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A SONIC ATTACK?

Reasoning through Mysteries # 1

Facilitator's runsheet for a 100-minute workshop about Havana Syndrome

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[0:00] Welcome and introductions

> Cover slide

[0:01] Introduce workshop topic

'Havana Syndrome' refers to some unexplained health problems suffered by staff at the American embassy in Havana, Cuba, in 2016.

Today, we're going to do a deep dive into the mystery of Havana Syndrome to explore some of the philosophical questions it raises.

We've got five short video clips and various activities and discussions that will carry us through this session.

Let's take a look at the first video clip.

[0:02] > SLIDE > Play '[Havana Syndrome' clip 1](#)'¹ (4.5 minutes) – *mysterious health symptoms, and suspicions of a sonic attack*

Transcript of clip 1

Newsreader: "The Trump administration announced Friday that it is pulling more than half of its staff out of the American embassy in Havana. This comes after diplomats and staff suffered mysterious health attacks that caused minor brain injuries."

"This was a terrorist attack against US diplomats another families in Cuba."

"I think this is an art of war on our personnel, and we have to figure out who did this."

Diplomatic relations between the US and Cuba had been tense for decades. Extremely tense. The Cold War never really ended there.

¹ This clip uses remixed audio primarily excerpted from [The Sound: Mystery of Havana Syndrome](#), an investigative podcast by journalist Nicky Woolf (produced by Project Brazen).

"The government of Cuba, I think it's still a threat to the United States."

"So many years of hostility, of strained relationships."

But in 2015 the political winds started to shift. The Obama administration reestablished diplomatic ties with the Castro regime. For the Americans, life in Havana was truly idyllic. They'd fall asleep to the chirping of cicadas, an ever-present feature of life in the Caribbean, and they'd wake to the sound of rooster crows.

"I mean, Cuba was fantastic, until it wasn't."

Embassy life isn't always romantic. A lot of it is pretty standard office work. There's civil servants, there's consular officers – but there were spies, too. There was a CIA station within the embassy. The FBI responsible for counter-intelligence had a desk there too. And all these people come and go.

"When people started disappearing it wasn't really noticeable at first. I remember asking somebody that was working in the Consular section, 'hey, what happened to this person?'"

And like 'Oh yeah they've left, they got Medevaced (medically evacuated), I'm not sure if they're coming back.' I was like 'Wow, what?'

Karen works on an upper floor of the embassy.

"As she turned a corner she heard this very high-pitched noise."

The sound is piercing.

"It's like a tea kettle just like on steroids. That high-pitched whistle that was so intense that she jumped back around the corner."

That evening, she starts having symptoms.

"She started seeing some black spots in her vision. By the next day, it was growing. The ophthalmologist is like 'Well, your retina's definitely bleeding. I've only ever seen this when someone has a trauma to their head, like a car accident or something.'"

She gets flown to Miami where a team is evaluating a rising number of similar cases.

"She'd lose her balance, she'd start to fall. She was not able to remember things."

The skeleton staff that remain at the embassy are tense, paranoid, jumping at every sound. By this point, cases in Havana number around two dozen. Like Karen, they report things like nausea, dizziness, vertigo, insomnia, debilitating headaches, cognitive issues. And all of them say they heard a sound.

"They could sometimes hear the sound it sounds like metal grating; metal being dragged across the ground."

When they move away, it stops. And if they go back to where it's happening, "it started again. They could kind of walk in and out of what they described as a beam of energy hitting them. And so they clearly felt this was something targeted, this was something that was being done to them."

[0:07] Spectrum activity

Summarise if required: e.g. 'Staff of the American embassy in Havana, Cuba, heard a piercing noise and reported an array of health symptoms including nausea, dizziness, vertigo, insomnia, headaches, and cognitive issues.'

Create a spectrum with headers 'Unreasonable' and 'Reasonable' on the floor or board.

Distribute card sets (cards 1 – 3) to each small group of students. Students should work together to respond.

> SLIDE: How reasonable is each claim...?

How reasonable are each of the following claims?

If you don't know, what questions would you want to ask, or what information would you need to obtain, in order to decide?

