

# UNDISCLOSED, the State v. Adnan Syed

## Episode 8 - Ping

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**[00:55] Rabia Chaudry** Hi, and welcome to the eighth episode of *Undisclosed: The State v. Adnan Syed*. My name's Rabia Chaudry. I'm an attorney and national security fellow, and I blog at SplitTheMoon.com. I'm joined with my colleagues Colin Miller, who is an associate dean and professor at the University of South Carolina School of Law and is also the blog editor of the *EvidenceProf* blog. We're also joined with Susan Simpson, who's an associate with the Volkov Law Group in D.C., and she blogs at *The View from LL2*.

So, last time we discussed the key piece of evidence that the State of Maryland used to corroborate Jay's story, and that evidence, as we all know, was the cell phone records. From what we understand, Adnan's case was actually the first of its kind in Maryland. Never before had cell site location data been used as evidence in a trial in the entire state. Remember, this was 1999. That's back when pagers were the norm and cell phones were still catching on. So the prosecution broke new ground by using cell evidence for two specific reasons: first, they use a call log to show who was called and when, which we're going to discuss another time, and more importantly, what towers were pinged to determine the location of the cell phone at the time the calls were made.

Now, it might surprise some of you to know that Susan, Colin, and I didn't know each other before *Serial* broke this case. And Susan Simpson first caught my eye when I read a blog that she wrote about the cell phone evidence. Uh, I think it was a blog she posted, uh, online and then somebody had linked it to Reddit or somewhere else, and I was fascinated. I thought, "Who is this person?" and "I got to, like, stay on top of her blog because she's bringing another level of analysis to the cell phone data and to the case in general."

**[2:40] Susan Simpson** When I first started blogging about *Serial*, I was all about the cell phone records. I was convinced that there was something useful to be had there, and that if only we could understand what the cell records were telling us, we could understand the case. I fell into the trap of believing that the answers could lie there in the cell phone records. It turns out they

don't. That's not how it works. That's not what the records were showing, and that's not what they can be used for. So after a lot of time spent going through all the files, all the cell records, all the data, I eventually realized what I know now: that although useful in a limited respect, the answers to this case do not lie in the cell data.

As a result, it feels almost silly to be talking about it now. What's the point? Any value that those records could have really had were thrown out by shoddy investigative tactics, and even Urick and Murphy would seem to agree with that. For instance, at trial at the closing arguments, Murphy argued the following:

"Think about it. The witnesses could not have known what cell site they were in when they were making calls and they certainly couldn't control that. They were probably unaware that the calls were even being recorded in this fashion. Do you think Jay Wilds when confronted with these phone calls said, oh, L608C, I better put Kristi's ["Not Her Real Name" Cathy - *Ed.*] house into this. No. The witnesses can't control it, and they weren't aware of it and that's why you can't get around this evidence."

[Closing arguments at second trial, Feb 25, 2000, p. 63]

And as Urick explained in his interview with *The Intercept*, "'Jay's testimony by itself, would that have been proof beyond a reasonable doubt?' [...] 'Probably not. Cellphone evidence by itself? Probably not.'

"But, he said, when you put together cellphone records and Jay's testimony, 'they corroborate and feed off each other--it's a very strong evidentiary case.'"

Problem is, those two things aren't independent. Jay was confronted with the cell phone records, and he changed his story to match those records. This isn't a theory. This is fact that was testified to by the detectives:

**[4:36] Kevin Urick**

What happened that made you want to speak to Mr. Wilds again?

**Detective MacGillivray**

I had obtained cell site information as a result of the cell phone information and, uh, I wanted to talk to Mr. Wilds a second time.

**Kevin Urick**

And did you speak to him a second time?

**Detective MacGillivray**

Yes, I did.

**Kevin Urick**

As a result of information you obtained from that, what, if anything, did you do?

**Detective MacGillivray**

He actually took us on a ride, and the cell site information that we had didn't correspond to his statement at first, at which time we narrowed the time frames down. He started to recall things a little better and, uh, took a second statement.

[Direct examination at second trial, February 17, 2000, pp. 157-158]

**[5:21] Susan Simpson** The cell phone records can in no way be considered corroborative of Jay's story. All the parties agree, Jay changed his story to match the cell phone records that the detectives showed him. And even if Detective MacGillivray hadn't testified to this fact, we could still prove it happened because when Jay changed the story to match the detective's script, he did so in a way that matched the parts of their script they actually got wrong--like the location of the tower that they thought, incorrectly, was next to Cathy's.

