

# Investigation Method

## 1. Introduction

'Ghosts' or 'spirits' as manifestations of the survival of human consciousness has been a near ubiquitous feature of human civilization across culture and time. In times before mass rationality, 'ghosts' were considered to be undeniable, paranormal entities driven by belief in either religion or folklore. The age of rationality has discounted reported paranormal events as the consequence of hoax or over-active imagination.

As reports of ghosts and hauntings continue to be common in the 21<sup>st</sup> century large numbers of people have made various attempts to explain or investigate the nature of hauntings. People have attempted to devise classification systems for 'ghosts', for example as 'sentient spirits', 'replay ghosts' and 'poltergeist'. These categories tend to stem from folklore and have no scientific basis, merely the human mind attempting to make sense of unexplained data. Former categories, such as 'crisis apparitions' and 'veridical apparitions' have waned in recent times.

The religion of 'spiritualism' grew in the nineteenth century; believing in the existence of God, an afterlife and ability of mediums to communicate with the spirits of the deceased.

Using objective methods to assess haunting claims has been popular since at least the late Victorian period. The last ten years has seen the TV-inspired proliferation of 'paranormal investigators', falling into several often indistinguishable methods:

- Religious experience. Mediums and psychics operate outside the scientific method, investigating under the assumption that God and the afterlife exists, and that they are equipped to contact them. As is the nature of religious experience, such methods cannot provide objective evidence, just personal proof for those who believe.
- Hobbyism and thrill seeking. Various hobbyist 'investigator groups' and commercial companies have formed in recent years so cater for groups wishing to 'experience ghosts'. Such groups pre-suppose the existence of ghosts and enjoy the experience of misattribution to contribute to a 'night out'. Again, such pursuits offer personal experience and personal 'proof', but make no contribution to scientific understanding of the subject.
- Pseudo-science investigators. Portions of 'paranormal investigators' attempt to investigate ghosts in a 'scientific way'. This usually follows the 'fishing' approach of assuming a building is 'haunted' and using 'ghost detectors' to attempt to prove this. The typical approach is attempting to capture EMF readings, ghost photographs, EVP recordings and the like. This assumption-led approach has no grounding in science, and in fact such methods have been proven to severely flawed. Over time some pseudo-science investigators have progressed to attempting to 'disprove' ghosts, but

based on the unscientific false duality of assuming an experience is paranormal unless proven to be normal. Pseudo-science investigators often consider themselves to be scientific, but fail to adhere to basic scientific principles and have been shown to have contributed little to scientific knowledge of the hauntings.

## **The Purpose of Rational Investigation**

If most enquiries fall into the categories of person and religious experience for personal proof or assumption-led pseudo-science, what is left?

What is clear is that people have experiences they attribute to possible paranormal phenomena. Such 'hauntings' often arise as a result of misattribution of xenonormal phenomena. Rather than assuming these events constitute a haunting and using unproven tools to unscientifically draw conclusions, rationality dictates we should begin with what is normal, rather than what is paranormal.

There are a range of proven tools and techniques that can be used to determine what is normal but which seems paranormal – i.e. the xenonormal.

Forgetting EVP, mediumship, ghost photography, trigger objects, ITC, spiritual tools, inappropriate EMF meters and any other unscientific assumptions, rather than being distracted by this fools gold it is possible to really learn what is 'normal' in a case.

By proving what is normal, it is then possible to focus in heavily on those experiences that cannot yet be proven as normal.

This method seeks to rigorously identify all normal and xenonormal experiences in a haunting case, and flag up those experiences that cannot be proven as normal.

When these rare events present themselves it would be pseudo-scientific to adopt the false duality that anything unexplained automatically becomes paranormal. The next stage is to design rigorous research around these unexplained events, focussing on getting to the bottom of their cause.

Rather than adopting the traditional approach of drowning in the false evidence of traditional approaches – which have proven to fail, over the years – it is hoped that focussing rigorously on anything unexplained can allow us to discover something more meaningful about the nature of ghost experiences.

## 2. Equipment

Below is a full list of equipment used by PSI during investigations. Procedures for use of equipment and methodological justifications are found elsewhere in this document:

### Visual Equipment

- CCTV:
  - Digital Video Recorder
  - 20 inch Dell LCD screen
  - 4 x Swann CCTV cameras
  - 2 x dictaphones, IR sender/receivers and speakers.
  - 4 x 5 metre cabling
  - 2 x 36 metre cabling
- 6 x Video cameras with infrared boosters

### Monitoring Equipment:

- 2 x Data Logging Spectrum Analysers (Spectran NF-5010)
- 2 x Testo 405-1 Velocity Stick (hotwire anemometer)
- 2 x Lascar Carbon Monoxide Data Logger (EL-USB-CO)
- 6 x Lascar Temperature Data Logger (EL-USB-TC)
- 14 x Digital Voice Recorders (Olympus VN-3100PC)
- 2 x Infrasound Measuring Units (pending)

### Operational Equipment:

- 4 x UHF Two-way radios
- Floodlight with built in tripod
- 20 x Tripods and Microphone stands
- 3 x Laptop Computers
- Power Generator
- Enclosed gazebo (outdoor Monitoring Centre and Base Room)
- Ultrasonic Distance Measure
- 4 x power extension reels

### 3. Participants

The majority of PSI investigations take place within an environment where ethical sensitivity and conduct are paramount. As such all investigators are:

- Covered by Public Liability Insurance to a limit of £5,000,000.
- Checked by the Criminal Records Bureau (CRB).
- Selected by process of application form and interview.
- Fully trained in operations, ethics, conduct and equipment use by qualified trainers.

Where investigators take the role of 'percipient' they are considered to be participants of the study. Individual differences between percipients are tracked and monitored using:

- Thalbourne's Paranormal Belief Scale
- Perception of Context Questionnaire

Investigators will be organised into three operational roles: percipients, CCTV Monitors and EF (Extraenous Factor) Auditors. All investigators will be trained to execute all roles. Whilst fluidity between roles will be encouraged, some stability of experienced operatives will be ensured. Further, investigator roles will be held constant across the three events of any given investigation.

Where investigators are familiar with the background of a case, where possible, they will not be assigned a percipient role.

## 4. Procedure

This document mainly concerns Phenomena Investigations, but the procedures for other investigations are also included here.

