

# Hypothesis of Human-Light Dependency, Conceivably Could Ascertain Einstein's Prediction

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## ABSTRACT

All animals, including humans see the world in varying electromagnetic energy ranges. There is a possibility of doubting the principles of black and white (dark and bright). For the average readers, authors will start with a very basic argument in section two. The third section is the detail clarification of the second section, a logical conclusion of the third section (partial dark world) is unavoidable. While the core of this paper is in Section 4, it is about the hypothesis of light and all the supporting argument. If the hypothesis in Section 4.1 could be experimentally verified, it is anticipated that the light is merely Electromagnet (EM) energy as proposed has its basis, then its illumination property is residing in human mind could be true. Nevertheless, regardless Section 4.1, arguments support in Section 4.2 & 4.3 showed a strong inclination that the claim is most probably correct. This means biological creatures (human) make use the energy of EM (400-700nm) to create the meaning of brightness of which we are unaware. Whilst in the outside world is different as predicted by Einstein.

**KEYWORDS:** Light; Bio-physic; Electromagnet spectrum; Dark-bright; Reality

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## SECTION 1 - INTRODUCTION

Cats, dogs and farm animals, mostly see with two cones (differentiation of EM wave with 2 colour cones), humans with three cones, some birds normally have more than three cones and butterflies (Papilio) generally have five colour cones (Hanson, 2012). The world's view is actually different from the view of humans. Relatively speaking, the view towards the world differs from one creature to another. Some birds can visualize beyond violet colour ultra-violet (UV) (Gerl & Morris, 2008). As for humans and dogs, their colour visions seen are found to differ in mental interpretations (Gerl & Morris, 2008; Miller & Murphy, 1995; Neitz *et al.*, 1989; Pongrácz *et al.*, 2017), the illustration in Figure 1 as conceptual used by Pongrácz *et al.* (2017).



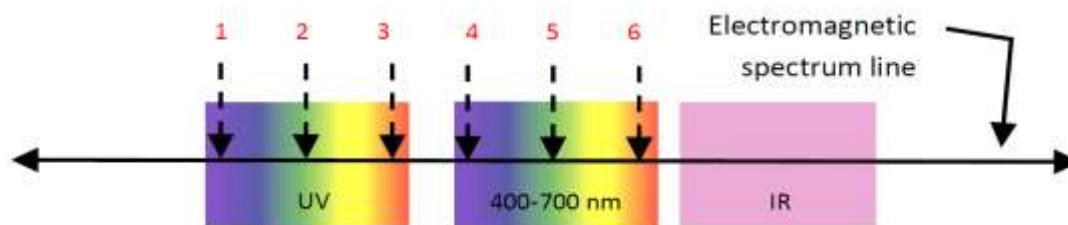
**Figure 1.** Vision interpretation comparisons that differ between the biological creatures. For this example, the dog's brain does not create the colour red in its mind (dog sees the building and the car as in green colour).

Colour differences also happen among human beings (Prathap, 2016), as well as different gender (Gravensen, 2015). One of the things that the authors want to focus is the range of sight of animals and humans, are far from perfectly equivalent, but rather overlapping between species in certain extent. We often assume that all animals will have the same meaning of brightness and darkness. Now imagine, if the range of the spectrum between the animals is separated without overlapping. See what are the consequences in Section 2.

## SECTION 2 - SKEPTICISM TOWARDS THE EXISTENCE OF THE BLACK-WHITE

This section demonstrates skepticism towards the existence of the black-white colours (dark and bright). Now, consider the following situation (intention: to observe, investigate a new concept):-

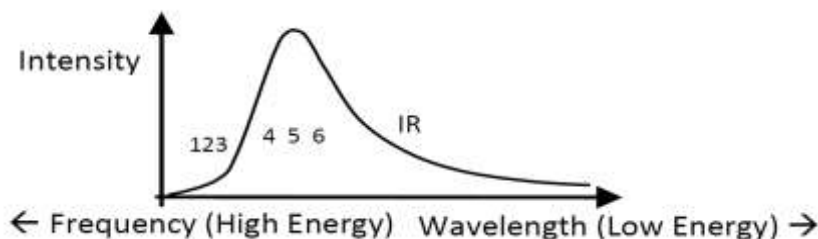
1. A creature K reads an Electromagnetic (EM) wave signal in a UV range frequency.
2. The eye sensory input of creature K consists of three types of cones in the retina, range 1, 2 and 3 (UV range) (refer to Figure 2). Since it is unknown on what colours are seen, let us assume that the creature K sees/perceives the colour of blue, green and red (and combination), just as if a human being does.