1. The health symptoms experienced by embassy staff were related to the piercing sound they heard.
2. The piercing sound was caused by a sonic weapon, and the embassy staff were the targets of a terrorist attack (or an act of war).
3. Given the decades-long history of hostile diplomatic relations between the USA and Cuba, it was rational for the embassy staff to be "tense, paranoid and jumping at every sound" once their colleagues began to experience mysterious health problems.

[0:11] Placement of cards, justification of placement and wider group discussion

[0:22] > SLIDE > Play '[Havana Syndrome](#)' clip 2² (3 mins) – the chirping of crickets and a hypothesis of mass psychogenic illness

Transcript of clip 2

There may have been no energy source at all. A report published last month from several intelligence agencies found it, quote, very unlikely a foreign adversary was responsible; very unlikely a weapon or any device purposely or accidentally caused the symptoms, and there's not even a consistent set of physical injuries.

Many experts argued that sound can't cause brain damage. Not without deafening everybody in the area.

A team of researchers in the UK and the US clearly identified this sound, which was recorded by a patient in Havana, as the mating call the Indies Short-Tailed Cricket.

"The Cubans brought me in to meet with their team of scientists that was trying to analyse it, and in that meeting they said that they believed it was crickets."

Some have gone even further.

According to reporting from the New Yorker, the FBI initially concluded that this was all mass psychogenic illness.

² This clip uses remixed audio primarily excerpted from [The Sound: Mystery of Havana Syndrome](#), an investigative podcast by journalist Nicky Woolf (produced by Project Brazen).

"Mass psychogenic illness is a collective stress response based on a belief. Their symptoms are as real as any medical condition."

In a mass psychogenic illness, which is also sometimes called mass hysteria, the anxiety or the physical symptoms themselves are contagious.

"I think it is possible a lot of anxiety may be caused about the possibility of having a brain injury from a sonic attack, and that that concern is heightening people's vigilance for events that might be consistent with a sonic attack and then symptoms that might be consistent with a sonic attack."

"And there have been examples of this throughout history. Things like sudden contagious outbreaks of laughter or fainting in schools."

"If I had been told I'm going to be a potential victim of Havana Syndrome in that it's associated with a sound, I'm on the alert for any unusual sound. And over the next hour I guarantee I'll hear some unusual sound. Or, you hear the sound, and then you're monitoring your body for symptoms. People started to scrutinise their environment and scrutinise their body for symptoms of a sonic attack after they were being told that they were the likely victims of a sonic attack. It's a self-fulfilling prophecy."

[cricket noise] To the mass delusion camp, this cricket is the explanation. People like Doug heard a cricket sound, and it triggered a psychogenic response.

"It's embarrassing to think that the United States government has spent the better part of the last six years getting people needlessly upset all because of the mating call of the Indies Short-Tailed Cricket."

[0:25] Spectrum activity

Leave cards 1 – 3 where they are on the spectrum, to be revisited later.

Distribute card sets (cards 4 – 6) to each small group of students.

> SLIDE: How reasonable is each claim...?

How reasonable are each of the following claims?

(If you don't know, what questions would you want to ask, or what information would you need to obtain, in order to decide?)

4. **The sound the embassy staff heard was the mating call of the Indies Short-Tailed Cricket.**
5. **'Havana Syndrome' was a mass psychogenic illness, characterised by contagious anxiety and hypervigilance.**
6. **Given that anxiety is infectious in episodes of mass psychogenic illness, if people around you are getting sick and you don't know the cause, it is rational to keep a calm and level head and to try not to get caught up in other people's anxiety.***

* *Background information: On the trusted and credible website familydoctor.org maintained by The American Academy of Family Physicians, there is an article about Mass Psychogenic Illness which states: "It is easy to share stress and anxiety in these situations. Try not to get caught up in other people's anxiety. Keep a calm and level head. Don't assume that because someone else is sick that you are going to get sick too." Source: <https://familydoctor.org/condition/mass-psychogenic-illness/>*

[0:30] Placement of cards, justification of placement, and wider group discussion

[0:41] Revisit claims 1 – 3.

Having heard the second clip, are you inclined to change your view at all as to how reasonable the first three claims we considered are? (If so, move the cards accordingly, giving reasons.)