So, if the cell phone records can't corroborate Jay, what use do they have? The prosecution probably would have argued that even without Jay's story the cell phone records are sufficient to prove that Adnan was in Leakin Park at 7 p.m. on January 13th, 1999. That was when two phone calls came in, one at 7:09 and one at 7:16, and both of them originated or triggered or pinged--I'll use those terms interchangeably for purposes of this episode, but those aren't the technical terms--on a tower that was on the northern edge of Leakin Park.

So, we have these two calls that the prosecution can claim show that Adnan was in Leakin Park on the same day that Hae was murdered and presumably buried in Leakin Park. Problem is, we know now from the lividity evidence and from Jay's own statements, in which he has publicly recanted his story about the timing of the burial, that the 7 p.m. burial didn't happen. It's contradicted by the medical record, and Jay himself says it never happened. So there's no reason to think the 7 p.m. calls are in any way related to a burial in Leakin Park.

So, why are we even talking about the cell phone evidence? I mean, it's not corroborative of Jay; it was used to support a narrative that couldn't have happened and even the star witness agrees didn't happen. So what's the purpose? Well, even if its factual use is limited, it was still a pretty huge piece of the prosecution's case. So, let's start there.

To show what we're going to be talking about, let's start with what the evidence looked like and what they were using to draw all these conclusions. Now, when you have a cell phone and you make a call, that call is going to originate or ping or whatever term you want to use on a specific cell site or cell tower. This information then gets recorded in the phone company's billing records, so later on you can go back and pull up records from a phone and show, well, at 5:00 on Sunday, it made a call, and the records show that call was routed through tower 1234.

A party in litigation can then use that data to say, "Well, we know then that this person with this phone was near tower 1234 at 5:00 last Sunday." Or, at least, that's how they'd like to be able to use it and how it often gets used in courts today.

So, for this case, a few days after Hae's body was found, the detectives requested Adnan's cell phone records, and they got records back showing a list of calls that were made, the times they were made, and the tower that the call first went through when the call was made. Now, a single call can be on many towers. It's called a handoff when the phone, say, moves to a new location, and a new tower will take over from the previous tower. So the fact that a call started on one tower does not mean it will end on the same tower.

As we'll discuss later though, in this case, the State only requested information about the very first tower that any particular call pinged on. They could have gotten more data; they didn't. So, we have all the calls Adnan's phone made on January 13th and then the list of cell sites that were the very first cell sites that each call was either made or received on. Now, in addition to using Adnan's cell phone records themselves, at trial the prosecution also used an expert witness who was an RF engineer that worked for AT&T. They had this expert witness perform what is called a drive test, where he drove around and made test calls and recorded what cell sites those test calls originated on.

**[09:21] Colin Miller** And, by the way, an RF engineer, that stands for radio frequency engineer, and so that's a type of electrical engineer. And they deal with devices like cell phones that are designed to operate in the radio frequency, the RF spectrum, and so that's why this expert was dealing with the cell phones and the cell towers.

**[09:40] Rabia Chaudry** So, from what we know, the cell phone expert used by the prosecution, you know, the way he conducted the drive test was in and of itself a little bit odd and--I can imagine--may have been a little awkward, but the State's cell phone expert was in a car with both prosecutors, and they drove to lots of different locations. And on his drive test equipment he would read off, uh, the cell tower that would be pinged as he made the calls. And he wasn't doing any independent recording himself. One of the prosecutors, uh, Murphy, was actually recording the cell towers pinged as they went along.

**[10:13] Susan Simpson** Yeah, so... Murphy is writing down the numbers that the cell expert's reading out, but she's writing them down by hand taking notes and not using the official record of all these sites that the expert was testing. The problem with this is that it means there's no record of exactly where testing was done, which is a big deal when even small movements can cause radical changes in results as to what cell tower's being used.