**Figure 2.** A creature K has three sensory colour cones no: 1, 2 and 3. A human being also has three sensory colour cones no: 4, 5 and 6.

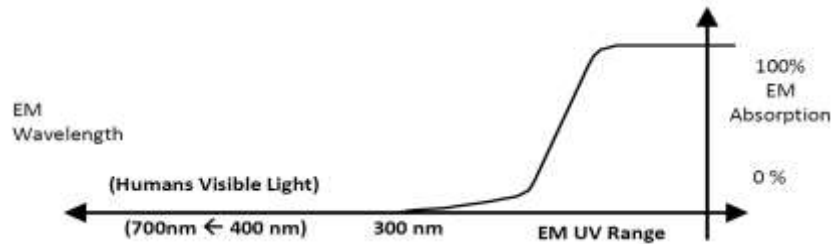
If the creature K gets into the Solar System, with EM Spectrum (where the intensity against wavelength) as shown in Figure 3, he/she will see all planets in a nebulous state. With the sun shining a little brighter, as it is caused by a small amount of high-frequency energy wave that radiated from the sun as in Figure 3, on the left side, where the intensity is minimal. Only a small amount of EM UV wave radiation is available for the creature K vision system.

If the EM wave radiated coincidentally only around the cone 3, then a vague reddish glow will be seen. When the creature K enters the earth's atmosphere, where the situation here is darker (because most of the high frequency energy is absorbed or scattered in the higher atmosphere), while its ability to see requires high frequency waves, so the creature K has got to switch ON a light with a high-level UV wave, then only it would be able to see a human figure (even during the day-time!). The situation for the creature K then, would be no difference whether it's day-time or night-time.



**Figure 3.** The sun's intensity vs. wavelength.

In order to see a major difference in the interpretation of the colours black and white, consider this situation: Assume that the outer layer of the creature K's spaceship is coated with a synthetic material that absorbs all the UV waves as shown in Figure 4. On their planet, the spaceship would appear as black colour, regardless of day or night.



**Figure 4.** The absorption of the UV wave on the surface of the spaceship's body start at 300nm.

Within the range of 400 nm to 700 nm, the coating will totally reflect the EM frequency energy. Therefore, the spaceship will appear as 'black' on their planet K, whereas it will appear as 'white' on Earth as illustrated in Figure 5.



**Figure 5.** On Earth the colour is 'white'. On the Planet K the colour is 'black' (we always assume that all aliens will experience the same bright/dark sensation as human beings do).

Therefore, from the discussion above, it is suggested that the concept of 'black' and 'white' (or dark and bright) should be based on the observer system (observer dependent). This proposal will also be associated with the new proposed theoretical concept about the brightness / darkness in Section 3.1, along with a dark room test in Section 3.2.

### SECTION 3 - THEORETICAL CONCEPT AND THE DARKNESS PHENOMENON.

#### Section 3.1: Theoretical Concept

Here, the authors would like to remark and explore the theoretical concept of the 'black-white' colours (bright and dark concept) as presented in the first article of (Zakaria et al., 2017a). The contents in this Section 3 is to facilitate understanding in Section 4.

If the effective detection range (wavelength) of the human's eyes is not overlapping with any of the EM wave value, within the detection range, then the human will see it as 'dark'. Also, if the effective detection range (wavelength) of the creature K's eyes is not overlapping with any of the EM wave value, within the detection range of the creature K, then he/she will see it as 'dark' too.

Similarly, 'white' or 'bright light' colour is a full energy concept or a maximum uniform representation of the retina system for the biological creatures (for all cones, depend on their detection range respectively).

The concept of equivalents used is described as follows. Although we do not know exactly what colours are really perceived by creatures K, but we are sure of the two types of colour concepts that are really seen by both species: ‘full brightness’ and ‘full darkness’. This is what we are trying to explain in the above paragraph.

Note: This article has tried to discover a theoretical concept of the dark, bright colour without considering the side effects of the waves (e.g. UV can damage skin cells, or even organic nature of a creature, etc.). Hence, the authors only aim to discover on the new concept.

