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New Peer-Reviewed Scientific Article From William Dembski and Robert Marks Challenges the Creative Mechanism of Darwinian Evolution

A new article titled "**Conservation of Information in Search: Measuring the Cost of Success**," in the journal *IEEE Transactions on Systems, Man and Cybernetics A, Systems & Humans* by William A. Dembski and Robert J. Marks II uses computer simulations and information theory to challenge the ability of Darwinian processes to create new functional genetic information. (For a PDF of the article, see **here**.)

Darwinian evolution is, at its heart, a search algorithm that uses a trial and error process of random mutation and unguided natural selection to find genotypes (i.e. DNA sequences) that lead to phenotypes (i.e. biomolecules and body plans) that have high fitness (i.e. foster survival and reproduction). Dembski and Marks' article explains that unless you start off with some information indicating where peaks in a fitness landscape may lie, any search — including a Darwinian one — *is on average no better than a random search*.

After assessing various examples of evolutionary searches, Dembski and Marks show that attempts to model Darwinian evolution via computer simulations, such Richard Dawkins' famous "METHINKSITISLIKEAWEASEL" example, start off with, as Dembski and Marks put it, "problem-specific information about the search target or the search-space structure." According to the paper, such simulations only reach their evolutionary targets because there is pre-specified "accurate information to guide them," or what they call "active information." The implication, of course, is that some intelligent programmer is required to front-load a search with active information if the search is to successfully find rare functional genetic sequences. They conclude, "Active information is clearly required in even modestly sized searches."

This paper is in many ways a validation of some of Dembski's core ideas in his 2001 book *No Free Lunch: Why Specified Complexity Cannot Be Purchased without Intelligence* , which argued that some intelligent input is required to produce novel complex and specified information. Dembski has **blogged** about his paper at Uncommon Descent, explaining how it supports ID:

> Our critics will immediately say that this really isn't a pro-ID article but that it's about something else (I've seen this line now for over a decade once work on ID started encroaching into peer-review territory). Before you believe this, have a look at the article. In it we critique, for instance, Richard Dawkins METHINKS*IT*IS*LIKE*A*WEASEL (p. 1055). Question: When Dawkins introduced this example, was he arguing pro-Darwinism? Yes he was. In critiquing his example and arguing that information is not created by unguided evolutionary processes, we are indeed making an argument that supports ID.

The paper's abstract is as follows:

> Conservation of information theorems indicate that any search algorithm performs, on average, as well as random search without replacement unless it takes advantage of problem-specific information about the search target or the search-space structure. Combinatorics shows that even a moderately sized search requires problem-specific information to be successful. Computers, despite their speed in performing queries, are completely inadequate for resolving even moderately sized search problems without accurate information to guide them. We propose three measures to characterize the information required for successful search: 1) endogenous information, which measures the difficulty of finding a target using random search; 2) exogenous information, which measures the difficulty that remains in finding a target once a search takes advantage of problem specific information; and 3) active information, which, as the difference between endogenous and exogenous information, measures the contribution of problem-specific information for successfully finding a target. This paper develops a methodology based on these information measures to gauge the effectiveness with which problem-specific information facilitates successful search. It then applies this methodology to various search tools widely used in evolutionary search.
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> (William A. Dembski and Robert J. Marks II, "**Conservation of Information in Search: Measuring the Cost of Success**," *IEEE Transactions on Systems, Man and Cybernetics A, Systems & Humans*, Vol. 39 (5):1051-1061 (September, 2009).)

Research Faced A Rocky Road to Publication

The article was published from the work of Drs. Dembski and Marks with their **Evolutionary Informatics Lab**. A few years ago, Marks started Evolutionary Informatics Lab at Baylor University (with William Dembski) to study the ability of Darwinian evolutionary

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