In this case, however, rather than having the expert do his testing and have his results introduced at trial, because the prosecution tried to avoid at all cost ever putting anything in writing because if they did so they would have to give it to the defense, they told the expert, 'Nah, don't worry about that. Don't record your results. We're just going to write down the

numbers as you read them off.' Of course, this means that we don't actually know where the car was at the time that any given result was made, and it also means the prosecution had full power to choose which results to report. Now, this is crazy. If you're trying to pretend this is scientific, that there's some kind of methodical, useful way of using cellphone data to interpret movements, what you don't do is have the prosecutors take hundreds of thousands of results and toss out every result they don't like and pick and choose 13 to keep. There were many, many test calls made that day by the expert. They drive around all through West Baltimore trying to recreate Jay's crazy ass day. Out of these thousands of results they got, literally 13 were written down by Murphy, and she chose which ones.

When the defense was given the expert's report, all they got was this list of 13 cell sites out of thousands, so the data itself is useless. There's no way to claim that any sort of reliable conclusions can be drawn from data that has basically been cherry picked.

**[11:58] Colin Miller** That really should have been grounds for Gutierrez to move to have this deemed inadmissible because not only does the expert have to use reliable techniques or technologies, but it also has to be reliably applied to this case, and this would be like, say, having crash tests to determine the impact rating on a car and cherry picking what results. That's not ever something that an expert's going to do. And so, Gutierrez, knowing this information, should have moved to exclude this evidence based upon the cherry picking of these calls done during this drive.

**[12:32] Susan Simpson** Well, she had no idea how the data was obtained or that this cherry picking had occurred. I mean, she basically knew nothing. She kind of learned a little bit as the trial progressed, but she had a very, very limited understanding of what all this involved.

But in addition to the fact that it's just not scientific and it's not good data, the way the prosecutors did the drive testing here opened up the results to contamination: whether deliberate or unintentional, when you have someone reading out numbers and another person writing them down with no other record of where they come from, it's very easy for mistakes to be made. We know they were made. As we'll discuss later in more detail, at least one of the numbers that Murphy wrote down didn't match what the expert actually read off. But all that's kind of irrelevant because every cell expert I have spoken to agrees: trying to interpret cell phone records based on drive testing done 10 months after an event is pointless and worthless. The changes in the network, the changes in conditions, all of that makes it impossible to use drive test data from 10 months later to say where the phone had been 10 months before when certain calls were made.

**[13:37] Susan**

So, how many cases have you been, or has your firm been, a... an expert witness on?

**Michael Cherry**

I think we've been involved in 50 or 60 cases. I'm not sure. Maybe it's 40. I, I really don't know. We don't count.

**[13:50] Susan Simpson** To find out more about how cell phone location data has been used and continues to be used in courtrooms throughout the United States, I spoke to Michael Cherry from Cherry Biometrics.

**[14:00] Susan**

They wanted the cell phone expert to drive around to the locations where Jay, the witness in this case, had said he'd been and to make test calls.

**Michael Cherry**

But you can never recreate the conditions, the probabilistic conditions that, that existed the, the day of, the day, you know, at the time of the event because the load on different towers is always going to be different. If it's SINR, signal-to-interference noise ratio, you'll never get that same setting. So wh--what's the point in driving around later?

**Susan**

If you do it a drive test immediately after, is it more accurate, or is there any way to know--

**Michael Cherry**

No. No, it's all probabilistic. You don't know what's more accurate. But the odds of getting, you know, the probability of getting something that closely approximates, uh, what happened th--on a different day in a different time are pretty slim.

**[14:57] Rabia Chaudry** So, let's talk a bit now about how the prosecution actually used, or misused, the data in this case at trial. Now, although the prosecution made expansive claims in closing arguments about the significance of the cell data, the actual testimony entered into evidence during the trial was really narrow in scope. For example, the prosecution's expert witness testified that he could verify that, if shown a specific location, whether or not it could have made a call on a specific tower. However, what he could not do is show that any particular call was made in any particular location. He actually said this at trial.

**[15:30] Cristina Gutierrez**

You cannot tell us where the cell phone that made any call, on that exhibit I believe is still in your hands, was at any point any call was made, can you?

**Abraham Waranowitz**

No.

**Cristina Gutierrez**

Did you hesitate to [*inaudible*]?

**Abraham Waranowitz**

Yes, I did.

**Cristina Gutierrez**

But your answer is no, isn't it?

**Abraham Waranowitz**

My answer is no. I cannot tell where a cell si--a cell phone is when it originates a call.