Section 3.2: Dark Room Experiment

The Theoretical Concept (3.1) above also corresponds with this light’s experiment (3.2). The experiment shows the light rays crossing in a dark vacuum room, through a hole at a 90° angle (with perfectly ‘white colour’ reflective walls) as in the Figure 6. It does not matter how intense the light intensity is amplified, or how large the hole is, the room remains dark.

Consider an experiment setup shown in Figure 6.

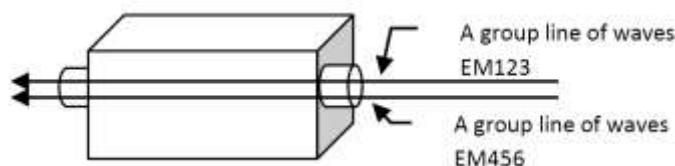


Figure 6. A concept of a dark-bright room for both human and creature K.

This is an ordinary experiment, but the authors emphasize on the combination of the two wave groups that happened simultaneously. At first, human and creature K in that room will see that the room remains dark (for both species).

Dark Room Experiment: Case 1: EM 123 Deflected

If EM 123 is deflected until full part of the ray is reflected inside that room, creature K will find that room is very bright. In the meantime, humans still see a black opaque room.



Figure 7. A bright white room for Creature K.

Dark Room Experiment: Case 2: EM 456 Deflected (123 remain straight)

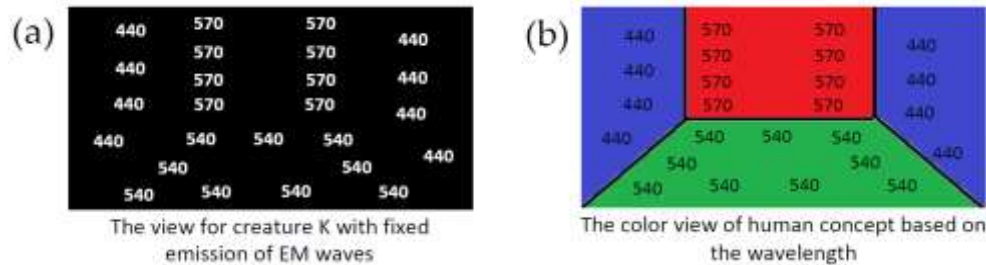
Whenever EM 456 is deflected, human will find the room is bright whereas, for creature K, the room will appear dark.



Figure 8. A bright white room for humans.

### Dark Room Experiment: Dark Vision vs Colour

In a colourful view (Figure 9 below), the reflected wall for EM wave is specially selected (to reflect colours), a maximum of 440nm represents the blue colour, whilst the colour green is represented by a maximum of 540nm, and the maximum of 570nm represents the colour red. The figure below illustrates this example graphically.



**Figure 9.** The concept of a 'dark-colour' room is for humans and creature K only (colour is used only to represent the concept, not accurate wavelength, eye's circuitry is also ignored for simplicity).

In Figure 9(a) above, the reflected waves for creature K remains true, at about the 440nm, 540nm and 570 nm, this is the same as in humans' reception. Both received the same EM, presuming that creature K also have a pair of eyes, if any part of its eye or brain does not absorb any of the EM energy of between 400nm – 700 nm, the EM wave will permeate through creature K's head (just as radio wave passing your head). Hence, this means that the physical world is dark for creature K. Sensation of darkness/brightness/colours is not absolute, but dependent on the observer's system.

Now during the day, look at the world around us, is it possible for some species just sleep, as it is dark for them? Supposedly, at night-time, another 'dark sun' is nearby and emitted other range of frequency which we are not able to detect it. Then, at 'night', the species see the world brighter and moving freely everywhere like day-time.

Remark: The response cones on the retina are approaching a bell-shaped graph, with the numbers of 440, 540 and 570 as approximations of the maximum peak (this maximum value also varied from source to source). These values are quite different among the references and the equivalent cones are commonly labelled as S, M and L, which are approximately from 400 to 700 nm, it is in the range of the "visible" light.

## SECTION 4: THE DEVELOPMENT OF HYPOTHESIS

What is light? Does light bring illumination with it? If a sound requires 'air' as a medium to transfer information, so, is that vision, requires 'light' as a medium to transfer information? Does light serve as a medium? A code? So, what is light, especially when involving sight?

