PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

Evolution of Ritualization in the Biological and Cultural Spheres

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A. THE PSYCHOBIOLOGICAL APPROACH: METHODS AND RESULTS

Evolution of ritualization in the biological and cultural spheres

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I. *Ethological approach and phylogenetic ritualization*

The young science of ethology can be simply defined as the biology of behaviour. It is rather a paradox that the behaviour of animals was not, from the beginning, investigated by zoologists and biologists, just as all other life-processes were. Behaviour study was begun by psychologists and psychology is the daughter of philosophy, not of the natural sciences. The philosophical dispute between vitalistic and mechanistic psychologists did much to obscure the problems of 'instinctive' behaviour.

Though a thoroughly scientific approach to these problems is clearly expressed in the writings of Charles Darwin, zoologists were slow to recognize behaviour as a subject worthy of investigation. A special tribute is due to the ornithologists, whose intense pleasure and interest in just watching birds was instrumental in re-discovering of the fact that biological approach and method can successfully be applied in the study of behaviour, exactly as Darwin had done in his book, *The expression of the emotions in man and animals*. What, then, are these good old Darwinian procedures?

I would name the most obvious one first, as being most important. It is the unbiased observation of the organic system and the inventorizing of its component parts. In all natural sciences description has to precede systematization, and both together are the prerequisite for abstracting the natural laws prevailing in the operations of the whole.

Comparative anatomy and systematics, using a broad basis of induction gained by observation and description, brought order into the chaotic multiplicity of living species and prepared the way for the recognition of the common origin of all living creatures. Once this basic evolutionary fact was established, it was an unavoidable conclusion that a historical explanation is needed for practically every detail of structure and function observed in living creatures. Such historical explanation is indeed also a *causal* one: if we ask why man has auditory organs at the sides of his head, with auditory canals connecting them with the pharynx, one of the causal explanations of this state of affairs is that all this is so, because man is descended from water-breathing vertebrates which had a gill-opening in that part of their anatomy. Thus research into the phyletic history of an organ or function becomes an indispensable part of its scientific study. The application to behaviour of the comparative method which reconstructs the phyletic history of organisms by studying the similarity and dissimilarity of their characters is indeed one of the most important procedures of ethological research.

Next to the comparative, the selectionist approach is, in my opinion, the most indispensable one for ethology; indeed the two cannot be legitimately separated from each other. Finding out wherein lies the survival value of a structure or of a function, is a

prerequisite to understanding the factors causing its evolution. If we ask 'what for'? about a cat's hooked retractile claws, and answer 'to catch mice with', this is no profession of mystical teleology, but shorthand for a query concerned with causality, namely 'what is the function whose survival value exerted the selection pressure which produced cats with this kind of claw?' We call this type of inquiry *teleonomic*, a term introduced by Colin Pittendrigh in the hope of setting off the corresponding concept against that of *teleology* as sharply as astronomy has been distinguished from astrology. Not only is the teleonomic approach essential for the deeper understanding of behaviour, it may also be claimed that few zoologists have ever investigated the interaction of conflicting selection pressures with such subtlety, as ethologists like Tinbergen and his pupils have done.

Last but not least I would mention, as essential for the ethological approach, a constant awareness of the organism's being a systemic whole, in the sense in which Otto Koehler defined this concept—an organized system in which each part stands in a mutual causal relationship with every other. This realization makes us cautious and circumspect in our experimenting, as we are very much aware that any attempt to influence or isolate a single function experimentally, we must take into account the repercussions which our interference may have in all other parts of the system. One cannot do this without knowing something about the rest of the system; this is why ethological investigation has to begin with studying the intact organism in its natural biotope and getting to know it thoroughly before beginning experimentation.

