical remoteness.

d) Physiognomical distance. This factor is not distinguished by Murdock, but is blended in with the other scales. The physiognomical scale would begin, on the left, with partners phenotypically more or less similar to Ego; there follow members first of related and then of alien race, until finally the borderline of the species is reached, beyond which non-human life begins.

The monotonously descending dash-dot curve in Figure 1 can be interpreted as a positively-shaded "we"-feeling, the amplitude of the curve over a given abscissa point indicating the strength of preference for the choice of an individual located at that point as marriage or sexual partner.

If this "endogamy gradient" — or, as Murdock has proposed, "gradient of ethnocentrism" — were alone effective, then indeed extreme incest among members of the nuclear family would be the favourite form of marriage. In fact, however, there is a second gradient plotted over the same scales, ascending monotonously from left to right; this we call, again after Murdock, the "exogamy gradient".

Supposing the two forces, symbolized by the two gradients, approximately multiply each other, then we obtain as product an inverted U-curve, showing the degree in which individuals are preferred as sexual or marriage partners. The left-hand descending portion of the curve is designated as *endogamy taboo* or *incest taboo* if applied primarily to marriage or to sexual intercourse respectively. The descent of the curve towards the right represents the *bestiality taboo* at the latest, although here in certain cases narrower boundaries are drawn, *e.g. class, caste or race* barriers.

It is shown schematically in Figure 1 that the four scales of "distance" span, as a rule, different regions of the abscissa. The scale of "kinship dis-

tance", for example, always begins at the left, ascending flank of the preference curve — denoting the permanent existence of a particularly close degree of relationship with which sexual contact is forbidden. The "cultural distance" scale, on the other hand, usually commences at the point on the abscissa directly under the peak of the preference curve: *i.e.* maximum cultural "proximity" will as a rule define the most favoured spouse. But here too, there are occasional exceptions, for example the status-group exogamy of certain Indians, that is, the obligation of people of rank to choose a partner from a lower class (Murdock, 1949, p. 266).

Similarly, for the "physiognomical distance" one should at first proceed from the supposition that the typical features of one's own race lie at the apex of the preference curve. It is not yet clear, however, what conditions obtain if the scale is extended still further to the left into the area of *individual* physiognomical similarity with Ego. Upon this differing reports have been made, in which for some features (*e.g.* the Kretschmer constitutional types) a certain preference is shown for *contrasting* partners. With the majority of features, nevertheless, there seems to be a preference for *similarity*. Geneticists speak of *homogamy* or *assortative pairing* (*cf.* Lerner, 1968, p. 261; Knussmann, 1965). We shall not pursue this issue further, as in any case no *social* rule concerning the left-hand termination of the physiognomical scale seems to exist.

2) Cross-cultural differences

To allow for the manifold variations in the marriage laws of diverse cultures, Figure 1 should be appropriately modified in each instance. Modifications can occur mainly in the following four respects.

a) The scale of *kinship distance* is differently interpreted in different cultures. Especially in the region of cousins there are conflicting opinions about who is related to whom and how closely, and the marriage rules are more or less tied up with these conceptions of relationship. (For an introduction to the material see Schusky, 1965.)

b) The four "distance" scales of Figure 1 can *slide* in relation to each other; their *extension* may also vary in different cultures. As an example of this latter feature, the "geographical distance" may be quite irrelevant in one culture, while in another a strict rule enforces marriage outside one's own village.

c) If one of the scales, *e.g.* the kinship scale, is conceived as fixed in relation to the abscissa, then further variations are *possible with respect* to the *position of the peak of the preference curve*. This can shift far to the left, as for some Islamic tribes having *preferential* cousin marriage, or far to the right as for many North American Indians, for whom symbolic kin groups ("Phratries") consisting of many hundreds of members fall under a marriage taboo.

d) Finally the preference curve can be more or less *shallow*: threatened penalties for infringing the marriage rules may, depending on the given culture, run the whole range from execution through banishment and disapproval down to mild mockery.

2. Theories on the incest taboo

1. *Classification of the theories*

As with the distinction made originally between the terms "culture" and "nature", 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 totally different type. Some authors (Homans and Schneider, 1955; Slater, 1959; Coult, 1963) therefore subdivide further according to the categorical form of the causes given for the incest taboo, using the Aristotelian distinction between *causa materialis*, *formalis*, *efficiens* and *finalis*. Here we can confine ourselves, as also Homans and Schneider (*op. cit.*) have done, to the two last-named categories. In this way we arrive at a fourfold division, in that we first compare the biological and sociological explanations regarding the *final* cause (the reason, motivation, usefulness) of the incest taboo, and then proceed, again dividing the expositions into biological and sociological, to examine the *efficient* cause, that is, the mechanisms which actually ensure abstinence from whatever is forbidden.