[Cross-examination of Abraham Waranowitz at second trial, February 9, 2000, pp. 145-6]

**[16:09] Rabia Chaudry** So, in other words, if the cell expert was informed that Jay had testified--to take a hypothetical example--that a particular call made while he was at Woodlawn High School, the expert could say whether that testimony was possible based on the cell phone records. If the cell expert was simply shown the cell record for that call, he couldn't say whether it had been made from any specific location at all.

So, in addition to the background info on the cell technology, the prosecution had its expert testify to exactly four facts in Adnan's case: number one, that Jay's story about paging Jenn from Edmonson Avenue was consistent with the cell phone records; number two, that Jay's story about going to Cathy's was consistent with cell phone records; three, that Jay's story about going to Gelston Park [actually, Gilston Park - *Ed.*] was consistent with cell phone records; and four, that Jay's story about receiving calls at Leakin Park was consistent with the cell phone records. That's it. Full stop. He did not testify about the cell site locations for any other calls beyond these four examples.

**[17:09] Susan Simpson**

Problem is, three of those four examples were manufactured by the prosecution. They never happened, at least not in the way that the expert was asked to testify. Let's start with Gilston Park.

At trial, Prosecutor Kevin Urick got the cell expert to confirm that his testing and the cell phone records were consistent with a hypothetical series of calls that Jay never testified to.

Question: "Now, if there was testimony that someone had dropped someone off at [a] school to go to track practice and the person who had the car went to Gilston Park, parked for a while, and then went back to pick the person up, if [they had] called at Gilston Park, one or more incoming calls were received [...] and then you found [that] cell phone records that had calls from the L654 cell site, would that functioning of the AT&T network be consistent with the testimony?"

[Direct examination at second trial, February 8, 2000, pp. 102]

The cell expert responded, "Yes." Except Jay never actually testified to any of that. Jay testified that he was 3.6 miles away at the time of those calls... at Cathy's apartment.

At trial he testified in direct to this:

Question: "And what did you do at that point?" Meaning, after dropping Adnan at track.

Answer: "I left, and I went to [Kristi's] house."

[...]

Question: "And what, if anything, happened next?"

Answer: "It was real short, maybe like half an hour. I received a phone call from [Adnan] saying that he was at school. I went there [and] I retrieved him, and then I came right back to [Kristi's] house."

[Direct examination of Jay Wilds at second trial, February 4, 2000, p. 144]

**[18:44] Colin Miller** Now, Susan, if I'm correct, Gilston Park was part of one of Jay's recorded interviews. Maybe the second recorded interview on March 15th?

**[18:54] Susan Simpson** It was mentioned briefly, except Jay has never said that a call was made or received from there. So in no statement that Jay has given has Adnan called to say track was over while Jay was at Gilston Park.

**[19:05] Colin Miller** Right. So, basically, Urick is referencing Gilston Park, which Jay never brings up at trial. He did bring it up earlier in an interview but not in the same context that Urick is raising at trial.

**[19:25] Susan Simpson** Next example: Urick had the expert testify to the following:

Question: "Now, if there were testimony that someone were in a car traveling westbound on Edmondson Avenue and that two calls were made on an AT&T Wireless [...] phone, and you found cell records that had first [L653A] and then a [...] minute or two later a call originating [on L653C], would that functioning of the network be consistent with the testimony?"

Answer: "Yes, that would be consistent."

[Direct examination at second trial, February 8, 2000, pp. 100]



Urick's question refers to the 8:04 and 8:05 calls, which were to the number for Jenn's pager. But Jay testified that he thought he was at Westview Mall when he paged Jenn, which is not consistent with L653C or A.

**[20:05] Colin Miller** And that's not an insignificant part of Jay's story because recall that Jay says they're at Westview Mall dumping the shovels used in the burial at one of the dumpsters there. And so, to say that this is consistent with Jay's story at all--no, Westview Mall is not consistent with the L653 tower, and therefore, this is an incorrect assertion of the facts where really this cell tower ping does not match up with Jay's story.

**[20:29] Susan Simpson** Well, Jay's story there was already a mess because he says he got to Westview Mall and paged Jenn to pick him up from his house. So that's the part where Jenn, again, does not match Jay's story in any significant respect because she says she picked him up at Westview Mall, not that he's paging her from there.

