

Detailed inquiry into the meaning of the question ‘Is the Moon there when nobody looks?’ and related matters, of relevance to foundational physics

Abstract

The usefulness of the analysis is presented. Some history of the question related to Einstein is given along with the supposed motivation for asking it. Questions are asked about the meaning of the starting question. What is meant by ‘the Moon?’, and what is meant by: there? The lack of precision of the question is identified. The biology of vision is briefly discussed. What is an observer? is considered. For completeness ‘What is a question?’ And, ‘Where is a question?’ are also discussed. Further evidence of unseen and unmeasured existence is given. This paper concerns Metaphysics.

Analysis of the question ‘Is the Moon there when nobody looks?’ and related matters, of relevance to foundational physics

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This paper concerns Metaphysics, specifically existence, object permanence, sense perception, space and spacetime. The question ‘Is the Moon there when nobody looks?’ and its examination (The analysis of the logic and semantics of the question, as it is written) is relevant to the concept of existing things and of object permanence. Which is to say objects still exist when not seen or measured; Concepts with relevance to identifying the incompleteness of Relativity theory and Quantum mechanics. Explaining why there is paradox and strangeness associated with both theories. This is relevant to Relativity as it treats observation products as existing objects; there is no distinction. That is a categorization error. It is relevant to quantum physics which currently is interpreting having no pre-measurement state as a quasi real condition. A mix of future outcome and imagined but won't be-stands instead.

"Is the Moon there when I'm not looking? This question alludes to something Einstein purportedly said, recounted in "Einstein and the quantum theory", (Pais, A., 1979.) [1], "I recall that during one walk Einstein suddenly stopped, turned to me and asked whether I really believed that the Moon exists only when I look at it." Einstein was questioning belief in quantum mechanical systems without objectively real properties that exist independently of observation. It was perhaps an attempt to highlight the philosophical consequences of such beliefs. Like the Schrodinger's cat paradox calling attention to the

lack of pre measurement objective *state*, he uses the Moon for the purpose. This is about objective local realism too.

It can be demonstrated that the Moon can in some sense not exist because of lack of information receipt (measurement) but at the same time still exist in a different way. That title question fails to distinguish between all of the following: the knowledge /concept of the Moon, the existing Moon object, a manifestation, semblance of the Moon formed by an observer's sensory system or output of a monitoring or recording device, potential sensory data (Electromagnetic (EM) information) pertaining to the Moon in the environment, EM information pertaining to the Moon input to a device or organism's sensory system. It can be seen by the following argument that the question 'is the Moon there when I'm not looking' is inadequate. It is inadequate because the category of Moon; Moon source object, Moon related potential sensory data, Moon observation product (manifestation) or Moon-concept has not been specified, only an unspecific noun used.

[Relevant to observation product generation] The biology of vision works by the eyes receiving electromagnetic radiation , which stimulates the photoreceptors. In response nerve impulses are sent (or are modified) to the brain. Processing of the nerve impulses in the brain generates an observation product or products, The product generated is experienced as external. In space time . it is not **(the image)** outside of the body of the observer. If no image is formed the image can not be a part of the observation product, so is not seen **anywhere**.

Is the Moon there when nobody looks? One of the variants of a question of Einstein's often used to give the idea, but not necessarily the exact parlance used on a particular occasion or at all.

There are two questions that can be asked about the question, which is ambiguous.

1. What is meant by, 'the Moon?'

It could be referring to the observer independent materially existing Moon. Or the observer generated relative observation products called the Moon too, experienced as existing externally but generated by internal brain activity which produces virtual spacetime, There are also other perceptions related to the mental concept of the Moon. That may be 'in mind' without observing the Moon.; The concept of the Moon and the visualization of the Moon by brain activity we call imagination, and memory There is also potential sensory data emitted by the Moon but not yet received by an observer, so neither existing Moon nor yet observation product. (That is what I refer to as potential sensory data or signals, or potential sensory information.)

The observation product called 'the Moon' isn't generated by the observer when not looking or eyes are closed or blindfolded etc. There is still the existing observer independent Moon, the potential sensory data in the environment, the concept of Moon held in imagination stored in memory and other records.

## 2. What is meant by 'there'?

It could mean within the configuration of existing things independent of observation? Einstein didn't differentiate observer independent existing things from observer relative semblances of existing things. For him 'there' would have meant within spacetime external to the observer. External spacetime is generally accepted by mainstream science as being where things are. The question can be read as asking whether the existing Moon is in Spacetime when not observed. It is not there, in space time. The seen Moon is seen as an Image semblance of the existing Moon which is a virtual spacetime image. It is not formed if potential sensory data (electromagnetic signals) are not received and processed into the observation product called the Moon.

Each observer generates their own observation product using the electromagnetic radiation they have received. Giving a virtual spacetime from their own relative viewpoint. The virtual spacetime of each observer, in which observation product (manifestations), semblance of objects, appear to be, does not include a Moon semblance if no electromagnetic radiation emitted by the Moon object is received.

The existing material Moon is an observer independent actualization. We know from the idea of object permanence that it is likely the Moon still exists when not seen. Existing in an absolute configuration of existing things which is not in observation product spacetime, but elsewhere.

What is an observer? is a valid, worthwhile question. An observer must be capable of receiving potential sensory data, electromagnetic radiation where vision is being considered, and must subsequently produce an observation product or products. The observation product shows the observer viewpoint or relative perspective. The rivet in the bug rivet paradox is not an observer as it is incapable of producing an observation product. So there can not in reality be a paradox involving the rivers viewpoint. The paradox belongs to Special relativity theory.

