

# Integrity and Fragility: Human Values and the Material System

T. F. H. Allen

*University of Wisconsin, U.S.A.*

Integrity is not an absolute, independent of human conceptual frameworks. Rather it is always set in the context of decisions about system type over a prescribed spatio-temporal scale. For notions of integrity to be significant, there must be at least a tacit utilitarian component to these prescriptions. Putting aside an undefined integrity of some mythical pristine system, working definitions of integrity do not become relevant until there is a human presence and a system made fragile by it. Fragility is not bad, but has been a quality of the biosphere since the emergence of civilization. For example, both the ancient Greek and Roman systems, when they had fully functional integrity, were fragile.

Unraveling integrity requires a duality of the material system itself, as opposed to human frameworks for communication or management action. Exclusive focus on the material system gives the decision-maker an impossible number of choices, and no definitions; exclusive focus on scale and type gives narrowly directed capricious action that ignores lessons from the material system. An ideal is guided by the principal physical and biological material flows, as the scientist erects a rich system definition that explicitly links different ecological types, like landscape and ecosystem, across a range of scales. Integrity is not a matter of degree, because the material imbalances of incomplete integrity will bring all down, like the ancient failure of Sumerian agriculture through salinization. True, integrity at one scale may deny integrity at another, but if it is in a scale-explicit framework, trade-offs can be calculated and weighed. Integrity in the contemporary biosphere must work with natural processes, but they are not those of the pristine system. Utilitarian concepts of integrity must accommodate to new structures and their patterns of process which naturally emerge far from equilibrium as a result of a substantial human presence. In a world with five billion people, managing towards a pristine system is irresponsible.