AD OBJECTIVE VALUE AS PROPERTY OF A COMPONENT OF A SYSTEM

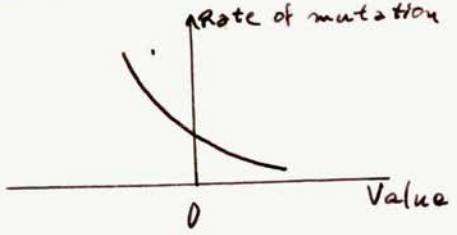
Most biologists seem to take it for granted that every component of an organism has some value (positive, negative, or nil) for the organism, even if the latter is not aware of it. Such values are then objective. A general characterization is this:

If b is a component of organism c, then b is <u>valuable</u> to c

$=_{df}$ the presence of b is necessary for the normal functioning of c.

(A similar definition holds, mutatis mutandis, for the parts of a machine.) Moreover, such value assignments underlie much evolutionary thought. Indeed take a molecule or a gene. If its precise composition is critical to the organism, it is assumed that it will mutate slowly if at all; if on the other hand its precise composition is of no consequence to organism

then it is less constrained and its rate of mutation may be greater.




( Possibly $-\frac{dr}{dt} = kV \therefore r = r_0 e^{-kV}$ )

The concept of objective value of a trait is basic to the theory of evolution. Indeed, one assumes here that, if a variation (mutation) x is favorable/to (valuable) or neutral organisms of a kind, then it has a chance to become fixed. In other words widerspread or

If m is a mutation, then: $V(m) \geq 0 \iff Pr(m \text{ fixed}) > 0$.

$V(m) < 0 \iff Pr(m \text{ fixed}) = 0$.

(These equivalences hold for natural selection. They cease to hold for artificial selection. E.g. dog breeders have succeeded in creating dogs that drag their bellies on the ground, and medical science is succeeding in increasing the fraction of people with certain genetic diseases.)