

Can Pareidolia Explain the Perception of Ghost Manifestation?

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ABSTRACT

Do Ghosts Exist? This question is dormant in everyone's mind. Literature abounds in ghostly stories. Even some of our friends and relatives narrate their chilling encounters with Ghosts. What to talk of others, even I, myself, had experiences seeing and hearing the ghost of my late mother. Then why this doubt whether Ghosts exist?

The Human Mind is known to spring many surprises, and one of them is **Pareidolia!** Pareidolia surprises you by making you see or hear what doesn't even exist, such as Ghosts. This paper brings to you the fact that Ghosts do not exist, and their seeming appearance could be Pareidolia at work. Even the seemingly credible evidence put forth by Paranormal Ghost Investigators comes under doubt because some of it can be counter-explained by Pareidolia, and the basic assumptions (on which their investigations are based) could be falsified as those assumptions could be explained by facts other than the existence of ghosts. The conclusions drawn are scientific and based on credible logic.

Keywords: *Pareidolia, Ghosts, mysteries of the mind, Life after death, After-death communications, apparitions, spirits, Do ghosts exist, the evidence against ghosts/spirits*

Being a parapsychological researcher, I find ghosts to be a favourite topic of my research, and I am intrigued by theories about the possibility of life after death. The literature throws up theories which support the belief that there is life after death which is believed by many religions as well, whereas contrarily there is a theory which says all ends with death. While theories supporting life after death find it easy to explain the manifestation of ghosts and life-after-death communication, the theories which negate the possibility of life after death tend to explain the ghost phenomena through 'super psi'- a psychic capability possessed by mediums which help them access discarnate information without using our known five senses (see Naresh Kumar¹, Naresh Kumar²)

Whether life exists after death or not, the phenomena of after-death communications (ADCs) and the manifestation of ghosts are occurring worldwide and no one can deny these occurrences. Many of us including me have personally experienced these.

Some thinkers have been toying with the idea that 'Consciousness' does outlive death and can manifest in some form or the other even after bodily death, ghosts being one of them!! This is because no one knows what consciousness is and where it resides. Does it reside in the brain? Scientists have not been able to prove this.

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Then if it resides outside the body then there looms a possibility that it can outlive death. There are many compelling reasons to believe that life continues after death. What is death, after all?

Could it not be a stage of life beyond old age where all organs stop but mental faculties and consciousness continue?

Death could be a stage of life because the body transforms at different stages of life, and death could be the last transformational stage. As born infants, even though we possess automatic physical systems of breathing, heart beating, digestion and excretion but we lack physical capabilities of walking/running, speaking etc.

When we pass on to the next stage, we develop the capabilities of speech, thinking, writing, walking, running etc. Further on, changes happen at puberty and at the youth stages, all our physical and mental capabilities attain a peak and then start a gradual decline. We start losing physical capabilities even though mental decline does not keep pace with physical decline. We lose vigour and strength and gradually become so weak that we cannot even walk, so motor capabilities are gone when we reach the stage of extreme old age; our sight fails, and we become hard of hearing. Thus, the loss of physical capabilities continues, but we continue to live with intact mental activity—this is the transformed stage of old age. All parts of us decline with age, but the mental faculties do not! Even in the old transformed stage, when physical organs show deterioration, mental alertness is unchanged in healthy people. Lastly, we reach the transformed stage of death. Doctors declare us dead when breathing stops, the heart stops, and the brain is dead. Yes, we may not be able to respond to external stimuli, and all our bodily capabilities, both automatic (breathing etc.) and physical, would have failed us, but we could still exist because the mental portion of us, which did not decline, may still be functional. Maybe our physical capabilities cannot be brought back, but it could be that our mental state is still alive- we may be physically dead, but we could still be existing.

Could it, then, not be an extended stage of life where all physical capabilities (most of which we lose in old age) are totally lost, and we also lose the automated systems of breathing, but the person continues to live in this stage because the mental state (Consciousness) is alive? Were we not alive when in a coma? Could we not be alive as if we are in the next transformed stage of life where we have lost the capability of responding to external stimuli as well as lost automated systems of breathing etc? Maybe this was the next stage of life where only the mind was functioning, and since physical actions were not happening, we burnt the body, but we still existed with only mental capabilities. So, we may be alive as an invisible entity in the next stage of life. This stage of us is the transformed stage just after old age.

The above is extrapolating the observable facts to deduce logically that we outlive death, but there could be more compelling shreds of evidence that life exists even after our body dies. One compelling reason which immediately comes to mind is the occurrence of NDEs- Near Death Experiences.

Near-Death-Experiences (NDEs) are the experiences of people nearing death, who pass over to the other side of life and are resuscitated back to life, and they vividly remember the happenings after they had died. They could find themselves floating out of the body and could see their dead body and happenings around the body. In some cases, they are reported to have observed happenings in other rooms which were not visible from the place where their bodies were lying. The incidents reported are not works of fiction but are real-life incidents reported from various hospitals.

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These strongly suggest that consciousness may not need a body and that it exists even without it. This is suggestive of a possibility that consciousness outlives death and life could continue even after death.

Dr. Bruce Greyson of the University of Virginia School of Medicine strongly believes that consciousness does not reside in the body. He goes on to say, *“I fully endorse the logical inference that mind and consciousness are not part of the brain and not even a part of the physical body as is evident from the fact that the physical body could be perceived even from outside the body.”*

(https://med.virginia.edu/perceptual-studies/wp-content/uploads/sites/360/2017/01/NDE46_spirituality-Zygon.pdf)

NDEs (near-death experiences) and OBEs (out-of-body experiences) prove this.

Since life can survive without the body, it gives a compelling logical possibility that it could outlive the physical body and the survival of self is possible without the physical body, and hence, through NDEs and OBEs, we have compelling evidence that life exists even after death. The fact that a blind person could see when he crossed over to the other side of death is a chilling example which loudly supports the idea that we can outlive death.

Even the reported and verified credible incidences of Reincarnation, as explored by Dr Ian Stevenson and Dr Satwant Pasricha, suggest that life continues even after death. (Naresh Kumar³).

If life continues after death, then a manifestation of ghosts seems logical. My friend Dr Ashwin Pillai, a Parapsychologist and Paranormal Ghost Investigator, even suggests how the ghost manifestation may be happening.

While speaking in a podcast session, he put his belief that when we talk or do any act, we emit vibrations which get absorbed in the atmosphere and in the inanimate objects around us and remain stored there forever. Due to a combination of unknown factors which come together at a future time point, these appear like a filmic aura and become visible to us. These are the ghosts that we see.

These appearances could be just apparitions without intelligence (termed as Residual Hauntings) because they are just impressions, and you can walk through them. They are apparitions without consciousness. But there are Intelligent Ghost Hauntings, which, even though they just give a feel of impressions in appearance they can interact with us due to embedded consciousness in them.

(Source: *Awaara Musaafir Show*--https://youtu.be/ZgPwkSOB_DU?si=ajSlBIkCzrZPBT5w)

The pieces of evidence of life after death and the manifestation of ghosts do appear compelling, but still, these fall short of being accepted as scientific truth because these could be falsified by having equally credible other explanations.

This paper will explore alternate explanations (Pareidolia being the most prominent one) which could credibly give an alternate explanation to the perception of ghosts by humans.

It is a fact that ghosts have been witnessed by people across the globe since ancient times. No one can deny these happenings. Even you or your friends would have experienced such happenings. Even I experienced it myself.