Where is the question? It is abstract and can be in different forms and locations; In active thought as electrical activity of brain structure, or processing within computer circuits, within the existing material form. As memory stored as material structure of neurons and synapses also existing. It could be stored in other formats such as on magnetic tape, also material existing. Its written form could be seen in which case it is on the existing paper, in the existing brain activity *and* a virtual spacetime observation product. It is taken as a given that existing and observation products do not occupy the same type of

space. The existing Moon object can not be within the generated observation product space; virtual spacetime, generated internally but experienced as external by the observer, especially if that space is not being generated. It is therefore somewhere else, external to the observer.

What is a question? It is usually a request for an informative response from another person. Though it can also be directed to an animal, machine or sometimes even a plant or an inanimate object. Questions can also be rhetorical. Not intended to gain information but used as a figure of speech to berate, belittle or hector another. Questions can be witty, sarcastic, draw attention to irony, or puzzles and hence be thought provoking.

Questions such as if a tree falls, but there is no one to hear, does it make a sound? This is similar to the Moon question, this is drawing attention to the difference between sense perception and observer independent existence. As the tree falls pressure waves are produced in the air which could be received and used to generate sound heard by a person in the vicinity or stored for later playback on a recording device. If there is no observer, person to hear, or recording device, there are still pressure waves in the air (they exist), but there is no observation product, the sound sense experience.

A written question is usually denoted by a question mark at the end of the sentence. In spoken English a question is usually signified by inflection of the voice at the end of a sentence.

#### Further evidence of observation independent existence

*Not existing and not being seen are not the same situation.* The fun of peekaboo is in the ‘magical’ reappearance of an object, often a face, that had disappeared from view. Older children are not amused by the game, having awareness that objects obscured from view probably still exist unseen. Coming into and out of view is ordinary.

“Psychologist [Jean Piaget](#) conducted experiments with infants which led him to conclude that this awareness was typically achieved at eight to nine months of age.” “He claimed that infants before this age are too young to understand object permanence.” Wikipedia peekaboo,

<https://en.wikipedia.org/wiki/Peekaboo>

*Where is the unseen existing object located?* If the child observer isn’t constructing an observation product semblance in ‘observation product spacetime’.

The observation independent existing thing exists in *another space than the products of observation*. A space that is not relative to an observer, (*there is no reason for it to be relative*), but absolute. Here things are existing in relation to other existing things forming a unitary pattern of all existing.

Further evidence of continued existing unseen and unmeasured is; Appearing and transformation illusions, using concealed objects, such as fire into doves using doves concealed within the magician's dove pan, and rabbit from an 'empty' hat.

### Conclusions

The observation product called the Moon is not produced when there is no input of electromagnetic radiation to the sensory system of the observer. Because of object permanence it can be assumed that the existing object called the Moon also, continues to exist nonetheless, as does the electromagnetic radiation emitted by the Moon object, into the environment, but not yet received.

Also persisting are memories and records of the Moon. Which can be accessed and experienced as mental concepts, (thoughts and imagination) of the Moon.

The existing Moon object can not be within the generated observation product space; virtual spacetime, generated internally but experienced as external by the observer, especially if that space is not being generated. The existing, observer independent Moon is therefore somewhere else, external to the observer.

### References

[1] Pais, A. 1979. Einstein and the quantum theory. Rev. Mod. Phys. 51, 863–914 (1979), p. 907 Pais, A. 1979. from Einstein and the quantum theory. Rev. Mod. Phys. 51, 863–914 (1979), quoted in the book E= Einstein, His Life, His thoughts and His influence on our Culture, Sterling publishing Inc., New York, London 2006: Quote from Part one p.34

Appendix

'Is the Moon there when nobody looks?' (variant) Does the Moon exist only when I look at it?

Solution

## KEY

A- Actualized, an existing element of reality

Ab- Absolute, no singular reference frame applied

Category error- Failure to correctly identify or discriminate between different kinds of element of reality belonging to the different facets of reality

D- Definite. Certain and un-altering in that respect)

EOIR- Element of Image reality

EOOR- Element of Object reality, not same as objective reality

FS- Fixed state. A selection giving one un-altering state

Gross Set PSD- Total potential sensory data in the environment emitted by an actualized source object

Image reality- Emergent output reality from sensory data / measurement processing, Individual observer specific or objective via shared output or shared sensory data input

L- Limited (partial sample)

MS- Mixed state. A selection containing more than one state

M- Manifestation. Output of sensory data processing

Object reality- Foundational, source reality of existing objects and particles and potential sensory data

Objective reality- Multi-observer corroborated Image reality

PSD- Potential sensory data

oMoon-Material source object Moon

PSDMoon...EM info. pertaining to oMoon

iMoon...Output of EM processing, image

PSYMoon... Concept/idea of Moon in thought and/ or records including memory

When not looking: there is no (D LFS PSD) Moon, the sub set of potential sensory data received by the observer (because no receipt is occurring), and there is no (D LFS M EOIR) iMoon, output manifestation.

However, within Object reality [the observation independent existing configuration ] there is still (Ab A S EOOD) oMoon; The Absolute actualized object.

There is also still, within Object reality, (Gross Set A PSD) Moon. The total potential sensory data in the environment emitted by Moon.

The existing actualized object and total sensory data in environment relating to Moon object, can exist without their Image reality manifestation counterpart.

Likewise, the concept of the Moon, PSYMoon, within brain activity or mind, stored within connected neurons as memories and as information within books and other kinds of records exists independently of a currently observed image manifestation.

The concept of the Moon does not require the formation of the seen image for its continued existence. (Ab A S EOOD) oMoon and (D LFSM EOIR) iMoon belong to different categories of elements of reality, belonging to different facets of reality.