Of course, the sequence of procedures just described is not exclusively characteristic of ethology. Indeed there is no branch of biological science that does not proceed from observation and description, unbiased and free from preconceived hypothesis, to the phylogenetic and teleonomic approach before proceeding to experiment. But in many branches of the psychological and behavioural sciences it is today quite usual to devise, out of hand, some sort of experimental procedure, apply it to a highly complicated system about which next to nothing is known, and then record the results. Of course, information can be, and has been, gathered by this method; it is exactly the way in which a species, by random mutation and recombination gathers 'information' and adapts itself to its environment. However, we also know the very slow speed with which this procedure operates and we prefer to have results before the present interglacial period comes to an end. That is why ethology emphatically keeps to well-tried Darwinian procedures.

The historical origin of ethology may be ascribed to a discovery made by two zoologists, who were unbiased in the contemporary quarrels between different psychological schools and bent only on clearing up the taxonomic relations of the species of a comparatively small group of birds. The success of such endeavours, as every phylogenist knows, is dependent on the number of homologous characters that can be adduced to give a measure of genetic relationship between the forms investigated. In their search for more and ever more homologizeable characters, Charles Otis Whitman in the U.S.A. and Oskar Heinroth in Germany independently made the outstandingly important discovery that there are coordinated motor patterns of action which are just as characteristic of a species, a genus, a family, an order, and even of the higher taxonomic categories, as are any structural properties of the animal's anatomy. This fact alone justifies the conclusion that the coordination of these movements is performed in the genome of a species and

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

that the concept of homology can be applied to them just as well as to morphological characters. Whitman, as early as 1898, made a statement which involves an essential part of ethology's present programme: 'Instincts and organs are to be studied from the common viewpoint of phyletic descent.'

The study of the phylogenetic process of ritualization, with its cultural analogy, constitutes the main subject of our present conference, originated simultaneously with the comparative study of homologous motor patterns, for the simple reason that most of the motor coordinations used by the pioneers of ethology were themselves ritualized: both Whitman and Heinroth concentrated on the patterns of display and had good cause to do so, as I shall shortly explain.

It was Julian Huxley and Edmund Selous who first realized that a very special process of evolution had been at work in the production of threat, courtship, and other displays, which birds and other animals address to fellow-members of their own species. They discovered that many of these movements serving communication are similar to and yet different from motor patterns developing an altogether different function in the everyday life of the species. For obvious reasons, into which I need not go here, the communicative movements have evolved from everyday functions. The process by which they do so was termed ritualization by Julian Huxley. It is of interest not only to the sociologist and the information theorist interested in communication, but also to the student of evolution in general. There are several reasons why ritualized movements lend themselves particularly well to comparative study: they are conspicuous, clear-cut and easily recognizable: the process of ritualization is one of the fastest processes of evolution known in undomesticated animals, as can be concluded from their dissimilarity in comparatively closely related species. If one compares non-ritualized instinctive movements, like locomotion, feeding, preening, nest-building, etc., within a taxonomic group of Family or Sub-family rank, like dabbling ducks, no appreciable differences appear between its members. In order to study the phylogeny of such types of motor pattern by the comparative method one must go much farther afield, studying their manifestations in different Orders, or at least Sub-orders. For this reason ritualized movements are of great help in ascertaining the phyletic relationship of closely allied species.

Another property of ritualized movements which makes them particularly valuable to comparative phylogenetics is a consequence of their functioning as signals. Any signal code is based on a convention between the sender and the receiver of the communication. The meaning of a word, for instance, is only intelligible to a person acquanted with this convention, on the basis of another convention, of another code, the word might have an altogether different connotation. If the historian finds, in two different and unrelated cultures, an axe or a plough of very similar construction, this similarity may be caused by the similarity of function and the investigator is not justified in assuming that the instrument of one culture has been derived, in some way, from that of the other. If, on the other hand, the comparative linguist finds that the words meaning *mother* in English, German, Latin, Greek and Russian have a number of important structural properties in common, he concludes without hesitation that these words are derived historically from a common root. The chances of these similarities being coincidences are negligible, and no similarity of function can explain them. By the same reasoning, similarity caused by similar function,

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

in the biologist's language convergent evolution, can be excluded in the comparative study of ritualized movements. All this contributes to make their study an extremely rewarding occupation for the comparative phylogenist; and as a considerable number of investigators, led by Whitman and Heinroth, seem to have realized this fact, we know more about their evolution than we do about that of any other kind of innate motor patterns.