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But are the ghosts real or just hallucinating perceptions or illusions?

We shall be examining in this paper whether there could be alternate explanations including Pareidolia.

Coming to Pareidolia and before exploring how this incredible absurdity of mind could explain the so-called ghost manifestation; let us first understand this mental phenomenon:

What is Pareidolia

Have you ever looked at clouds and found that a bear or a human face or a familiar entity staring at you? Have you ever watched spilt water on the floor and found a familiar face emerging out of the water? As children, we were told stories that our grandma was weaving *charkha* on the moon, and when we looked at the moon, we could see a silhouette of an old woman busy at *Charkha*.

Whenever our mind is faced with complex patterns, it tries to extract meaning from the complexity, and it tries to match the complexity with some pattern stored in our subconscious mind, which could be a human face or some familiar thing, and we find that staring from clouds, from spilt water etc.

This is Pareidolia!!

My paper on Pareidolia⁴ posited the following facts---Pareidolia is a naughty act of the brain by which it fools our perception. Our brain develops and accumulates memories, and when it is confronted with a complex thing, it tries to recognize it by comparing the aspects in the conscious and subconscious memory and gives a meaning to the complex thing. It tries to make sense out of an entropy.

Some pictures explain the phenomena.



Picture 1-Can you see a bird in flight in this photo? It's a photo of the aurora borealis taken near Fairbanks, Alaska, by Dave Bachrach

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Another picture showing an old woman and also a profile of a young woman



Pareidolia at work to bring two distinct images of old and young women alternatively



clouds giving the impression of a flying bird



Erwan Mirabeau shot this rock formation in Ebihens, France. It's reminiscent of a green-haired man, known in the area as an Apache. Photo via Wikimedia Commons

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If we look at the meaning of Pareidolia in dictionaries, we find the following definitions from three notable dictionaries:

- **Cambridge Dictionary:** *A situation in which someone sees a pattern or image of something that does not exist, for example, a face in a cloud.*
- **Merriam-Webster:** *The tendency to perceive a specific, often meaningful image in a random or ambiguous visual pattern.*
- **Oxford Dictionary:** *The perception of apparently significant patterns or recognizable images, especially faces, in random or accidental arrangements of shapes and lines.*

Even the above dictionary publishers cannot agree on what exactly pareidolia is. The Cambridge Dictionary outright claims that the pattern or image is something that “does not exist.” The publishers of this dictionary have already concluded the results of your evidence for you – what you see in the picture or video you took during your investigation last week is not real. However, the other two definitions are less harsh, offering the words “meaningful” or “recognizable” which leaves a bit of wiggle room in what you are seeing.

Anton J. Buchberger⁵ explains that the word Pareidolia is derived from the Greek words *pará* (meaning: beside, alongside, instead of) and *eídōlon* (shape, form or image).

The German use of *pareidolie* first appeared when it was used in articles by Karl Ludwig Kahlbaum, particularly his 1866 paper “Die Sinnen delirien” (On Delusion of the Senses). When Kahlbaum’s paper was reviewed the following year in *The Journal of Mental Science, Volume 13*, pareidolie was translated into English as pareidolia.

Definition and connections

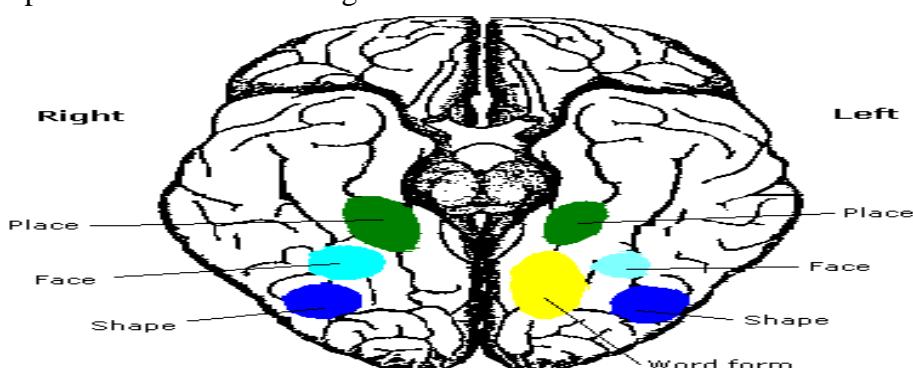
Pareidolia could be defined as the tendency of the human mind to interpret one or multiple stimuli into a recognizable pattern or shape.

Whenever the human brain comes across something complex, unknown or new, the brain will compare it to something similar that it recognizes.

The neurological reasoning behind it could be described in a two-step process:

- The human brain is wired in such a way as to deal with parallel processes to discover patterns, create associations and analyze a vast array of data
- The brain compares that stimulus to all the possible matches in its internal memory and identifies it as the closest one

There is even a specific part of the visual association cortex — the **Fusiform Face Area (FFA)**, meaning spindle-shaped face area) which is a part of the human visual system that is specialized for facial recognition.



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It is located in the inferior temporal cortex (IT), in the fusiform gyrus (Brodmann area — It is dedicated to recognizing and remembering faces. (Wikipedia⁶)

This particular concept has a clear psychological connection. The main purpose of pareidolia is to help quicken the analysis of a given situation to determine risk factors, and therefore help us in our self-preservation.

In layman's terms, whenever our mind is faced with a complex pattern, it tries to give it meaning by comparing the patterns stored in the brain and identifying it with the one that is closest to it. Thus, many a time the finding by the brain even though closest to the stored patterns in conscious and sub-conscious minds turn out to be far different from the real fact.

Pareidolia happens with everybody; but why does this happen, why is the mind forced to arrive at a wrong conclusion?

Chris Howley⁷ elaborates on the reasons, “*There are many theories as to the cause of this phenomenon based on survival, such as the need for babies to identify a human face as their caregiver from the moment they are born. Or the brain has evolved back in the day of cavemen to identify a face at a distance or amongst foliage quickly.*

Carl Sagan, an American cosmologist and author, made this case of pareidolia being a survival tool. In his 1995 book, "The Demon-Haunted World – Science as a Candle in the Dark," he argued that the ability to recognize faces from a distance or in poor visibility was an important survival technique. While this instinct enables humans to instantly judge whether an oncoming person is a friend or foe, he said that this could result in some misinterpretation of random images or patterns of light and shade as being faces.

Experts say pareidolia provides a psychological determination for many delusions that involve the senses (i.e. the brain trying to make sense of random information by seeking something it is already familiar with). They believe pareidolia could be behind numerous sightings of ghosts, UFOs, Elvis and the Loch Ness Monster and the hearing of disturbing messages on records when they are played backwards.

When looking at all of the scientific theories on how pareidolia works on the mind it is interesting to note that the human face is one of the first images that is imprinted on a newborn's mind. Can this be why our brains act in such a way when interpreting non-specific images or sounds?"

With the knowledge of Pareidolia in the background, let us now explore how the evidence of ghost manifestation could be interpreted not as ghosts but as something else. The credibility of the theory of existence and manifestation of ghosts will go for a toss if the human observation of seeing an apparition or hearing the voice of a dead person could be explained by something other than a ghost.

Can Ghost Manifestation be something other than a Ghost?