### 4.1 Exploratory Fieldwork

Exploratory fieldwork takes place where:

- The location is not suitably controlled, for example an outdoors location.
- The location is not available to PSI for sufficient time to conduct a Phenomena Investigation, for example a business premises with prohibitive opening hours.
- The location is not available to PSI on a sufficient number of occasions to conduct a Research Investigation.

The functions of exploratory fieldwork is to:

- Observe the process of perceiving an environment to generate research theories for testing.
- Test the functionality of new equipment and methods.

### 4.2 Specific Research Investigations

Research investigations take place where:

- There are no vulnerable clients or clients seeking an explanation, for example a Local Authority building.
- Where the location is suitable for particular research purposes.

The functions of research investigations are to:

- Provide a location where meaningful research can be conducted and results shared with the research community. Such research should be well designed and seek to test a particular hypothesis.

### 4.3 Longitudinal Phenomena Investigations

The hypotheses and rationale for Phenomena Investigations are contained in the rest of this document.

For methodological reasons discussed elsewhere, Phenomena Investigations take place over at least three occasions; these occasions should be sufficiently far apart to allow meaningful analysis:

1. Baseline Investigation; where functions are:

- To build the Monitoring Baseline.
- To build the Physical Baseline.
- To build the Extraenous Factors Baseline.
- To build the Perception Baseline.

2. Percipient Investigation; where functions are:

- To allow percipients to observe, in matched circumstances, compared to original reports, and monitor similarities between the two.
- To continue to build the Monitoring, Physical and Extraenous Factors Baselines

### 3. Analysis Investigation; where functions are:

- To allow percipients to observe, in matched circumstances, with knowledge of previous reports to attempt to find explanations for original reports.
- To continue to build the Monitoring, Physical and Extraneous Factors Baselines.
- To allow group analysis of reports to attempt to find xenonormal origins for original and subsequent reports.

#### 4.3.1 Pre-Investigation Procedure

The following steps should be taken prior to the first event:

- Agree terms of access with the venue and conduct a Risk Assessment.
- Ensure the venue is aware of the full procedure, in line with the Statement of Ethics.
- Fully interview all available witnesses and compile any accounts of previous activity (interviewers should not act as a Percipient during the Baseline Investigation).
- Produce a briefing of eyewitness and other findings.
- Select Areas of Study, produce a map including hotspots. Criteria for selection of Areas of Study are:
  - 2 x Percipient Areas. This should include one room with previous accounts of hauntings ('Active') and one similar room with no accounts of hauntings ('Control'). These areas should be used for Percipient Observation, percipients should not be informed which area is which.
  - 2 x Non-Percipient Areas. This should include one room with previous accounts of hauntings and one similar room with no accounts of hauntings. These areas should be subjected to CCTV and sound monitoring.
  - Where there are more than two rooms with previous haunt experiences a decision should be made based on the following paper-based criteria:
    - Recency of experiences.
    - Any experiences less explicable by non-investigative means.
    - Multiple, independent accounts.
  - The circumstances of experiences should be recorded and matched during subsequent investigations.

#### 4.3.2 Preparation

The set-up for any of these investigation events shall consist of:

##### 1. Location of:

- A Base Room for rest and storage.
- A Monitoring Centre for CCTV, sound and data logger monitoring. A set of criteria shall be applied to include: distance from Areas of Study, including measurement of sound pollution and power sources or distances from generator (including sound measurement from generator).
- Viable areas of travel for Extraneous Factors Auditors.

- Sound monitoring equipment around Areas of Study, locations for cameras.
2. Equipment and Participant Preparation, to include:
- Participant paperwork, to include: Code of Conduct and Disclaimer signing, percipient scales questionnaires and procedural paperwork.
  - Time synchronisation against the talking clock between watches, laptops, voice recorders, DVR unit, camcorders and stills cameras.
  - Laptop activation of data logging equipment.
  - Allocation of roles and any equipment to individuals, including allocation of marked Data Loggers to percipients.
  - All duplicate equipment should be allocated a unique number.

#### 4.3.3 Placing of Equipment

Equipment should be placed as follows:

- Monitoring Centre: CCTV screen, DVR unit, IR units x 2, speakers x 2, mixing unit and data logging laptop.
- Non-Percipient areas, 1 x active, 1 x control: CCTV camera on tripod/stand in the corner of the room with best coverage of the room and any entrances/exits, microphone also on tripod/stand.
- Percipient areas 1 x active, 1 x control:
  - One tripod with temperature data logger for each percipient, placed within the area allocated as a 'hotspot'. These should not be moved for the whole event.
  - One EM field meter within a 'hotspot' connected to a laptop.
  - CCTV camera on tripod/stand in the corner of the room with best coverage of the percipients and all equipment.
  - At least two camcorders with IR boosters on tripods/stands covering the lines of sight of the percipients. Operatives should test all cameras to ensure crossover of IR beams does not cause unintended effects. These camcorder should only be operated during Percipient Observation sessions.
  - One voice recorder constantly recording throughout the event.
- Other areas: voice recorders should be left continuously recording for the whole event. Six recorders will be left in locations around the experimental rooms where sounds could be heard (for example in rooms on other floors, outside the room).
- A diagram must be generated of the positions of all units of equipment and of all percipients.
- All equipment should be left in its original position for the entire event.
- At the end of the event equipment should be given to analysts or return to the laptop for data logging to be completed.

#### 4.3.4 Procedure for Baseline Investigations

Time	Activity	Detail
90 mins	Preparation	As above, without prior knowledge of reports
	Placing of Equipment	As above
90 mins	Extraenous Factors Baseline	Using check sheets to monitor all EFAs possible within the timeframe
	Physical Baseline	Fully record the physical environment using stills cameras
120 mins*	Perception Baseline	Percipients should remain next to a data logger within the hotspot
	CCTV Monitoring	By two nominated individuals
	Continuous EFA	Two nominated individuals to continually assess EFs and respond to others
45 mins	Disassembly	Disassembly of all equipment
	Debriefing	Debriefing as per Statement of Ethics