The concept which we associate with the term ritualization, like most biological concepts, can only be defined by what Bernhard Hassenstein has called an injunctive definition, that is to say by the enumeration of a number of properties which constitute the essence of the concept only by summation. The properties of life, for instance, like metabolism, growth, propagation, etc., all are to be found in inorganic processes as well, but constitute life when realized in the same object. All injunctively defined concepts lack a sharp borderline but merge by gradation into neighbouring concepts.

The first and probably most important characteristic of ritualization has already been mentioned. A phylogenetically adapted motor pattern which originally served the species in dealing with some environmental necessities, acquires a new function, that of communication. The primary function may persist, as in many fishes, birds and mammals, in which locomotion has been ritualized so as to communicate, to the fellow members of the species, an animal's moving away. All these movements release the response to follow in conspecific animals. In many cases, however, the primary function recedes into the background or disappears altogether so that a complete change of function is achieved. Out of communication, two new, equally important functions may arise, both of which, however differentiated the movement may become in their service, always retain a measure of communicative effect. The first of these new functions is the canalization of aggression in a manner permitting its discharge without damaging fellow members of the species, as is the case in the numerous forms of ritualized fighting found in fish, birds and mammals; the second is the formation of a bond which keeps together two or more individuals. This is achieved by most so-called greeting ceremonies which an animal can perform only with a certain, individually known partner, whose presence, for this reason, becomes an indispensable need in the animal's life. It is quite erroneous to say that such ceremonies are 'the expression of' a bond; indeed they themselves constitute it.

The second characteristic of ritualized motor patterns is a change of form which the unritualized prototype underwent in the service of its new communicative function and which quite obviously was brought about by the selection pressure exerted by the survival value of communication. All those elements which, even in the unritualized primary movement, produce visual or auditory stimulation, are strongly exaggerated, while those serving the original, mechanical function are greatly reduced or disappear altogether. This 'mimic exaggeration' results in a ceremony which is, indeed, closely akin to a symbol and which produces that theatrical effect which first struck Sir Julian Huxley as he watched the now classical Great Crested Grebes. A riot of form and colour has evolved to enhance this effect. The beautiful forms and colours of a Siamese Fighting Fish's fins, the plumage of a Bird of Paradise, the Peacock's tail, the amazing colours on both ends of a Mandrill, one and all evolved under the selection pressure of the communicative function performed by some particular ritualized movement.

In the interest of greater unambiguity of the communication, the speed and amplitude

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

of ritualized movements are strictly regulated, a phenomenon termed 'typical intensity' by Desmond Morris who was the first to draw attention to it. The same aim is served by frequent, rhythmical repetition which very often is in itself sufficient to recognize a behaviour pattern as ritualized. Finally, a great number of elementary instinctive movements which are independently variable in the unritualized prototype, are in many cases welded into a single obligatory sequence.

This important effect is achieved by evolving an altogether new motor pattern which copies, in ritual form, a whole series of primarily independent and independently variable movements. The so-called inciting ceremony of ducks furnishes a good example. In its