Our common sense tells us that ghosts do not exist, and science also has not been able to provide solid proof for the existence of ghosts. No sane mind would like to believe that a person who died and was buried or burnt could come back and manifest his/her presence before us. How could that be possible? Our body is a machine, and when a machine is unworkable and gets scrapped, it cannot come back out of anywhere and make its presence felt. The idea itself is ridiculous! But queer incidences are happening and happening spontaneously across the world

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where people have not only heard voices but also seen dead people physically. The incidents defy science. Some people give credence to such incidents because apart from hearing such incidents or reading them in literature, they had personally experienced such phenomena at some time or the other in their lives. Why to talk of others, even I had experienced both these phenomena i.e., I had heard the voice of a dead person and even seen a ghost in person. More of it later.

First, let us see what all goes in favour of the theory of ghosts being real!

The first fact is the experience of people who have had a confrontation with a ghost. Literature abounds in such experiences:

Dr Joseph Murphy⁸ gives a narration of after-death communication in his book *Psychic Perception*-

A widow visited me last year, saying that her husband, shortly before his demise, had told her that he had made out a new will leaving all of his estates to her. But his lawyer knew nothing about it, and he had a will made ten years back. She had searched everywhere but could not find the new will.

I suggested to her that she should believe in the sentence, 'Infinite intelligence knows where the will is and reveals to me.' And she should chant this sentence in her daily prayers.

She started praying, and after three or four days of praying, she distinctly heard her late husband's voice in the kitchen where she was ironing: 'Look up the 45th chapter of Isaiah.' She did that, and there she found the new will, attested by two witnesses, all in legal phraseology, dated and signed.

Strangely, a voice from the late husband guides the wife to find the lost will. The incident just sends a chill across our spine!-do Ghosts really exist?

Some interesting incidents concerning the ghosts of world leaders are also posited by Judith Ennamorato⁹-

Mrs. Eleanor Roosevelt has recorded perhaps the best story of Lincoln's ghost: -

"I was sitting in my study when one of the maids burst in on me in a state of great excitement. I looked up from my work and asked her what was the trouble.

"He is up there ---sitting on the edge of the bed, taking off his shoes!" she exclaimed

"who's up there taking off shoes?" I asked

"Mr. Lincoln!" she exclaimed"

In another incident-Queen Wilhemina of the Netherlands saw the ghost of Lincoln during a state visit. While spending the night at the White House during Roosevelt's Presidency, she was awokened by a knock on the bedroom door. Answering it, she was confronted with the Ghost of Abraham Lincoln staring at her from the hallway.

Presidents Theodore Roosevelt, Herbert Hoover and Harry Truman, all, reported hearing unexplained rapping on their bedroom doors. They all believed it was Lincoln.

On several occasions, the wife of Calvin Coolidge reported having seen the ghost of Lincoln standing with his hands clasped behind his back, at a window in the Oval Office, staring out in deep contemplation toward the bloody battlefields across the Potomac.

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During one of his visits to the States during World War 2, Winston Churchill spent the night at the white house. On one occasion, he climbed out of the bath and naked, save for the Cigar, sauntered into the adjoining bedroom. Startled, he looked up to see Abraham Lincoln standing by the fireplace in the room, leaning on the mantle. Churchill simply blinked before saying, "You seem to have me at a disadvantage,.". Lincoln apparently smiled softly before simply disappearing.

Lincoln's ghost, however, was not confined to the White House. Some have spotted his spirit walking near his graveyard in Springfield, Illinois.

Incidents of after-death communication by ghosts and their manifestation in person are found extensively and we can go on narrating the same. But these are all hearsay and many would brush them aside as merely fiction but when you experience it yourself, you cannot brush such incidents lightly.

I now narrate my experiences:

My brush with ghosts/ spirits was a few years back when my father breathed last at the age of 93. He died on 23rd February 2018 at 2.55 p.m. I came out of the ICU and when I glanced at the relatives of other patients seated on benches outside the ICU, I could visualize my mother sitting there. I was astonished because she had passed 27 years ago!

I was baffled and when my brother reached ICU after learning passing away of our father, I asked him to look at the bench where relatives of patients were sitting and look at the lady who was, none other, than our mother. He saw that lady and he, also, jumped with excitement and exclaimed that Ma had come to take away Daddy!!

A few seconds later our sisters also came to the ICU and there was crying and weeping from all of us and I forgot about seeing the ghost of my mother. My sisters, however, had not noticed seeing our mother. The incident of sighting the ghost of my mother is etched permanently in my mind!!!

Another incident where I heard the voice of the dead occurred on the death anniversary of my Bhabhi Sangeeta Prasad.

On the first death anniversary of my Bhabhi (sister-in-law), while going to bed, in the darkness of night I and my wife both heard a clear audible voice coming from nowhere; it was loud and clear and we heard it as "Renu". The voice was unmistakably that of my mother who used to call my bhabhi Sangeeta as "Renu" which was her pet name. We were shocked to hear the loud and clear voice because my mother had died twenty-seven years ago!!

Was it again an encounter with a ghost!!!

The above incidents left me completely stunned and for the time being my logical reasoning was stumped and fear kept engulfing me. Probably the fear tormented me because my mind had been conditioned since childhood with stories about ghosts and spirits. Since I had an inclination from very childhood to learn more and more about the things which defied science, I had been reading literature about telepathy, clairvoyance, precognition, psychokinesis, and Life after death. History abounds in stories where ghosts did manifest in person before the near dear ones. Hence my mind was not able to think anything except that I did see ghosts and that Ghosts do exist.

While People who experienced seeing ghosts or hearing their voices feel that the experiences were real and will not accept the fact that their mind was imagining these, there are strong reasons that these emanated from Pareidolia.

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Can Pareidolia explain such ghostly visual and auditory manifestations?

The above two incidents shook me and I was stunned to face a ghost both visually as well as audibly. At that time, I was unaware of the Parapsychology field and also did not have any knowledge about the psychological aberrations mind could create but today I can think more rationally after I did my advanced certificate course in parapsychology and also got PhD in Parapsychology after researching the parapsychology field extensively.

Now with the awareness of Pareidolia, it is not difficult for me to look at the sighting of my mother's ghost from a different perspective.

Pareidolia creates illusions when faced with complex patterns; not only that our brain can fool us when we are not in a normal frame of mind. My situation, then, at the ICU was that of a person shattered by grief and my mind was hazy and probably in that disturbed moment I remembered my late mother. My mind was disturbed and the complex situation before my mind forced it to morph my mother's face onto the face of an old lady sitting there on the bench. Mind can create havoc and this manifestation of Pareidolia made me think that my mother had come in person there. Since my brother was also in a similar disturbed state of mind and since I planted this idea of mother coming here into his mind, he could also see our late mother due to Pareidolia which took over him as well.

But our sisters did not see our mother because even though in a disturbed state they were not under Pareidolia because the idea was not planted in their minds.

I, now, strongly feel that it was not my mother's ghost but it was a creation of our minds under the influence of Pareidolia.

Besides this type of Pareidolia where the visual perception is affected, there is auditory Pareidolia where we perceive a voice when there existed none. Using the same reasoning of visual Pareidolia, I could logically come to an inference that hearing "Renu" from the deceased mother was a case of Auditory Pareidolia.

So much so for my own experiences.

Talking in general of ghostly manifestations, not only are ghosts supposed to be able to do things that science says are impossible, such as turn invisible or pass through walls, but also scientists using reliable research methods have found zero evidence that ghosts exist. What scientists have discovered, though, are lots of reasons why people might feel they have had ghostly encounters when actually it was just an illusion.

