

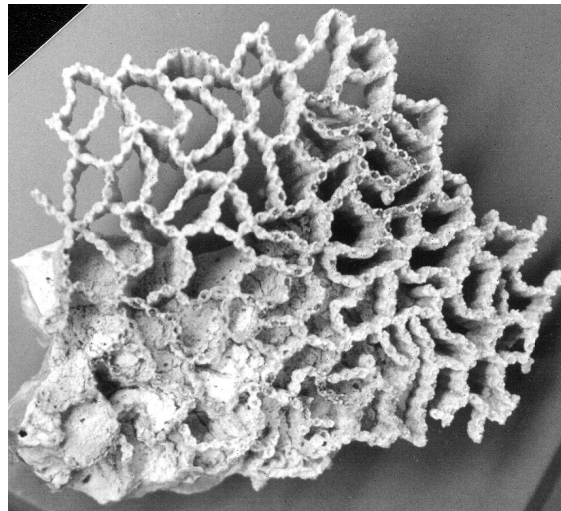
Intelligent Design and the Future of Science Education

The central purposes of science are easily stated – cataloging, describing, and explaining the majestic complexity of nature. As such, the scientific process was established as a way to bring organization and reliability to those very human activities of observation and interpretation. Without question, science has proven to be the most successful philosophical and intellectual system ever created. The origins of this success reside in the way in which the scientific process occurs – errors, mistakes, and logical gaps are essential to the growth of knowledge. The boundaries of our understanding are defined by the magnitude of our ignorance. As scientists we do not like to be wrong, yet, neither do we retreat from the complexity of nature. By using the scientific process we explore our world and expand our understanding. There is no phenomenon of nature that is too complex for our consideration. There is no structure or process that defies our ability to address through the formal structure of science. Nature is complex. New knowledge is gained only with great effort. Yet, nature does not defy us.

There exists, however, a small but vocal cadre of credentialed professional scientists who question the accessibility of nature's complexity to the consideration of our science. These individuals are proponents of a notion, typically and inaccurately, referred to as Intelligent Design Theory. This notion holds that the complexity of nature cannot be explained by the incremental evolutionary changes postulated by Darwinian Evolution. Pointing to so-called units of irreducible complexity, the champions of Intelligent Design suggest that there are elements of nature that are too perfect, too complex, to be anything other than the product of special creation by a divine intelligence.

Irrespective of one's theological sentiments, Intelligent Design represents a significant challenge to the future of science education. Cloaking their arguments in the language of science, supporters of Intelligent Design strengthen and undergird their notions while at the same time undermining the public's perception of the validity and utility of scientific inquiry. One need go no further than the inappropriate application of the term "theory" to the concept of Intelligent Design to understand the fundamental dangers at work. Clearly, the idea that aspects of nature are sufficiently complex as to

require special creation without evolution is non-scientific. Science demands that an idea be subjectable to tests of falsification. Intelligent Design is not science, no matter how much window dressing is applied – there is no way to test the notion, nor is it clear what the falsification result would be. The concept must not, therefore, be referred to as a scientific theory – it is, if anything, a postulate – a "just-so" story, something taken as self-evident or assumed without proof as a basis for further reasoning. In this case, Intelligent Design is the cornerstone upon which a larger illogical and anti-scientific structure is created.



Geometric complexity of Silurian chain coral colony-evidence of the power of evolution or of divine construction?

Wherein lie the dangers associated with Intelligent Design? Surely, the concept represents little more than the product of a small sect of people working at the fringe of science. Perhaps in terms of the impact of Intelligent Design upon the scientific community assessment is correct. As science educators, however, it is essential we give this movement more serious consideration. Our educational mission is two fold: first, develop the next generation of geoscientists; second, serve as an essential source of information for decision makers and the general public. It is in our second role that we must address the issues raised by the proponents of Intelligent Design.

The greatest philosophical problem associated with Intelligent Design resides in how it treats uncertainty - how it addresses our incomplete understanding of nature. The concept of irreducible complexity has two major flaws. First, because there does not exist living examples of the vast number of evolutionary steps needed for the development of a human eye or the flagellum of a bacteria does not necessitate that there were never such intermediate forms. Second, the logical sequence that demands that because modern science does not fully understand the origins of such complex systems, the only possible process of formation is divine design turns the essential and necessary driving force of ignorance against science. Holding such a view of a complex structure is an intellectual "give-up." Such have always been the arguments of those who would slow science's progress, "we can't know, therefore we shouldn't ask." One of the most significant contributions we can make as science educators is to proclaim notions such as Intelligent Design to be the nonsense they so clearly are.

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