FIGURE 1

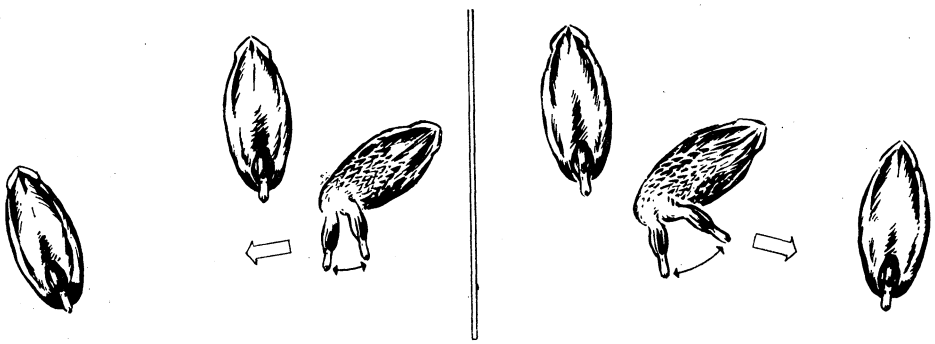

FIGURE 2

primary form, it consists of behaviour patterns motivated by at least three independent factors. The female duck runs aggressively towards an adversary, is then overcome by fear and rushes back to the protection of her mate. The moment she has re-established contact with him, she regains courage and begins to threaten the antagonist again. In its primary form, which is to be observed in Sheldrakes, the component parts mentioned vary in intensity and duration, the attitudes of the female when threatening are exclusively dependent on the positions of herself, her drake and the 'enemy'. All angles between her body axis and the direction in which she stretches forward her neck in threatening, are equally possible. There is one standard case, however, which occurs more frequently than others: very often, the duck, after running back to her drake for protection, stops in front of him without turning her body around, almost touching him with her breast, and now starts again to stretch her neck threateningly in the direction of her enemy. The spatial relationship between the female, her drake and her enemy force her to perform the

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

threatening movement backward over her shoulder at an acute angle to her body axis. In many surface-feeding ducks, this special case of motor coordination has become fixated as one obligatory pattern. However, the head movement, directed backward over the shoulder, still contains the original orientation responses which, in the unritualized prototype, produce a motor pattern phenotypically identical with the one genotypically fixated in the surface feeding ducks. The movements caused by the primary orienting responses are superimposed on the new pattern: if the enemy bird is standing directly in front of the inciting duck, her eyes remain fixated in his direction and the threatening movement backwards over the shoulder is noticeably decreased; while it increases with the angle between the long axis of her body and the direction in which the enemy is standing. If he is situated directly behind her, the amplitude of the movement attains a maximum, the duck's bill almost touching her tail (figure 2). This superimposition of primary orientation responses and newly envolved fixed motor pattern often offers considerable difficulties to the motivation analysis of ritualized behaviour.

A further important constitutive character of ritualization arises directly from the evolution of the new motor pattern: this acquires all the characteristics of an autonomous instinctive movement. It has its own releasing mechanism, its own spontaneity and, therewith, its own appetitive behaviour. Thus, by the process of ritualization, an entirely new instinct may be born which is, in principle, just as independent as any of the primary 'great' drives—hunger, sex, fear or aggression—and may influence the behaviour of a species just as strongly. If it did not, it would not be able either to oppose and master aggression, nor could it ever fulfil its other tasks of forming a bond of friendship literally 'stronger than death'. I have not the time to give you a convincing description of the amazing manner in which the triumph ceremony of geese achieves both these functions: suffice it to say that this ritual, derived from a re-directed threat movement in the comparatively recent phylogeny of the subfamily Anserini, not only suppresses all aggression between the partners but holds them together with something of the death-defying fidelity which, in animal behaviour, is familiar to us only in our faithful dogs.

As with most injunctively defined concepts, we use that of ritualization not only when all its constitutive properties are realized. If some intention movements, for instance those of ducks about to take off, are rhythmically repeated, without being otherwise changed, in the service of communication, we can say that they are 'slightly ritualized' although they possess none of the other properties just described. The essence of ritualized behaviour, however, is represented by those cases, in which it possesses all the properties I have discussed and achieves the full autonomy of an independent drive.