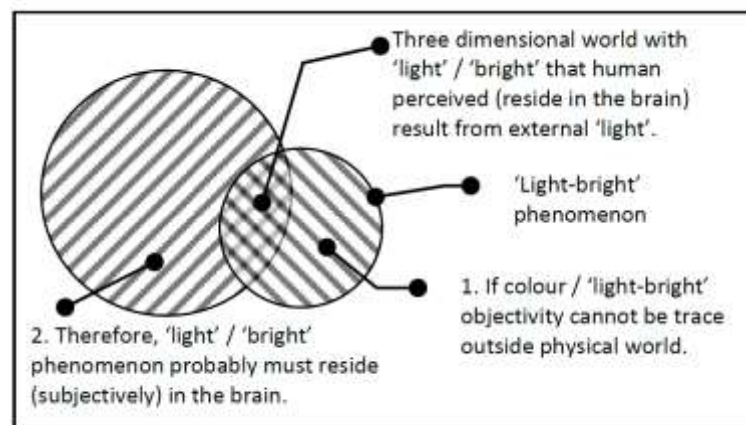
### Section 4.1: The Hypothesis of Light, Which Brings the Illumination.

The brain science (neuroscience) still far from understanding how the brain works in 'drawing' the 3-dimensional world that we perceived. This is the quest for researchers who are interested in between the two fields (the physical science of light and energy) to be able to confirm (or to provide high confidence) regarding what is light, when involving vision.

This is the hypothesis of light, which brings the illumination:-

1. Light or other EM wave is Electric and Magnetic energy phenomena, it brings energy which can be transformed into an electrical energy /electron energy level as follows:-
  - a. For longer wavelength (radio wave): ChargeVolt (qV) [unit: Joule]; the Energy moves the q 'charge' or electron to a higher energy. As a result, the charge particle moves q in a circuit / across empty space (In antenna, 'current' is used instead of charge).
  - b. For shorter wavelength: electron volt (eV) [unit: Joule]; the energy moves the electron to a higher state of energy ('band gap' as known by the solar energy researchers). As a result, it moves to a higher orbit/state in an atom.
2. If all energy changes are fully modelled, it should show no loss of energy, until the absorption of energy, then light or brightness that one perceives does not reside in any form of energy (it cannot be traced on why it only comes together with the direction it goes (not from the side) and it also cannot be traced, where it goes and disappears when the energy absorption/changing occurs).

If all the above generalization and complete model is found true, then the light is merely an EM energy where the illumination we perceived is nothing to do with the frequency or wavelength or electric or magnetic field of that wave. To make it clearer, please follow the diagram below:



**Figure 10.** Hypothesis of brightness / light.

The hypothesis predicts that a part of the sensation of light is actually a part of the mind concept. If 'light-bright' objectivity cannot be traced outside physical world, light as we perceive is supposedly to be part of a dependency system (observer dependent). It is not 'light' (brightness) until it can be seen by observers.

If this opinion is correct, it may be related to the mystery of the double slit experiment, which has measurement problems, without a satisfactory explanation. Without detector, light becomes a wave, but with a detector, light becomes a particle (the problem is about awareness of photon pathway). However, it is quite difficult to comprehend how these two connected. Therefore, perhaps, we need a smart experimental setup (that is, if the form of experimental evidence is known properly, the experiment can be designed wisely, eg. delayed-choice double slit experiment). Building an argument test (hypothesis) is also a requirement of the role in science for further verification (Poincare, 1905).

#### Section 4.2: Argument to Support Hypothesis

Now, case 1 and case 2, can be used to achieve a higher value conclusion. Consider again case 1 below:-

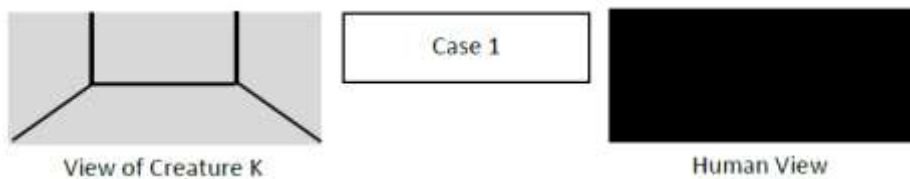


Figure 11. Case 1 used again to describe the dark world.