2. *Possible final causes of the incest taboo*

1) *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. The main supporters of this argument were Morgan (1877), Maine (1886) and Westermarck (1889). Among modern geneticists there is for example Lenz (1962) who takes this view. Empirical evidence of "incest depression", *i.e.* deficiency symptoms such as retarded growth, lowered immunity and decreased 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 on humans (Schull and Neel, 1965; Adams and Neel, 1967).

2) *Sociological advantages*

Alternatively, comprehension of the incest taboo may be attempted through its value in the ready functioning of social institutions. The palette of these theories is wider, and we must limit our enquiry to a few outstanding examples.

a) There is, firstly, the older opinion of McLennan (1896), Spencer (1877; 1896) and Lubbock (1870; 1911), according to which the prohibition of endogamy stems from the practice of marriage by capture: wives are valuable possessions, and perpetual conflict within the group can only then be avoided when ownership is apparent; this can be guaranteed if every man provides himself with a wife from outside the group.

Similarly, it has been postulated that the taboo on sexual promiscuity within the nuclear family was necessary to protect the family from internecine strife caused by mutual jealousy (Freud, 1924; Malinowsky, 1927; 1931; Seligman, 1929; 1950).

There are, finally, authors who seriously hold that the incest taboo was invented to save hopeless confusion in kinship terminology (*cf.* however Fox, 1967, p. 57 *sq.*).

b) While the three foregoing interpretations see a benefit to the nuclear family itself resulting from the taboo, other theories see in it 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 (to which people would in essence tend) no larger social structures could be built up, as over-reaching cultural achievements could certainly not survive in the atmosphere of selfish particularism created by small nuclear families perpetuating themselves (Tylor, 1888; Fortune, 1932; White, 1949, 1959; Murdock, 1949; Mead, 1950; Lévi-Strauss, 1970; Schelsky, 1955).

A similar argument is advanced by Parsons (Parsons, 1954; 1964; Parsons and Bales, 1955): as it should be in the interests of society that the nuclear family produce *mature* scions, it is therefore required of the individual that he summon enough courage to turn his back on the shelter of his family circle, which would tend to keep him infantile, and stand on his own two feet. From this angle incest avoidance appears as something like an enforced documentation of social maturity.

3. *Possible efficient causes of the incest taboo*

1) *Biological conditions*

If we now turn to those factors which concretely hinder incest within a society, 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.

In its most naive form this hypothesis assumes something like a "voice of the blood" which sounds a warning when relatives meet. Maisch (1968) connects Hobhouse (1912) and Lowie (1920) with this obviously untenable opinion, without apparently having read the articles quoted.

As a matter of fact these authors agree in principle with a theory which must be taken far more seriously, that of Westermarck (1889) and Ellis (1906), according to which 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. Some modern authors (*e.g.* Wolf, 1966) endorse this view on the basis of new empirical findings (*cf.* p. 26 *sq.*); currently, however, the theory is generally regarded as repudiated (Maisch, 1968, p. 30 *sq.*), due

to criticism by Freud, Lévi-Strauss and many others, including incidentally Marx.

2) *Sociological conditions*

While the biological theories postulate an inhibition of incestuous activity primarily "from within", there are sociological theories which predicate repressions "from without" — that is, repressions which may be internalized secondarily, but originating through the intervention of social partners, an incestuous inclination thereby initially existing on the part of the individual.

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 parent of the same sex and the unapproachability of the other-sexed parent in the Œdipus situation after Freud (1924).

4. *Arguments against the biological explanations*

1) *Against the supposition of biological final causes*

There exist essentially two arguments at present, disputing the contention that incest between close blood relations damages the congenital fitness of the offspring.

a) It is reasoned that genetic disadvantages resulting from inbreeding are certainly not observed with sufficient frequency to justify such a far-reaching prohibition.

b) On the other hand it is pointed out that inbreeding in itself cannot produce genetic depression; it merely promotes homozygosity and hence the manifestation of *recessive* characters. This is a disadvantage only when the recessive characters themselves are unfavourable, which of course does not necessarily follow.