II. *Ritualization in the psycho-social evolution of human culture*

If Sir Julian Huxley, when first describing ritualization, used the term without inverted commas, he did so on purpose, to emphasize that it denoted a purely functional concept equally applicable to a phyletic and a cultural process. Professor Carstairs, a short time ago, said that he was 'chary of analogies'. I agree that an erroneous assumption of homology or, worse, of physiological identity, can indeed be dangerously misleading. When I am lecturing about animals to scientists investigating human behaviour, I usually begin with the caution that the central nervous system has an insidious way of performing

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

analogous functions on different levels of integration in such a similar manner as to mislead even the sophisticated observer to assume physiological identity where it does not exist. However, I do not see that the statement of obvious analogies can lead us into any trap. Provided that an analogy concerns plainly comparable details sufficiently numerous to exclude the possibility of coincidence, we are fully justified in assuming that the two analogous structures or behaviour-patterns do indeed have the same function. Nothing except convergent evolution can account for their detailed similarity. If I were the first scientist to see a dead octopus and, on dissecting it, discovered an eye built like ours, with a cornea, a lens, an iris, focusing muscles and a retina, I would be justified in assuming that this was a visual organ and in calling it an eye without further ado, even if I had no other proof of its function. 'Eye' denotes a functional concept; cephalopods and vertebrates have no common ancestors with eyes of this type: their eyes are functionally analogous, not phylogenetically homologous.

An even better case can be made out for the application of our functional concept of ritualization to both the biological and the cultural spheres, because we need not rely on detailed formal analogy alone. We know from observation and ample experimental verification that rituals, whether phylogenetically or culturally evolved, do in fact perform the same functions of communication, of canalizing aggression, and of effecting the cohesion of pairs or groups. Before speaking of the obvious analogies between the processes of phylogenetic and cultural ritualization, I must say a few words about their differences. These differences concern the mechanisms underlying the two processes and the amounts of time required by each.

Conceptual thought and verbal speech, endowing man with the possibility of cultural tradition, changed man's evolution fundamentally by achieving something equivalent to the inheritance of acquired characters.

We have almost forgotten that the verb *inherit* had a juridical connotation long before it acquired a biological one. When a man invents, let us say, a bow and arrow, not only his progeny, but all his tribe and even all his culture will soon be in possession of these weapons just as securely as if they were organs grown on their bodies. Nor is the likelihood of their use being forgotten any greater than that of an organ of comparable survival value becoming vestigial. Thus, cultural development and tradition, within one or two generations, can achieve a process of ecological adaptation which, in normal phylogeny, would have required a period of an altogether different order of magnitude.

Though cultural rituals develop incomparably faster than phyletic ritualization their development is still less rapid than that of inventions. I do not think that the system of social norms and rites characteristic of a culture owes much to human insight and invention. It has been said that Moses prohibited the consumption of pork because he knew all about trichinosis. If he did, he trusted the devoutness of his followers rather than their insight, as he enunciated a religious law instead of giving lectures on parasitology. In general, the systems of social norms and rites characteristic of cultures rather give the impression that it was good old natural selection that moulded their particular forms, but on a psychosocial instead of a genetic basis, using, as its raw material, randomly arising habits and customs instead of mutations and recombinations. I advance this speculation for all it may or may not be worth.

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

The role played by genetic inheritance in the evolution and maintenance of phylogenetically evolved rituals is, of course, taken over by tradition in cultural ritualization. In the process of tradition itself, however, there are some instinctive, in other words phylogenetically programmed, mechanisms at work. Primary among these is so-called creature habit. On deviating from an individually acquired but sufficiently deeply ingrained habit, man and beast alike experience anxiety. Margaret Altmann, during her studies of the social life of wapiti and American moose, followed the tracks of these animals for many months on her old horse, accompanied by an even older pack mule. When she had camped several times in one particular place, she found it impossible to ride past it without stopping: her mounts balked and were thrown into a panic when she forcibly tried to make them continue on their route. Being well versed in the ways of animals, Margaret Altmann resorted to a compromise—stopping, 'symbolically' unpacking, camping a few minutes, and repacking; after this her mounts were quite satisfied and ready to march on. This behaviour, closely akin to human magical thinking as well as to human compulsive behaviour, is caused by a mechanism whose survival value is obvious. An animal which has acquired a certain habit and has ascertained that it leads to the desired goal without incurring danger, is well advised to stick slavishly to all the details of this procedure, because, not possesssing any insight into the causal connexions of the whole, it cannot possibly know which details are essential to success and safety, and which are not. Many human superstitions, like touching wood, etc., involve this principle: one does not quite know what might happen if the custom were violated!

