Path Semantical Aquality

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In this paper I introduce the mirror operator of path semantical quality.

In the paper "Path Semantical Qubit"[1], I introduced a `qubit` operator for use in Path Semantics[2]. This means that path semantical quality can be defined as the following (unary `~` means `qubit`):

$$a \sim\sim b \qquad psq(a, b) \qquad <=> \qquad (a == b) \land \sim a \land \sim b$$

It turns out that there is a corresponding mirror operator:

$$a \sim\neg\sim b \qquad psaq(a, b) \qquad <=> \qquad (a == b) \land \neg\sim a \land \neg\sim b$$

This operator is named "aquality" by putting an "a" in front of "quality".

The practice of putting an "a" in front of something is intended in general, for example "Aseshatism" (for Seshatism) or "Aplatonism" (for Platonism)[3].

Now comes the difficult part to understand: Quality and aquality are like two drops of water. It is impossible to distinguish one from another, without obtaining information that is proof irrelevant.

With other words, if one replaced `~~` with `~¬~` and vice versa everywhere, then one can prove the same theorems and nothing has seemingly changed. There is nothing computationally interesting in the difference, because every 0 that turns into 1 and vice versa is unbiased random, so one can not tell from the result whether a bit has been flipped or not.

For Seshatism vs Platonism, this has a peculiar philosophical consequence: Seshatism[4] is usually thought about as a very different way than Platonism[5]. This bias of thought can be explained logically as a biased choice of the core axiom of path semantics[6]. When the core axiom uses quality, the language gets biased toward Platonism vs Seshatism in the ordinary sense. By adding an axiom that uses aquality, the symmetry between Seshatism vs Platonism is restored. This axiom might be thought of as an "acore axiom".

Platonism in Avatar Witness Theory[7] is usually thought about in two forms:

a ~~ a	Self-Quality	Loop Witness
a ~~ b	Other-Quality	Product Witness

Seshatism is usually thought about as a single form:

¬(a ~~ a)	Self-Inquality	Seshatism

It turns out that Self-Inquality corresponds to Self-Aquality:

$$\neg(a \sim\sim a) \qquad <=> \qquad a \sim\neg\sim a$$

This in turn corresponds to the inverted qubit `¬~a`, thus it is equally fundamental.

Likewise, Self-Inaquality `¬(a ~¬~ a)` corresponds to Self-Quality `a ~~ a`.

References:

[1] "Path Semantical Qubit"
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https://github.com/advancedresearch/path_semantics/blob/master/papers-wip2/path-semantical-qubit.pdf

[2] "Path Semantics"
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https://github.com/advancedresearch/path_semantics

[3] "Seshatism vs Platonism"
AdvancedResearch – Summary page on Avatar Extensions
https://advancedresearch.github.io/avatar-extensions/summary.html#seshatism-vs-platonism

[4] "Seshatism"
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https://github.com/advancedresearch/path_semantics/blob/master/papers-wip2/seshatism.pdf

[5] "Platonism in Metaphysics"
Stanford Encyclopedia of Philosophy
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[6] "Path Semantics"
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https://github.com/advancedresearch/path_semantics/blob/master/papers-wip/path-semantics.pdf

[7] "Avatar Witness Theory"
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https://advancedresearch.github.io/avatar-extensions/summary.html#avatar-witness-theory