Event length including breaks: 6.5 Hours

#### 4.3.5 Procedure for Percipient Investigations

Time	Activity	Detail
60 mins	Preparation	As above, with prior knowledge of reports
	Placing of Equipment	As above
60 mins	Extraenous Factors Baseline	Using check sheets to monitor all EFAs possible within the timeframe
	Physical Baseline	Fully record the physical environment using stills cameras
120 mins*	Percipient Observation	Percipients should remain next to a data logger within the hotspot
	CCTV Monitoring	By two nominated individuals
	Continuous EFA	Two nominated individuals to continually assess EFs and respond to others
45 mins	Disassembly	Disassembly of all equipment
	Debriefing	Debriefing as per Statement of Ethics

Event length including breaks: 5.5 Hours

#### 4.3.6 Procedure for Analysis Investigations

Time	Activity	Detail
45 mins	Preparation	As above, with prior knowledge of reports
	Placing of Equipment	As above

45 mins	Extraenous Factors Baseline	Using check sheets to monitor all EFAs possible within the timeframe
	Physical Baseline	Fully record the physical environment using stills cameras
120 mins	Group Analysis	On site analysis of all original and Categories C & D subsequent reports, with supporting documentation
120 mins*	Percipient Observation	Percipients should remain next to a data logger within the hotspot
	CCTV Monitoring	By two nominated individuals
	Continuous EFA	Two nominated individuals to continually assess EFs and respond to others
45 mins	Disassembly	Disassembly of all equipment
	Debriefing	Debriefing as per Statement of Ethics

Event length including breaks: 7 Hours

\* In all three procedures this condition should take place at exactly the same time for consistency of matched circumstances. This will lead to the start and end times of each event being different to one another, in order to keep this Percipient Observation time consistent.

#### 4.3.7 Percipient Observation Procedure

- The circumstances in each Area of Study should match circumstances of original accounts. The general time of day/night and the level of lighting in the room should match these as closely as possible.
- No equipment should be moved during the course of the event.
- Percipients should remain in a seat next to their marked Data Logger.
- Everyone set of investigations should focus on two control and two experimental areas.
- Percipients should be randomly assigned to two groups that should spend one session in each of the two experimental areas, in a randomly generated order.
- Each session should be rotated in two, 30 minute blocks:
  - 10 minutes: Silent observation.
  - 10 minutes: Observation in conversation.
  - 10 minutes: Engaging in a self-distracting activity.
- In each group there will be the following roles:
  - Person A: Group spokesperson to the other units, using the radio.
  - Person B: Group spokesperson using the voice recorder. Every percipient should state unusual experience (including possible natural causes) in precise terms; this should be recorded. Person B should also co-ordinate use of stills cameras (as below).
  - Person C: Holder of the anemometer, to measure any draughts where percipients experience temperature fluctuations. Person C will cease to be a percipient for the time it takes to take anemometer measurements.

- Person D: Responsible for ensuring the changing of tapes in each camcorder prior to each session commencing.
- Percipients should only use stills cameras after an experience has been reported, and only where the experience has some sort of visual reference point. Two cameras should be used to capture the exact location of the experience, to provide objective visual evidence of the location of the experience.

#### 4.3.8 CCTV Monitoring Procedure

- CCTV Monitors should observe the four CCTV cameras throughout percipient sessions. Monitors should also listen to audio streams in control rooms.
- There should be the following roles:
  - Person A: Spokesperson on the voice recorder. All visual or auditory events in any of the four locations should be recorded onto a voice recorder, in specific detail.
  - Person B: Holder of the radio to communicate with the percipient groups and inform the EF Auditors of any potential EFAs. Also to monitor all time keeping for all groups.

#### 4.3.9 Extraenous Factor (EF) Auditor Procedure

- EF Auditors should use agreed routes to traverse a location highlighting any EFAs throughout the course of percipient sessions, independent of the Percipient Observation.
- There should be the following roles:
  - Person A: Spokesperson on the voice recorder. Any emerging EFAs in any area should be recorded in detail.
  - Person B: Holder of the radio to communicate with the percipient groups and CCTV monitors to advise or be advised of any potential EFAs.

## 5. Methodological Detail

Much modern 'paranormal investigation' is based on a TV-inspired, assumption-led approach. The cornerstone of a rational, scientific approach is a defined, justified methodology.

So often methods are implied and unquestioned. The assumption-led approach analogises the investigation of hauntings to 'UFO spotting'. The assumption goes that ghosts exist, so that all one has to do is sit and wait for one to appear. A rational approach to the field recognises that haunting experience is often a psychological phenomena, calling for matched circumstances, control conditions and assiduous recording of the natural environment rather than sitting and waiting for an ambiguous experience

A rational approach also dictates that we place an emphasis on understanding what is normal, before trying to understand what is unexplained. This compares to the assumption-led, often unjustified approach of using unproven (and often disproven) tools such as EMF meters, stills cameras and EVP. Such methods typically go unjustified and when questioned all that is forthcoming is pseudo-scientific guesswork.

This section seeks to justify everything an investigation involves, from a rational standpoint.

### The Xenonormal Approach

'Xenonormal' defines as something that is normal but unexplained at the time (literally, foreign). Most paranormal investigators – with the possible exception of the purely religious-spiritualist approach – are somewhat concerned with the xenonormal. The vast majority of ghost experiences – be they by experiences during investigations or original eyewitnesses – are xenonormal events that are attributed as 'paranormal' where either the belief or expectation exists to place that label on an unexplained event.

Rationally it is necessary to fully focus on explaining what is normal before considering what remains. In some circles a 'false duality' exists that suggests that anything that cannot be explained as normal must be, by default, paranormal. False duality is a hallmark of pseudo-science. Lack of evidence for the normal does not provide evidence for the paranormal and such events are merely left as 'unexplained at that particular time'. Often the 'normal' itself is lost because of the employment of myriad pseudo-scientific methods. A focus on EVP, spiritualism, photography, experiencing, etc, means that there is little time for the tireless search for the 'normal'.

Concentration of financial and human resources on pseudo-scientific methods also means that these resources cannot be fully invested in explaining normal events. The result of this full focus on the 'xenonormal' means that this methodology may, rarely, leave a truly significant event unexplained. Further methods can then be used to focus on these interesting events, rather than such events being 'lost' in the mountains of fools gold of pseudo-scientific evidence.

The most obvious result of the xenonormal approach is that all instruments used are focussed on this goal and human resources are employed to explain the normal and in control conditions, to allow comparison.

