**Passage:Opportunists and Competitors**

Growth, reproduction, and daily metabolism all require an organism to expend energy. The expenditure of energy is essentially a process of budgeting, just as finances are budgeted. If all of one’s money is spent on clothes, there may be none left to buy food or go to the movies. Similarly, a plant or animal cannot squander all its energy on growing a big body if none would be left over for reproduction, for this is the surest way to extinction.



All organisms, therefore, allocate energy to growth, reproduction, maintenance, and storage. No choice is involved; this allocation comes as part of the genetic package from the parents. Maintenance for a given body design of an organism is relatively constant. Storage is important, but ultimately that energy will be used for maintenance, reproduction, or growth. Therefore the principal differences in energy allocation are likely to be between growth and reproduction.

Almost all of an organism’s energy can be diverted to reproduction, with very little allocated to building the body. Organisms at this extreme are “opportunists.” At the other extreme are “competitors,” almost all of whose resources are invested in building a huge body, with a bare minimum allocated to reproduction.

Dandelions are good examples of opportunists. Their seedheads raised just high enough above the ground to catch the wind, the plants are no bigger than they need be, their stems are hollow, and all the rigidity comes from their water content. Thus, a minimum investment has been made in the body that becomes a platform for seed dispersal. These very short-lived plants reproduce prolifically; that is to say they provide a constant rain of seed in the neighborhood of parent plants. A new plant will spring up wherever a seed falls on a suitable soil surface, but because they do not build big bodies, they cannot compete with other plants for space, water, or sunlight. These plants are termed opportunists because they rely on their seeds’ falling into settings where competing plants have been removed by natural processes, such as along an eroding riverbank, on landslips, or where a tree falls and creates a gap in the forest canopy.

Opportunists must constantly invade new areas to compensate for being displaced by more competitive species. Human landscapes of lawns, fields, or flowerbeds provide settings with bare soil and a lack of competitors that are perfect habitats for colonization by opportunists. Hence, many of the strongly opportunistic plants are the common weeds of fields and gardens.



Because each individual is short-lived, the population of an opportunist species is likely to be adversely affected by drought, bad winters, or floods. If their population is tracked through time, it will be seen to be particularly unstable—soaring and plummeting in irregular cycles.



The opposite of an opportunist is a competitor. These organisms tend to have big bodies, are long-lived, and spend relatively little effort each year on reproduction. An oak tree is a good example of a competitor. A massive oak claims its ground for 200 years or more, outcompeting all other would-be canopy trees by casting a dense shade and drawing up any free water in the soil. The leaves of an oak tree taste foul because they are rich in tannins, a chemical that renders them distasteful or indigestible to many organisms. The tannins are part of the defense mechanism that is essential to longevity. Although oaks produce thousands of acorns, the investment in a crop of acorns is small compared with the energy spent on building leaves, trunk, and roots. Once an oak tree becomes established, it is likely to survive minor cycles of drought and even fire. A population of oaks is likely to be relatively stable through time, and its survival is likely to depend more on its ability to withstand the pressures of competition or predation than on its ability to take advantage of chance events. It should be noted, however, that the pure opportunist or pure competitor is rare in nature, as most species fall between the extremes of a continuum, exhibiting a blend of some opportunistic and some competitive characteristics.