In addition to this compulsion to stick to habit, there is a second mechanism which ensures that fidelity to an acquired custom is handed down from one human generation to the next. Curiously enough, an analogous process has recently been demonstrated in a bird. My co-worker J. Nicolai has found that young bullfinches learn their song from their father only. For a comparatively long time after fledging, young male bullfinches stand in a peculiar, clearly sexual relationship to their father. They crouch before him, performing the submissive gesture which, like that of many monkeys, is derived from the female copulation posture, and they are much more attached to him than to their mother. During this period they learn their father's individual song. Nicolai had a male bullfinch which had been reared by canary birds and sang exactly like one. His canary-like song was handed down in its pure form, without admixture, through four generations bred in aviaries in which plenty of normally singing bullfinches were present. Nicolai also demonstrated experimentally that a bullfinch can learn his song only from a 'father figure' to which he takes the above described attitude.

In my view, the strong emotional value which human beings attribute to handed-down custom, derives most of its motivational energy from a very similar relationship between the young generation and the elder. If the recipient of tradition does not feel, for at least one member of the older generation, that emotion of respect and love which, under normal conditions, a son feels for his father, the mechanism of passing on traditional norms and rites seem unable to function. In other words, something very like the psychoanalytical 'situation of transference' is its indispensable prerequisite. If, on the other hand, this condition is fulfilled, traditional values gain strength from generation to generation. The farther the revered figure of the ancestor recedes into the past, the better it fulfills its

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

function as the super-ego, the more inviolable become the standards of ritualized social behaviour set by it. As the father figure, even if it takes the form of a personal immortal god, inspires not only fear, but also love, a new factor arises to motivate fidelity to culturally evolved social norms and rites. We not only feel a compulsory fear at their infraction, but we love them for their own sake, and for the sake of what they symbolize.

Habit-formation, compulsive anxiety over infractions of accepted rules, reverence and love for traditional customs—these and whatever other mechanisms there may be to ensure the permanence of culturally ritualized social norms and rites, from generation to generation, perform an analogous function in culturally ritualized social norms and rites, to genetic inheritance in the evolution of phylogenetically ritualized forms of social behaviour. Furthermore, all these mechanisms have themselves, of course, been phylogenetically evolved. Man, as Arnold Gehlen has aptly put it, is by nature a cultural creature. In other words, all his inherited norms of behaviour have been selectively moulded in phylogeny in such a way as to need being complemented by cultural tradition. The phylogenetically evolved part of our brain which endows us with the faculty of verbal speech would be quite unable to function, if the human individual were not brought into contact, during his ontogeny, with a culturally evolved language whose vocabulary he can learn. A man deprived of culture would not be a happy savage released from the bondage of civilization, but a wretched cripple comparable to someone with a damaged forebrain. It is necessary to keep in mind that even a partial loss of cultural tradition is very dangerous, and also that it can occur all too easily. While the phylogenetically evolved bases of social behaviour will persist, for better or worse, under any changes, however rapid, imposed on human environment culturally evolved social norms and rites can be snuffed out like candles.

Having discussed the intrinsic difference of the mechanisms underlying the evolution of ritualization in the biological and the cultural sphere I now proceed to the amazing analogies in their results. These analogies concern all the constitutive properties of ritualization in general, of which I have already spoken.

I need say very little about the change of form which the primary, unritualized pattern of behaviour undergoes in the service of its new functions of communication, of channelling aggression and of group cohesion (bonding). All the means ensuring unambiguity of communication are employed exactly as in phylogenetic ritualization. Mimic exaggeration, redundant repetition and typical intensity are clearly marked in most human ceremonies. In particular, 'measured' speed, frequency and amplitude are symptoms that mark human ceremonial behaviour. The deans walk into the aula of the university with measured step; the catholic priest's chanting during mass is strictly regulated in pitch and rhythm by liturgical rules. The riot of form and colour accompanying human ceremonial, all its pomp and pageantry are developed, in cultural history, in the service of the same functions and along lines astonishingly parallel to those seen in phylogenetic ritualization. In both cases it is abundantly clear that the evolution of the stimulus-sending part of the communicatory system is adapted to the special requirements of the receiver: in other words, it is the receiving set which exerts the selective pressure responsible for the evolution of the sending mechanism.