The claims previously discussed are listed again here, for your reference:

1. The health symptoms experienced by embassy staff were related to the piercing sound they heard.
2. The piercing sound was caused by a sonic weapon, and the embassy staff were the targets of a terrorist attack (or an act of war).
3. Given the decades-long history of hostile diplomatic relations between the USA and Cuba, it was rational for the embassy staff to be “tense, paranoid and jumping at every sound” once their colleagues began to experience mysterious health problems.

Note that claims (6) and (3) are designed to conflict. Students may well say that both claims are reasonable, but this would lead to a contradiction whereby the reasonable thing to do is both to remain calm and level-headed and to experience tension and paranoia.

Discussion 2

Focussing on claims 3 and 6 in particular, which response is the more reasonable – being tense and paranoid, or being calm and level-headed?

If you’re in a situation where people around us are getting sick, how can you tell whether it’s likely to be mass psychogenic illness (in which case it’s rational to keep calm), or when it’s something more imminently dangerous (in which case, arguably, it’s rational and adaptive to be anxious)?

[0:47] 3-minute break

[0:50] > SLIDE > Play [‘Havana Syndrome’ clip 3](#)³ (2.5 mins) – brain injuries, or just brain anomalies?

Transcript of clip 3

The psychogenic theory has the advantage of being the simplest explanation. But. There are some problems with the psychogenic explanation.

Doug and the others were diagnosed with brain injury by multiple medical teams at multiple institutions. Doctors see evidence of brain damage, but no visible cause. How could Havana Syndrome be psychogenic if there’s evidence of trauma in the victims’ brains?

“It was reported that there were changes on MRI scans of the brain, and that was definite evidence that they had brain damage.”

The paper led to headlines like “Brain abnormalities found in victims of US embassy attack.” But when I saw the actual paper, the final conclusion was there really was no abnormalities on the MRI studies. They were essentially within normal limits.

³ This clip uses remixed audio primarily excerpted from [The Sound: Mystery of Havana Syndrome](#), an investigative podcast by journalist Nicky Woolf (produced by Project Brazen).

The human brain has a huge amount of variation between people. These scans look well within the normal range of variance.

"I would so far consider the evidence to be intriguing and suggestive, but in no way conclusive."

"This conflation of brain anomalies with brain damage - yes you had anomalies, but it's not the same. And unfortunately the media has gotten that wrong."

The study finding brain damage was widely criticised.

"After reviewing and reading the paper I was disappointed because they really didn't provide any convincing data of brain injury or brain damage."

But... there's been more research since.

A 2019 paper concluded "a wholly psychogenic cause is very unlikely." Another study was even firmer: "Our findings confirm brain injury."

And even the loudest sceptics admit that psychogenic symptoms usually fade over time with reduction in stress. That's just not what we're seeing. The people who got sick are still sick.

[0:52] Introduce Discussion 3

There was a lot of material densely packed into that video, so let's recap:

- An initial study was interpreted to indicate that embassy staff had brain injuries, which mass psychogenic illness cannot account for.
- This suggests that Havana Syndrome had some kind of physical cause, whether it was a sonic weapon or a bioweapon, or whether it was accidental exposure to a neurotoxin (i.e. substances that are toxic to the brain). *Note that there is also another scientific theory⁴, not mentioned in today's video clips, that Havana Syndrome may have been caused by recurrent exposure to neurotoxins either from commercial pesticides, or from mosquito fumigation – noting that the Zika virus, carried by mosquitoes, was a major health concern at the time, and mosquito gas was sprayed in around the diplomats' homes.*
- Other experts reinterpreted that initial study, concluding the study did not reveal brain damage, but merely brain anomalies which were within the normal range of human variation. If it's true that there was no brain injury (brain damage), then the mass psychogenic illness hypothesis could still be plausible.
- Later studies seemed to indicate there *was* actual brain damage after all, once again calling the mass psychogenic illness hypothesis into question.

⁴ The neurotoxin theory was advanced by scientists at the Brain Repair Centre in Halifax, Canada. The results of their study were highly suggestive of cholinesterase inhibitor intoxication. Cholinesterase is an important enzyme in the human nervous system, and blocking it through an inhibitor can lead to death. Source: BBC News, Cuba's 'sonic weapon' may have been mosquito gas. <https://www.bbc.com/news/world-latin-america-49770369>

[0:53] Discussion 3

> SLIDE: What should we believe?

So, what should we believe?