Anyway, that brings us to the third example out of the four that the cell expert testified to at trial. And that's where Urick had the expert testified to the following:

Question: "Now, if there were testimony that at [Kristi's apartment] two people were visiting other people and two or three incoming calls were received on [an] AT&T wireless [...] phone at that location, and the cell phone records indicated the cell sites you listed for [...] 655A and 608C, would that functioning of the AT&T network be consistent with the testimony?"

Answer: "Yes."

[Direct examination at second trial, February 8, 2000, pp. 101]

Problem is, that is inconsistent with the cell expert's actual results. He did not find that a call from Cathy's would be made on L655A. Although the report that the prosecution wrote up and gave to the defense claimed that the expert's testing had found that a call made from Cathy's could be made from L655A, that wasn't true. His testing found that L655B was triggered from the area near Cathy's apartment.

So, a cell tower or cell site has typically three sectors, and those sectors represent three different antennas that are pointed in separate directions although their ranges overlap at the sides. So you have the A antenna, which usually points kind of north; you have a B antenna, which usually points more towards the south; and a C antenna, which points more towards the west, although they're all--most of the time--spaced equally apart from one another, so each would be about 120 degrees from each of its neighbors.

So, L655A and L655B would be two antennas in the same tower each pointing in different directions. So, in the report that was given to the defense, the prosecution wrote down that

L655A was triggered at Cathy's apartment because there was a phone call made at a little after 6 p.m. on January 13th that triggered L655A. And according to the prosecution, the phone was at Cathy's apartment at that time, so therefore, L655A has to be triggered from Cathy's apartment. Well, whether it was an accident or not, that's not actually what the expert found. His testing, which we can see from some maps that we'll explain later, shows that he actually triggered L655B.

Now, it could be a coincidence; it could just be that while Murphy's writing down what the expert was reading off from his test equipment, she made a typo and wrote down A instead of B. But it's hard not to be suspicious when someone makes a typo that just happens to fit their case when the real result would have contradicted it--at least, according to their interpretations of the cell phone evidence.

**[23:27] Colin Miller** Yeah, I mean, it's almost like you had a medical examiner performing an autopsy and stating out to the prosecutor a certain type of hemorrhage or a, a certain type of illness. And, obviously, there's going to be some problems there. That's why we have the rule against hearsay. We've all played that game of telephone where things change when you tell it to someone else. So, yeah, was it a mistake? Was it not? This is exactly why this was completely improper and unreliable, the way that the prosecution conducted this entire cell tower investigation.

**[23:58] Susan Simpson** Either way, the testimony that the expert gave--not based on reality because according to his testing, those calls weren't consistent with testimony that the phone was at Cathy's at that time.

So, even though Jay was with the phone for 22 of the calls on January 13th, at trial the prosecution only had the expert confirm that four of those calls matched Jay's story. Of course, of those four, three of them--as we just discussed--are flat out wrong. The cell expert verified testimony that Jay never gave or verified cell sites that he didn't actually find in his testing but the prosecution had mistakenly claimed he'd found.

So, that brings us to the fourth call that the expert testified to at trial, the Leakin Park call or calls. The expert testified that the 7:09 and 7:16 calls were consistent with calls received at the burial site on a sector called L689B, the Leakin Park tower.

Of course, there's problems there, too. There never was actually any testing done at the burial site where Hae was found. Instead, as with all locations, the expert drove around with the prosecutors and took readings from his car. They didn't go into buildings; they didn't leave the road to go out into the woods to check places where Jay said they'd been. And this is a problem because, well, for one, being in a building could affect cell coverage. If a wall is blocking a cell site or a certain tower, that call will naturally originate on a different tower instead. So, yeah, the fact that the testing's done outside on a street instead of in a building does affect the results,

and we have no idea what the expert would have found if he actually went to places to replicate those calls.

Likewise, he never went to the burial site. The burial site was, depending on which map you use, 114 to 127 feet from the roadside. And rather than getting out of his car and trekking his equipment back into the woods, they drove by and took testing from the roadside. However, although the expert did testify that L689B was the only tower that could really get into that area, he also testified that the cell coverage in all of Leakin Park was extremely spotty and a very difficult problem they'd been addressing.

So, to begin with, we have an issue of whether or not there would have been coverage in Leakin Park along Franklinton Road. But even aside from Leakin Park as a whole, at the specific location where Hae's body was found, it's unlikely that any coverage would have existed because of a giant pile of dirt that was in between the line of sight of the burial site and L689B, meaning you very likely would not have had a chance of getting or making a call while burying a hole [sic] at the burial site in Leakin Park.

