

Lens-less Through-Wall Imaging

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Introduction

Being able to observe the target is the *sine qua non* of the whole system of surveillance. Although this can be done with cameras, either hidden or carried by robotic devices, this treatment focusses on a technique that has been developed and is deployed that images the target through walls, and is lens-less in the sense that it is not associated with cameras that focus visible light using lenses. An example of this that most people are probably familiar with is magnetic resonance imaging (MRI) that is used for medical imaging. This technique produces an image of the internal structure of the body using magnetic fields and radio waves – there are no cameras or lenses (in the conventional sense) involved.

This technique has a number of advantages over cameras. Since no physical devices are needed inside the building, none can be found, and identification of the operators is impossible. It can image in the dark, unlike cameras, and is virtually undetectable, leaving no evidence that it has occurred.

This treatise is a work in progress, and uses the “spirit of scientific inquiry” using logic and observations to deduce constraints on the mechanism and physical principles being used in the imaging technology. But it differs substantially from a situation where explicit experiments can be run with different treatments and the results compared, as many understand science. In this case, the target has little or no control over the presence or absence of the imaging process, or of any parameters, and so must rely on comparing propitious observations and measurements to draw inferences. In this way, it is similar to cosmology, where observations can be made, but explicit manipulation of the observed objects is not possible.

But the situation is even worse here - those performing the imaging are actively trying to prevent discovery of its presence. This is actually something addressed in communication systems under the rubric “Low Probability of Detection/Low Probability of Interception” (LPD/LPI) – the most basic technique of which is to just stop transmissions when you are being observed. At another level, as here, when trying to identify the technology, is to actively mislead or proffer incorrect information in an effort to thwart understanding. Some of this will be evident in the observations below.

The phrase “spirit of scientific inquiry” also entails the notion of attempting to consider alternative explanations, and trying to rule them out by proving oneself wrong. A lot of current

“science” in some fields cannot be replicated and is just wrong, due to motivations and biases of the investigators who have career or monetary gain, fame, competitive pressure, or a desire to be right, and these affect their work. However, when the results really count, the fundamental goal must be to determine the truth. Only in this way can findings be built upon and accurate predictions made, bridges built, or diseases cured.

This is much more easily said than done. Data and observations can be noisy, inconsistent, and come with various levels of confidence. There can be outliers that lead one down the wrong path and need to be ignored. Unconscious biases can creep in at many levels. And, it can be necessary to revise some of these more subjective aspects to re-evaluate inferences. It is in this vein that this treatise should be considered a current working hypothesis, with some unknown details unresolved, others better considered, but high certainty that it will need to be modified as more is learned. Along these lines I have split this treatment into three sections.

The first section describes the fundamental observations that bear on the through-wall imaging technique. These constitute unassailable empirical observations that are essentially incontrovertible unless one wishes to claim that they are fabricated.

The second section describes reasonable inferences that can be drawn from the observations, that are constrained and consistent with known science. This rules out new laws of physics yet undiscovered or known but kept secret by a select few, or speculative ideas that have never been shown to exist – like “scalar waves”.

The third section discusses the current overall framework of understanding, unresolved issues, and interpretation problems. It then considers what types of experiments, observations, or comparisons might be done in order to help resolve outstanding or new issues and questions.

Fundamental Observations (I)

Having had the displeasure of being a target of this surveillance over a long period of time, I have seen the through-wall imaging change over time. For simplicity, I will try to present things in rough chronological order, unless clarity or understanding is served by different grouping.

Although refinements and improvements have undoubtedly been proceeding over the entire period, there is a clear demarcation that happened in the mid 2000s.

Early 2000s – Discrete Images

In the beginning, there were small, ground-traversing robots with lights, indicating some type of camera mechanism, that were being used to obtain images inside buildings. I saw these only at night or in the dark, by virtue of them having light emissions that I could see, traveling across the floor or, one night, crawling under the flashing of a ventilating fan on the roof. Hence, I

never got a good look at these devices in full light, but infer that they were employing some sort of camera that required the light that I did see, in order to capture images.

