

the improbable, yet elementary, case: *making sense of an incoherent species, by deriving, and applying, the common primitives, of a coherent universe* - @causalmechanics ¹ - 2023-03-09

1 paradigm, measure, common measures, incommensurability

$(Pa, Me, \bigcap_{Me}, \bigcap_{\emptyset})$

A reinterpretation of Thomas Kuhn's 'On The Structure of Scientific Revolutions', through the lens of set-theory(-ish) mathematics.

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note: consider all set-theory as pseudo-set-theory; a means for a novice mathematician to express ideas in less time and fewer words than a similarly novice writer might, in prose ².

1.1 a gentle introduction

(Pa, Me)

Let us consider a paradigm Pa , as a set of two measures Me_1 and Me_2 :

$$Pa = \{Me_1, Me_2\} : |Pa| = 2$$

...

1.2 totality, commonality

(\cup, \cap)

If paradigm Pa_1 , contains measures $Me_{1,2,3}$:

$$Pa_1 = \{Me_1, Me_2, Me_3\}$$

And paradigm Pa_2 , contains measures $Me_{2,3,4}$:

$$Pa_2 = \{Me_2, Me_3, Me_4\}$$

...

The *set-of-all* measures \bigcup_{Me} , across Pa_1 and Pa_2 , can be found by union \cup :

$$\bigcup_{Me} = Pa_1 \cup Pa_2 = \{Me_1, Me_2, Me_3, Me_4\}$$

...

The *set-of-common* measures \bigcap_{Me} , between Pa_1 and Pa_2 , can be found by intersection \cap :

$$\bigcap_{Me} = Pa_1 \cap Pa_2 = \{Me_2, Me_3\}$$

...

Observing:

$$|\bigcup_{Me}| = 4, |\bigcap_{Me}| = 2, |\bigcap_{Me}| < |\bigcup_{Me}|$$

...

note: remember, this is a simplification, and an introduction

...

1.3 incommensurability

(\cap_{\emptyset}) ³

Consider paradigms Pa_3 and Pa_4 , whereby:

$$Pa_3 = \{Me_1, Me_2, Me_3\}$$

$$Pa_4 = \{Me_4, Me_5, Me_6\}$$

...

When paradigms Pa_3 and Pa_4 , do not share common measures, then \bigcap_{Me} , is an empty set \emptyset :

$$\bigcap_{Me} = Pa_3 \cap Pa_4 = \emptyset : |\emptyset| = 0$$

and paradigms Pa_3 and Pa_4 , can be said to be incommensurable $\bigcap_{Me}^{\cap_{\emptyset}}$:

$$\bigcap_{Me} = Pa_3 \cap Pa_4 = \emptyset : \bigcap_{Me} \rightarrow \bigcap_{Me}^{\cap_{\emptyset}}, |\bigcap_{Me}^{\cap_{\emptyset}}| = 0$$

...

note: while any two paradigms may appear incommensurable as an isolated pair ⁴, *we will later discover that there exists a universally special paradigm, which by analysis or composition, renders all paradigms reconcilable, and as such, commensurable*

□