**[26:39] Colin Miller** Yeah, I mean, this being such a huge part of the prosecution's case, you'd think if they wanted to really determine whether this call could have been made, made every effort to go out there--at least as close as they could to the alleged burial scene on January 13th--to test whether there was reception and whether these calls could be received in Leakin Park.

**[26:59] Susan Simpson** Well, drive test equipment is usually or often built into the car itself, which could be what happened here, which means that it wasn't possible to get closer to check in the first place. But, again, this is all assuming that you're buying into the narrative that drive testing done 10 months later has any validity whatsoever. It doesn't. The network changes too much. In fact, the AT&T network, the wireless network there, only began in '97 or even '98, which means it was a year or less than a year old at the time of Hae's murder. So there were rapid changes being made as the network was put into place, fixed, expanded upon, and made functional. And 10 months after that fact, you're not going to have the same network that you had 10 months earlier.

So, what was the point of all that drive testing, and what did it show for Adnan's case? I showed Michael Cherry the prosecution's amended disclosure in which they summarize the results of the cell expert's drive testing and asked him to weigh in on its evidentiary significance.

**[28:01] Susan**

It's a list of 13 cross streets or vague geographic locations and a statement about which tower and sectors the call was made [on] when the expert try to make a test call.

**Michael Cherry**

Yeah, I'm sure this is very true. But what's its relevance?

**Susan**

That was my question for you. What use is this document for--

**Michael Cherry**

None. It's irrelevant. I mean, at least it proves that they weren't in the, the Amazon.

**[28:31] Susan Simpson** So, anyway, that is all the factual data that the cell expert presented at Adnan's trial, and it doesn't show much of anything because it was either based on false facts or facts that weren't really tested in the way the prosecution tried to imply.

Now, it should be noted that the problem here wasn't with the actual testimony given by the expert. Like they said in *Serial*, the way the technology was explained was right: the cell expert did as he was asked to do and gave answers based on the information he was given. He had no knowledge of Jay's testimony or how the prosecutors had manipulated the data or that he was being asked to verify events that had only ever existed in the prosecutors' heads. To make things worse, Gutierrez didn't understand the technology and had no way to put it in its proper context. And worse yet, while at trial, she did nothing to correct the prosecution's factual errors.

So, yeah, despite this very limited testimony, which, again, only had four data points, the prosecution was very generous--to put it mildly--in how they use this evidence in their closing arguments. For instance, Prosecutor Kathleen Murphy basically just rewrote all of Jay's testimony to fit call records that didn't actually exist either, like the Leakin Park calls. Here's what Murphy argued in closing:

"So, at [7 p.m. Jay] pages Jennifer Pusateri. He leaves that confusing message that she tells you about. Jay Wilds and the defendant go to Leakin Park. [...] And the next phone call, calls 10 and 11," that's 7:09 and 7:16, "are crucial. Jay Wilds tells you that [...] they're entering the park preparing to bury the body of Hae Lee [and] Jennifer Pusateri returns that call."

[Murphy's closing arguments at second trial, February 25, 2000, pp. 70-71]

Well... Jay didn't say any of that. Jay said that at 7 o'clock they were already in Leakin Park, and he was parked on Briarcliff Road when he made the page to Jennifer Pusateri. However, the 7 o'clock call was made on the Woodlawn tower, so if you're buying their theory of how cell phones work, it was impossible for Jay to have made the 7 p.m. call from where he claims he was. Second, Jay never testified that they were entering the park when he received the 7:09 and 7:16 calls. Although Murphy is correct that those calls make more sense because there's more likely to be reception at the entrances of Leakin Park than Leakin Park itself, Jay said that they were at the burial site when those calls were made. But since Jay's story doesn't make sense--who answers the phone when they're burying a body--she substitutes it with a better story in closing.

Another example is how Murphy describes the Nisha calls. At closing, Murphy said that “[t]he defendant gets Jay to follow him to the I-70 parking lot where they leave Hae’s car, and then they head back towards Woodlawn from the Park and Ride together. It’s at that point at 3:32 p.m. that the defendant calls [Nisha] in Silver Spring. She says hello to Jay. We know [that] they are together at that point in time.” Dot, dot, dot... “This occurs in the coverage area of L651C, the pink area, which would be consistent if they were heading back towards Woodlawn from the I-70 parking lot.”

