

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

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

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

$$(Pa, Me) \text{ introducing paradigm and measure}$$

Let us consider a paradigm Pa , as a set of measures Me :

$$Pa = \{Me, \dots\}$$

or ³:

$$Pa = \{\dots\}_{Me}$$

...

1.2 totality, commonality

$$(\cup, \cap) \text{ introducing all, and common}$$

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 :

$$\bigcup_{Me}^{1,2} = Pa_1 \cup Pa_2 = \{Me_1, Me_2, Me_3, Me_4\}$$

...

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

$$\bigcap_{Me}^{1,2} = Pa_1 \cap Pa_2 = \{Me_2, Me_3\}$$

...

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

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¹mastodon — twitter

²all terms are tentative. corrections $\wedge \vee$ advice, welcome.

³is this alternate form acceptable?

1.3 cardinality

(n) counting elements

The cardinality of any set, refers to the number of contained elements, expressed $|\{\dots\}| = n$.

So where:

$$A = \{a, b, c\}$$

cardinality is:

$$|A| = 3$$

...

1.4 incommensurability

($\cap \emptyset$) introducing incommensurable paradigms ⁴

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 \cap_{Me} , is an empty set ($\{\}$ or \emptyset):

$$\cap_{Me} = Pa_3 \cap Pa_4 = \emptyset$$

$$\cap_{Me}^{3,4} = \emptyset$$

...

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

$$\cap_{Me} = Pa_3 \cap Pa_4 = \emptyset : \cap_{Me} \rightarrow \cap_{Me}^{\emptyset}$$

$$|Pa_3 \cap Pa_4| = |\emptyset| = |\cap_{Me}^{\emptyset,3,4}| = 0$$

...

note: while any two paradigms may appear incommensurable as an isolated pair ⁵, we will later discover that there exists a universally special paradigm, which by analysis or composition, renders all paradigms reconcilable, and as such, commensurable

□

⁴famously, two paradigms which share no common measures are incommensurable.

⁵from an unified scientific endeavour