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THE DISC QUOTIENT: A POST DETECTION STRATEGY

Abstract

D.I.S.C: Decipherment Impact of a Signal's Content.

The authors present a numerical method to characterise the significance of the receipt of a complex and potentially decipherable signal from extraterrestrial intelligence (ETI). This approach is modelled on the 'Rio Scale', for characterising the discovery of an ETI, and the 'Torino Scale', for characterising asteroid impacts. The purpose of the scale is to facilitate the public communication of work on any such claimed signal as such work proceeds, and to assist in its discussion and interpretation.

Building on a 'position' paper rationale, this paper looks at the DISC quotient proposed and develops the algorithmic steps and comprising measures that form this post detection strategy for information dissemination, based on prior work on message detection, decipherment. As argued, we require a robust and incremental strategy, to disseminate timely, accurate and meaningful information, to the scientific community and the general public, in the event we receive an 'alien' signal that displays decipherable information. This post-detection strategy is to serve as a stepwise algorithm for a logical approach to information extraction and a vehicle for sequential information dissemination, to manage societal impact.

In developing a strategy for message detection and decipherment, comparators from existing protocols for 'catastrophic' and globally significant events that have high societal impact are presented as supporting rationales. Nevertheless, a post detection scenario has very particular challenges that form its core metrics, dictating logical stages and subsequent information flow, which are significantly affected by the unknown aspects of its structure and content. To assist our capabilities in tackling such a complex task, prior research conducted on identifying structural 'universals' and decipherment strategies, based on aspects of these computational phenomena identifiable in the constructs of language, provide essential insights into the difficulty factors each phase is likely to present.

The 'DISC Quotient', which is based on signal analysis processing stages, includes factors based on the signal's data quantity, structure, affinity to known human languages, and likely decipherment times. Comparisons with human and other phenomena are included as a guide to assessing likely societal impact.

It is submitted that the development, refinement and implementation of DISC as an integral strategy, during the complex processes involved in post detection and decipherment, is essential if we wish to minimize disruption and optimize dissemination.