

Introducing the Possibility of Corruption to Facilitate Reverse Engineering of Natural Systems

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In conducting reverse engineering studies on manmade systems, it is often necessary to consider the possibility that the specimen under investigation has experienced wear, damage, or corruption due to misuse, fatigue, exposure to corrosive elements, etc. A clear example of this is seen in the case of the severely corrupted Antikythera Mechanism, which took most of the twentieth century to successfully reverse engineer. The disintegrated gear train from this undersea artifact was eventually reconstructed through the painstaking process of teasing apart the original design from the effects of corruption. However, this was not accomplished by analyzing the recovered specimen in isolation from other pertinent information. Reverse engineering necessarily makes use of available information regarding all six of the relationships between the four entities that comprise the “big picture” of design and reverse engineering (designer, artifact, user, and investigator). This “relational” theory of design has proved helpful in capturing and elucidating key design affordances provided to the end user.

Is it possible that this same kind of relational approach may be helpful when conducting reverse engineering studies of natural systems? A Christian worldview posits a similar big picture of Creator, cosmos, human as user, and human as seeker of truth. Consideration of the relationships between these entities may assist in addressing questions of meaning and purpose. When seen from this perspective, recent biological discoveries, such as those made in the field of epigenetics, appear to confirm the importance of moral and lifestyle choices and their influence on human flourishing. Of course, these considerations may cross the boundaries of common definitions of science, but such is the nature of the reverse engineering enterprise. Although experimentation and data-collection must necessarily come under the scrutiny of methodological naturalism, data-interpretation and theory-building need not be so constrained, unless suffering under the imposition of a materialist worldview. A relational theory of design and reverse engineering with the possibility of corruption provide a rich setting in which to collect and conjoin the consilience of pertinent data from various fields of study that bear on the questions of human origin, purpose, and destiny.