However, there were also occasional instances that were certainly electronic imaging through the roof or walls. These through-wall events were apparently limited to discrete snapshots with long intervals between them, and were only noticeable in the dark because of an associated bluish-white flash illuminating an area presumed to be being imaged. This happened on a number of occasions:

- Once I removed the access cover to the attic and put my head up there. I heard a single-engine plane fly over, and as it did so, I saw a series of the bluish-white illuminations of the rafters, ceiling joists, and other debris in the attic at like half-second intervals. These flashes moved across the attic as the plane flew over the house.
- One evening I noticed that there was unusual blocking of the windows at 832 W. Upas St. as if someone had hung bedsheets to prevent anyone seeing what was going on in the front living room facing the street. I could see this from my upper west bathroom window, and observed a couple of people in silhouette apparently looking in my direction. So, I went into the adjacent closet and shut the door, leaving the light off. The closet had a window facing the same direction, and I went to it to watch. Suddenly I saw an intense bluish-white flash in my face.
- Another evening, I was walking my German shepherd in an open field that was a couple of blocks from the house. This field was open and undeveloped, being owned by the family of the Majestic Rug Cleaning company that had a building on it on Reynard Ave. From the field, one can see all the houses and apartments across the street on the hill, where Dove Ct is at the top. I noticed one house seemingly was having a party in the back yard that I could see from my vantage point. I watched for a while, and then started to walk back home, and as I did, another blue-white “flash in the face” event occurred.
- In these early days, I became aware that I was being followed around by people whenever I left the house. This was especially apparent at night when I went to the gym. The vehicles were often identifiable by having small, USA flag decals on a rear window, and/or a Department of Defense sticker on the driver’s side of the front windshield. It became an aspiration of mine to try to lose this tail. So, one night, returning from working out at the 24 Hour Fitness in the Golden Triangle, I succeeded by quickly pulling into an obscured parking lot on Miramar road when no other vehicles were in sight. After hiding there for an hour or so, I continued South but did not go home. Instead, I drove into Hillcrest, and parked on a street – Herbert street. I exited the car, walked across the street and went into a side area of an apartment complex where garbage containers were stored. Then I crouched down behind a fence that faced the street so I could see out. After just a few minutes, a vehicle with five or so people riding

in the open back came by and stopped behind my parked car. They all jumped out, carrying things, including newspapers (this was a frequent ploy used as a cover – delivering newspapers) and I noticed one of them point something at the apartment building. Suddenly there was the characteristic blue-white flash, but apparently I was not spotted, as they continued on in different directions.

An irrelevant side note as far as the imaging technology is concerned, but important for continuity and is related to its deployment:

By the late 2000s, this being followed by cars transitioned into the use of unmanned aerial vehicles (UAVs). In one unusual incident, I was driving down to the 24 Hour Fitness in Chula Vista with my friend Pablo to work out, and one of these UAVs actually flew right next to my Toyota truck as we drove south on highway 5. It was not easy to see exactly what it looked like because it had a bright light attached to it. As I drove, it matched our speed and position, even when changing lanes. This continued for at least a mile, but it then flew off.

These could occasionally be seen during the day, following me around. At night they appeared as small points of lights making zig-zag and circular movements in the sky, but omnipresent, when I walked the dogs. I often went to Balboa Park to walk the dogs at night, and other people could easily see these as well if I pointed them out. It became clear that this was now the primary means of tracking me. Whether coincidentally or not, this is when the “discrete frame” morphed into something different but possibly related, In any case the current technique of interest is what follows.

Late 2000s to Present Time Frame – Active Illumination

Since the bluish-white flashes were relatively dim and really only apparent in the dark, I blocked out all the windows in my bedroom with material used to make anti-static bags. I got a large roll of this on eBay. It was mylar with an embedded aluminum foil on one side, and an opaque black matte finish on the other which was entirely impervious to visible light. All pilot lights were covered with foil tape, and black towels were used to temporarily prevent light from coming in under doors. In this way it was possible to detect the presence of even low levels of light.

1: Presence of Light in Darkened Spaces

Under these conditions, it was apparent that there was some type of light, a very dim, pale, illumination present. It was more detectable after dark-adaptation, and I asked a few friends to verify it. I have pretty good eyes, and other people wouldn't always agree that “light” was present, but everybody agreed that they could tell when I waved my arms and when I didn't, so some light was present, even if they wouldn't identify it as what they normally think of as light, or describe detecting my arm motion as seeing. In any case, on some occasions it was more intense, and had the form of a bluish-white

cone, much like a flashlight beam, coming from above that didn't require dark adaptation or other subterfuges. This cone was apparently sourced from above, although there was an intact ceiling present. They often appeared to rotate around in circles to cover various areas, much like a police searchlight appears from helicopters. Again, it was bluish-white when color could be identified at low light levels.