Should we simply believe whatever the latest study shows? (If it shows there is brain damage, we should reject the mass psychogenic illness hypothesis, because brain damage must have a physical cause.)

Just imagine that somebody were to come along tomorrow and reinterpret the 'brain damage' from the new study as merely 'brain anomalies' (which is exactly what happened when the initial study got re-interpreted). Should we then switch our commitment to the new interpretation, reject the idea of there being brain damage, and take the mass psychogenic illness hypothesis seriously again?

Should our beliefs hinge on what the most *recent* scientific findings are, or the *number* of studies pointing to a particular conclusion, or the *quality* of those studies?

If *all* these factors count, how should we integrate them in coming to a conclusion?

[1:01] **Exposition** – fallacy of the 'argument from ignorance', or argument from a lack of contrary evidence

I want to take a few minutes to introduce a fallacy of informal logic that might apply to discussions of Havana Syndrome.

The fallacy (or incorrect argument) that I want to talk about is an argument based on a *lack of contrary evidence*.

> SLIDE: A fallacious argument...

The bad argument goes that something is true because it hasn't yet been proven false (or, that something is false because it hasn't yet been proven true).

It would be like saying, "There are ghosts on Mars, because nobody has proven that there aren't any."

Or, it would be like somebody last century (prior to recent discoveries) saying, "There's no life in the Pacific Ocean's Mariana Trench [*the deepest oceanic trench on Earth*], because nobody has discovered any life down there."

A problem with this kind of argument is that it doesn't recognise the possibility that there might have been simply not enough investigation done to find the piece of evidence that would disprove the thing believed to be true (or to prove the thing believed to be false).

Here are a couple of real-life examples of this kind of bad argument, again from the USA:

- In 1942, California's Attorney General noticed a lack of subversive activity by enemies of the USA, and he took this to be evidence that espionage by domestic spies was underway, and that these 'enemies within' would soon perform acts of sabotage against America. Here's what the Attorney General said: "I take the view that this lack [of enemy subversive activity] is the most ominous sign . . . It convinces me more than perhaps any other factor that the sabotage we are to get, the Fifth Column activities we are to get, are timed just like Pearl Harbor [*a surprise strike by the Japanese military upon the U.S. naval*

base at Pearl Harbour in Hawaii in 1941] ... I believe we are just being lulled into a false sense of security.⁵

- In 2002, the US Defense Secretary Donald Rumsfeld declared that the war in Iraq was justified on the grounds that, even though there was no evidence that Iraq had weapons of mass destruction, “Simply because you do not have evidence that something exists does not mean that you have evidence that it doesn’t exist.”⁶

These are poor arguments because in the context of making bold claims about the existence of extraordinary things, the onus is on the people who believe those claims to prove them. This is what we mean by shouldering the ‘burden of proof’.

Some people have argued, with respect to Havana Syndrome, that *the lack of evidence of a physical cause* of the illness is doesn’t prove that there’s *no* physical cause. Perhaps we just haven’t found the physical cause yet. This is an argument that has been used to challenge the mass psychogenic illness hypothesis.

The problem stems from the fact that mass psychogenic illness is a *residual diagnosis*. It’s what’s ‘left over’ after ruling out a bunch of other causes of illness, like bioterrorism, or infection, or toxic exposure.

In short, some people say it’s not logical to argue that since we can’t find a physical cause, it *must* be mass psychogenic illness.

An eminent clinical psychologist who has levelled this exact criticism against the mass psychogenic illness hypothesis is Jerome Singer, who said: “...you find a group of people getting sick, you investigate, you measure everything you can measure ... and when you still can’t find any physical reason, you say “well, there’s nothing else here, so let’s call it a case of [mass psychogenic illness].”⁷

But not everyone agrees with Jerome Singer’s criticism. There are vocal proponents of the mass psychogenic illness hypothesis who make powerful arguments for it being the most reasonable explanation of what went down in Havana.

In any case, our next video clip will raise some further questions to challenge the mass psychogenic illness hypothesis.

[1:05] [> SLIDE](#) > Play [‘Havana Syndrome’ clip 4](#)⁸ (3.5 mins) – *pulsed radiofrequency radiation*

Transcript of clip 4

There are still things about the cricket and psychogenic hypothesis that just don’t fit. At least, not as an explanation for everything. The sound came in a focused beam that they could step in and out of, and the sound would start and stop. The people nearby

⁵ Earl Warren, then California’s Attorney General, testifying before a congressional hearing in San Francisco on 21 February 1942.