As per Kathryn Hulick¹⁰, "*We're used to our senses giving us accurate information about the world. So, when experiencing a hallucination, our first instinct is usually to believe it. If you see or feel the presence of a loved one who died — and trust your perceptions — then "it has to be a ghost. That's easier to believe than the idea that your brain is lying to you.*

The brain has a tough job. Information from the world bombards you as a mixed-up jumble of signals. The eyes take in colour. The ears take in sounds. The skin senses pressure. The brain works to make sense of this mess. This is called bottom-up processing. And the brain is very good at it. It's so good that it sometimes finds meaning in meaningless things. This is known as pareidolia (Pear-eye-DOH-lee-ah). You experience it whenever you stare at clouds and see rabbits, ships or faces. Or gaze at the moon and see a face.

The brain also does top-down processing. It adds information to your perception of the world. Most of the time, there is way too much stuff coming in through the senses. Paying attention to

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all of it would overwhelm you. So, your brain picks out the most important parts. And then it fills in the rest. “The vast majority of perception is the brain filling in the gaps.

What you see right now isn’t what’s actually out there in the world. It’s a picture your brain painted for you based on signals captured by your eyes. The same goes for your other senses. Most of the time, this picture is accurate. But sometimes, the brain adds things that aren’t there.

For example, when you mishear the lyrics in a song, your brain fills in a meaning that wasn’t there. (And it will most likely continue to mishear those words even after you learn the right ones.)

This is very similar to what happens when so-called ghost hunters capture sounds that they say are ghosts speaking. They call this the electronic voice phenomenon (EVP.) The recording is probably just random noise. If you listen to it without knowing what was supposedly said, you probably won’t hear words. But when you know what the words are supposed to be, you might now find that you can discern them easily.

When people sense ghosts, he points out, “They’re often alone, in the dark and scared.” If it’s dark, your brain can’t get much visual information from the world. It has to create more of your reality for you. In this type of situation, the brain may be more likely to impose its own creations onto reality and you turn hazy things before you into ghosts and believe that you saw one.

Apparitions or ghost sightings, in general, happen in haunted places that are dimly lit and where visibility is abysmal. The persons who see ghosts are already in a frame of mind where they expect to witness a weird phenomenon as was my case when I saw my mother’s ghost. When the brain is made to face the queer scenario of a dimly lit haunted house (that is a very likely situation of sighting a ghost), pareidolia together with confirmation bias pushes the brain to create a picture that does not exist.

Our Brains are pattern-seeking machines, especially when we are primed for a scare. In low light or shadowy environments, we are more likely to see faces or figures because our minds work overtime to make sense of the visual noise. The expectancy is high and even a rustling curtain or a creaky floorboard creates impressions in our mind and it becomes easy for our mind to fill in the blanks to make a manifestation of an apparition.

Pareidolia, by definition, is “Brain making patterns when faced with a complex environment that lead to perception of things which do not exist. Scientists have further found that Pareidolia can also be triggered when the brain interacts with magnetic fields and other fungal pores and can cause illusory sighting of a ghost. This is brought out in my Paper, “Do Ghosts Exist”¹¹:

“Pareidolia creates illusions of ghosts.

The presence of an Electromagnetic field /fungal pore or toxic material can cause Pareidolia which senses a ghostly presence.

Canadian neuroscientist, Mr. Michael Persinger, had demonstrated that the application of electromagnetic field to temporal lobes of the brain could provide a haunting experience viz: perception of the presence of a person, or, a sensation of touch, when, in reality, there is no presence or no one has touched.

Mr. Shange and his team from Clarkson University in the US observed that the presence of a fungal pore can cause the perception of haunting. Supernatural perception can also arise from

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the brain's reaction to toxic substances -such as carbon monoxide, formaldehyde, and pesticides. It is also suggested that fungal hallucinations caused by the toxic mold could stimulate haunting-related perceptions. This may explain why ghost sighting, often, seems to occur in older buildings. This means that toxic molds can trigger significant mental or neurological symptoms which create perceptions, similar to, those reported during haunting experiences.

Ghost sightings could be due to Pareidolia or the brain getting affected by electromagnetic fields or by a fungal pore. The hallucination can also get triggered if the brain is exposed to toxic substances like Formaldehyde or carbon monoxide. Thus, the brain can get fooled and give a perception of seeing a ghost."

The above discussions build a strong case that Pareidolia could be behind the visual or auditory perception of ghosts i.e., the visual manifestation of ghosts or after-death communication from the ghosts may not be real and the perception of ghosts could only be a trick of mind!!

The above was regarding the events of ghost manifestations that humans have perceived. Humans being inquisitive have tried to probe the domain of so-called Ghosts and have revealed startling experiences in their paranormal ghost investigations using scientific tools. The findings by the Paranormal Ghost Investigators build a strong case in favour of the existence of ghosts. Not only these investigators were able to locate ghosts, but they could also communicate and persuade them to leave the haunted places.

The method of their investigation is scientific and they use scientific tools like EMF meters, EVP devices, Thermal Imaging Cameras, etc...

Their findings are credible!

We shall explore whether Pareidolia can counter-explain their findings.

But let us first understand the process of Paranormal Ghost Investigation:

Paranormal Investigations encountering ghosts

Ghost Hunters are prospering and we can find many videos streaming on YouTube. They do not like to be called Ghost Hunters and prefer to be known as Paranormal Investigators.

As per Cohen Howard¹², “***The Paranormal Investigators are, actually, Ghost Hunters. Ghost-hunter clubs and societies have popped up all over the world. There is no government regulation of ghost hunters or an industry group that oversees their activities. These groups are almost all amateurs, and very few of them practice the scientific method. "Many of these groups are earnest and are making an honest effort to contribute to the field," said Liebeck. However, too many of them "are not in the business of conducting actual research or impartially evaluating evidence, but have apparently already decided what the 'truth' is and are just promoting their belief system. Waving a magnetometer in front of a TV set and announcing, 'They're here!' or photographing a bunch of flash-illuminated dust particles and proclaiming that 'The orbs are upset over our negative vibrations,' does not constitute an investigation."***

We shall not be talking about such paranormal investigators but shall explore the Paranormal Ghost Investigations which are done in a credible scientific manner to locate, communicate with and influence the ghostly entities.

Cohen Howard further asserts that paranormal investigators are, actually, Ghost Hunters. He goes on to say that Paranormal Investigators (Ghost Hunters) use a variety of instruments-- *Ghost hunters use a variety of electronic devices, including EMF meters, digital thermometers,*

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both handheld and static digital video cameras, including thermographic and night vision cameras, night vision goggles, Electronic Voice Recorders (EVPs), and digital audio recorders. Other more traditional techniques are also used, such as conducting interviews and researching the history of allegedly haunted sites. Ghost hunters also refer to themselves as Paranormal Investigators.

A typical paranormal ghost investigation is well brought out in a paper by Naresh Kumar¹³:

Ghost Hunters, as they really are, prefer to call themselves Paranormal Investigators because they feel that the name Ghost Hunters discredits their profession as it tends to equate them with exorcists and other cheap healers (so-called Tantriks or ज्ञान के वाले बाबा). They consider their work as scientific investigation and hence they do not like to be equated to ज्ञान के वाले बाबा so they do not wish to be labelled as Ghost Hunters and prefer to be called Paranormal Investigators.

Paranormal Investigation makes use of scientific gadgets and their investigation is based on some assumptions about ghosts.