### **The Nature of Ghost Experience**

One of the first methodological questions to address is what we actually know about the nature of 'ghost experience'. Evidence from three years of standardised PSI investigations suggests that such experiences are often 'subjective' rather than 'objective'. This means that where one person has an experience but the people in the immediate vicinity do not, the source is more likely to be an internal psychological construct rather than an objective event. Clearly an experience becomes more compelling where several individuals multiply experience and where objective recording tools can be used to assess its subject or objective evidential status.

It is generally recognised that human beings are poor recorders of unusual events. Events with an objective cause can often be psychologically misinterpreted; and studies of human memory show its fallibility in anything but the very short term. This has an impact on the analysis of evidence – an uncorroborated experience is likely to be psychological – in short, seeing is not believing. An impact is also had on the recording of experiences in that our fallible memories should never be relied on for anything.

### **Recording of Data**

Individual experiences should be objectively recorded immediately rather than relying on fallible memory. As such pen and paper recording is inappropriate, as the method relies on notes as an *aide memoir* to fill in the details later. Consequently the only objective way to record is full explanations being immediately recorded on dictaphone and fully transcribed and permanently recorded. In analysis the unfortunate side effect of priming of others should be given due weight.

### **Use of Control Conditions**

The use of 'control' is a cornerstone of the scientific method. However it may seem like madness from the assumption-led approach in place equal emphasis on 'haunted' and 'non-haunted' areas (defined by eyewitness accounts). Hauntings being often psychological events require a level of comparison, necessitating control. If an experience is derived from expectation coupled with ambiguous stimuli and a 'spooky' environment, it is important to control these factors. The logical result is the 'pairing' of rooms within a location. Matching two areas – one 'active' and one 'control', and not telling experiencers which is which – ensuring they are as similar as possible, allows the analyst to conclude whether it was the circumstances and environment caused experiences, as opposed to the 'active' status of the room.

The question remains of whether 'ghost experiences' are purely resultant of the perception of individuals. One question is whether there is something objectively and physically 'different' about 'active' locations, or whether any experiences are

purely on a psychological level. This logically leads to the practice of having a further 'matched pair' of rooms that are objectively monitored remotely and recorded by CCTV. Again one is 'active' and one 'control' to allow for comparison, and experiencers do not enter these rooms at all.

This allows the building of a full picture of an untouched area, to assess whether there are any physical differences between 'active' and 'control' areas, helping us to better understand whether 'ghost experiences' are subjective or objective. This involves continuous, remote monitoring and post-event assessment of physical changes in the environment by running the footage through a motion sensor programme.

### **Unscientific and Pseudo-Scientific Tools and Methods**

As previously noted this method seeks to use proven methods for finding xenonormal phenomena. As such using unproven or disproven tools and methods are deemed inappropriate.

Attempts to use such unscientific methods typically form part of an assumption-led approach that assumes that prior paranormal experience leads to a location being haunted. Such tools and methods are then used to either 'gather evidence' or to try to build evidence that such tools are appropriate for 'gathering evidence'. In the former case, such tools are either unproven, or have been disproven, as being associated with paranormal phenomena; therefore using them is undoubtedly irrational and unscientific. In the latter case, attempting to draw associations with paranormal events is fraught with methodological difficulty. Gathering 'anecdotal' evidence with such tools and methods – without assiduous recording of non-events, and hence suffering from poor probabilistic reasoning – does not contribute to scientific evidence. PSI conducted a standardised, three-year test of the below equipment and methods. Results were used to assess such tools and methods for usefulness and validity:

*EMF Meters.* Various paranormal theories abound relating to presence of electromagnetic fields (EMF) and how it may either be 'caused' by a ghost or, conversely may 'cause' a ghost. Needless to say no theoretical justification or model has ever been presented to back this up. The likely route of these theories is a misreading of peer-reviewed studies that demonstrated that weak, complex magnetic fields can cause hallucinations that can be misinterpreted by a primed individual. Once such misinterpreted understandings have taken hold, they are subsequently reinforced by poor probabilistic reasoning – for example any anecdotal coinciding of explainable EMF fluctuations with paranormal experience is not assessed for the rule of chance. In PSI's three year study we found that the role of chance more than accounted for any such coincidences.

*Ultrasonic, Humidity, Air Pressure and Ion Detectors.* Similar fringe theories have developed about the role of ultrasound, air ions and other possible fluctuations. Again there has been no theoretical justification for such theories. Again, use over PSI's three-year study showed that coincidences were accounted for by chance.

*Electronic Voice Phenomena (EVP).* EVP – or allegedly the voices of the departed – have held interest for a number of decades. Needless to say many investigations use such methods, often with the result that methodological error or misattribution causes ‘evidence’. It was known that factors such as: uncontrolled environments (movement in a building, sound recorders left unattended, speaking or whispering), radio frequency interference (RFI – where the use of white noise, a detuned radio, can pick up stray radio broadcasts) and technical factors (like lack of account of the Auto Gain Circuit and use of recorders with internal moving parts) all provide compelling natural causes. PSI conducted three hundred experimental EVP conditions, over three years, where these factors were accounted for. Specifically, ‘pure’ generated white noise was used, digital voice recorders were used and experiments were silently and continuously monitored. No clear ‘EVP’ voices – at all – were established. This suggests that EVP – as well as not having a theoretical justification – produced at best no evidence, and at worst misattributed evidence. Past EVP studies may justify the need for studying the phenomena in independent and dedicated settings, but the lack of methodological justification and ethical problems attached does not justify its use during investigations.

*Trigger Objects/kinetic experiments.* Historical ‘evidence’ of ‘ghosts’ moving objects – for example in so-called ‘Poltergeist’ cases – has led to the placing of objects during paranormal investigations, in expectation that a ‘ghost’ might move them. Again, problems of fraud, accidental movement and objective recording have provided problems for any ‘evidence’ gathered in this way – not to mention the myriad alternative causes for low-level movement. PSI’s three-year study set up over one hundred and fifty such experiments over three years. Factors involving fraud, accidental movements were accounted for by continuous use of video cameras; which also served to provide an indication of possible vibration. In none of these experiments did a trigger object move. The lack of any compelling video evidence for trigger object movement leads to the conclusion that this – as well as being an assumption-led approach – has no practical merit as a dedicated activity.