In the previous case, the human sees the room is very dark (figure above, on the right). Imagine that the real world is very dark just like night-time. Now consider there is an electronic converter/translator at the retina as shown in Figure 12.

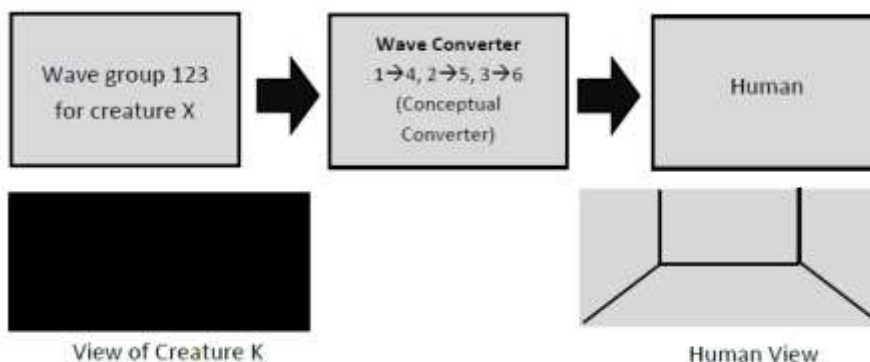


Figure 12. Replicate of case 2

As a result, at the time, the world is realized as 'dark' just now, then, suddenly a new bright room is perceived. Supposedly, the world is actually a dark place where the brightness is only perceived as relative or subjective. Supposedly, our brain is now able to see the brightness as usual (while in reality, the outside world confidently is still in darkness).

This situation proposed that light brings 'code', not a direct 'brightness'. If it is true, amazingly, then it is fully compatible with the meaning of air vibration as 'medium to transfer information' (sound wave) as illustrated in figure below.

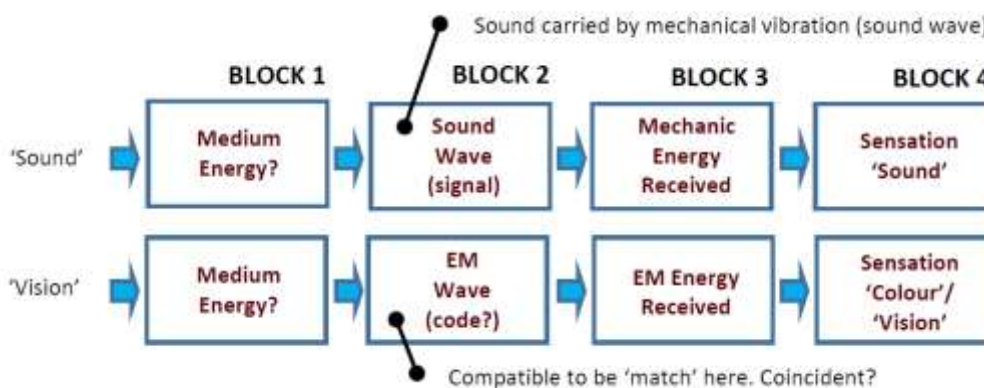


Figure 13. Compatible 'meaning' (Parallel) in the block diagram for signal & code! Coincident?

According to the physiological view point, the 'sounds' heard by humans will take place in the mind only (Silverthorn, 2013). Once the air vibration signal is received in the eardrum, it will be

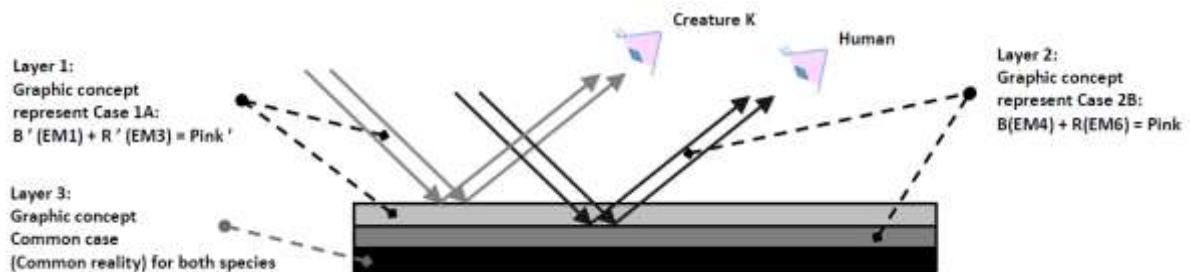
detected by the cochlea. Finally, electrical signals are sent to the brain and are translated there as sounds. The author of the physiological book suggested that the noise or sound will not occur if there is no human presence to detect the vibration and interpret it as a sound (Silverthorn, 2013).