I have, as I believe prudently, explained that rituals developing in cultural history

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

attain their power of actively motivating human behaviour in a way that is very different from that in which the instinctive motor patterns which evolved in phyletic ritualization, achieve the character of independent, active drives. However different these two origins of the motivating forces are, their effect on social behaviour is very similar. In both cases the rituals become sufficiently autonomous and stable to function as a sort of skeleton supporting the structure of society. This is true not only of the great, highly ritualized ceremonials, but even more so of inconspicuous every-day behaviour patterns. The word polite is derived from the French verb *polire*, to smooth, to rub something until it shines, to give a finish. The omnipresence of this cultural polish is brought to our notice only when we observe, as an exception, human behaviour in which it is entirely lacking. This sort of behaviour is emphatically not supposed to be overtly performed in 'polite society', like yawning and stretching uninhibitedly.

It is especially in the seemingly unimportant everyday cultural rituals which we call manners, that the triple function of all rituals, phyletic and cultural, can be best demonstrated: communication, control of aggression and bond-formation. Any human group which exceeds in size that which can be held together by the bonds of personal love and friendship depends on these three functions of cultural ritualization for its very existence. 'Good' manners are by definition those characteristic of one's own group. As I said, we conform to them automatically and do not, as a rule, realize that they do indeed inhibit aggression and form a bond. Yet it is they that produce what sociologists call group-cohesion, the sticking-together of a group. The function of good manners in permanently producing mutual conciliation between the members of a group can easily be demonstrated by observing what happens in their absence. I do not mean the effect produced by an active gross breach of manners, but by the mere absence of all the little polite looks and gestures by which one person, for example on entering a room, takes cognizance of another's presence. If a person considers himself offended by members of his group, and enters the room occupied by them without these little rituals, as if they were not there, his behaviour elicits anger and hostility just as overt aggressive behaviour does: such intentional suppression of the normal appeasing rituals is equivalent to overtly aggressive behaviour.

Aggressively elicited by any deviation from a group's characteristic manners and mannerisms forces all its members into a strict and uniform observance of these norms of social behaviour. The non-conformist is discriminated against as an 'outsider' and, in primitive groups, of which school classes or small military units serve as good examples, is cruelly mobbed or persecuted.

Culturally developed social norms and rites are characters of human groups of various size much in the same manner as inherited properties evolved in phylogeny are characters of subspecies, species, genera, and higher taxonomic units. Their history can be reconstructed by much the same methods of comparative study. Their divergence during historical development erects barriers between cultural units in the same sort of way as divergent evolution does between species: Erik Erikson has therefore aptly called this process pseudo-speciation—leading to the production of cultural pseudo-species analogous to true biological species.

Though immeasurably faster than phylogenetic speciation, cultural pseudo-speciation

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

does need time. Its slight beginnings, the development of characteristic mannerisms of behaviour in a group and discrimination against uninitiated outsiders may be seen in any group of children, but to give stability and the quality of inviolability to a group's social norms and rites, its continued existence for at least a few generations seems to be necessary. For this reason, the smallest cultural pseudo-subspecies I can think of is the school and it is surprising how old schools preserve their pseudo-subspecific characters throughout the years. The 'old school tie', though often an object of ridicule nowadays, is something very real in a dual sense—as a bond as well as neckwear.

