Principle of Perspective

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Abstract

The Principle of Perspective tells that one observer can look at an object from only one direction. Always. Time has nothing to do with that. When an object is being observed, photographed or detected from two directions by two observers or detectors, an image is obtained that seems contradictory or not right. With a simple trick these images can be rectified. This Principle is of the greatest importance in explaining seemingly incomprehensible results of physics experiments in which objects are being detected from opposite directions.

One observer can observe an object from only one direction. When two observers look at one object from opposite directions and take a picture from one halve of the object, each picture of one halve that is the opposite of the other halve, and then put the pictures together, a seemingly incomprehensible picture of the object comes about.

Fig. 1) Pictures of the object.

Front

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Fig. 2) Pictures of the two halves of the object put together, one picture of the top halve from the front and one of the bottom halve from the back.

The picture of fig. 2) is incomprehensible because it is not a picture of the object from one viewpoint from whatever direction. Yet it is a (albeit composite) picture from the object and everyone understands how it came about.

This is exactly the phenomenon that occurs in Bell-test experiments. In Bell-test experiments the object is a pair of entangled particles with opposite spin directions. Spin is a vector that can be made visible. A pair of entangled particles is considered to be one object. One particle is detected from one direction and the other particle is detected from the opposite direction. When the outcomes of the spin measurements are being compared afterwards the result is incomprehensible.

There is an easy trick to produce a normal picture of the object from opposite directions. Let observers Alice and Bob start at the same position, looking in one direction at the object. Alice takes a picture of her halve of the object. Then Bob moves over to his position, opposite of Alice's position, and let Bob's halve move along. Bob now takes a picture of his halve. When the pictures that were taken by Alice and Bob are now being put together, a normal, comprehensible, picture from the object has come about.

Of course this procedure is not possible in reality so we are stuck with the incomprehensible picture of the object when constructed from pictures of opposite halves from opposite directions. But because we do understand how this picture came about, we also can understand how the seemingly incomprehensible correlations in Bell-test experiments come about. Correlations in Bell-test experiments are the numbers of combinations of certain spin results related to the position of the detectors. In case of Bell-test experiments the seemingly incomprehensible picture is represented by the opposite spin directions of pairs of entangled particles that doesn't seem opposite. Applying the trick tells us which pairs seem to have equal spin. Their numbers exactly correspond to the correlations that are found in the experiments. The comprehension of how the correlations in the experiments come about shows that entanglement in the sense of instantaneous interaction at a distance does not exist.

For more explanation about correlations in Bell-test experiments see reference.

Reference:

G. van der Ham; The Principle of Perspective: https://bell-game-challenge.vercel.app/