To be sure, the proportion of unfavourable to favourable characters for recessive genes is indeed higher than for dominant. This significant circumstance seems to be unknown to some authors (e.g. Maisch, 1968). The disparity is caused by selection acting constantly upon the dominant genes, whereas in the recessive pool, sheltered by the dominant alleles, all sorts of litter can collect unpenalized. Accordingly it would indeed make sense to proscribe marriage practices by means of which the sediment of recessive factors is churned up — provided that inbreeding had been formerly suppressed for a considerable length of time, and consequently a biological depreciation of recessive gene material had already occurred. Even so, an inbreeding depression would be a temporary phenomenon only, as natural selection would soon cleanse the — now manifest — recessive gene pool (cf. East, 1927). And if, finally, as Lévi-Strauss (1970, p. 15) assumes, mankind has developed from an ancestry regularly practising incest, there would indeed have been no eugenic reason suddenly to forbid this.

2) *Against the supposition of biological efficient causes*

The chief arguments against the assumption of an instinctive abhorrence of incestuous mating can be arranged in four groups, of which the first two have indirect, the last two direct empirical reference.

a) According to Lévi-Strauss (1970, p. 16) the "alleged horror of incest can only be manifested when a kinship relationship is supposedly known, or later established, between the guilty parties, and this sufficiently substantiates that its source cannot be instinctive". And Freud (1924, p. 149) could not believe, of a biological instinct, that "it could err so widely in its psychological expression, that instead of blood relatives harmful to reproduction, it took aim at house-mates and fire-side companions who in this respect are perfectly harmless" (author's translation).

b) Freud (*ibid.*, p. 149 sq.) voices a second objection, quoting 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."

c) Immediately following this quotation Freud states rather presumptuously that "psychoanalytical experience makes the assumption of an inborn abhorrence of incestuous relationship perfectly impossible. It has on the contrary taught us that the earliest sexual impulses of the human child are regularly of an incestuous nature". Lévi-Strauss (1970, p. 17) refers to this passage as follows: "Psychoanalysis, namely, finds a universal phenomenon not in the repugnance towards incestuous relationships, but on the contrary in the pursuit of such relationships."

d) It is Lévi-Strauss again (1970, p. 18) who offers a last empirical argument for the cultural foundation of the incest taboos, in calling incestuous mating "a natural phenomenon found commonly among animals". Similarly, Wyss (1968, p. 136) writes "that the incest taboo [...] is agreed by most investigators to be the cultural step which differentiates man from the anthropoids".

An answer to the first two objections will be given further on (pp. 25 and 29). The nature of the third argument makes analysis extremely difficult, and it will be attempted elsewhere. Thus the fourth argument remains to be tackled now; if correct, this would indeed be of considerable weight.

3. Incest-preventing mechanisms in mammals

1. *Individual bonding and the necessity for incest barriers*

It is characteristic of the fourth argument that its many proponents have hard-

ly ever seriously tested it. Had they done so, they would surely have come up against the empirical 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 having no attachment to conspecifics, or at best only collective-anonymous attachment, and which furthermore are not sedentary. In this case the general diffusion occurring soon after birth makes for ample intermingling. In animals of such a low level of socialization no instinctive incest barriers have been observed: brother and sister cannot single each other out among other conspecifics, and so accept each other readily as sexual partner if they happen to meet.

It is quite different with bonding-motivated animals, however, that is, animals having the ability to recognize each other *individually*, and the *inclination to affiliate with* acquainted conspecifics. This selective 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*, and the measures adopted will be presented below.

"Bonding motivation" is one of the concrete specifications, necessary for scientific clarity, of the hazy term "love". It is in no way synonymous with sexual eroticism, and is probably not even derived therefrom; this emphasis is necessary, as psychoanalysis shows little inclination for such differentiation either in theory or in terminology. The distinctive nature of the bonding motivation has been stressed repeatedly by ethologists (e.g. Fischer, 1965; Lorenz, 1965) and by ethologically-oriented psychoanalysts (Bowlby, 1969). But human psychological research has also reached this conclusion, chiefly in connection with the motivational content analysis of projective techniques ("need for affiliation", see Atkinson, 1958).

The following considerations are confined to those animal species evidencing bonding-behavior, at least in the form of attachment of offspring to parent, which corresponds then regularly with parental care of the young. In the space available we must limit the survey substantially to mammals.

