

The Inverted Spectrum

by Matthew Louis Mauriello

The inverted spectrum, or more generally qualia inversion, is a thought experiment. Qualia are defined as the phenomenal “properties” that make up experiences [1]. We say that each of these properties of the experience is a phenomenal state and these various states are then subsumed into a global, unified, phenomenal state. We call this union of phenomenal states the “unity of consciousness”, which is simply a fancy way of talking about how we combine and fuse our qualia into a single coherent experience [2]. We assume that the non-inverted person experiences qualia in the same way that the average person experiences them. The inverted person experiences a different set of qualia, but both experiences are predicated on the same objects. Generally these experiments involve visual perception and will compare one object that produces a quale Q1 and another object the produces a quale Q2. Each subject in the experiment experiences the opposing Quale for each object .Figure 1 demonstrates the general parameters of the experiment; the non-inverted sees the top image and the inverted subject sees the bottom image.



Figure 1: Qualia Inversion
Source: Stanford Encyclopedia of

Origins

A unique scenario (i.e. a story that may or may not be possible) is described in “An Essay Concerning Human Understanding,” where a person awakens one morning to discover that the visual spectrum they usually see the world in has become inverted without any apparent physical reason. It is through this scenario that John Locke, in his seminal essay, first raised the issue of spectrum inversion. Locke uses this experiment to theorize that it would be impossible to know if different people experience the same qualia.

If the idea, that a violet produced in one man's mind by his eyes, were the same that a marigold produces in another man's, and vice versa...this could never be known; because one man's mind could not pass into another man's body, to perceive, what appearances were produced. - John Locke

Colloquially it is frequently asked: “is your blue, my blue?” While this simple question pokes at Locke’s ideas, the analysis of the answer can be quite detailed. A person might experience a spectrum, or qualia, inversion from birth, but the thought experiment usually starts with someone waking up to find their vision has been inverted. This idea of suddenly experiencing inversion is presented by Locke believes that someone who experiences the inverted spectrum from birth and those they interact with would not notice the difference. Locke refers to this phenomenon as “behaviorally undetectable” [1], therefore sudden inversion is necessary for the difference to be perceived.

The thought experiment continues when the inverted relates their experience to the non-inverted, describing how their perception of the world has changed (i.e. we usually see a blue sky and describe it as being dark, but the inverted sees an orange sky and describes it as warm). Those that support the feasibility of the thought experiment believe it demonstrates that qualia are real phenomenon and can be potentially different for each person.

Controversy

Sydney Shoemaker writes that there are a number of variations on this thought experiment, but in general most variations still consist of a similar scenario and seek to validate the question and scenario [1]. One interesting variation on this experiment is the “Shifted Qualia” variation. In this version of the experiment, the invert and the non-invert are asked to look at a single object (ex. the banana in Figure 1) and then asked what other objects are the closest match in color. Proponents believe that these scenarios suggest that qualia are a unique internal experience for each individual, although the different subjects will behave the same. However, many philosophers are quick to point out that behavioral differences would quickly emerge in the case of shifted qualia because the two subjects in the experiment would likely differ on which other colors are most similar to the original qualia they perceived [4]. These latter ideas would be examples of behavioral differences and would call into question the feasibility of the entire thought experiment [1].

What has been presented in terms of behaviorism is a scenario where the invert and the non-invert exhibit the same behavior but the qualia are different. This type of experiment directly contradicts behaviorists who believe that the behavior implies the same mental states. The argument is the same against functionalism and most other schools of thought on the theory of mind. The opponents of Locke’s thought experiment believe that if the behavioral outcome is the same, the mental state must also be the same; therefore, it is fairly easy to understand why so many philosophers (i.e. Dennett, Putnam, and numerous others) have weighed in on the subject and why this issue tends to be a controversial one.

Conclusion

Though this thought experiment has mostly concerned itself with vision, there is no reason that the inverted spectrum could not apply to other phenomenal states. One could easily imagine a similar thought experiment that involved: an inverted auditory range, different experiences of tactile contact, taste, or smell. Essentially, it is not really a stretch to consider the full range of human qualia participating in similarly structured thought experiments. Shoemaker believes that the controversy, and reason, philosophers are resistant to the feasibility of the inverted spectrum thought experiment is because it forces us to accept that our experiences may be completely individualized and as a result we will never understand the mind. Perhaps Locke’s idea of the inverted spectrum is intentionally extreme only to suggest that there is variance to our experiences. However, variance in experience does not necessarily mean that we will never understand the mind.

References

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