

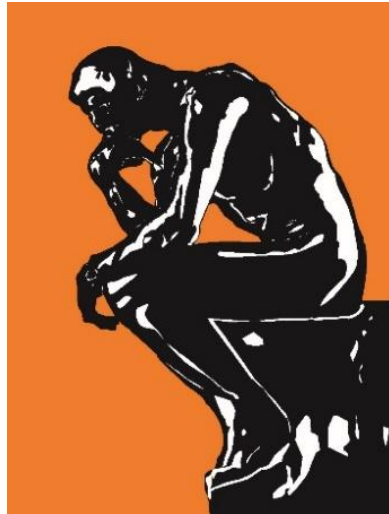
Revisiting cultural additivity through the lens of granular interactions thinking mechanism

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“– My family’s fishing legacy is the epitome of talent, to the point that we are revered as “king.” Only today did I learn that, apparently, the whole family has been catching fish illegally.”

In “Family Legacy...”; *The Kingfisher Story Collection* (2022)

In a recent book [1], we have co-developed an informational entropy-based notion of value. The concept is developed from the granular worldview and primary features of quantum mechanics [2,3], Shannon's information theory [4], and the mindsponge theory [5].

In essence, the new concept stipulates that values derive from the granular interactions thinking mechanism. Such interactions can happen among units of information existing within the mind and between them and newly absorbed ones to maximize the probability of prolonging one's existence. Following this way of thinking, values can be deemed as granular units that are formed through interactions of information (i.e., potential alternatives). When being formed, they can subsequently interact with other existing units of information (or values), contributing to the formation of new units of information, values, and information-value nexuses [1].

As Rovelli [2] asserts that a well-constructed theory must effectively explain established empirical evidence or observed phenomena, it leads me to consider whether there are any socio-cultural phenomena or events that reflect the properties of the new informational entropy-based notion of value. After some reflection, we realized that cultural additivity is a phenomenon that clearly demonstrates the properties of informational interactions [6]. Although we have employed the mindsponge theory to elaborate on the information-processing mechanism behind cultural additivity, many aspects remain elusive [7]. Thus, through the lens of the informational entropy-based notion of value, we attempt to provide explanations for the aspects that we could not explain previously: the additivity limit and the drawbacks of cultural additivity.

The concept of cultural additivity reflects the addition of different types of information (i.e., ideas, values, beliefs) into an existing psychological system. This addition not only increases the amount of information but also enhances the interaction and connectivity between units of information. During this process, information-value nexuses are formed. Some nexuses complement each other, some conflict and negate each other, while others coexist with the remaining nexuses. Thus, an individual is considered to have the additivity ability when they can accept various information-value nexuses. The more information-value nexuses an individual can accept, along with the higher the level of conflict among these nexuses, the higher their cultural additivity is considered to be. In other words, cultural additivity can be seen as a continuum, ranging from accepting only one highly similar information-value nexus to accepting all information-value nexuses, including those that are completely conflicting.

Therefore, a high level of cultural additivity clearly allows an individual to become more resilient to external shocks and more creative. For example, Vietnamese people, with their high cultural additivity, were able to adapt better to the devastating COVID-19 pandemic [8]. Meanwhile, the open to new information enables an individual to combine and create new kinds of information, values, and information-value nexuses [9,10].

However, maintaining cultural additivity also requires more energy and carries a higher risk of losing more information. To better understand this aspect, we can refer to Shannon's formula for informational entropy (or missing information) [4]:

$$H(X) = - \sum_{i=1}^n P(x_i) \log_2 P(x_i)$$

$H(X)$ is the informational entropy of a random variable X with possible outcomes $\{x_1, x_2, \dots, x_n\}$ and corresponding probabilities $\{P(x_1), P(x_2), \dots, P(x_n)\}$. $P(x_i)$ is the probability of the outcome x_i . Each probability $P(x_i)$ represents how likely each outcome x_i is to occur.

In this context, the variable X can be interpreted as an individual's mind in the current state, with i number of information-value nexuses. Each information-value nexus has its $P(x_i)$ probability to be stored within the mind. According to this formula, when the number of information-value nexuses increases without clear differentiation and prioritization of their importance, informational entropy will rise rapidly, reaching a maximum when all nexuses are equally important, specifically when $P(x_i) = \frac{1}{n}$. In other words, individuals face the highest risk of information loss if they fail to establish a priority system.

Reducing entropy requires energy. However, according to quantum physics, all physical systems have limits, and humans are no exception [3]. Therefore, the ability to integrate new information additively also has limits. In essence, due to these energy constraints, to integrate a new unit of information, value, or information-value nexus into the system (possibly due to changes in the environment), highly additive individuals tend to forget older units of information, value, or information-value nexus.

This tendency can be observed in the behaviors and patterns of Vietnamese people. Because Vietnamese individuals have a high level of cultural additivity, they often assign probabilities to retain information-value nexuses relatively equally. When energy limits are reached, older nexuses may be lost and replaced by new ones. Evidently, many intellectuals have noted that Vietnamese

philosophical systems often lack a cohesive, overarching framework, instead forming through borrowing and stitching together elements from various other cultures to adapt [11-13]. Even in everyday consumer behavior, Vietnamese people show less brand and store loyalty, frequently changing their shopping habits to optimize their purchases. Among consumers in the Asia-Pacific region, those in Vietnam report the lowest brand loyalty, with 90 percent having switched stores or brands in the past three months [14].

It seems to us that, through the lens of the informational entropy-based notion of value, many aspects of socio-cultural phenomena can be further clarified and explained, particularly the mechanism of cultural additivity. In this paper, we have only outlined a few broad strokes to capture initial thoughts, with the intention of further developing and refining them later. We hope that these insights contribute to illuminating the potential of the new notion of value and the granular interactions thinking mechanism in the study of culture, society, and business.

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