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 , $\overset{\cap}{Me}$, $\overset{\cap\varnothing}{Me}$)

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) introducing paradigm and measure

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

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

or [3]:

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

...

1.2 totality, commonality

($\cup$, $\cap$) 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 $\overset{\cup}{Me}$, across Pa_1 and Pa_2, can be found by union $\cup$:

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

...

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

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

...

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

...

1.3 cardinality

(n) counting elements

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

So where:

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

cardinality is:

$$|A| = 3$$

...

1.4 incommensurability

($\cap\varnothing$) 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 $\overset{\cap}{Me}$, is an empty set *($\{\}$ or $\varnothing$)*:

$$\overset{\cap}{Me} = Pa_3 \cap Pa_4 = \varnothing$$

$$\overset{\cap 3,4}{Me} = \varnothing$$

...

and paradigms Pa_3 and Pa_4, can be said to be incommensurable $\overset{\cap\varnothing}{Me}$:

$$\overset{\cap}{Me} = Pa_3 \cap Pa_4 = \varnothing : \overset{\cap}{Me} \to \overset{\cap\varnothing}{Me}$$

$$|Pa_3 \cap Pa_4| = |\varnothing| = |\overset{\cap\varnothing 3,4}{Me}| = 0$$

...

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

□