*Photography.* Attempting to take photographs of ‘ghosts’ is a popular, assumption-led activity. In PSI’s three-year study over three thousand photographs were taken and analysed. The presentation of ‘ghost photos’ seem to rely on the twin problems of low-light creating technical artefacts and users with little knowledge of the workings of cameras and the sorts of errors they can produce in certain circumstances. As none of the thousands of photographs were inexplicable – and no compelling ‘ghost photo’ has ever been captured – this assumption-led approach can be viewed as a waste of scarce resources. Every ‘new’ paranormal investigation tool seems to rely on the presentation of ambiguous stimuli. For example audio units converting EM fields into sounds, which basically present scrambled sound which is ripe for the biased mind to endogenously interpret. Another category is the presentation of seriously flawed tools – like the KII meter – which are so prone to user error that they greatly increase false readings, allowing the biased mind to observe coincidences between false readings and other events.

### **Further Avoiding the Assumption-Led Approach**

The assumption-led approach pre-supposes the existence of ghosts and haunted houses, it assumes that these phenomena are caused by discarnate entities or dead people and assumes that by being in such a location ample evidence can be gathered to prove the existence of the paranormal. Whether these ideas are inaccurate or accurate has not been proven, but the assumption of them involves biases, which preclude rational enquiry.

The assumption that any ambiguous experiences may be paranormal leads to the adoption of techniques that reinforce such experiences. One example is conducting investigations at night, and automatically turning the lights off. There is little doubt that such an approach generates more ambiguous experiences – for example shifting shadows as eyes adjust to the dark and moving lights caused by unconscious eyeball movement – but these experiences are known to be xenonormal (and hence naturally explicable).

The assumption-led approach treats the original reported experience at a location as the baseline for gathering evidence. This method treats the original experience as central to the enquiry; if original experiences were explicable then any given case could be the result of misattribution. Therefore under this method – as far as it practically possible – circumstances are matched to the original reports so as to understand and analyse them more effectively. This includes the time of day or night and the level of lighting matching the original reports.

Another hallmark of the assumption-led approach is the assumption that the cause of any experiences is some form of historical figure. Therefore historical research is often undertaken and an attempt to match such data to experiences. Poor interpretation and poor probabilistic reasoning are rife in such practices. In this method historical research is held to be an unnecessary distraction of resources, simply allowing for poor assumptions to be made which are likely to be the result of chance.

### **Investigating the Xenonormal: Basic Approach**

To understand what cannot be explained at a site an investigation must primarily consider what can be explained. The principle of 'baseline' is widely applied by paranormal investigators, but not in a rational way.

To truly understand what is normal it is necessary to visit and record a site over an extended period of time, over multiple visits.

### **Establishing a Baseline**

Common practice would be 'baseline check' equipment periodically over one night. This leads to three major problems:

- Most equipment measures highly localised variables. The common practice of using portable equipment and periodically taking readings means that the reading is only relevant to particular position. As such walking around a location (even only a few inches) and reporting variation is meaningless.
- The natural variations an investigation is trying to establish in a location may be gradual – taking place over minutes – or may be more time sensitive.

Taking readings on the basis of a few minutes leads to a high likelihood of missing variations. This is especially important where a reading is taken at the time of a possible paranormal event.

- A baseline is only being established for a particular room on a particular day. Any given baseline reading may be, for example, the highest or lowest point on any given day, week or area.

All these problems must be addressed to achieve meaningful baseline readings. Firstly equipment should be absolutely stationary throughout an entire investigation – not even just during sessions – and must assume the same position in subsequent visits. Readings should be logged in a timeframe suitable to the measure. For temperature, variation once a second might be sufficient, whereas for measuring Experience Inducing Fields (see below) readings should be taken one hundred and twenty times per second.

Finally it would be desirable for equipment to build up a picture of a location, continuously, over months. As this tends not to be practical in most locations, both visiting on multiple occasions and establishing a positional baseline (two identical pieces of equipment running simultaneously in similar locations) is an absolute minimum alternative.

Establishing a baseline is not only necessary for equipment readings.

Establishing a physical baseline is also useful. Specifically every aspect and angle of an area under study should be recorded, and then continue to be physically monitored (by CCTV and/or video camera) throughout the entire event. This not only useful during subsequent analysis – tracking visual clues for anomalous experiences – but can be useful in the event of claims of kinetic events.

### **Establishing Parity between Equipment**

Paired models of equipment used to establish a positional baseline, or those which would be used across locations in tandem with others suffer from the need to establish parity between the two, or measure the deviation. This method calls for equipment use on a non-comparative basis – they are assigned to areas and are compared to individual experience, rather than to one another. As such, testing for parity is not important in this method.

### **Percipients and Baselines**

An experience baseline can be usefully employed. There is little doubt that knowledge of previous reported events can guide the perception of individual percipients. Knowledge of previous events is important to allow percipients to seek natural, xenonormal causes for previous reports. However this necessary knowledge itself may impact on the perceptory abilities of percipients. As such an experience baseline can be established during the first investigation event, where percipients do not have knowledge of previous accounts. This allows a picture to be built of what ambiguous stimuli and anomalous events are likely to be perceived, without the confounding variable of this knowledge. This leads to practical necessities such as those with knowledge of previous events not being allocated to – or even leading, to avoid experimenter effects – percipient teams.

Similarly, once this baseline has been established the composition of percipient teams should remain the same.

The exact time of percipient sessions should also remain constant. Whilst other events during the investigation may vary these should stay the same, operationally leading to subtle shifts the exact starting and ending time of investigations in the same location.

Whilst in percipient sessions, percipients are instructed to report any ambiguous stimuli, anomalous experiences and any potential causes for anomalous experiences. States of attentiveness are systematically varied across percipient sessions – in silence, conversation and in engaging activity. This is primarily to recognise that anomalous events are experienced in different states of attentiveness (and this might have an impact on the perception of ambiguous stimuli) but also to counter fatigue in percipients.

### **Extraneous Factors Auditing**

Another aspect of building a picture of what is normal about a location is a full audit of any sensory input in or around the location that – in the right circumstances – could be misinterpreted as a paranormal event.

Similarly to the concept of baselining, building a picture of the EF of a location cannot be completed prior to one investigation, or even across one investigations.

As such this method incorporates a group assessment of EF but supplemented by two dedicated personnel whose role it is the continuous audit EFs, in communication with percipients and CCTV monitoring personnel.

