

## How to understand something that cannot be accessed by our sensory system?

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Physics understands different phenomena in Nature that are not accessible to our sensory systems. How do physicists do it?



First, they make large number of observations ( $O_n$ ).



A stage comes when they recognize the disparate nature of several of these findings. This means that these findings cannot be explained in terms of each other.



They recognize that there should be a deep underlying principle ( $x$ ) that should inter-connect these disparate observations, which is yet to be discovered.



To solve this, they apply the principle of unification. This means that if it becomes possible to find “something more fundamental” that can explain all the observations ( $O_n$ ), then this is likely a solution ( $x$ ). The solution brings rapid progress in the field.



Reductive approaches will be necessary to discover  $x$ . How do physicists do it?



They use constraints provided by all the observations ( $O_n$ ) to derive the solution  $x$ . They may fine-tune the derived solution to fit the minute details of the observations.



The derived solution  $x$  is expected to be correct, even though not confirmed.



Confirmation of  $x$  by making predictions and testing them. This theoretical approach is undertaken to improve the yield and to reduce cost.



Similarly, disparate findings of the nervous system that are being studied by different branches of psychology and neuroscience necessitate unification. It is essential to understand the main function of the nervous system – generation of internal sensations within the mind.



In physics, a concept that fit with experimental findings is made followed by searching for mathematical fitness. In biological systems, derivation of a structure-function mechanism that fits with all the observations from various levels can be made followed by its verification.