Therefore, supposedly according to the above argument and from Figure 13, a new reason why we cannot see an object is simply that we do not have the 'code' representation of that object. The discussion of this section shows that the expectation of this article has a potential to get an astonishing achievement.

#### Section 4.3: The 'Colour of Universe' & Einstein's Prediction

Other common misconception about colour is the concept of yellow colour (yellow light). If the yellow colour is filtered, the green and red colour will be allowed to penetrate; when recombined with green and red, the yellow colour reappears. This yellow colour is what to be appeared in mind, but it is not in the physical realms. However, when the above situation is repeated for red and blue colour; if filtered the mid-colour between red and blue (around yellow-green-cyan); when recombined the colour red and blue, the colour of the filtered one does not appear. On the other hand, the colour of magenta (pink) will appear. The second combination shows that the mixture of colour (light's colour) is not in the middle of the EM spectrum line. In fact, the magenta colour is not at any point in the EM spectrum. This indicates that, in the range of visible light, the wavelength range does not contain all types of colours available, but the combination of the wavelength creates new colours. Thus, with this argument, it suggests the meaning of 'code' (not a direct brightness or colour). Please follow the following paragraph to discover the meaning of the code.

By following the original concept that wall reflects the white colour for both humans and creature K, only in the particular case, EM waves, no 2 and 5 are blocked (so in case 1 will become case 1B, in case 2 will become case 2B).



**Figure 14.** Understanding the physical world in mind will be different from the real physical world.

For human, the pink code required is R (about 570nm) + B (about 440nm) = Pink, whilst the 'pink' code for creature K is  $R' + B' = \text{Pink}'$ . To see the pink colour, human needs code 4 and code 6 whilst the creature K needs code 1 and code 3. By capturing two different frequencies energy, new colour will be generated.

The absence of codes 2 and 5 are representative of energy absorption by objects. Refer to the discussion on energy absorption, whether leaves should be blue or green in the second article of (Zakaria et al., 2017a). Now, human observer will see that the wall is pink, as well as for creature K when the code is accepted, (the walls are designed to fully reflect any wave ranging from EM 1 to 6). Both of them perceive whether white, pink or black depends on which cone that is activated.

The green energy absorption (code 2) and (code 5) give observer the presence of a pink colour 'solar panel' (example of absorption). However, regardless whether the 'solar panel' absorbs UV or



infrared (IR) energy, the panel will still show pink. Only the code absorption in the human range will give meaning while the code absorption for other creatures will not change the pink colour.

Is it possible that the colours according to EM reflection are objective? Colour interpretation due to exact frequency reflection is unsuccessful (as discussed in paragraph 1 in Section 4.3.). The above paragraph shows that the colour interpretation of frequency absorption is considered to be unsuccessful too. The only interpretation of the yellow/pink colour as the amount of energy may be true. However, taking into account the energy that is included in the UV/IR category, it will fail again.

Authors can give examples of various creatures after K: L, M, N,..Z, to show the same concept, but the colour of the wall remains as layer 3 (as never touched). If the momentum of the photon is maintained, no energy will be left on the wall. The condition of the wall must be remained permanent as original (even at the level of atoms). This is the mechanistic energy viewpoint and if reflection/absorption in IR/UV(for creature K) in the paragraph above is reviewed as well; the third layer colour will look strange and end up being meaningless. The result shows that the colour can be objective in a particular range only, it is not universal.

Now, the new conceptual colour of the third layer of the wall, suddenly appears. Strangely, the original colour cannot be given by any particular concept or name. Therefore, we will refer to it as a 'meaningless colour' or 'unknown colour' or the 'Colour of Universe'.

The new concept of the third layer colour; if it cannot be conceptually conceived by readers, we can give a simpler clarification that the colour is interpreted by a Universal Creature which requires all the EM codes (1,2,3,4,5,6) to decode the colour in his/her view (which indicates better universal meaning of colours). However, the truth is that the colour in the third layer is a 'meaningless-colour', which is difficult to describe (as if: what is the true colour of the pigment?).