### **Xenonormal Events**

Standardised procedures over a three-year period have informed the categories of xenonormal events that may be perceived during an investigation. As mentioned previously, investigations focus on uncovering the xenonormal. As such, techniques and tools are specifically used to monitor possible xenonormal events.

These include:

Xenonormal/Anomalous Event	Monitoring Method
Visual events	All participants, their line of sight, and all areas of study will be monitored by CCTV and video cameras
Tactile events	
Kinetic events	
Auditory events	All areas will be monitored by CCTV and audio recorders will be placed across the location
Unusual feelings and sensations	Impossible to objectively monitor* (however locations will be monitored for EIFs, CO and Infrasound)
Hot/cold sensation	Static temperature data loggers and hotwire anemometers

Extra-sensory impressions	Impossible to objectively monitor*
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\* Individual difference scales may also inform such attributions.

### **Xenonormal Monitoring Tools and Methods**

All tools and methods have been stripped back to those useful for objectively identifying the cause of potential anomalous events. This section will consider the rationale of the use of such tools and methods.

#### **Video and CCTV: Objective Physical Recording**

Objectively recording a physical environment typically justifies the use of camcorders and stills cameras. One theory of physical monitoring is to assess whether 'ghosts' can be physically recorded, as opposed to being subjectively experienced. The result of this assumption-led approach is the time-costly analysis of video footage and stills photographs to observe anything 'unusual'. A rational perspective suggests that these methods are inappropriate. Three years of many hours of recording – assiduously analysed after the event – and many thousands of photographs taken have resulted in almost no footage or photographs that cannot be accounted for as natural.

Where 'unusual' evidence emerges it typically takes analysts with an in-depth knowledge of photography and videography to uncover the natural or technical causes presented in the more unusual cases. Where hundreds of hours of footage and many thousands of photographs have resulted in nothing that cannot be explained – coupled with the practice itself being pseudo-scientific and assumption-led – it is clear these methods cannot be justified. Further, the time used to employ these methods can be much more effectively spent pursuing the xenonormal.

Often investigators will try to cover as much ground as possible by allocating one video camera per room, this is based on the idea of wanting to effectively use scarce resources to maximise the chance of 'catching a ghost'. This is another example of an assumption-led method that sacrifices the chances of being able to find xenonormal explanations.

Specifically, where one video camera records a room of four or more experiences experience shows that there is a very slim chance of the video camera being in the correct position to 'show' the area where an experience is taking place; more commonly the investigators reaction is recorded.

The xenonormal method of trying to objectively verify experiences – to assess them for objective or subjective cause – leads to the necessity of a minimum of three or four video cameras (one being CCTV) in each room where experiences are positioned.

The 'baseline' of the physical environment can be important for some 'experiences', particularly where they require knowledge of the original positioning of items (which may be claimed to move) and the location of anything physical that might explain an unusual experience after the event. This creates the only justifiable use for stills photographs – painstaking physical baselining, rather than 'attempting to photograph ghosts'.

## **Audio Recording**

Audio recording is often confined to EVP and the audio function of video cameras. The primary flaw in recording sound to subsequently review is the likelihood of ambiguous noises occurring. Ambiguous noises may be caused, for example, by people moving through a building, internal physical functions of the recorder (be it audio or video/audio) or even by the Audio Gain Circuit of the audio or video/audio unit. A common operational flaw of tracking auditory phenomena is insufficient recording devices.

This method calls for a quantity of numbered audio recorders in different areas throughout the location, so auditory phenomena can be tracked to source and analysed as a closer event.

## **Measuring Experience Inducing Fields (EIFs)**

The work of Townsend and Braithwaite's Magnetic Anomaly Detection System (MADS) project has seen evidence of the role of EIFs enter peer-reviewed publications. The developers postulate that such EIFs may be a major factor in a small number of haunting cases. There are myriad potential causes for such fields. Though natural geomagnetics can conceivably produce natural EIFs, but in practice it is more likely to be caused by the movement or vibration of materials with high magnetic permeability.

The research has demonstrated that weak, low frequency, complex magnetic fields can effect the brain in such a way as to cause hallucinations that may contribute to hauntings, in the right context. The specific fields may affect up to 30% of the population and occur where subjects are exposed for upwards of twenty minutes with extremely low frequency magnetic fields. The magnetic field frequency may be of 0.1 to 30 Hz and the amplitude of 100 to 5000 nT.

Sampling is needed at the rate of one hundred and twenty per second, being more than twice mains frequency (Nyquist criterion), so that it can be eliminated, being a common ambient field in buildings.

Most electromagnetic field meters are calibrated to measure AC fields whilst even meters specifically designed to exclude AC fields are insufficiently sensitively collaborated to measure EIFs. Crucially, they do not tell you the relative contributions of different frequencies. The Spectran NF Professional series is the only known 'off the shelf' meter than performs spectrum analysis. Whilst EIFs can occur at 0.1 to 30 Hz, the Spectran NF5010 can only measure the majority of EIFs, at 1 to 30 Hz.

Paired Spectran NF5010 units data log to laptops, as the thirty six thousand data points logged on the average investigation cannot be internally stored. One unit is positioned in the Experiencer 'Active' Area and one in the Experiencer 'Control' Area to allow comparison. As EIFs are likely to be a factor in a small number of locations the units are used to provide a cursory indication of this factor. Where this factor is identified a specific investigation would utilise a hired MADS unit to measure with greater accuracy.

### **Measuring Infrasound**

Infrasound is sound (typically) inaudible to the human ear due to its low frequency (specifically, lower than 20 Hz). Tandy and subsequent experimenters hypothesised that a certain frequency – typically cited at 18.9 Hz – that could be responsible for misattributed haunting phenomena. It has long been known that infrasound can cause unusual sensations (such as nausea and a sense of unease); and we already know that in the right context, witnesses will interpret ambiguous stimuli as anomalous events.

The infrasound theory further purports that visual disturbances and even hallucination can be caused by oscillations of the eyeball at this frequency. Whilst current evidence does not seem to support this latter assertion it should be noted that research into infrasound is ongoing. Also, the less controversial ambiguous sensations caused by infrasound are worthy as measuring as potential factors in themselves; although infrasound is estimated to be a factor in a small number of cases. However it should be noted that the cause of particular instances of infrasound could also be the cause of EIFs so, as such, neither should be measure in isolation in case of this confounding variable. This method hopes soon to incorporate the use of Infrasound Measuring Equipment, currently being developed by academics at the forefront of infrasound research.

