Essay

The Challenge and Satisfaction of Integrative Thinking

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IN AN ESSAY in the last issue of this journal, I reviewed some of the integrated biological processes, both generic and environmental, that work together to nourish, strengthen, and protect the human being, including tangible and intangible agents that nourish and regulate the organism. We are gradually learning that to understand is to think integratively and to avoid narrow dogma.

Among the most stultifying dogmas are those which collectively hold that evidence, to be scientific, must be concrete or numeral; that a force, to be real, must be tangible; that only tangible forces can have a real impact.

Integrative thinking must question all dogmas. Some of the most tenacious are those that emerge from insistence on "either-or" solutions to questions. The prototype is the nature-nurture conflict, and its consequence is failure to learn that organisms emerge from an integrative process dependent on inheritance and experience.

Another either-or trap in biological inquiry is whether to sponsor the top-down or the bottom-up approach to achieve enlightenment regarding how the body works or to ascertain what has disrupted its functional state. We have been slow to recognize that organisms are formed and governed by myriad structures of various size and composition which, nourished by energy, interact at every level.

The history of medicine is filled with conflicts between advocates of one guess or conviction and advocates of another, when the realization eventually emerges that both views have merit.

The rapid pace of development in molecular genetics during the latter half of the present century has spawned a widely held deterministic dogma but no satisfactory theory of human development, adaptation, welfare, health, and fulfillment. There have been noble attempts, however, to fill this void.

The reluctance of many biologists and medical scientists to recognize and deal with the influence of real, powerful and important intangibles has also hampered our ability to recognize and deal with the reality of mind and spirit. This intellectual deafness may be attributable to the long-standing dogma mentioned above, which restricts the domain of science to the objective and the measurable.

Although many modern biologists not only turn a deaf ear and a blind eye to intangible and subjective evidence, the philosophers, from whom all science originally emerged, had no difficulty accepting meaning and significance as legitimate matters for study as readily

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as they did objective, observable phenomena. In the early eighteenth century, the famous philosopher and mathematician Christian von Wolff proposed the existence of an intangible physical force at work in human interactions (Blackwell, 1961). Wolff had approached psychology with the concepts and methods of physics. He suggested that, as the explanation of physical phenomena is to be found in the laws of motion, so the inter-human force, capable of producing a somatic or visceral change, favorable or unfavorable, is reflective of individual experience and especially of human interactions. As Claude Bernard put it: "The vital force directs phenomena that it does not produce; the physical agents produce phenomena they do not direct" (Bernard, 1839). As he used the term, vital, to distinguish living organisms from inanimate bodies, he was pointing out that the organism operates at all levels in response to its experience. It is the experience, then, which initiates the force that Bernard refers to, i.e., a force that does not lend itself to reductionistic analysis. Although irreducible, it is nevertheless comprehensible as a powerful and universal intangible. Thus, as significant as are the brain's intricate, versatile, and elegant structures and their awesome capacity to intercommunicate, it is specifically how the structures interrelate that determines the character of their product. As Hughlings Jackson put it, "Neural organization is dependent on, but distinct from, anatomical structure" (1889). Wolff, Bernard, and Jackson were integrative thinkers.

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