[Murphy’s closing arguments at second trial, February 25, 2000, pp. 66-67]

She gets two things wrong here: first, Jay never said any of that. He said the Nisha call occurred *after* the Patrick call, which was at 3:58. And he said that it’s after they made a trip to Patrick’s to get weed, but it turned out Patrick wasn’t there. So they went back up north, went to Forest Park, bought some weed from a corner guy, then head back towards school, and by Forest Park golf course, that’s when the Nisha call happens. Second, neither that story that Jay gave or the story that Murphy made up for closing arguments is consistent with the cell phone records because if you’re driving from the I-70 parking lot to the school, then, again, if you buy the prosecution’s theory of how cell phones work, that’s not consistent with L651C.

I could go on; I’ve probably already beat this horse to death. But point being, despite having such small amounts of factual evidence introduced about the actual cell records, the prosecution decided to spin it into a great narrative about how all the phone records support their witnesses and are consistent with the story being fed to the jury--even though that story didn’t come from the witnesses and the records don’t actually match it.

**[33:01] Colin Miller** Let’s now turn to the admissibility issues regarding the cell tower evidence at Adnan’s trial. In 1923, there was a famous case named *Frye* that set the standard for the admission of expert evidence that still governs in some jurisdictions, including Maryland, today. In the *Frye* case, we had a psychologist; his name was William Moulton Marston. His wife observed that her blood pressure tended to climb when she got mad or excited, and so Marston based upon that decides, “I’m going to create the first modern lie detector, and it’s going to be based upon spikes in systolic blood pressure.”

And if you think about the blood pressure you get at the doctor’s office, you have one number over another like 120 over 80. The systolic blood pressure is that higher number, so the 120. And so, in the early 1920s, James Frye is charged with murder in D.C., and so he reaches out to Marston who has created this first modern lie detector. He takes a lie detector, and he passes in that he claims he didn’t have anything to do with the murder. And so Frye then seeks to have Marston testify, but the court refuses. And the court says this lie detector doesn’t have general acceptance in the forensic science community, and for that reason it’s inadmissible.

And so, in the wake of *Frye* in 1923, courts across the country say, “We’re going to apply this *Frye* general acceptance test. If the technique or technology in question doesn’t have general

acceptance, it's inadmissible." Sort of an interesting side note: Marston later creates the superhero Wonder Woman, and her Lasso of Truth is the fictional version of the lie detector test, and yet Marston is never successful in having his lie detector evidence being admissible in court.

Okay, so fast forward to 1995. In 1995, we have a case known as *Daubert*. And in the *Daubert* case, we have plaintiffs suing Merrell Dow, claiming the drug Bendectin is causing birth defects. And they seek to have an expert testify about animal studies in which Bendectin caused birth defects in certain animals. And the Supreme Court, in addressing this, looks at the *Frye* test and says, "We don't really like the general acceptance tests anymore. It, on the one hand, lets in too much junk science, and on the other hand, we sometimes having emerging technologies and techniques; they don't yet have general acceptance."

And so, therefore, *Daubert* says, "We're going to create the idea of a judge as gatekeeper, and that judge, regardless of what the expert says, should independently assess the evidence and reliability in deciding what evidence comes in and what evidence goes out." And so, for instance, the arson community might say, "Here's a burn pattern analysis that can show arson versus an accidental fire." Even if the arson community accepts it, the judge with a fine-tooth comb can reject it.

On the other hand, let's say that we have an expert, and they're trying to identify someone based upon the vein pattern in their hand because their face is blurry in a surveillance video. Well, that's an emerging technology, and even if the biometric community says it's not yet generally accepted, the judge can overrule that and can decide this evidence should come in. *Daubert* is what currently applies now in federal courts. At least 30 states have adopted it, but again, Maryland still applies the old *Frye* test, and so what's the significance here in terms of what Adnan's attorney Cristina Gutierrez should have done?

Well, as we said at the introduction, this was, as far as we can tell, the very first case in which the prosecution was trying to introduce cell tower evidence. In that circumstance, Gutierrez absolutely should have asked for what's known as a *Frye* hearing. That would be a hearing before trial in which these issues are hashed out and the court decides: "Should this evidence come in?"