### **Measuring Carbon Monoxide Levels**

CO poisoning is another possible cause of misattributed haunting experience, although possibly less likely in any individual case than EIFs or Infrasound. At lower levels CO can cause unusual sensations (such as nausea, confusion, impaired hearing and vision) and at more dangerous levels can cause hallucinations.

CO data loggers are used in both Percipient 'Active' Areas and Percipient 'Control' Areas to rule out this theoretically possible but practically unlike cause of ambiguous sensations that can be attributed to paranormal events.

### **Measuring Individual Differences**

PSI's three-year standardised investigations tracked individual 'paranormal belief' and 'perception of context'. Results suggested that these played a role in reporting possible paranormal events. Feelings at the moment were also tracked but were not demonstrated to impact on reporting rates.

A correlation emerged between reporting of subjective experiences and level of paranormal belief. Whilst the nature of correlations is to be open to interpretation either way, the most likely explanation would seem to be those of a higher belief are more likely to attend to ambiguous events and attribute them as anomalous. Similarly, there was a less clear correlation between initial perception of 'spooky' context and rates of experience reporting. Again a more likely explanation is that if an environment is perceived to be conducive to experiences, ambiguous events are more likely to be attended to and attributed as anomalous.

It should be noted that individual difference data should be treated with great caution, but in individual cases may shed light on the nature of a subjective experience.

### **Measuring Perceived Temperature Fluctuation**

The perception of increase or decrease in temperature was found by PSI's three year study to be a common anomalous report, and is anecdotally held to be a common 'symptom' of haunting experience.

Perception of change in temperature can be an endogenous or exogenous experience – this is, it can be an internal physiological event or an objective variation in temperature or draught. This method calls for the distinction between such subjective and objective events, and attempting to find natural causes for objective events.

This method uses temperature data loggers to track variation in temperature and hotwire anemometers to track draughts.

For all the simplicity of measuring temperature, these are tools so often used inappropriately by paranormal investigators. Various theories exist suggesting that temperature fluctuations are linked to paranormal experience. This assumption-led theory has no theoretical or evidential (beyond anecdotal) basis. However most of the theories (and indeed the xenonormal causes for experiences this method is concerned with) call for the highly localised measurement of temperature fluctuation. As noted previously, establishing a baseline is crucial here. As such, moving temperature gauges instantly compromises your baseline; by moving a temperature gauge to a different area (where an experience is being had) any data as to the previous temperature is lost. As temperature fluctuations linked to experiences are highly time sensitive this rules out the use of non-data logging gauges. If temperature is only measured occasionally, a continuous baseline (from which to measure deviations) cannot be established. Non-contact (infrared, thermogun-style) measures are also inappropriate, as these do not measure ambient temperature, only surface temperature of a target; additionally because of this functionality, a baseline cannot be reliably established.

The traditional limitations of data loggers were their insensitivity: being slightly shielded and only suitable for logging every ten seconds (clearly inappropriate for time sensitive experiences). This method uses a new brand of thermocouple data logger than logs every second, which is clearly the least worst option. However measurements are still localised and the data loggers should not be moved, so as to preserve their baseline. The imperfect solution is to allocate a data logger to every experiencer, and ensure the experiencer does not move away from the data logger during percipient sessions.

The 'wind chill' effect of draughts do not objectively vary temperature, but merely provide a cooling effect to the skin. The unfortunate result is that temperature gauges are useless for measuring draughts. Inexpensive 'vein' style anemometers are inappropriate for the sensitive measurement of draughts, due to the minimum speed needed to rotate the vein and the dependence on the correct angle of the vein. Hotwire anemometers of a higher sensitivity largely

overcome these flaws. However a meaningful baseline cannot be accurately established with handheld meters. As such a handheld anemometer which attempts to record readings and establish a baseline after the event is the least worst option.

## 6. Data Analysis

Data gathered should be analysed in line with the principles of scientific enquiry and in line with stated hypotheses.

Data Type	Treatment
Individual differences	Questionnaires to be aggregated. <i>Added to the reports to draw conclusions based on individual differences.</i>
Control condition CCTV footage and sound	1) At the time observation and inclusion in Timed Phenomena Reports. 2) Subsequent monitoring of variations in sound and movement <i>In both cases reports should be timed to (a) provide evidence during Timed Report Analysis and (b) provide a Control Condition Report.</i>
Temperature fluctuation	Tracking reported changes in Timed Phenomena Reports. Comparing data logger and anemometer outputs to draw conclusions on cause. <i>See Timed Reports (below)</i>
EM field	Comparison of results over the three investigations. Results should be used to provide a Monitoring Report of the location, drawing conclusions as to whether factors could lead to general reports.
Carbon Monoxide	
Infrasound	
Sound recordings	Tracking recorded sounds and noises compared to Timed Phenomena Reports. <i>Visual and auditory findings will be used as a track-back from Times Phenomena Reports to provide evidence to analyse experiences.</i>
CCTV experimental recordings	
Camcorder experimental recordings	
Stills camera images	

### Assumptions in Data Analysis

Special consideration shall be given to hypothesis that original and subsequent haunting experience shall be caused by xenormal factors. Scientific principles dictate that special consideration is given to the most likely explanation.

### Control Reports

A report of any visual and sound fluctuations in the Control Areas will be provided. This will comprise:

- Timed reports made by CCTV Monitors, along with appropriate footage.
- An automated report, with appropriate footage, of any visual or sound fluctuations throughout the course of all investigations.

These reports will act as evidence to support any experiences reported in Experimental Areas, for example where a noise is heard coming from the Control Area and can be thus be identified.

These reports will also make conclusions as to any events that might have been interpreted as usual had percipients been there to perceive. As such a comparison shall be made between the Control (both with and without previous reports) and Active areas, and an assessment made of any differences. This report will focus on the differences between different types of areas, and whether haunting triggers exist independently of peoples' experience.

### **Monitoring Report**

An examination of the graphed output of the following data logged instruments shall be made:

- Experience Inducing Fields
- Infrasound
- Carbon Monoxide

Assessments will be made based on the graphs and individual data points as to whether any fluctuations would be sufficient to cause 'haunt experiences'. A more dedicated use of this technology would be needed to compare fluctuations with individual accounts, so general conclusions on the possibility of the link with haunt experiences will be made.