Even in such a reduced field, however, an exhaustive report cannot be made. Fairly reliable field observations are available for only a minute proportion of the species concerned, and what relevant information we can extract for our purpose is nearly always a by-product, as the incest question proper is scarcely ever attacked by field workers. Indeed, it has been rather neglected in ethological literature. Although the issue was raised by Heinroth in 1910, and re-stated by Lorenz in 1943, there are, save for a paper on animal psychology by Brückner (1933), only two more recent dissertations by an ethologist or with ethological co-operation (Kortmulder, 1968; Aberle *et al.*, 1963 respectively), dealing with the general problem of incest barriers in animals.

A thorough examination of field data so far collected concerning the social life of mammals, and an evaluation of this material especially from the aspect of incest avoidance was first carried out by Bischof and Schottenloher (in preparation). The following is an outline of this work.

2. Mechanisms of family dissolution

1) Isolation

If it is primarily the need for attachment to familiar individuals which brings with it the danger of incest, the simplest way to by-pass the danger would be to deflate the need before sexual maturity occurred. This is what actually happens with some animals. 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.

This relatively primitive form of family dissolution is found in the North American opossum (Reynolds, 1952), in a series of rodents, *e.g.* the hamster (Eisenberg, 1966) and the squirrel (Eibl-Eibesfeldt, 1951), further possibly in the red fox (Tembrock, 1967), reportedly also in the tiger (Schaller, 1967; but *cf.* Ewer, 1968, p. 68 *sq.*) and generally in most felids with the exception of the lion and the cheetah, which live in prides.

The same mechanism functions with the European wild boar (Gundlach, 1968) and with the exhaustively studied coati (Kaufmann, 1962), 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 attachment reduces the chances of incest to the same degree as does a family dissolution in both sexes.

2) Change of object

By far the most frequent mechanism of family dissolution among mammals is, however, more complicated, in that the need for social attachment in the animals concerned 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.

This mechanism, the motivational background of which is still not sufficiently clarified to date, has mainly been observed in three forms.

a) 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 (term proposed by Chance, 1967); 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 attachment to female groups for the duration of sexual activity.

This mechanism is found in red deer (Darling, 1951; Etkin, 1964; Eisenberg, 1966) and wapiti (Altmann, 1963), and seems, indeed, to be general in cervids. The African elephant can also be reckoned in this group (Nicholson, 1955; Ewer, 1968; Hendrichs, 1971); here the males maintain contact with their cohort even during sexual activity.

It must be left at issue whether the formation of male cohorts is caused solely by the switching of attachment from the familiar to the *strange* object — the unisexual nature of the cohort being brought about merely by lack of female interest in such new encounters — or if a real preference for *male* companions is evinced. These suppositions are not of course mutually exclusive, and could both apply.

b) 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 of sexual periodicity. We are dealing here with a *double* change of object in bonding behaviour, the motivational structure of which is even more obscure than with the single change, more especially as the second new bonding — the marriage — seems to be similar in intensity to the bonding of the offspring to its original family, as opposed to the rather loose affiliation of the male cohorts.

The mechanism described has been reported of *polygynous* (harem forming) and *polygamous* (group mating) mammals. In the first category belong the zebra (Klingel, 1967), the hamadryas baboon (Kummer, 1957; 1968*a, b*; 1971), in a qualified sense also the patas monkey (Hall, 1968; Grzimek, 1969) and the hanuman langur (Jay, 1963; Sugiyama, 1967; Yoshida, 1968; Vogel *et al.*, 1969). Into the second category fall several macaques such as the rhesus monkey (Carpenter, 1942*a, b*; S.A. Altmann, 1962; Koford, 1963, 1965; Kaufmann, 1965) and the Japanese macaque (Imanishi, 1957). The gorilla (Schaller, 1963; Reynolds, 1968) and chimpanzee (Reynolds and Reynolds, 1965; Reynolds, 1968; Goodall, 1965; 1967; Van Lawick-Goodall, 1971; Albrecht and Dunnett, 1970) also belong in this group, although it must be pointed out that here, too, solitary males were observed, primate social structure, indeed, seeming to be altogether more flexible than that of other mammals.

c) 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 reason to assume that this form of social rearrangement is prevalent among species with long-term monogamy. Systematic observations and experiments substantiating this are so far available in the case of wild geese only (Bischof and Böttger, in press); with respect to monogamous mammals, our knowledge unfortunately is still rather fragmentary to date. Nevertheless, reports on the gibbon (Carpenter, 1940) and the dikdik antelope (Hendrichs and Hendrichs, 1971) seem to justify the assignment of these species to this third version of object change. (But see also pp. 19-20 below.)