If this hypothesis continually receives more support, the universe is supposed to be physically 'dark' or 'meaningless colour' without any species realizing on it. It is consistent with an assumption in the field of neurosciences that there is another real objective world beyond the mind (Alfred, 2006). With this, perhaps man's views towards the 'light' & 'colour' will change one day. Einstein's prediction was actually shocking. Here, were his words:-

"It is entirely possible that behind the perception of our senses, worlds are hidden of which we are unaware" - Albert Einstein.

Thus, most probably, Einstein had detected 'the science of physics beyond the mind' since at his early times. An extraordinary claim requires extraordinary justification. As for readers, they can always seek other relevant articles if necessary. Perhaps, this was Einstein's Final Great Prediction, which seemed to be true.

## SECTION 5: DISCUSSION

The first perception is that, everything in this world is objective. The vision perception depends on the observer system. This has been preserved detailed as in the previous article of (Zakaria *et al.*, 2017b). In addition to Figure 1, readers can also see Figure 8 in a research paper of (Jameson *et al.*, 2016) by clicking or copying the link given in Appendix A. The picture gives clues about vision in the minds of other observers (4 cone systems).

On the other hand, this special article concentrates more on how the relativistic vision concept, leads to the 'dark' world phenomenon. In Section 2 or 3, it can be concluded that in one of the cases, the black world will be visible (perceived) by one of the species, but there is no way for them to be able to realize/know about it (if they never met and discussed it with each other). The acceptance of the Section 3 is essential for readers to accept Section 4 from this article.

Section 4.1 is a general hypothesis to be considered. Section 4.2 demonstrates that, the illumination is not a direct result from light. It seems like a 'code'. With its status as a 'code', the block in diagram no. 2 is corresponding well to the block diagram of the no. 2 above which means 'signal' as shown in Figure 13. Does the position of the block, which appears to be parallel happens naturally?

Finally, if the light is really a 'code' as suggested in Figure 13, then what is the wall in the real world looks like (outside our mind)? Is it simply part of a dark world as in Figure 14? Again, perhaps, readers should carefully think about Figure 7-9, and compare them with the reality of other species (eg. if creature K really exists/lives). Once readers accept it, Section 4.2 is possible to accept.

For those who know about what is 'sound' communication at a higher frequency in a certain animal species, they may relate it with the perspective in the given figures (Figure 7-9) as the concept is almost similar. Some animals communicate at the rate where humans cannot hear it. However, according to the statement from (Silverthorn, 2013), the sound that we hear actually comes from our own mind/head. There are many clues for this claim, but the best clue comes from a phenomenon called Mc Gurk Effect. Dr. Joanna Atkinson (University College London) explores the sounds that happen to the deaf. The deaf cannot hear, but she finds out from her studies that they also sometimes hear the sound in their minds (Atkinson *et al.*, 2007). Moreover, the thing to emphasize here is that the sound happens in the mind, not from the outside. The study supports the statement by (Silverthorn, 2013).

If readers are convinced that the sound we hear is in our mind/brain, and readers assume that Figure 13 is not a coincidence (but it is the key to a new part of knowledge that can be discovered by the principle of equivalent), then read the paragraph below carefully. This will bring a logical awareness that Section 4.2 and 4.3 is true.

With the energy received (air vibration energy), the brain will interpret the signal (merely mechanical's frequency and amplitude) to become a reality (to be the 'sound' where one species heard it as a 'sound'). Similarly, the next sentence is just to repeat for energy received for vision (as in Figure 13). With the energy received (EM energy), the brain will interpret the code (merely different EM energy, according to its type of wavelength and combination) to become a reality (to be the 'vision' where one species see it as a 'vision'). These forms of deductions/inductions in Section 4 are hard to be accepted, but the arguments still lead to the conclusion.

Section 4.3 is able to show an example of a combination of two codes (two frequencies) which is discussed in Section 4.2. The combination of the two codes provides a perception of colour that does not exist in the EM spectrum. Furthermore, each frequency brings different energy, but the signal out (electric pulse) remains the same, regardless of the energy received. This argument also suggests that the frequency acts like a 'code' (eg. what kind of 'code' to the brain).