Various scientific instruments used in the investigation and the underlying assumptions as to how these instruments relate to the responses provided by ghosts are given hereunder:

- **The Electromagnetic Field (EMF) Meter** is the most common tool used by ghost hunters. The underlying assumption is the belief that spirits or ghosts may interact with the environment through electromagnetic fields.
- **Night vision cameras** are used on the assumption that the movement of ghosts which is not visible in ordinary light could be visible to night vision cameras.
- **A Thermography Camera** is used with the assumption that the ghosts can fluctuate temperatures of environments; spirits take energy from surroundings and this can lead to a drop or rise in immediate conditions which will be caught by Thermography Cameras.
- **Night Vision Goggles** are used on the assumption that the ghosts can fluctuate heat transmissions and thermal imaging goggles can catch these variations^[a2] and enable them to become visible. Alternatively, image enhancement could make them visible to night vision goggles and they could then mark their presence and communicate with them using other devices.
- **EVP (Electronic Voice Phenomena) Recorders** are used to capture unexplained voices or sounds that are not audible to the human ear underlying assumption being that the ghosts do emit faint sounds inaccessible to human ears.

The above assumptions are not fundamental and we do not know how these came into the minds of Paranormal Investigators.

While it is not known what made paranormal investigators reach the assumptions above. Still, under these assumptions, they very confidently assert that the gadgets do make them establish contact with the ghosts /Spirits.

We shall take up later the question of these assumptions being true/false and whether the inferences drawn point to ghosts' existence or whether there could be alternate explanations like Pareidolia to the observed phenomena. First, let us understand the process of Paranormal Investigation.

Paranormal Investigation Process

I, being a Parapsychological Researcher, have curiosity to learn about investigations into life after death and communication with spirits is one such area that arouses my curiosity. Even though I do not have any first-hand experience with Paranormal Investigation but as per details available in the literature, my interaction with Paranormal Investigator friends, and my logical thinking; the following must be the sequence of activities in the process of Paranormal Investigation:

- Locating the haunted places, either through contacts with owners or learning through media.
- The owners of the haunted place call these investigators. For locations learnt through the media, the investigators seek permission for investigation from the respective authorities.
- Reaching the place and doing a preliminary investigation and survey of the place to learn what ghostly activities are observed and taking actions to eliminate known sources of electromagnetic radiation so that Paranormal gadgets could be used effectively for ghost hunting when the investigation begins.
- Conducting the investigation: In the words of Mr. Gaurav Tiwari (considered the father of the Paranormal Investigation Movement in India; now deceased): When we receive a complaint, we analyze the incident at the client's place using various aspects of science like electromagnetic fields, geomagnetic impact, temperature and humidity. We note all the reasons that could trigger hallucinations. If we feel there's no scientific/natural reason for the haunting, we begin our vigil thereby trying to communicate with the spirit. If we find any activity that can't be replicated in a lab or be explained scientifically, we call it paranormal. We try to establish contact with our gadgets. We record everything with gadgets that prove the existence of paranormal forces." -" says Tiwari.

(source: <https://timesofindia.indiatimes.com/city/gurgaon/gadgets-gyaan-to-grabghosts-in-gurgaon/articleshow/14569669.cms>

- Once the gadgets show the presence of ghosts/ spirits, paranormal investigators try to talk to the ghosts/spirits by asking questions which could be answered as yes or no. They suggest the ghost to attempt to flicker the K2 meter one time if the answer is yes and two times if the answer is no. They try to understand through the conversation the reason why ghosts are present here and why they are causing trouble. They try to understand what they want and then they try to make them understand that they are now not in this world and they must walk over to their world. Many a time the ghosts leave the place. Use is made of all gadgets like EMF, EVP recorders (electronic voice recorders), Night cameras, and digital thermometers to record paranormal activity and data is collected.
- Data is subsequently analyzed by piecing together the information collected on different gadgets and then arriving at meaningful conclusions using all information. The analysis results in a report prepared on the findings and shared with clients if the assignment was for a client.
- The last operation in the process is cleansing i.e., taking action to make the place free from ghosts/spirits if the ghost does not leave the place after communicating with the investigators.

These appear to be the logical steps in the process of Paranormal Investigation.

I have read accounts of several paranormal expeditions of credible paranormal investigators in literature and have also seen videos explaining their achievements. I have read the book, "The

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Spirits Talk to Me" by Sarbajeet Mohanty and Neil D' Silva. I explored the work done by IPS (Indian Paranormal Society), P.A.I.R.S (Parapsychology and Investigations Research Society), ISPS (Indian Specter Paranormal Society), and CPSR (Council for Paranormal and Spiritual Research). Also, I had the occasion to interact with some prominent paranormal investigators.

I am impressed by the work done by Paranormal Investigators. They have done a great service to society by alleviating the suffering of the sufferers of Poltergeist activities while carrying out Paranormal Investigations and are still pursuing their great work!!

I am amused to observe that these investigators are totally sold on the idea that they are interacting with the ghosts.

Could their interpretation be not a handiwork of Pareidolia? Could they be not hearing voices on EVP which are just blurred audio that their minds give meaning—Audio Pareidolia!

Before I venture and bring Pareidolia into focus, let us examine why they may not be interacting with ghosts.

Interestingly Steven Novella¹⁴ posits as follows:

"I wish to point to one aspect of so-called ghost hunting that marks it as pseudoscience- it is this – they don't carry out any actual hypothesis testing.

What they are doing: it's not science. There's not a single shred of evidence to suggest that ghosts exist, or that they can be identified by cold spots. Why are ghosts cold? Why do they never seem to show up in visible light, but infrared cameras always find them? Why can you never hear them speaking, but finding them in garbled audio (what they call electronic voice phenomenon or EVP) is absurdly common? The answer is that it's easier to find whatever you're looking for in distorted or unclear video and sound. This is a profession that thrives on false positives.

It is a fact that ghost-hunting, as practised, is nothing more than anomaly hunting – searching for things that seem unusual or out-of-place and then declaring such anomalies evidence of the paranormal. But there is no reason, a priori, to assume that a cold spot is evidence of anything paranormal or ghosts in particular.

In fact, all the assumptions on which the Paranormal Investigations hinges may not necessarily link the observed facts to the existence of ghosts.

While it is not known what made the paranormal investigators reach the assumptions on which they founded the ghost investigation, they very confidently assert that the gadgets do enable them to establish contact with ghosts / Spirits. The assertion, naturally, is based on their belief and assumptions which are not fundamental and may not be true I could not find any scientific proof that the assumptions are true. It is not valid logic to connect the observations with ghosts/spirits if the underlying assumptions that ghosts/spirits can even do these acts are far from being true. For example, it may not be true that ghosts emit electromagnetic radiation and hence if they show K2 meter flicker, it may not be evidence of the presence of a ghost!!

It cannot be denied that sometimes K2 meters do blink in response to questions, IR thermometers do catch cold spots, thermal Cameras on rare occasions capture blurred patterns, and other gadgets do give responses and depict unusual patterns. But the question is whether these come from discarnate spirits / Ghosts. To date, there is no compelling evidence to relate them to ghosts and spirits. Their exact causal roots are not known. Who causes them and how?

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There is a theory that ghosts cause them. There could be alternate theories. Could the flickering be not due to some other entity which responds to command? Could it not be even due to the mental powers of investigators themselves who may be exercising Psychokinetic mental powers to make K2 Meter flicker as per their wish under the influence of strong "Confirmation Bias" and their wishes come true due to the Placebo effect? You may say all this is far-fetched but so is the thought of ghosts doing it!! There are no scientific facts supporting the presumption that ghosts interact with paranormal investigators.