3) *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: Klingel, 1967); sometimes the owner of the harem is even routed or killed, together with all his male progeny (in hanuman langurs, according to reports from Sugiyama, 1967, and Yoshida, 1968); 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, see Kummer, 1968).

4) *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 the gibbon (Carpenter; 1940) and dikdik (Hendrichs and Hendrichs, 1971); it has been reported of the howler monkey (Carpenter, 1965) and the rhesus monkey (Carpenter, 1942*a, b*) 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 perhaps be described as an "autonomy claim", conceivably analogous to terms such as "Ego-strength" or "self-confidence" used in human psychology.

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. (See also the mechanism of "identification with the aggressor" as described by A. Freud, 1936.)

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, often rather thoughtlessly, as a "chasing away" of the young, one should be aware that motivational processes of considerable complexity are possibly being ignored.

Moreover, for some species, there is not only a lack of reports on expulsion, but observers emphasize that the departure of the young is *not* the result of parental pressure (*cf.* Kaufmann, 1962, on the coati; Klingel, 1964, on the zebra and Sade, 1968 — as opposed to Carpenter, 1942*a, b*, — on the rhesus monkey).

Fig. 2

3. *Suppression of intra-familial sexuality*

The mechanisms described in the foregoing section cause a spatial separation of potential incest partners. They can of course 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 does not occur at all, or in which the break is at least 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.

1) *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, either permanently or at least during the height of the female œstrus: as with Japanese macaques (Imanishi, 1957), hamadryas baboons (Kummer, 1968*a*), olive baboons (Hall and DeVore, 1965), *Cacma* baboons and yellow baboons (Washburn and DeVore, 1961).

3 In societies customarily 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 (Zimen, 1971), marmosets (Rothe, personal communication) and dwarf mongooses (Rasa, personal communication).

2) Inhibition

Nevertheless, it can sometimes be noted of the above-named species that sub-dominant animals, feeling themselves unobserved, attempt copulation regardless; that is, the *need* for sexual activity persists in these instances in spite of threat, only as a rule the animals do not *dare* to indulge. But Epple (1966; 1967; 1970) and Hampton and Taylor (1970) in watching marmosets, have reported that sub-dominant females who managed to conceive could not 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 stress (as, e.g. in squirrel monkeys; see Baldwin, 1969). This phenomenon is admittedly rather unspecific, but it could indeed result in the exclusion of subadult animals from reproduction.

If, as indicated on p. 20, 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 processes described could be interpreted as a fixation of sexuality at or regression to the functional disability of an earlier stage. This connection between infanthood 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, but remain with the family. The young male shows a preference for the proximity of his mother, with whom he keeps intimate social reference, entailing close bodily contact, mutual grooming and mutual defence. 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. An important requisite for the efficacy of this mechanism seems to be the superior rank of the mother; Sade observed on only one occasion that the son succeeded in breaking her dominance in a violent fight, and with that the inhibition against copulation was also gone. It should be pointed out that the connection with rank order in this respect is very complicated for, apart from in the mother-son relationship, superior ranking of a female is no obstacle to mating.

3) Repulsion

Sade (*ibid.*) was able to record in his colony to date only a single instance of a brother-sister mating. He does not explain the abstinence. Recently, though, Van Lawick-Goodall (1971) made known her observations on an

inhibition of sibling incest in chimpanzees. We must bear in mind that sexual play among juveniles is quite common in these animals, and in this immature stage familiarity, and therefore relationship, presents no obstacle (see also below p. 27). 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. *Missing incest barriers in the animal world*

Summing up, it is clear that the die-hard fable of incest tolerance in animals, concocted according to Maisch (1968, p. 15) by Diogenes in his tub and henceforth hawked about unscanned, just about turns the empirical findings upside-down. There are, to be sure, certain exceptions.

1) Firstly, we must consider that incest occurs habitually in some lower animals with a high reproduction rate, living under ecological conditions which impede or preclude exogamic mating; particularly, that is, in certain *parasites* (mostly mites or worms: Mayr, 1963, p. 408).

2) A further group showing enhanced incest tolerance is formed by the *domesticated animals*; the origination and persistence of the said fable are probably due to these. It is plain that incest barriers are likely to be rudimentary in domesticated animals: the breeder himself will wish to decide which mates with which and when; he has no use for breeding stock which is fastidious. Hence he necessarily exerts a selection pressure tending to breed out possible incest inhibitions.