Although my funding was seriously limited, I also installed a new surveillance system that recorded images digitally on a hard disk. It was only four channels, with a relatively low frame rate and resolution, but recorded continuously and produced video in standard video formats. I placed a couple of cameras outside, to capture anything flying around the house, as it was also now clear that a variety of UAVs were being employed. Then on Oct 1, 2009 this happened:

2A: The Imaging Signal Causes Fluorescence of Some Substances

I was lying in bed, in my darkened room when, I heard a whirring sound outside my covered window. Simultaneously, I could see that a dim but definite oval area of the plaster of the wall was glowing. This glowing oval moved across the wall, much as a moving flashlight beam might produce. But this was not from a light beam, the actual plaster was glowing, apparently fluorescing. It lasted only a few seconds, and then disappeared. After I got up and got dressed, I went to look at the surveillance recorder footage at that time, and, lo and behold, outside the East window to my second-floor bedroom, something difficult to identify had apparently flown up near the house, hovered for a while, and then flown off. That recording can be seen here:

<https://www.youtube.com/watch?v=VfKg9nL1cX0>

Note that since the CCTV recorder operated continuously, the only reason I examined that time on the recording was because of the whirring sound and the oval illumination on the wall. The obvious interpretation was that a UAV carrying some type of through-the-wall imaging system was what was seen in the recording.

It seemed reasonable that signal being used for imaging was electromagnetic and should be blocked by metal. Having a porcelain bathtub in the adjacent bathroom that had a thick steel shell, I procured a sheet of 1/8 inch steel that could be laid on top, which ought to block any directed rays. That is, thinking of radar and how a directed ray reflects back, enclosing myself in metal should prevent it.

2B): More Fluorescence

One night I crawled into the bathtub and placed the steel sheet on top of me, with only a 2' by 3' open aperture pointing towards the outside wall of this second floor bathroom. As I was fumbling around in the cramped space, suddenly a piece of plastic I was holding started glowing reasonably brightly. It was a white, opaque polypropylene

cap to a sample vial. Apparently, the material used to instill the white opacity to the cap was emitting light! I inferred that something had been pointed through the wall at the open end of the bathtub and excited the pigment in the plastic.

Although this section is supposed to be limited to the raw observations alone, experiments and directed observations need some theoretical framework and nomenclature with which to operate. I thought at this time that it was beyond doubt that there was some sort of signal putting energy into the area under surveillance. This would make it an “active” technique, as opposed to something like infrared thermal imaging which does not employ external energy to elicit the imaging information. Rather, it is entirely passive, using the heat generated by the objects being imaged themselves.

I termed this the “illumination signal” as a moniker for the excitation energy responsible for engendering the returned imaging information and/or the illumination and fluorescence effects, and will use that as shorthand here as well. I was also implicitly assuming that the imaging technique operated like radar, in that the observed area would need a direct impingement of the illumination to create an image.

At this point, it seemed clear that I needed an area that was shielded from electromagnetic energy, so I contracted with a local welder to construct a welded steel chamber with a door that had apposing flat areas where either finger stock or EMI gasketing could be placed in order to ensure electrical continuity when the door was closed. I nicknamed this the “steel box”, or SBox for short.

While the SBox was being fabricated, I also decided to sacrifice one of the upstairs closets in the bedroom that had the windows obscured. I tore out the plaster, placed plywood on the walls, ceiling, and floor, and lined the interior with sheet copper that was soldered at all the seams. I covered the door with copper sheet as well, and arranged electrical continuity when it was closed. I nicknamed this the “Copper Closet”, or CC.

Neither of these rooms were really very well shielded, but both did prevent the use of cell phones when inside. The main goal I was thinking of at the time was to prevent directed beams from being able to penetrate the enclosing surfaces, a la radar, and all seams were either welded or soldered continuously along their entire lengths. Hence, of course, they were therefore light tight. But I was about to experience a big surprise!

3A: The Surveillants could produce light in a shielded room!

One evening, right after I had pretty much finished the copper closet, I had the bedroom dark and I entered the closet. I noticed an obvious illumination originating from the southwest, upper corner of the closet! It was sort of yellowish, and had a directionality as assessed by noting that shadows could be produced by blocking it. This was relatively

bright compared to previous instances that were near threshold. How was this possible? The corner of the closet was definitely soldered and impervious to light, and most definitely to Radio Frequency (RF) energy. There wasn't anything in the attic. The light wasn't moving, and remained there for a while, while I played around a little with it, checking for shadows.