Should a location find a strong propensity for such factors to cause haunt experiences, a further investigation will be planned and dedicated to the study of the factor in question.

### **Extraenous Factors Report**

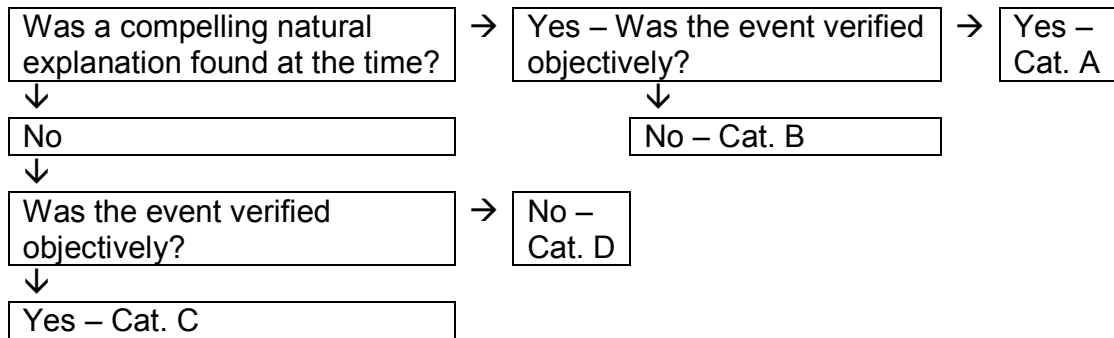
A detailed report will be produced after each investigation about generally identified EFs, along with specific timed EFs identified by auditors, monitors or percipients. This report will input into the analysis of the Timed Phenomena Reports.

### **Timed Phenomena Reports**

Following each investigation event all notes from percipient groups are transcribed and collected in a tabular format.

Reports will be analysed by the CCTV analyst, photo analyst, Camcorder analysts and Sound analyst who will attempt to find objective evidence for each report. Each report will also be considered against the EF and Control reports. Reports will then be subdivided into Objective and Subjective reports.

## Evidential Categories



### Treatment of Evidential Categories:

- Category A – Objective Xenonormal – strong evidence for a normal explanation. Cause should be noted in analysis.
- Category B – Compelling Xenonormal – fairly strong evidence for a normal explanation. Cause should be noted in analysis, with suggestions for how evidence could better be captured.
- Category C – Unexplained Xenonormal – probably good evidence for a normal explanation. Attempt to recreate events during Analysis Investigation and note findings in report.
- Category D – Insufficient Information. Attempt to recreate events during Analysis Investigation and note findings in report. If a compelling explanation cannot be found, flag up in the report as an area needing further research.

Where Category D events take place and further need for research is identified, the current method will be discarded and a Category D Investigation be designed specifically against the phenomena in question.

## 7. Statement of Ethics

Ethical conduct is of great importance when conducting research, especially as human participants are involved and individual's properties are often the setting. Below are the basic ethical tenets applied to each aspect of investigating.

### Doing no harm

This relates to not putting participants at risk of undue physical, emotional or psychological harm during an investigation, and being insured against public liability. Participants are chosen via a rigorous selection and training procedure that ensures they are, amongst other things, of a suitable mindset to participate. PSI carries out risk assessments in conjunction with venues, and all relevant equipment is PAT tested. PSI has an obligation to assess all experimental methods for harmful impact upon participants, and to provide post-investigation and post-experiment support to participants.

The ethical principle of doing no harm also extends to potential harm to the living- or working- environment of venue owners and workers. So-called 'spirit communication tools' are not used, being both scientifically unproven and generating the serious risk of an exacerbated perception of 'haunting' by clients. Further, the use of unproven tools and methods to 'gather paranormal evidence' is potentially harmful and are thus not utilised.

Similarly, 'paranormal conclusions' are not drawn under this method; such an approach would be equally unscientific and risks the exacerbated perception of 'haunting' by clients.

Post investigation support is always made available to venue owners or managers.

### Consent

No person who is deemed unfit to give informed consent may participate.

All individuals participate with informed consent and no individuals under the age of 18 are permitted to participate in PSI investigations.

Similarly, investigations always operate with the informed consent of venue owners or managers, including outdoors locations investigated.

### Deception

All participants are fully briefed, trained and are aware of all research objectives. For methodological reasons, during Baseline Investigations the nature of previous accounts of experiences, including which rooms under investigation have or do not have previous accounts, are withheld from percipients.

Venue owners or managers are made fully aware of all methods used during the investigation. Similarly the purpose of PSI investigations are made clear to venue owners or managers.

#### Freedom to withdraw

All participants are free to withdraw at any time. Further, venue owners have the right to halt any investigations at any time. Venue owners are made aware of this right prior to the investigation.

#### Confidentiality

All evidence and information gathered on investigations is held in confidence within the organisation where requested or more commonly where agreed by experimenters. It is frequently deemed unsuitable for the sum total of evidence gathered to be made publicly available. Confidentiality applies to working with the mass media.

Whilst the experience of individual participants is not kept confidential, except where otherwise requested, all participants names are removed.

For these purposes the organisation is defined as constrained to trained team members, and consultants associated with PSI to whom confidentiality is occasionally extended.

#### Debriefing

All participants are fully debriefed and offload experiences at the end of investigations, to ensure they leave in the same psychological state in which they arrived. PSI has follow up procedures should participants need to discuss any issues after an investigation.

#### Reporting research

PSI has a duty to take due care in any reporting of results, especially to the media. PSI takes the responsibility as being seen as 'representing' the field very seriously.

PSI never sensationalises evidence or vies for attention. PSI never makes unscientific claims, including asserting that a property is 'haunted', or 'not haunted'.

#### Treatment of venues and owners

All venues and owners are treated with respect at all times. PSI always shares results with venues, abides by their wishes and continues contact for as long as venues and owners need.

As mentioned previously, ethical responsibility extends to not conducting investigations in any way which might cause a venue to feel any 'presence' they feel has been exacerbated. PSI never performs 'clearances', but can refer venue owners to suitable individuals or groups should they request that information. PSI has special and separate ethical procedures for dealing with private homes and families.