3) It must be remembered that any interference with the natural living conditions of a species may also disturb instinctive mechanisms and thus reduce their effectiveness. For this reason incest among *zoo animals*, although these are not necessarily domesticated, is less infrequent than in the wild.

Finally, it remains to be noted that a possible selection pressure militating against incest (see below) may sometimes come to a halt at a minimum effect. A mechanism which impeded *all too habitual* inbreeding would suffice; juristic pedantry is not to be expected in nature. The barriers can for example be so low that incest is not made impossible but only improbable; or one of the three possible incestuous combinations (brother-sister, mother-son, father-daughter) could be left open (in polygamous primate groups this is often the last-named); and then again, inhibitions need in principle function with only *one* of the partners, while the other may well incline in vain towards incestuous practice.

4. The biological import of incest avoidance

1. On the concept of selectional advantage

The multiplicity of mechanisms restraining incest in the animal kingdom compels us to reconsider the possible existence of a biological final cause, that is, of a selectional advantage in this phenomenon (*cf.* p. 14 above).

The concept "selectional advantage" is much too complex to 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, whereby dismissal of this reasoning is taken as a dispensation from any biological argumentation whatsoever.

In actual fact, a biological value of quite another character can be shown to attach to the incest barriers, *i.e.* a selection pressure, the power of which dwarfs the small advantage of hereditary fitness in comparison. This selection pressure is identical, as will be explained below, with that which favours *biparental reproduction* above all other forms of propagation.

2. The selectional advantage of biparental reproduction

To the biological layman the terms "mating" and "propagation" seem practically synonymous; nevertheless, propagation can indeed occur without mating throughout the world of organisms including man: that is, it is biologically *possible*.

It appears in three forms (see Hartmann, 1956): *asexual reproduction* (agamogenesis), *i.e.* propagation by division of the whole individual (in protozoa, polyps and some worms, further in the formation of identical twins) or by budding (found on the very brink of the vertebrate stage); *unisexual reproduction* (parthenogenesis), in which new individuals are produced from unfertilized egg-cells (in some insects); finally *self-fertilization* (autogamy) in hermaphrodites (occasionally observed still in some species of fish).

Thus it is evident that neither fertilization nor indeed propagation necessarily implies the sexual union of two individuals; yet the three above-named forms of nonparental reproduction are remarkably *rare* throughout the vegetable and animal kingdoms. This focusses attention on the biological significance of biparental reproduction: it must have been the outcome of substantial selective forces, as its vulnerability entails so many evident disadvantages.

This biological significance lies, as Weismann realized as long ago as the turn of the century, in the increase of *variety* through the recombination of genetic material.

Evolution is fed by the variability of the species. Only a wide spectrum of distinctive features can ensure, in times of environmental change, that there are enough individuals available who are just then better adapted, and can

help the species to pull through the crisis; other, ill-equipped members die out: the species has "adapted itself to changed conditions" — because it contained sufficient diversity of feature, but evidently at the cost of such diversity. Only the constant creation of new variety can save this procedure from grinding to a halt. The source of variety is, after all, the mutation, but this source is a mere trickle. And here, heterogeneous fertilization comes into play, acting as a powerful "variation-amplifier".

One can work out what astronomical period of time it would take to effect a somewhat more complex genetic adaptation, if a species were forced to transact all the necessary steps of mutation successively and independently in the *same* germinal spoor; how much swifter is this process if the "inventions" are interchangeable between different spoor! In this sense Mayr (1963, p. 179) calls recombination "by far the most important source of genetic variation".

3. *The selectional advantage of exogamy*

The answer to the question of the selectional advantage of exogamy should now be apparent: a species which allowed the obligatory mating of siblings only would retain almost all the disadvantages of biparental generation, without being able to profit from a single one of its advantages. Its 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 escaped the danger of obligatory incest, either through favourable circumstances, or through development of special inhibiting mechanisms.

Such mechanisms, however, in the animal species concerned, are integral parts of the genetically fixed instinctive structure, and it would be astonishing if there were not at least rudimentary traces left in man. If so, the biological final cause 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 determined 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 mythico-magically, then the cultural taboo emerges indirectly from biological advantages, *without* these last having had a chance to bear fruit in the ridiculously short span of cultural history. In the following section an attempt will be made to establish whether observations on man himself will support this interpretation.

5. Incest barriers in man

1. *Two preliminary questions in an anthropological evaluation*

In examining the material basic to Section 3 we find that some of the incest barriers therein described can be grouped as “sociological efficient causes”, in accordance with the classification introduced in p. 12. Above all, the mechanisms of *abduction* and *threat*, in part also *expulsion*, are “inhibitions from without” — and of course, from the male point of view, the mechanism of *repulsion*.