I didn't know what to make of this, but knew I had to try to document its existence, and thus embarked on a long process of acquiring various devices to measure light, but running smack into the problem that the surveillants could control this, and turn it off when the measurements were to be made.

The SBox was eventually delivered, and placed in the garage. I could tell that there were a few spots that needed fixing, as I could see small, pinholes where light could enter through a few seams, but it did prevent cell phones from operating, and my RF meter showed virtually nothing inside when the door was closed. I plugged all sources of external light that could enter the garage so it could be darkened, as I had done for the upstairs bedroom, to ensure that there was no light outside the SBox either.

3B: Serious Light Produced in the Welded Steel Box

So, one evening I was in the SBox, while moving it around in the garage to find a good location for it, and lo and behold, a moderately intense, orange light appeared, coming from the southwest. It had the same characteristics as what had happened in the Copper Closet – the directionality was clear in terms of diffuse shadows that could be produced. I exited the SBox, but, of course, there was nothing in the garage, or inside the house either, for that matter.

As I walked around the garage, I noticed that the fluorescent bubble mechanism in a construction level that was hanging from the tool board was glowing, as were some of the unpowered CCFL bulbs that were on the ceiling. I wasn't sure what to make of this, but clearly something was putting energy into the garage to cause this to happen.

I was tooling up to try to measure and document the presence of this light in the Copper Closet using a meter from International Light, when another incident occurred.

3C: Multicolored Moving Light Show in the Copper Closet

As I sat in the Copper Closet without any lights on, suddenly there appeared a reddish and greenish set of illuminated patches that were racing around the top perimeter of the CC. This was astonishing, and was pretty easy to interpret as some sort attempt to mess with me. Of course, when I started to try and get my equipment going to document it, it stopped. This LPD/LPI move would become familiar in other situations.

These three incidents stand out as situations where there was no doubt that energy was getting into the shielded locations somehow, but did not have the bluish-white property associated with what I assumed to be the imaging process, and were out of the ordinary. I attribute these to the surveillants attempting to mess with me. Even so, they still demonstrate the ability to transmit energy into electromagnetically shielded areas.

Generally, though, in both the Copper Closet and the SBox, the same experience as had occurred in the unshielded areas was the default: there was a low level of illumination present, except that it was apparently brighter, and was often clearly visible as bluish-white rays penetrating from above, often moving.

4: Relatively Bright Bluish-White Columns of Illumination from Above

On multiple occasions, these readily seen columns or rays of bluish-white light appeared to emanate from above. Although this happened in both the CC and the SBox, they seemed to be strongest in the Copper Closet, which was shielded using copper, and closer to the sky, being on the second floor. When I tried placing my hand in these rays to obtain a shadow, I could feel a tingling sensation, akin to pins and needles, or paraesthesias. There were also times when there were visual effects, or phosphenes, that appeared as moving waves or blobs in my visual field.

This was somewhat disturbing as I thought (silly me) that perhaps it was ionizing radiation, and that it would be important to see if these effects showed up on radiation detection devices. Hence, I procured some scintillation counters, Geiger counters, and ionization chambers (including pressurized, very sensitive ones).

5: The Illumination Is Apparently Due to Ionization of the Air

I tried using all these detectors when the surveillance was occurring, both in the shielded rooms and outside. Here, the results were at first confusing. Standard Geiger sensors did not detect anything, while scintillation detectors showed small but reliable decreases in background counts. However, ionization chambers showed definite increases in readings. A Ludlum's Model 9 ionization chamber showed effects, but they were small and difficult to reliably read at the low end of the lowest scale. I purchased a new Fluke Biomedical (formerly Victoreen) 451P pressurized ionization chamber, as pressurized chambers are more sensitive. This regularly showed higher readings when inside the Copper Closet or the SBox, and even higher readings when there was the bluish-white illumination present. However, the 451P showed readings even when the illumination was not obvious or very low in intensity, as well as in unshielded areas, where occasional bursts of intense ionization occurred – crossing a projected beam?

The lack of detection with the standard Geiger sensor implies an absence of highly energetic particles or gamma rays associated with ionizing radiation that these sensors are designed to detect. These particles produce a trail of multiple ions at once that trigger an avalanche effect in that type of device, which is what is heard as a “click”. The slight decrease in background counts with the scintillation detectors could be explained by the presence of some sort of magnetic effect associated with the illumination signal (to be discussed later), as these detectors employ photomultiplier tubes that are very sensitive to external magnetic fields. Finally, the detection of gas ionization in the presence of the illumination signal is consistent with the emission of light, as stripped electrons return to neutralize the gas ions. Overall, this is the best and most consistent interpretation of these results to date.