⁶ Rumsfeld at a 2002 NATO Press Conference, quoted in Brown, D. & Key, B. (22 April 2019). ["You look but do not find: why the absence of evidence can be a useful thing"](#). *The Conversation*. <https://theconversation.com/you-look-but-do-not-find-why-the-absence-of-evidence-can-be-a-useful-thing-114988>

⁷ Singer, J. (1982), "Yes Virginia, There Really Is a Mass Psychogenic Illness." *Mass Psychogenic Illness: A Social Psychological Analysis*. Ed. Colligan et al. Hillsdale, NJ: Lawrence Erlbaum Associates. 21–31.

⁸ This clip uses remixed audio primarily excerpted from [The Sound: Mystery of Havana Syndrome](#), an investigative podcast by journalist Nicky Woolf (produced by Project Brazen).

couldn't hear it at all. We were all wrestling with this. What if the sound Doug heard in his garden isn't connected?

"If you say it's conceivable that this sound is a red herring, has nothing to do with what happened – that is totally a possibility."

"The fact that there was supposed tight localisation of the sound in space so that for some people they moved a couple of feet away and the sound abruptly stopped; they moved back and the sound abruptly came back. Or it was reported in some cases that someone heard a sound that was pretty loud but someone else in the immediate vicinity heard nothing."

If these reports were accurate, this sound wasn't behaving like, well, like sound. It wasn't going in through the ears. Not the way a sonic weapon would.

The point is, sound waves are extremely difficult to contain.

"When they covered their ears, or covered their heads, there was no perceived attenuation in the intensity of the sound."

"Lots of mechanisms can explain headache, lots of mechanisms can explain dizziness, but relatively few mechanisms are going to explain illnesses that begin in this dramatic manner with location dependence, and this repeatable locality feature."

"I pretty quickly suspected that pulsed radiofrequency radiation might be involved."

Rapid repeated pulses of microwave radiation can cause the brain to experience a sound as if from within.

At least one part of the US government knows somebody is blasting radio frequency energy at the embassy:

In 2009, Ken was posted to an embassy overseas. "It's a former Soviet country."

One day, when he gets to work, 'I go to sign into my FBI computer and there's no connectivity. It's a country that is intentionally attacking this communication link to either intercept comms, or just disrupt. You know, it was a radio wave attack."

The general consensus is, if it was an attack, pulsed microwaves – radio frequency radiation – fits closest. We've seen that microwaves can be projected. We know it's theoretically capable of causing this kind of brain injury. And we know that it can also cause the experience of a sound.

"In the past some of the clinical features had been elicited with pulsed radio frequency energy."

This does not, it's worth repeating, rule out a psychogenic event. In fact, the two theories are perfectly comfortable side by side.

For a mass psychogenic event, it doesn't really matter where the story comes from; whether, at the core of it, there's a grain of truth or not.

[1:09] Discussion 4

> SLIDE: Pulse radio frequency...

Does the pulsed radio frequency / microwave radiation theory seem plausible to you? What evidence seems most relevant to consider here?

Two kinds of evidence were mentioned in the video:

- Havana Syndrome patients described the sound having unusual qualities (it was highly localised; it didn't lessen when the person blocked their ears; other people nearby couldn't hear it; and
- Staffer Ken reports that on a previous occasion in a former Soviet country, a different embassy was targeted by radio waves in an attack to intercept or disrupt communications.

What do you make of these pieces of evidence? Are they persuasive?

Is one of those kinds of evidence (the qualities of the sound, or the previous embassy attack) more persuasive than the other?

Is it true that the pulsed radio frequency radiation theory is perfectly compatible with the mass psychogenic illness theory?

[1:16] > SLIDE > Play '[Havana Syndrome](#)' clip 5⁹ (2.5 mins) – *narratives and priming*

Transcript of clip 5

Right now there's still no way to definitely say what happened to these patients.

Government spokesperson: "We still are trying to determine the actual cause. We just don't have the definitive answers yet. This remains an ongoing investigation and I'm not going to get into that any further. We don't have all the answers yet, so I'm not going to create storylines for you that don't match up with the facts as we know them right now."