There can be many more convincing alternative theories against all the data recorded by the gadgets. Hence, we can't be absolutely sure that Paranormal Investigators have communicated with Ghosts.

Another question mark to the theory that they interacted with ghosts is the assumptions they are making about the capabilities and behaviour of so-called ghosts. There is no evidence to prove that the assumptions made by paranormal investigators that ghosts are influenced by magnetic field, can fluctuate environment temperature, have the capability of making themselves visible to thermographic/ night vision cameras etc.... are founded on scientific facts.

The very foundation of their interaction with ghosts is based on underlying assumptions they use which have no scientific base. So how can it be accepted that they really do encounter ghosts? It could be some other entity influencing the gadgets or it could be Pareidolia at work.

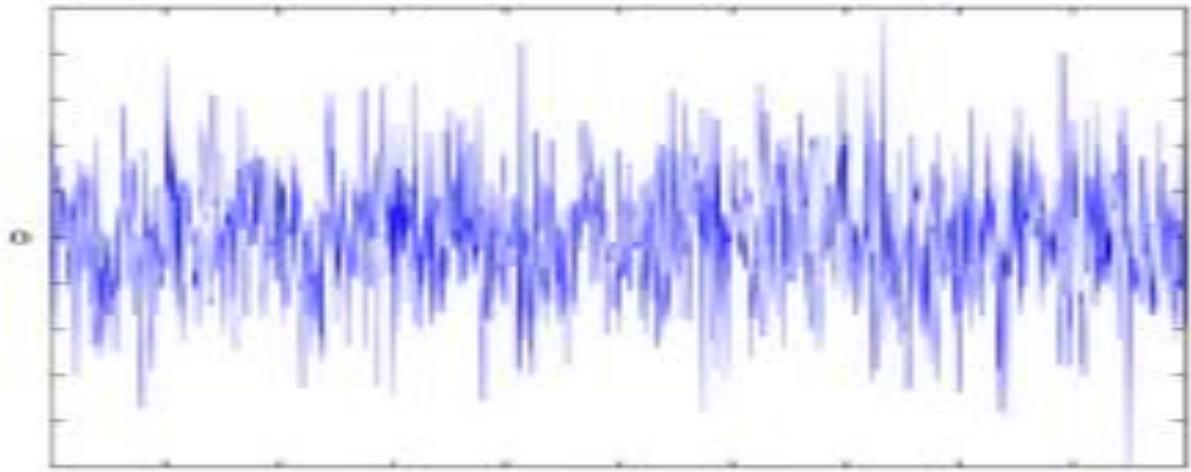
Pareidolia and evidence of ghost existence

The most significant aspect which brings Pareidolia credibility here is the fact that the unintelligible sounds observed when EVP recorders are replayed after the recording done during the paranormal investigation could really be insignificant noises but when our mind is faced with these unintelligent sounds, it tries to match it with patterns in Conscious/ Sub Conscious mind and Auditory Pareidolia results and we get thrilled to have a communication from the ghosts. It is a false thrill; it is Pareidolia at work!!

Wikipedia⁶ substantiates the above inference:

*"Within ghost hunting and parapsychology, **electronic voice phenomena (EVP)** are sounds found on electronic recordings that are interpreted as spirit voices. Enthusiasts consider EVP to be a form of paranormal phenomenon often found in recordings with static or other background noise. Scientists regard EVP as a form of auditory pareidolia (interpreting random sounds as voices in one's own language) and a pseudoscience promulgated by popular culture. Auditory pareidolia is a situation created when the brain incorrectly interprets random patterns as being familiar patterns. In the case of EVP, it could result in an observer interpreting random noise on an audio recording as being the familiar sound of a human voice. The propensity for an apparent voice heard in **white noise** recordings to be in a language understood well by those researching it, rather than in an unfamiliar language, has been cited as evidence of this.*

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A **waveform** of **white noise** plotted on a graph

Prosaic explanations for EVP include apophenia (perceiving patterns in random information), equipment artefacts, and hoaxes.

Deriving meaning out of unintelligible sounds is certainly a trick by the mind and hence Auditory Pareidolia credibly explains this ghostly evidence.

Coming to other shreds of evidence arising out of Paranormal Investigation we now explore photos captured on night vision cameras or thermographic cameras. As per Anton J. Buchberger⁵, “*When reviewing photos and videos as paranormal evidence, investigators would look for full-body apparitions or partial body parts. Therefore, they already put themselves into a predisposed state of mind. So, how can we avoid the risk of misinterpreting evidence and remain as objective as possible?*

This also brings to mind the effect of nature vs. nurture on our own pareidolia. How objective can an interpretation be? How impartial and deprived of any preconceived notions could we be to form an analysis?”

As a matter of fact, many a time during Paranormal Ghost Investigation, the images captured on night vision cameras are hazy and blurred and at a cursory glance these do not yield any meaning. But when the investigator starts gazing at it with concentration, he falls into the same trap as a person looking at a cloud and finding a bear staring at him from the clouds. Evidently, the investigator becomes a victim of visual pareidolia while interpreting photos or videos from the night vision cameras.

While discussing this point, I am reminded of the mystery of the death of a promising Indian Film Star Sushant Singh Rajput. His body was found hanging in his room and several theories were forwarded and one of them was that he was murdered and then his body was tied to the ceiling fan. In a few days, Paranormal Investigator Steve Huff rose to prominence with his claim that he communicated with discarnate Sushant.

Steve Huff is a paranormal researcher and photographer who claims to be able to communicate with spirits. He has a YouTube channel and website called Huff Paranormal. He also created the Wonder Box, which was used on the show Paranormal Lockdown. He uploaded a video on YouTube in which he as a medium was communicating with the ghost of Sushant.

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I heard the video many times and came to the conclusion that the sounds emanating from the recorder were totally unintelligible and Steve was trying to interpret them under the influence of Auditory Pareidolia.

Please watch this video with an open mind and I am sure you will agree with my judgment. The link is given here: <https://youtu.be/CCyoizWnLGo>.

If you explore YouTube, you may find an abundant amount of YouTube videos which are filled with “evidence” such as a ghostly figure standing behind a window in an abandoned house, or perhaps a shadowy figure walking out of a doorway. But one must wonder if what we are seeing is an entity from the other side or is it indeed just pareidolia.

Chris Howley talks about Photographic Pareidolia:

“The most common type of photographic pareidolia we get asked to examine is that of the ‘orb’ phenomenon. It is now widely understood that orbs are not paranormal – they are simply the product of airborne particles (dust, rain, insect, pollen, etc.) in the camera’s field of view caught in the flash and reflecting light back into the lens, causing specks of light to appear in the photo as ‘orbs’. In photography, this is known as ‘backscatter’ or ‘orb artefacts’.

However, we still hear examples of “Yes but this one has a face!” Our argument to this is that if the object had been caught in perfect focus and detail and the image resized to that of the ‘orb’ would you now so easily see a face? The answer to that has to be no. This is yet another instance of pareidolia working on our senses to perceive that much-desired proof of the afterlife.”

Most of the evidence recorded during the Paranormal Ghost Investigation is either on EVP or on Night Vision Cameras and these, we have seen, could be interpreted wrongly as ghosts and could be the result of Visual / Auditory Pareidolia.

We shall conclude the paper after exploring whether the assumptions underlying a Paranormal Ghost Investigation have some scientific foundation, e.g., does flickering on K2 meter necessarily mean the presence of a ghost who is making these flicker? Can there be some alternate explanation? There are several assumptions on which paranormal investigation rests and if those assumptions have no base, the very investigation has no meaning and puts a big question on the question of the existence of ghosts.