Kinetic Effects

One thing that I noticed around this time was that certain objects, such as hanging cables and stained-glass chandeliers appeared to be moving slightly, even without any significant air currents or other obvious reasons. I wanted to see if I could reproduce this behavior in a more controlled way with less possibility of artifacts and more sensitivity, so I turned to the torsion balance, or torsion pendulum. This is the device used by Coulomb to measure and derive Coulombs Law, as well as by Cavendish to measure the gravitational constant. I constructed a series of torsion balances, and other similar devices to see if I could detect any forces associated with the illumination signal.

6: The Illumination Signal is Very Energetic, and Transfers a Lot of Momentum

My first attempts at fabricating working torsion balances that could detect the illumination signal (SS) were not well thought out, as the rotating arm had a high moment of inertia, and did not have a geometric configuration that was optimized for signal beam arriving from the sides. The evolution of these devices and a description is contained in the following video:

<https://www.youtube.com/watch?v=x2X7uyxqM1I>

(Please note – since this video was created, further information regarding the physiological effects noted in the conclusions at the end of the video has come to light. Namely, the ability to haptically or visually sense the illumination is not universal, and only present in certain observers.)

As can be seen in this video, a torsion balance with a design that optimizes detection in the horizontal plane can be substantially deflected in the presence of the illumination signal. I think it is important to point out a few aspects of the effect to put it in context:

- A. The force being exerted is orders of magnitude larger than the radiation pressure exerted by visible light. This pressure can be measured using a similar apparatus, a Nichols radiometer, which it is optimized for that purpose. But in any case, visible light has no effect on these torsion balances. This argument is also true for Crooke's radiometers, the novelty devices that spin when exposed to light. But these spin not due to the intrinsic momentum of the impinging photons, but rather because the energy of the photons is absorbed and converted to torque by means of a thermodynamic interaction with the low-pressure gas that fills the device.
- B. That this effect is a result of the illumination signal derives from the situations in which it occurs, the absence of credible alternatives, and thorough identification of potential confounding artifacts. It is also seriously bolstered by multiple attempts by the surveillants to deliberately prevent the rotation of the pendulum. The details of observations that allow this inference are beyond the scope of this summary, but are reliable. These attempts imply that the surveillants are aware of this effect, and would like to counteract it.
- C. There are a number of implications of this finding, as well as a number of unanswered questions pertaining to this effect. However, these are better discussed in the interpretation section below, but I can't resist mentioning how I can't reconcile these forces with Newton's third law unless some sort of conversion of energy to torque is occurring, as in Crooke's radiometers. (Note added in edit: Newton's third law may not always be satisfied in electromagnetic interactions.)

Although the torsion pendula are a reliable and inexpensive method of detecting the presence of the illumination signal, it has a number of drawbacks. For one, although the effect is much larger than radiation pressure, it is still relatively small compared to everyday, macroscopic forces. Thus, the pendulum moves slowly, and it takes time to demonstrate that it is moving, hence the use of time-lapse recordings or reflected laser light on a scale. In addition, as can be seen in the video, they are not easily physically moved, because that incurs a period of time where the movement artifact must settle down. As a consequence, the short-time dynamics of the effect cannot be seen with this device.

Imaging Volume is Selected

It should be clear by this point that the area being imaged can be selected by the surveillants as a small part of the range of the signal, since these effects are occurring inside a building,

whereas the equipment is outside of it. However, this capability was underscored by an experience one evening.

7: The Imaged Volume can be Dynamically Selected

Recall that I was being closely tracked at all times, and it seemed important to the surveillants that they didn't lose track of me, so of course I was always trying to do exactly that. But one night I was returning from Fry's Electronics with Brandon, a friend of mine. Given my aspiration to try to lose this tail, instead of driving down the street and parking at my house, I parked at the top of the street, and asked Brandon to wait a half hour, and then exit the RAV4 and walk back to the house. In the meantime, I exited the RAV4 and walked home, entered without turning on the lights, and went into the SBox in the garage. I closed the Sbox door, and waited in the dark by the door.

