

Conservation of Frequent Events But Not Rare Ones

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Conservation of Frequent Events But Not Rare Ones

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From my thread on invariance measures today and yesterday (the third part will appear by the time this does, I think), Fairly Frequent Events and Rare Events respectively follow:

- 1) $P(B/A) = P(S(A, B)) = P(A)$ for A an Attractor in Frequent Events
- 2) $P(A \rightarrow B) = P(T(A, B))$ does not = $P(A)$ for any Rare Event A

Here $S(A, B)$ and $T(A, B)$ are respectively defined by the transformations:

- 3) $S(A, B) = P(AB)/P(A)$ if $P(A)$ is not 0
- 4) $T(A, B) = 1 + P(AB) - P(A)$

For invariant measures u or P (P used for probabilities or conditional probabilities with $P(A)$ fixed), S or T should be replaced by their inverse functions and (3), (4) generalize the concept to transformations on two arguments (both range and domains either set-valued or pairs of set values). Other than these considerations or modifications, however, some similarities should be noted.

This is especially important because of Noether's Theorem which essentially says that invariances of physical systems with respect to translation, rotation, and time respectively give rise to conservation of linear momentum, angular momentum, or energy, and invariance with respect to general gauge transformations yields conservation of electric charge, etc. Translation, rotation, and time are types of transformations.

What would be an intuitive interpretation of Fairly Frequent Events being conserved under conditional probability $P(B/A)$, while Rare Events are not conserved under Probable Influence $P(A \rightarrow B)$ (except under the Universe where $P(A)$ is replaced by 1 for the latter!)?

The simplest interpretation is that Fairly Frequent Events B can come under the influence of "finite" Attractors in the sense of $P(A) < 1$, which is a sort of analog of "Materialism" as placing high utility on finite appearances. Rare Events B cannot come under the influence of such Attractors and only can be attracted by the "Universe" up to probability 0, that is to say $P(A \rightarrow B) = 1$ is the only possible case of Attractors for Rare Events. This would be a sort of analog of "Non-Materialism" as placing high utility on infinite or indeed universal "essences". Philosophically, one could regard this as the Hedonist versus Platonic viewpoints respectively. But this is only part of the story. When Fairly Frequent Events are attracted to an Attractor, they tend to "stay still" or be conserved more or less. However, Rare Events tend to expand or increase without bound, on the one hand, or to decrease toward negligibility (the null set) on the other hand. If the formulation $P(A \rightarrow B) = 1$ is correct, the expansion or increase is by far the dominant mode at least for "Non-Material" variables like Knowledge – a type of "Non-Material" principle which balances out the law of thermodynamic increase in entropy for "Material" objects.

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