But here's the thing about storylines. Humans don't understand the world as a collection of random facts. We need to put them together, create a narrative to understand them.

We've got the list of hypotheses down now. In my head, I'm splitting them into two overarching categories. The first category is labeled "not an attack." Featured in this category is that this can all be explained away as a response to stress or something mundane like that – maybe even cricket noises. Which all got turbocharged; turned into a mass psychogenic episode by rumours, and the power of suggestion, a chaotic government response, widespread press coverage, and all that stuff.

Then there's the second category. The scary one. The one labelled "attack." Where the victims were hit by some kind of directed energy, even some kind of weapon.

Going through all these competing theories, my biggest takeaway is that basically everyone who's looked at this has come away with the conclusion they were primed to see. I keep coming back to this idea. That when you're a hammer... everything looks like a nail.

⁹ This clip uses remixed audio primarily excerpted from [The Sound: Mystery of Havana Syndrome](#), an investigative podcast by journalist Nicky Woolf (produced by Project Brazen).

Physicists see microwave energy. Neuroweapons experts see neuroweapons. Neurologists see neurological effects. Spies see spycraft. Psychologists?

"My specialty area is mass psychogenic illness and social panics, which is exactly what's going on here."

Then there's the politicians. And for a lot of politicians in America, particularly Republicans... Cuba is a big nail.

Donald Trump: "I do believe Cuba is responsible."

[1:19] Discussion 5

[>BLANK SLIDE]

Is it true, as the reporter claimed, that "Humans don't understand the world as a collection of random facts. We need to put them together, create a narrative to understand them"?

Facts can be true or false. Can *narratives* be true or false?

If not, how should we evaluate narratives?

(*Possible responses: plausibility, coherence, completeness, accuracy, explanatory power, etc.*)

What do you think about the reporter's conclusion that "everyone who's looked at this has come away with the conclusion they were primed to see"¹⁰?

Is there any way to avoid seeing the world through the lens of your area of interest or expertise? Should we try? (*Discuss priming and confirmation bias as risk factors to accurate judgement; and conversely, professional expertise as a strength.*)

Is there anything that could settle the mystery of Havana Syndrome once and for all?

Do you have a view on what caused Havana Syndrome?

If so, is your view based more on evidence, or on a hunch?

What are hunches? How reliable are they? Are they informed by evidence?

How can we know when we have enough information to come to a reasonable judgement or make a reasonable decision?

[1:40] End of workshop

¹⁰ Ironically, Robert Bartholomew and Robert Baloh, leading proponents of the mass psychogenic illness (MPI) hypothesis, make this same argument, but whereas the reporter used the argument to challenge all existing theories about Havana Syndrome *including MPI*, Bartholomew and Baloh use it in support of their MPI hypothesis. They write: "many of these complaints are common in the general population (e.g. fatigue, dizziness, headaches, memory problems) and may be reframed to reflect what doctors and government authorities are telling them. Hence, if you put these patients in a dizziness clinic, a headache clinic, a post-traumatic stress disorder clinic or an anxiety disorder clinic, there is a strong likelihood that they will be diagnosed with persistent postural perceptual dizziness, tension or migraine headaches, post-traumatic stress disorder, and anxiety disorder, respectively. The process of referring patients with non-specific symptoms to a clinic specialising in brain trauma can shape the symptoms into a specific pattern." – Bartholomew, R. E. & Baloh, R. W. (31/01/2020), Challenging the diagnosis of 'Havana Syndrome' as a novel clinical entity. *Journal of the Royal Society of Medicine*.

Optional further reading:

“The Havana Syndrome has become a strategic adversary’s dream: phantom causes and real, but poorly understood, effects; fear, suffering, confusion; recriminations without compelling material evidence; conflicting opinions among institutions we normally rely on for credible information; and a further disintegration of international trust. It may be the perfect metaphor for our current age of disinformation, doubt, decay of political norms and despair among liberal democracies about what the future may bring...”

– Terra, J. (30/11/2021). Havana Syndrome - The perfect disease for a post-truth world. *Balkan Insight: Reporting Democracy*. <https://balkaninsight.com/2021/11/30/havana-syndrome-the-perfect-disease-for-a-post-truth-world/>