After a while, I noticed the Bluish-white glow at the other end of the SBox. It looked about 6 inches thick, and contained the entire volume from top to bottom, and across the full width of the SBox. This glowing slice was moving towards me slowly, so I tried to keep as close to the front as possible, and it eventually got to my position. After a fashion it stopped, so I got out and went and got Brandon in the RAV4.

This was an explicit demonstration that the imaging area was a parameter that could be controlled. This conclusion is also implicit in all the other observations described above, as they occurred inside a building by means of equipment that must have been located outside the house. To be sure that this was the case, I removed all the plaster and drywall from the garage, and actually X-Rayed some of the posts and beams.

Low-Frequency Magnetic Effects

There were a variety of magnetic effects, most of which were clearly tricks designed to astonish or divert me. These did not have any direct relation to the illumination signal beyond depending on accurate and detailed information about where I was and what I was doing. But in a couple of situations, I managed to actually detect low-frequency magnetic fields that might have bearing on the nature of the illumination signal itself. These were measured using an Alpha Labs 100XE Tri-Field meter set to the most sensitive AC magnetic range. This meter is not a professional device, and its sensitivity versus frequency is not well specified, but is limited to below about 10 kHz. Nonetheless, it did show higher readings in particular situations.

8A) Small but Reliable Increases in Reading During Intense Surveillance

When I was engaged in "interesting" activities, especially sex or drug use, it was sometimes possible to detect small but consistent increases using the meter. This induced me to modify one of the 100XEs so as to allow external display of the internal

signals on an oscilloscope. Unfortunately, this was never successfully accomplished, for a variety of reasons, one being it is difficult to do this without assistance.

8B) Low-Frequency AC Magnetic Fields were Present During "Skin Crawling Trick"

I can recall three instances where I was subject to what I will call the "Skin Crawling" trick. In all cases these occurred while I was sitting in my car (I had taken to carrying a meter around with me), with the engine off. This is one of the many dirty tricks and interventions designed to freak out the target, and cause unpleasant sensations. In this case, it sort of feels like there are things crawling on one's skin, along with the sensation of pins and needles. I say that this might be related to the illumination signal because it is similar to the effect felt when I had placed my hand in the bluish-white beams in the Copper Closet and the SBox.

Optical Effects

Some of the more unusual and subtle effects that were not noticed at first were the optical effects.

9) Possible Changes in Refractive Index Next to Horizontal Surfaces

From a distance and at a grazing angle I first noticed what might be a change in refractive index next to surfaces, because of the change in the image similar to that next to a hotter or cooler surface. This effect is best seen when one moves one's point of view slightly, and I spent some time trying to capture this on video, without much success. I considered trying to gearing up for Schlieren optics, but the effort and potential artifacts versus the payoff didn't seem so good – temperature differences could be the cause of these, and there were other, more consistent optical effects.

10A) Up Close, Edges and Cracks had a Slight Line of Diminished Light Intensity

This was especially noticeable with metal edges, and much more detectable at very low light levels, as if a constant amount of light was being absorbed. That is, a constant amount of light compared to a low ambient level is a larger percentage than in comparison to a higher level, and the eye responds logarithmically to light levels.

This band was on the order of a millimeter or two from the edge and as wide, appearing as a transparent grey line. I saw this in many locations, including along the edge of a metal ladder, between a door and the door jamb, and in the crack where the removable panel from a desktop computer attached to the case, among others. This did not seem to be a change in refraction index, as it did not distort the image behind it, and they were present when both apposing objects had essentially the same temperature.

10B) Moving Dark Bands in Light Seen Between Doors and Their Jambs

Probably related to the diminished light intensity seen between surfaces was an effect that was seen from inside a dark room when viewing a closed door that opened into a more lighted area. That is, when light from an adjacent room leaked between a closed door and the door jamb into a dark area, dark bands could be seen that moved in the thin strip of illumination surrounding the door. This, too, was only apparent at very low light levels, and the movement was sporadic, not at a constant rate or location. This was not due to varying levels of illumination or moving objects in the adjacent room.

10C) Intermittent Extinction of LED Pilot Lights in Darkened Rooms.

Again, this might be due the same cause as the previous effect, and appeared as a definite, brief drop in intensity of small, LED emitters, at long, random intervals. This was present for green LED pilot lamps on powered Bose speakers, as well as red ones on CCTV cameras. These events were corroborated by other observers. The small size of these LED light sources seems to be a factor.