The important function of polite manners can be studied to great advantage in the social interactions between different cultures and subcultures. Many of the mannerisms enjoined by good manners are culturally ritualized exaggerations of submissive gestures, most of which probably have their roots in phylogenetically ritualized motor patterns conveying the same meaning. Local traditions of good manners in different subcultures, demand a quantitatively different emphasis to be put on these expression-movements. a good example is furnished by the attitude of listening politely which consists in stretching the head forward and simultaneously tilting the head sideways, 'lending an ear' to the person who is speaking. The motor pattern conveys readiness to listen attentively and even to obey. In the polite manners of some Asiatic cultures it has obviously undergone strong mimic exaggeration; in Austrians, particularly in well-bred ladies, it is one of the commonest gestures of politeness, while in other Central European countries it appears to be less emphasized. In parts of northern Germany it is reduced to a minimum, or even absent: instead, in these subcultures the correct or even expression of polite listening is to hold the head high a look the speaker straight in the face, just as a soldier is supposed to do when listening to orders. When I came from Vienna to Königsberg, two cities in which the difference in this motor pattern is or was particularly great, it took me some time to get over my misinterpretation of the polite listening gesture of East Prussian ladies: expecting a forward and sideways tilt of the chin, however small, from the lady to whom I was speaking, I could not help feeling that I had said something shocking when she sat rigidly upright looking me in the face.

Undoubtedly, little misunderstandings of this kind contribute considerably to inter-group dislike and hate. The man who, in the manner described, has misinterpreted the social signals of a member of another pseudo-subspecies, feels that he has been intentionally cheated. The mere inability to understand the expression-movements and rituals of a strange culture creates distrust, suspicion and fear in a way which can easily lead to overt aggression.

From the little peculiarities of speech and manner which cause the smallest possible subcultural groups to stick together, an uninterrupted gradation leads up to the highly elaborate, consciously performed and consciously symbolical social norms and rites which unite the largest social units of humanity in one nation, one culture, one religion or one political ideology. Studying such systems and processes by the comparative method—in other words, investigating the laws of cultural pseudo-speciation—would be perfectly possible, though it would be more complicated than the study of biological speciation, because of the frequent overlapping of group concepts, for instance of national and religious units.

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

As I have already said, the emotional appreciation of values gives motivational power to all ritualized norms of social behaviour. Erik Erikson has recently shown that conditioning to the distinction of good and bad begins in early babyhood and continues all through human ontogeny. In principle, there is no difference between the rigidity with which we adhere to our early toilet-training and our fidelity to the national or political norms and rites to which we become object-fixated in later life. The fixity of the transmitted rite and the tenacity with which we cling to it, are essential to its proper function. At the same time, like the operation of even more rigid instinctive patterns of behaviour, they need supervision by our rational, responsible morality.

It is right and legitimate that we should consider as 'good' the manners which our parents taught us, that we should hold sacred the social norms and rites handed down to us by our cultural tradition. What we must guard against, with all the power of rational responsibility, is our natural inclination to regard the social rites and norms of other cultures as inferior. The dark side of pseudo-speciation is that it makes us consider the members of pseudo-species other than our own as not truly or fully human. Many primitive tribes demonstrably do so, in whose language the word for their own tribe is synonymous with 'man': from their viewpoint it is not, strictly speaking, cannibalism if they eat the fallen warriors of an enemy tribe. And some developed nations also have done the same, in proclaiming themselves as the chosen people or inherently superior, therefore justified in treating other races or nations by different moral or cultural standards.

The moral of the natural history of pseudo-speciation is that we must learn to tolerate other cultures, to shed our own cultural and national arrogance, and to realize that the social norms and rites of other cultures, to which their members keep faith as we do to our own, have the same right to be respected and to be regarded as sacred. Without the tolerance born out of this realization it is all too easy for one man to see the personification of evil in the god of his neighbour, and the sacred inviolability of rites and social norms which is one of their most important properties, can lead to the most terrible of all wars, to religious or pseudo-religious (ideological) war—which is exactly what is threatening us today.

We must also learn to tolerate and indeed welcome changes in our own norms and rites, so long as they tend in the right direction—towards greater human fulfilment and fuller human integration.

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