Are assumptions underlying Ghost investigation valid

In the foregoing paragraphs, I talked about these assumptions on which Paranormal Ghost Investigation rests. The foundation of Paranormal Investigation delicately stands on some assumptions which link the observations to the existence of ghosts. What if the observations could have explanations other than the existence of ghosts? Then the investigations would lose their credibility.

We shall now explore each assumption and try to find whether the observation in the assumption has some alternate explanation (Naresh Kumar¹⁵):

- The first assumption is, "For manifestation, the ghosts draw energy from the air, leaving the cold spot behind. The location of cold spots by infrared thermometers confirms that the place is haunted." It is true that at some so-called haunted places, some cold spots are found but these could be due to environmental factors:

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1. Even if the windows are closed, air bricks for ventilation or poorly sealed doors and windows can allow cold air from outside to come indoors, causing sudden temperature drops.
2. Damp Patches can cause black moulds to grow. These are indications that there are condensation problems. This excess of water vapours on the walls or floor can cause cold spots to form.
3. Properties that aren't properly insulated will experience cold spots, dampness, and other issues that ghost hunters might attribute to paranormal activity.
4. "Chill" can also get produced if there is a gap in the floorboard if the house has wooden construction.

The above environmental factors could produce cold spots and hence these falsify the first assumption for the existence of ghosts.

- The second assumption is that "*Ghosts emit electromagnetic frequencies of varying intensities which can be detected using EMF gauges or meters.*"

Well, EMF is present everywhere, even our own body emits electromagnetic radiations. EMFs are everywhere, originating from appliances, cell phones, and electrical wiring, and even there may be geological patches where EMF presence is very high.

Paranormal Ghost Investigators look for and eliminate these sources from the location before claiming the place to be haunted. They claim that ghosts emit electromagnetic fields which are captured by EMF/K2 Meters and if getting rid of the above sources, if the EMF meter still shows EMF radiations, it is taken as the presence of ghosts.

Is it really true? Can the investigators be sure that they have removed all known sources of EMF radiation?

I think they cannot claim that all sources other than ghostly presence have been removed by them. There are some sources that they can't even identify and remove. For example, some portions of land may have geomagnetic properties and EMF meters may be capturing EMF radiated by the geomagnetic property of the land.

I know of a place in Runn of Kutch where this geomagnetic property manifests-- there is a small patch of the slope of the road on the way to Kalo Dungar in Runn of Kutch where a stationary car put in neutral gear, moves backwards by itself due to huge electromagnetic force which manifests due to geomagnetic property of the land and climbs the ingredient of slope by itself. This is not the result of haunting but demonstrates the strength of the electromagnetic field generated by the geomagnetic property of the stretch of land. At such places, EMF meters are certainly going to indicate the presence of EMF fields emanating due to the geological property of the place and can be confused with a ghostly presence. Such factors are not detectable by Paranormal Investigators and can create fluctuations in EMF that are unrelated to any paranormal phenomena. There may be several other factors, not noticeable to paranormal investigators that emit radiations of EMF; even our bodies emit the same. Another fact is that the belief in ghosts and the interpretation of EMF readings can be influenced by psychological factors. For example, the "placebo effect" or the power of suggestion can lead individuals to perceive a connection between EMF readings and ghostly activity. There is no empirical evidence that directly correlates EMF readings with the presence of ghosts. Most scientific studies on the paranormal have not found consistent, repeatable results that support the existence of ghosts or their detection through EMF measurements.

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In summary, while EMF detectors can provide interesting data about the environment, they do not, necessarily, have a scientific basis for detecting ghosts.

- The third assumption is that “*Ectoplasm, a static form of energy, is emitted by spirits or ghosts to aid their manifestation as apparitions.*”

Many of us have seen a mist or fog that looks like it’s swirling apparition. It could be ecto-mist or ghostly mist. The vaporous cloud usually appears several feet off the ground and can move swiftly or simply stay still. These ectoplasms have been captured in videos.



Picture of ectoplasm – giving the appearance of an apparition

We do not know whether there is some scientific reason to relate such happenings to ghosts. Also, we do not know whether these are real or mere hallucinations.

Wikipedia¹⁶ mentions that *ectoplasm*, also known as simply *ecto*, is a substance or spiritual energy "exteriorized" by physical mediums. It was coined in 1894 by psychical researcher Charles Richet. Although the term is widespread in popular culture, there is no scientific evidence that ectoplasm exists and many purported examples were exposed as hoaxes fashioned from cheesecloth, gauze or other natural substances.

The term comes from the Ancient Greek words ἔκτος *ektos*, "outside" and πλάσμα *plasma*, "anything formed".

The physical existence of ectoplasm has not been scientifically demonstrated, and tested samples purported to be ectoplasm are various non-paranormal substances. Other researchers have duplicated ectoplasm with non-supernatural materials.

I strongly feel that Pareidolia may be at work when someone seems to have a glance at an ectoplasmic apparition. As we know Pareidolia is the illusory perception of meaningful patterns or images of familiar things in random or amorphous data, as a face seen on the moon. Ectoplasm is generally visualized in a misty environment which is not well-lighted. Mind must be making a pattern in a mist and we tend to hallucinate it as a misty ghost.

It appears that ectoplasm has no scientific explanation which can link it to and manifestation of ghosts.

- The fourth assumption is that “*The ghosts often emerge as orbs of light because it is difficult for ghosts to appear as apparitions. It takes a lot of energy for them to do that, because of the difference in vibrational frequency between this dimension and the*

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dimension we call “the other side”. Appearing as an orb of light is a lot easier for them and this light orb is not caught on a normal camera but gets caught on night vision camera.”

Some people believe that orbs are the souls of deceased humans or animals that are travelling around. They may appear as:

- Transparent or translucent balls of light
- Round, blurry, fuzzy, and yellowish in colour
- Hovering over the ground



Picture of Orbs

Troy Taylor¹⁷ is of the view that orbs are not manifestations of ghosts. They are not evidence of paranormal activity or anything else.

Despite what has been seen and heard, there has never been any evidence to suggest that these “orbs” are related to ghosts. Yes, they have often turned up in photos that are taken at haunted locations but, as my research started to show, they could turn up literally everywhere.

The most common “orb” photos are merely refractions of light on the camera lens. This occurs when the camera flash bounces back from something reflective in the range of the camera. When this happens, it creates a perfectly round ball of light that appears to be within the parameters of the photo but is actually just an image on the lens itself. Many people often mistake these “orbs” for genuine evidence of ghosts, although I have never really been quite clear as to why that is. Most “orb” photos occur when the camera flash is used. Some of the photographers will insist that their flash was not on, which means it was and they didn't know it.

Even so, “orbs” don’t have to have a camera flash to be created. They can also be caused by bright lights in an area where the photo is being taken, by angles of light and by many types of artificial lighting.

But are lights and camera flashes the only thing that can cause “orbs” to appear? Far from it! Other objects that end up in front of the camera lens and are mistaken for paranormal images are dust, moisture, pollen, insects, snow, rain, hair, ash and scores of other semi-microscopic particles. In almost every case, the camera flash reflects on the surface of one of these particles and seems to “glow”, as one might expect a ghostly image to do. Taylor has been able to establish that orbs can be explained differently than being explained as the presence of ghosts and hence this assumption also seems to be not founded on scientific grounds.