10D) Macroscopic Patches Appearing with Varying Light Intensity

Yet another observation probably derived from the same mechanism is the appearance of relatively large areas (6cm by 6 cm) that seemed to have their brightness changing repeatedly at like 5 Hz or so. I first noticed this when looking at a stained glass chandelier one night with Brandon. It is hard to describe exactly the appearance; it looked like what I surmise one might see if a neutral density filter were placed and removed in front of the 6 cm square glass panels of the chandelier at a 5 Hz rate (the chandelier is hemispherical with these small rectangular glass pieces soldered together to approximate curvature). It was occurring on a number of adjacent panels, and both Brandon and I agreed that it was happening. It was reasonably clear that this was not due to a change in refractive of the air, as there was no distortion or movement of the image that one would expect from a change of refractive index.

I explored this effect by constructing an approximately 30 cm by 60 cm flat, diffuse light source using parts from a flat-screen monitor, and was careful to drive the backlight LEDs with a regulated DC power supply to preclude any intensity variations in the light output. This flat source was recorded using a camcorder at various exposure settings, distances, and magnifications. There were indeed correlated changes in intensity across various regions. However, the significance of these changes was not seriously analyzed statistically to ensure that they weren't due to changes in the camcorder quantization across the field, levels of noise in the recordings, etc. This probably could be done but is "beyond my pay grade", so to speak, as it would entail sophisticated math as well as a lot of time. But I think it has suggestive value...

Indirect Inferences from Interventions

This is a whole other class of information provided by the surveillants, derived from actions taken by them in response to information they have obtained from their surveillance. This is perhaps a tricky concept. Let me explain.

This technique that is being used to image inside the dwellings and buildings would not normally be apparent to anybody in normal circumstances, with normal levels of illumination. Hence, there would not be any good reason to believe that anyone was watching or performing surveillance. This is why I usually refer to it as “virtually undetectable”, but is clearly not magic and has a physical basis, if one knows what to look for.

For example, the situation in the Copper Closet above, where there was unusual light appearing in a shielded room, although clearly requiring an explanation, would not *a priori* cause one to conclude surveillance was taking place, or that you were being watched. However, even the simple LPD intervention of causing the light to extinguish when preparing to record it conveys information. It demonstrates that you are indeed being watched (and by people who don't want you to record the presence of the light), especially when it is repeated on multiple occasions.

Another example, very similar, but where the conclusion seems harder to believe, arose more times than I can remember accurately. It involves the small lights in the sky, moving in circles and zig-zag patterns wherever I went. This happened when walking the dogs in various places and also after driving down the freeway 20 miles, parking, and getting out. Wherever I was, there they were. I would say that is pretty good evidence they were following me. And, as mentioned, this was indeed seen by other strangers on occasions when they were present. I think it's pretty safe to conclude that these are UAVs.

Something like this is unusual, and clearly needs to be recorded. But whenever I would get out my camcorder, set up the tripod, get the proper field of view identified on the viewfinder and zoom in to get a good, focused picture, all movement would stop. Nothing to see but stars, apparently. But if one thinks through the logic, the subtle but inescapable conclusion is that they were observing me! Otherwise, they wouldn't know when to stop moving. Not only that, but they also don't want their presence recorded either.

Of course, it would be possible to demonstrate that a particular point of light should not be present using a star map, and I embarked on such a venture. But it is difficult, complicated, and not very interesting or persuasive to your average person, compared to video of zig-zagging “stars”.

These two examples are pretty basic, but show that even simple interventions can convey information and feedback from the surveillants. However, even more information is conveyed if the intervention depends on the what they have seen.

11) Some Interventions Occurred as a Result of Images on a Computer Screen.

This is a very important observation, and would be consistent with the other optical effects described above. On at least two occasions, an intervention was applied based on the image on my computer monitor. The interventions and circumstances are detailed and subtle, requiring some understanding of the interventions, and are described in detail in the **Non-Consensual Experimentation essay**. For our purposes here, let's assume this is a valid observation, and that there were no other camera-based devices present that record visible light.

Consider the implications: most imaging methods, such as radar, would produce an image representing the computer monitor, but could not include the actual image on the screen. That image is only present in the light emitted by the screen, not by reflections of the illumination signal from any physical matter present in the room. One hypothesis consistent with this would be, that somehow the actual wavefronts of the light in the room are being sampled and transmitted out. Perhaps this would explain the apparent absorption of light that could be seen at very low ambient light levels. This observation is of lower quality than most others above, but would indeed be consistent with the optical effects. Not only that, but consider the value to the surveillants of a technique that could not just show what and where physical objects are in a location, but also what a person could see or read at that location. Wow!