Looking at the whole picture, however, these are clearly outnumbered by the “inhibitions from within” occurring regularly in the species observed, that is, spontaneously developing counter-inbreeding tendencies entered in the instinct inventory of the species. In the higher animals the most important of these are the *change of object*, *repression of sexuality* and — from the female point of view — *repulsion*; also the mounting of the *autonomy claim* which leads to expulsion.

If we now try to estimate the value of this synopsis for the understanding of man, a two-fold question must be asked: firstly, whether “inner” 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. These two issues will be discussed shortly, whereby we shall be able to pick up the threads of the two still unresolved objections to the biological theory of the incest taboo, which were introduced earlier on p. 15.

2. *Emotional avoidance of incest*

1) *Justification of Westermarck's hypothesis*

The first of these objections was based upon the naive surmise that an instinctive aversion to consanguineous mating must be linked, as it were, with a sixth sense for detecting blood relationship: according to this argument, whoever admits the possibility of instinctive incest barriers must necessarily believe in a “voice of the blood”.

This contention seems incomprehensible, all the more so since Westermarck (1889) and Hobhouse (1912), often quoted ironically in this respect, opposed such conjectures with amazingly modern-sounding arguments.

Contemporary study of instinct does not expect to find nature performing supernaturally. If birds only rarely catch wasps, then the biological reason is that wasps are poisonous. The quality of being poisonous, however, is invisible, and so the mechanism restraining the birds operates, quite simply, as if every insect with black and yellow stripes were a wasp; the hover-fly and other insects with wasp-mimicry have this simplification to thank for their undeservedly care-free lives.

Westermarck therefore advances a legitimate argument, biologically speaking, when he assumes that nature recognizes early-childhood familiarity as a sufficient cue for consanguinity, just as black and yellow stripes stand for poison, the biologically unnecessary inhibition against marrying an adopted sister being tolerated just about as readily as the bird's abstinence from a meal of hover-flies.

2) *Endogenous tendencies towards family dissolution*

On pp. 17 and 20 an attempt was made to distinguish between the mechanisms of family dissolution and of suppression of intra-familial sexuality. If we now turn to the first of these, 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, of the exotic, the forbidden, the 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. Still, it may come as somewhat unexpected when, of all things, it is precisely at the bottom of young Oedipus' fight with his father that we find archaic motivational structures whose biological sense is none other than the *prevention* of incest (*cf.* for a more detailed discussion, Bischof, in preparation).

3) *Endogenous suppression of intra-familial sexuality*

It is less simple to answer the question whether the phenomena of *inhibition* and *repulsion* of intra-familial sexual activity are also observable in man. Fortunately, however, there is a possibility to test this empirically in societies in which prospective spouses are thrown together as children and grow up together.

Such a culture has been examined by Wolf (1966; 1968) in North Taiwan. Here, among others, two patrilocal marriage forms exist, whose main difference is that in the one the partners come together as adults, whereas in the other the bride is taken into her future husband's family as a child, and the two grow up practically as brother and sister.

The second form of marriage is not esteemed by most young people. This could be partly due to the small prestige actually accruing to this marriage-form; yet there are some peculiarities which can scarcely be thus explained, and which have led the author to conclude that such marriages suffer primarily under a disturbance of sexual harmony. At any rate, if questions are asked, the repudiation is not ascribed to social disadvantages, but veiled hints are made that such marriages are "embarrassing" or "boring". Adultery of

both sexes, concubinage and recourse to prostitutes are of significantly higher frequency in marriages resulting from child-engagement than in those resulting from adult-engagement.

As moving force behind the arrangement of child marriages Wolf suspects the jealousy of the mother: "A woman's son is too important in Chinese society for her to accept an intimacy from which she is excluded" (1968, p. 869). "*The sexual aversion created by the couple's intimate childhood association* [...] precludes the development of an exclusive conjugal bond [...] The effect [...] is to drive a wedge between husband and wife and thereby take the strain off the bonds between the generations" (*ibid.*, p. 870, italics added).

A second example is reported by Fox (1962) following Spiro (1958); *cf.* also Bettelheim (1971) and Shepher (1971). It refers to juvenile development in certain Israeli kibbutzim. The children of a settlement grow up together, grouped separately according to age; living rooms, dormitories and bathrooms have, on principle, no separation of the sexes.

