SOME BIOLOGICAL UNDERPINNINGS OF THE SELF-IMAGE

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The hypothesis of genetic control (regulation) ascribed to Chitty (1960, 1967) explains the causes of fluctuations in population numbers in terms of genetic composition. In periods of decrease in population numbers, the competitiveness between individuals is reduced and therefore there occurs a type of selection called selection $r$. In periods of peak population growth competitiveness is intense and a shift toward a different type of selection, selection $K$, takes place. Directional changes of selection are connected with population density and are self-regulatory. A corollary is that the average phenotype never totally represents the individual best fitted to specific population conditions, since those conditions are constantly changing. Consequently, the genetic pool of a group of individuals is always changing from generation to generation (Pianka, 1970, 1972).

MacArthur and Wilson (1967) denoted the two, opposed types of selection, with letters $r$ and $K$, derived from two parameters in the logistic equation of population growth. One cannot say of any species that it is subject either to selection $r$ or to selection $K$, because each species takes an intermediate position between these two extreme types. The $r$-selection and $K$-selection, the two opposing selective forces, are defined by Pianka (1974) as follows: "In a 'competitive vacuum' (or an extensively rarefied environment) the best reproductive strategy is often to put maximal amounts of matter and energy into reproduction and to produce as many total progeny as soon as possible. Because there is little competition these offspring often can thrive even if they are quite small and therefore energetically inexpensive to produce" ($r$-selection = $K.W.$). "However, in a 'saturated' environment, where density effects are pronounced and competition is keen, the best strategy may often be to put more energy into competition and maintenance and to produce offspring with more substantial competitive abilities. This usually requires larger offspring; and because they are

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energetically more expensive, it means that fewer can be produced" (K-selection = K.W.).

One should assume a certain continuum of selections $r \to K$, the position of given organisms within this continuum being changeable. Depending on the environment and time (Pianka, 1970, 1972), the genetic composition of a group may shift toward one or the other extreme in order to maintain homeostasis. One may also accept a hypothesis that, depending on the level of phylogenetic development—that is, a process of species transformation by way of undirected mutation and selection (see Eibl-Eibesfeldt, 1970)—under the conditions of extreme physiological stress occurring as a result of unusually high population densities, the selection continuum $r \to K$ may become disturbed. If this occurs, a given species may not be able to assume the optimal position between these two extreme types of selection. Under these conditions, and because of a high level of anxiety and aggressiveness, as well as the resulting reactive hostility brought about by conditions of peak crowdedness, many representatives of the group may die. This has been observed and reported in a population of voles by Christian and Davis (1964).

In an environment “saturated” with a specific population, the best adaptive strategy consists of sacrificing a greater amount of energy on rivalry and survival, and therefore competitiveness. This means generating an offspring particularly fitted to compete (Pianka, 1970, 1972).

Among the voles mentioned above, the so-called stress syndrome appeared under conditions of extremely high population densities. The weight of the adrenal glands was reported to be increased and individuals became very aggressive; as a result, reproduction became highly restricted. Under the effect of the so-called spreading “shock,” many animals died. Quite evidently, physiological stress led to the demise of a large number of individuals (Christian and Davis, 1964).

One may assume that the fights that took place between the rodents indicate the unblocking of those structures of the central nervous system that are otherwise subordinated to the brain cortex. This may constitute evidence proving the existence of an inborn, genetically mediated aggression impulse.

Naturally, these forms of behavior are biologically “patterned” and, according to dynamically changing conditions of population density, they undergo mutations. There are also changes of the preconscious archetype; the term archetype is used here in the sense of C. G. Jung (1958) who defines archetypes as factors and motifs that arrange the psychic elements into certain images, characterized as archetypal, but in such a way that they can be recognized only from the effects they produce. They exist preconsciously, and presumably they form the structural templates of the