Some Reasonable Inferences

This is where I would like to propose some inferences that can be made from these observations, which I'll assume constitute unassailable empirical observations that are essentially incontrovertible, unless one wishes to claim that they are fabricated.

This is an “Active” Imaging System

The presence of light in rooms where all light sources have been removed, and indeed, even in electromagnetically shielded chambers, means that an active imaging system is being used. That is, energy is being projected into an area to “illuminate” it, and some sort of returned signal is produced that is used to construct an image. To be sure, this returned signal need not be of the same type as the illumination signal, but often is, as with radar or even a flashlight.

Here's an interesting anecdote regarding the quality of this conclusion. When I told my brother about this phenomenon, he was unimpressed, and suggested that I try it in other locations, to ensure that it wasn't a typical or expected result – the idea being that maybe light naturally appears in those situations. This was my introduction to the problem of trying to explain technical results to people who are not well educated in a particular field. Anyone with even a modicum of understanding of physics would not consider any such “control” experiment necessary, and would readily accept the idea that someone is going to a lot of effort to get that light in there. I always use the example of trying to determine if driving with a black bag over one's head results in more accidents than driving without a bag over one's head. Most people agree that it is not really necessary to perform this experiment, because it clearly follows from what vision is and how one drives.

Whether the system is “continuous” or uses a sampling approach to gather information about the imaging changes in time is not clear, but given the ease with which sampled data are processed nowadays digitally it's a good bet that at least the return signal is processed as sampled data. Essentially all video and audio are now sampled systems; even the earliest film motion pictures were sampled at 24 frames per second.

Wavelengths Must Be Small for Spatial Resolution and Beam Divergence

In order to resolve two objects, it's well established and quantified that the wavelength of electromagnetic radiation must be on the order of or smaller than the space between the objects. Similarly, the wavelength also constrains the minimum amount of divergence, or spread that occurs as a beam travels over a distance. Given the distances observed between the imaged area and the devices emitting the illumination signal, there are constraints on the wavelength and the aperture of this signal.

Here we should distinguish between the wavelength of the illumination signal, and potentially a different return signal. Without more knowledge of the returned signal that is used to form the image, it's hard to say too much beyond the inferred resolution of the images as in the millimeter range.

Possible Physical Mechanisms that Might Produce Light in Shielded Spaces

The ability to penetrate metallic shielding and produce light inside a shielded room is perplexing, to say the least, and it took some time and my gaining a more sophisticated understanding of electromagnetics to even come up with possibilities.

Low-Frequency Magnetic Fields

It's well known that low-frequency magnetic fields are notoriously difficult to shield, but low frequencies imply long wavelengths and thus would not allow the fine spatial resolution required if used directly. There might, however, be some tricks that could be used to obtain a large, fast change in a magnetic field. I was envisioning the possibility of a set of low-frequencies that, when combined, produce a single, rapid change in the field at one point in time: the Fourier series for a sawtooth essentially does this. However, I am not sure I know enough to quantify how well this would work, but it might create an associated electric field strong enough to ionize air, and possibly activate the emission of a return signal.

There might be ways to modulate the illumination or combine multiple sources that perform some as yet undetermined action.

High-Energy Photons Above the Plasma Frequency

As it turns out, metals become transparent to photons of sufficiently high energy. This is termed the "plasma frequency", and varies with the metal, but is generally in the ultraviolet region of the spectrum. This certainly qualifies in terms of wavelengths for resolution and divergence, and is consistent with a number of the observations. Even if this photon energy is not enough to directly ionize air, there may be indirect mechanisms. For example, the illumination signal might excite an electron to a higher energy level, but a small fraction of these could have enough thermal energy to become fully ionized. When these ions recombine with the electron, it would thus create the light that is observed.

Higher-energy illumination photons would also explain the times when various phosphors and the plaster fluoresced. However, high energy photons have more chance of being blocked by other materials, or being detected

The manner in which these photons could be delivered and focused in specific volumes is not clear, nor is it clear that the returned signal is of the same type as a reflection would be.

However, it seems probable that the return signal is not visible light, as imaging was obviously occurring inside light-tight volumes.

Unresolved Issues Regarding Properties of Illumination Signal

What is this signal, and where does all the energy and momentum come from?

Unresolved Issues Regarding Imaging

This section is wide open. I'm lost.

Spatial and Temporal Selection of Image Elements

How are the locations and point in time of image elements selected and encoded?