Flat Reference Class

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A Flat Reference Class is how most observers interpret their own state over time. However, it turns out that this interpretation suffer from vagueness. Do we really know what the world would be like if we existed within a Flat Reference Class?

For example, given that there exists an observer, moving in a fixed direction:

1	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	0	0

Since the number of observers is constant over time, it is natural to think of it as a Flat Reference Class.

Yet, the same could be said about a normalized Path Reference Class. In a normalized Path Reference Class, the interpretation of the values is equal to probability. The sum of all values adds up to one, which is constant over time.

The same example above can be represented as a Path Reference Class where there exists no choices per step. With other words, a Flat Reference Class can be generalized to a Path Reference Class without any loss of semantics.

Neither can one use determinism to distinguish between reference classes. Both Exponential Reference Class and Path Reference Class have deterministic solutions. However, determinism of the law of physics is different from the determinism of the position of the observer.

What we actually mean by determinism in this sense is that the probability of finding the observer is concentrated in a single automaton cell.

Yet, it makes no sense to use the technical term “reference class” when the whole observer density is located in a single automaton cell at a time. It means that the observer is only relative to itself, or many observers behaving exactly like itself, and nothing else. A such observer has no language to think about observers like itself. It can only think about observers identical to itself. The whole point of a reference class is to reason about observers that are similar, but not necessary identical.

It also seem unnecessary strict to impose no choices at all in Flat Reference Class. The intuition we have e.g. from semantics of playing video games, is that choices exist naturally in the world. A large part of a video game might be deterministic, but the player feeds in input data that changes the world.

A more precise formalization of a Flat Reference Class that closely matches the intuition we have about it, is a Path Reference Class where choices are sparse.

The semantics of a Flat Reference Class is often confused with the experience of a single observer. When contrasting it with other reference classes, it is common to use the Exponential Reference Class.