


## How to Include Qualia in Science

How can we expand science to include what-it's-like information like qualia? This paper gives the beginning of one possible way forward.

1. It is possible to include qualia in communications as their own terms. For example,

(1) 

and include them in sentences, for example

(2) The phenomenal experience engendered by photons of wavelength 700nm in a human with normal color vision is .

We learn in school that the English word “red” names red, which names the color red. That way of doing things *wants* to say, with a liberal interpretation of the ‘equals’ sign:

(3) red = 

We could call an assertion about a quale that contains the quale itself a *qualation*.

But here, to expand to the notion of qualia, we could note that the experience elicited by the left-hand-side of (3) is different than the experience elicited by the right-hand-side of (3). The experience elicited by the left-hand-side is of a *reference to*, whereas the experience elicited by the right-hand-side is of redness. Since these are different, we are lead to the surprising qualation

(4) red  $\neq$  

2. Necessity

(5) red is not green

may or may not be true, but

(6)  is not 

is necessarily true. It is even tautologically true: to understand it is to affirm its truth *ipso facto*. Thus, while it is possible that we could be wrong about (5), we could not be wrong about (6).

The invariants of (5) and (6) are different. On one hand, if we switched from English to German, (5) would be different but (6) would be the same. On the other hand, if we switched to the appreciation of a sufficiently color-blind person, then (5) would be the same but (6) would be different. Since their invariants are not the same, (5) cannot be the same as (6).

If a sufficiently color-blind person apprehends (6) they might see two black squares instead of a red square and a green square. Then, for that person, (6) would be false. Nevertheless, *if* that person were to apprehend (6) with a red square and a green square the way a human with normal color vision does, then they would (implicitly) affirm its truth. In some sense (6) with two black squares would be a *different* qualitation. Indeed, if a bat were to apprehend (6) the way a human with normal color vision does, then the bat would (implicitly) affirm its truth, too.

### **3. Conclusion**

It seems possible to expand the purview of science to include 1st-person phenomena, in a non-trivial way, by the methods above.