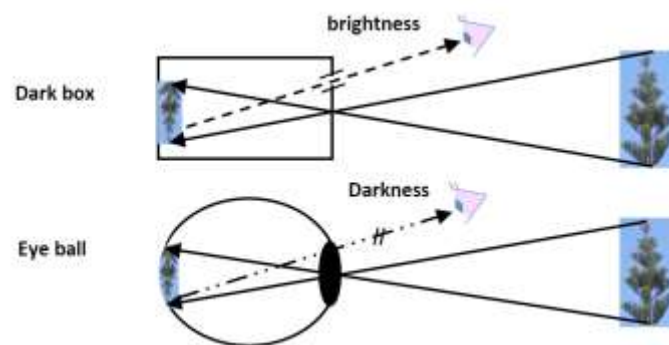
Finally, if the discussion above and all the arguments and hypothesis in Section 4 are correct without logical gap, then it will lead us to accept or to consider the possibility of the existence of the other objective world, which we are unaware of as predicted by Einstein.

## SECTION 6: THE CHALLENGE OF SECTION 4.1 (PROVING)

The argument suggest that Section 4.2/4.3 could be true, but the empirical evidence of hypothesis 4.1 is required to empirically prove it. Most researchers in the field of solar energy know very well that light energy can be converted into electricity, see review in (Jeffrey *et al.*, 2016). Researchers, who are skilled in the energy production generally, also believe the same, check review in (Samsudin *et al.*, 2016). They are among those who understood that light is a form of energy. However, what is the most difficult for us is to convince them that light is merely energy without the need for a 'light' (luminous). Even lower-powered EM waves (within the infrared (IR) range) which light is not visible at all, the light's energy can be exchanged as well in solar panels (Zulkefle *et al.*, 2013; Mohamad *et al.*, 2015).

Furthermore, additional infrared will cause the total amount of electric current (energy) increased, and this starts to get even more attention from researchers in recent years since certain substances are found to absorb the additional energy (Zulkefle *et al.*, 2013; Zulkefle *et al.*, 2015). Again (question for them), does the infrared light visible to the eye? Infrared cannot be seen because EM energy cannot be converted/absorbed in the retina detection layer (or in physic term: to drive the electrons (charged particle) to a higher energy level or 'band gap' as known by the solar energy researchers). The authors hope that a form of proof can be carried out by researchers who are expert/skilled/specialized in light and energy (to prove that Section 4.1 is true).

Researchers in solar energy are struggling to find materials (eg. Si/Ge etc.) that can absorb light energy as much as possible. On the other hand, we are parties who think how to prove our theory. Here is what both parties might be equally interested in.



**Figure 15.** Absorption design of electromagnetic energy?

There is an image (light) from the dark box, but there is no light seen in the retina (Figure 15). The black eye is a sign of having no direct light being reflected back from the inner side of the eyes. Does this mean that it is a sign that the mechanism of the cone, rod and others in the retina can absorb almost all EM power? (The eye area seemed to have a stable temperature, comfort, without excessive heat energy wasted). And yet, we are able to see a very clear and detailed vision.

## CONCLUSION

Brightness or darkness must be based on the observer's system. Bright or dark is supposed to be an internal interpretation of the observer. To prove it via the existence of the internal world is difficult. Nevertheless, if the hypothesis is correct (Section 4.1), it is safe to say that, the observers managed to build their own internal world of 'light' or brightness and the outside world is uncertain.

However, regardless hypothesis in Section 4.1, the argument in Section 4.2 gives indirect support to the hypothesis that light (brightness) we perceived is seemed to be a 'code' of a variety of energy. Additional arguments from the discussion section also give the same conclusion.

To reinforce the argument in Section 4.2, Section 4.3 is also able to provide examples of codes that occur in nature. Finally, the best and the most important of all, it leads people to discover the existence of natural colours of the universe, which may suit with what Einstein wants to deliver to us.

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#### APPENDIX A

<http://i.dailymail.co.uk/i/pix/2016/03/18/11/32539F3400000578-3498605->

[This\\_image\\_shows\\_a\\_painting\\_by\\_Ms\\_Antico\\_that\\_shows\\_her\\_view\\_of\\_-a-29\\_1458300963918.jpg](http://i.dailymail.co.uk/i/pix/2016/03/18/11/32539F3400000578-3498605-This_image_shows_a_painting_by_Ms_Antico_that_shows_her_view_of_-a-29_1458300963918.jpg)

(last accessed on 13 October 2017).