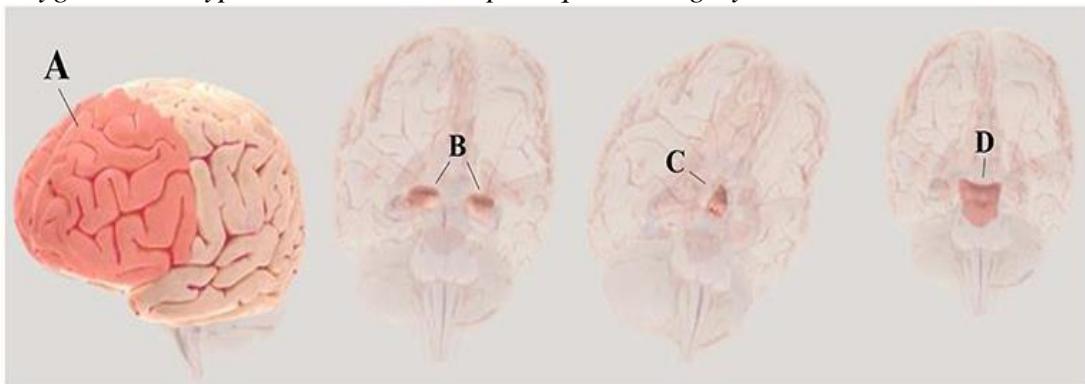
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- The fifth assumption is that “*Ghosts have the capability of producing voices, footsteps and noises which are not audible to human ears but can be picked up by sensitive EVPs.*”

This aspect has been discussed in detail and the assumption was negated on the grounds that the recordings could be non-sensical sounds which could be interpreted as meaningful sounds under the influence of Pareidolia. Supporting this fact, we listened to the video by Paranormal Investigator Steve Huff who claimed that he got the voice of late Sushant recorded. The voice is just intelligent sounds which under the influence of Auditory Pareidolia was given a meaning.

Ariana Thoksakis and Megan H Papesh¹⁸ give deeper insight into Pareidolia manifesting while interpreting data on EVP:

“Paranormal Ghost Investigation is exploring the unknown and when we venture into an unknown arena, fear springs up in us. The fear interrupts important processes in the brain, and this can lead to irrational thinking patterns. Irrational thinking causes us to be more likely to jump to conclusions about our surroundings. When we are afraid, a few important brain areas become more active, including the prefrontal cortex, the amygdala, the hypothalamus, and the periaqueductal grey.



- **Figure - (A) The prefrontal cortex, is an area at the front of the brain responsible for giving meaning to events.**
- **(B) The amygdala, two almond-shaped areas inside the brain that put you on guard.**
- **(C) The hypothalamus is a small area in the middle of the brain that controls panic responses**

as well as energy and stress levels. (D) The periaqueductal gray, an area inside the brain that controls how we respond to fear (Photograph credit: BrainFacts.org). When you wake up in the middle of the night, the shadows can play tricks on your eyes. In this situation, your prefrontal cortex is interpreting your surroundings. It is dark and you cannot see very well, so your brain prepares you for the chance that one of those shadows could be something dangerous. Your amygdala receives this information from your prefrontal cortex and puts you on guard. Your hypothalamus then causes you to feel panicked and scared. Finally, imagine hearing a noise during this time. It is probably just the house settling or a neighbour going out, but your thoughts turn to ghosts and monsters.

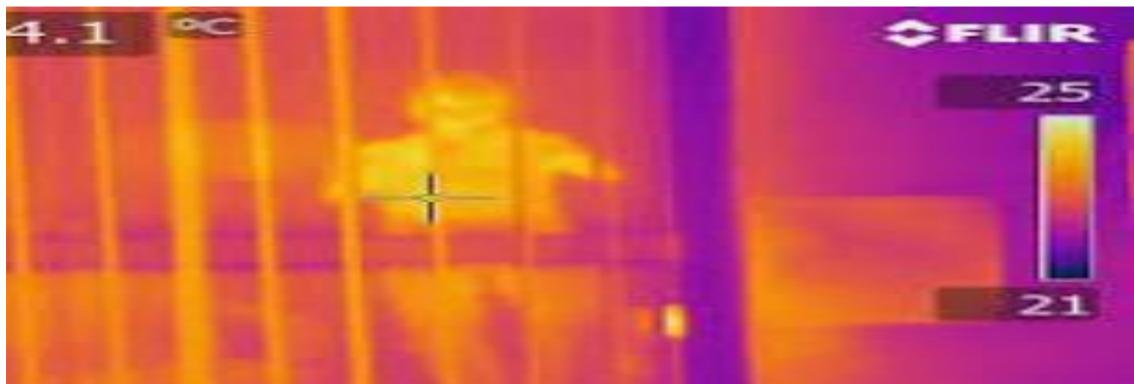
Thus, what we hear on EVPs may be just Pareidolia at work.”

- The sixth assumption- “*The ghosts can fluctuate temperatures of environments; spirits take energy from surroundings and this can lead to a drop or rise in immediate*

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conditions which will be caught by the Thermography Cameras. It is a device that creates an image using infrared (IR) radiation. The ghosts emit faint body heat signatures that are not visible but can register on a thermography camera.”

- In ghost hunting, many believe that ghosts draw energy from the environment while trying to manifest and this energy withdrawal creates temperature variations in the environment leaving cold spots and their presence becomes a thermal signature due to the comparative hot silhouette they possess and thermal cameras capture this signature and their picture surfaces on the camera as a distinct silhouette.



A question arises whether the silhouette appearing on thermal cameras can be explained in some way other than being a picture of a ghost.

Thermal cameras work exclusively with infrared radiation, they see the world as a great collection of temperatures. Colder items are shown as darkened, while hotter objects are shown in various colours ranging from red to bright white depending on how hot they are.

Thermascan published a paper¹⁹ which mentions that spooky images are often captured of people who are not seemingly there. Fuzzy, faded images of individuals are commonly associated with ghosts, but this might not always be the case.

Thermal imaging cameras are adept at reading IR (infrared) light, an invisible form of electromagnetic radiation. This radiation is thermal-based because it is induced by heat. As we all know, objects will retain a certain amount of heat collected, and (depending on the environment) it will dissipate over time. ***Some ghost sightings are the after images of where people were and have left some thermal heat behind that hasn't cooled yet.***

There is another explanation provided for the thermal silhouette image on the thermal camera:

Since a thermographer essentially stands directly in front of the area they are testing, their reflection, and the reflection of other things in the room can change the reading of a thermal camera. Such examples include reflections bouncing off shiny metal components, showing up on the thermal camera as hotspots when really they're just the reflection of something else. This means that some of the instances of paranormal activity detected using thermal imaging can be explained by thermal reflection.

(source:<https://www.pass-thermal.co.uk/blog/thermography-applications/paranormal-thermal-activity/>)

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Thus, we have been able to establish alternate explanations for each assumption that connected the assumption to ghosts and hence, the assumptions stand falsified, and the Paranormal Ghost Investigation loses its very foundation.

In conclusion, we can say that the visual/auditory perceptual experiences of ghosts are nothing but the handiwork of Pareidolia and even the apparently credible evidences put by Paranormal Ghost Investigators are falsified through Pareidolia and other scientific facts, which tend to falsify the basic assumptions on which the investigations rest.

Thus, we can say that Pareidolia does provide an alternate credible explanation to the perception of Ghost Manifestation.

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Conflict of Interest

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