Up to about twelve years of age there are no signs of embarrassment between the sexes; on the contrary, the children indulge extensively from an early age in heterosexual play, both in the dormitories and in public. This behaviour is tolerated by the adults in the interests of a repression-free sexual development.

On the threshold of puberty, however, there develops, more markedly in the girls, a mounting tendency to embarrassment, with a considerable admixture of *antagonism* towards the other sex in the same group. The girls reject the co-ed showers and seek to avoid being seen naked by the boys; at the same time their interest turns to young men outside the group.

As far as the authors could discover no marriages ensued within any one of these peer-groups; nor are any cases known of adult sexual relationship of group members. The reason for this abstinence, given by the juveniles themselves, is that they would "feel like siblings".

These two instances suggest an obvious parallel to the mechanisms of *inhibition* and *repulsion* of intra-familial sexuality. Other examples point in the same direction, although their substance may not be so apparent at first glance: one illustration is the general damping of sexual activity among the Mountain Arapesh in New Guinea (Mead, 1935), who also practice child marriage; another is the report of Rey (1969) according to which celibate professions are preferred by those men having a super-normal attachment to their mothers.

Reverting to the kibbutz example, it remains to be said that here, as with chimpanzees (p. 22) and incidentally as with other mammals and some birds, the incest aversion of puberty is preceded by a period of infantile sexual play with other members of the family. If psychoanalysis, by misapplication of Häckel's rule that ontogeny recapitulates phylogeny, deduces from this infantile tolerance an "original" (*i.e.* precultural) incestuous tendency in man (*cf.* p. 15) this would be in no wise biologically convincing; for if an incest-aversion should mature rather than be acquired by learning, this process need nevertheless only coincide with the commencement of the reproductive phase,

not with the first, still “harmless” try-out of sexuality in the “oedipal phase”, which may therefore very probably deserve its name.

3. *Nature and culture*

1) *Cultural ritualization*

The brief survey undertaken in the last section has already shown that forces are at work in man’s motivational make-up which must seriously be taken into consideration as being homologous to instinctive incest barriers. As a rule, however, they appear stylized in the framework of cultural superstructures.

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 (pp. 17 and 20), *viz.* 1) family dissolution, and 2) suppression of intra-familial sexuality.

a) Cohen describes, under the title of “*extrusion*”, the daily or nightly removal of children aged between eight and ten 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. Generally only the boys are extruded, sometimes both sexes, very seldom the girls only (*cf.* p. 17 *sq.*).

b) 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, or remain together under one roof, etc.

Cohen points out (*ibid.*, pp. 58-59) 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. From other aspects, however, the original pattern seems to have undergone considerable change. A special instance is the often somewhat hypertrophic extension of exogamy rules beyond the nuclear family in the direction of the four above-mentioned (pp. 9-10) distance scales. We could expect little success from an attempt to establish a “biological” explanation for this: cultural anthropology has here its legitimate domain.

Another peculiarity of the cultural incest proscription must be touched upon: its occasional reversal into an incest *prescription* (*cf.* p. 8). The experience of psychoanalysis, it should first be remembered, 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” (*cf.* also Caillois, 1959). 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).

2) *On the function of cultural norms*

So far, the question raised in the second objection, cited on p. 15, has been left unresolved: why, if natural inhibitions are effective, do cultural ones exist at all?

The answer seems to be that natural inhibitions, as also natural propensities, do not determine but only motivate our behaviour. How we realize them with respect to a given situation, and what compromise we make thereby, 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. We can live at odds with ourselves, and 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" final causes (p. 12 sq.) have all played their part, on a higher level, in the shaping of the incest taboo.

The cogitations of modern 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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Norbert Bischof (born 1930) works at the Max-Planck-Institut für Verhaltensphysiologie Seewiesen, Germany (FR). His research concerns the biocybernetical analysis of perceptual and motivational systems in animals and man. Some publications not mentioned in the references: "Erkenntnistheoretische Grundlagenprobleme der Wahrnehmungspsychologie"; "Psychophysik der Raumwahrnehmung" and "Stellungs-, Spannungs- und Lagewahrnehmung", all three printed in: *Handbuch der Psychologie*. Vol. 1/1, Bewusstsein und Wahrnehmung (1966); "Systemanalyse der optisch-vestibulären Interaktion bei der Wahrnehmung der Vertikalen" (1970) (with E. Scheerer) and "Inzestbarrieren in Säugetiersozietäten", *Homo*, Dec., 1972.