Uh, instead, what Gutierrez does is she sort of brings it up a trial and, in fact, she almost wins the argument. The judge almost excludes the evidence, but it's sort of this from-the-hip argument that Gutierrez makes at trial. I think a well-developed argument by Gutierrez in this case very well could have led to the cell tower evidence being deemed completely inadmissible. And as we'll get into a second, when we're discussing those ever important Leakin Park pings, there's a great argument that Gutierrez could have had this evidence excluded all together.

**[37:18] Rabia Chaudry** All right, so from what I understand, Susan and Colin, we know that the drive test data was not collected in a really methodical manner. It wasn't properly recorded by a

machine. For example, we don't have any kind of official record of it. It was read out. Some of the data might have been written down incorrectly. And then we also know that in court even, the three of the four points that the prosecution raised wasn't even supported by testimony, but... and also that, um, apparently, the cell phone expert did not even actually go into Leakin Park to test for coverage there.

Let's say none of these issues had actually happened. I mean, let's say all that stuff was done correctly. I mean, would that have given us sufficient data, I mean, and been admissible in court? Like, how is this used in other cases where, if none of those problems existed, like, could it have been successfully used?

**[38:06] Colin Miller** Yeah, it's interesting. There was a case, actually, last fall, *Roberts v. Howton*. It was a case out of Oregon. It involved a victim who was manually strangled. The victim had previously been in a relationship with the defendant. Pretty much just circumstantial evidence connecting the defendant to the crime, but there were these cell tower pings that pinged this tower in Oregon, and the claim was that the defendant was dumping the victim's body in this park.

And, actually, last fall the Oregon court reversed the conviction, and its conclusion basically was, A, that cell tower pings are not GPS. They give you an idea that the phone could be... close to that tower. It could be two miles away. It could be five miles away. It could be 10 miles away, so it's not GPS. And then, interestingly, in terms of what Gutierrez did or, should I say, didn't do at trial, what they found was ineffective assistance of counsel, that defense counsel, even though this was several years ago, should have known how important these pings were to the defense case and was ineffective, constitutionally speaking, by not hiring their own expert to basically explain to the jury all the problems with cell tower pings and how they're not in any way a GPS.

**[39:26] Susan Simpson** Mike Cherry's team actually acted as the defense expert in the Lisa Roberts case, and I talked to him about it, and here's what he said about Lisa's case and how that data was used by the prosecution to obtain a guilty plea:

**[39:40] Susan**

In this case, which was in 1999 in Baltimore and possibly the first case in Maryland to use cell phone record evidence, um, to determine location, we had a single expert from the prosecution who was an RF engineer with AT&T. The defense did not call their own expert at trial. Is that something that you commonly encounter?

**Michael Cherry**

Not any longer. I mean, in the Lisa Roberts case, where Lisa was in jail for 12 years, I believe, that was the same situation. They took poor Lisa. W--you know, they said, 'We have the cell phone evidence, and it'll show that you were right at the crime scene, and, and if--and there's a murder. You know, there's a death penalty if you're convicted, and

so you better confess to this crime because otherwise the cell phone evidence is going to prove that you're right at the location of the crime, and then they'll probably issue a death penalty. So if you want to save your life, you better plead guilty.'

And this is what she did, and she got a life sentence. And no one called in anyone to refute what the person from--I think in that instance it was Verizon--what the RF engineer at Verizon was going to say.

**[40:54] Susan Simpson** Unfortunately, Lisa Roberts is far from being the only defendant to wind up in prison due to the misuse of historical cell site data. But cell phone location data is a billing record, not a scientific test result. Its use as a way of tracking a phone's movements has no application outside of the courtroom, and its usefulness has only ever been evaluated with respect to its ability to win a case.

**[41:17] Michael Cherry**

The thing with the expert witness world, the, the thing about it is it's like a very different world, as far as we're concerned, than the scientific community. There's a lot of myths that, that take, uh, that take, that take place, and, and things are, are not as anywhere near as thoroughly vetted as they might be in the scientific community.

**[41:39] Susan Simpson** This problem is by no means limited to cell phone location data. In fact, it's a reoccurring problem with forensic science in general, and the way in which it's been used in courtrooms.

**[41:48] Michael Cherry**

The hair follicle analysis and then there was the bullet lead analysis and, for that matter, even fingerprints are grossly oversold. So there's all these things to happen in there that just don't happen in the scientific community, you know? Things just get oversold in the criminal justice system that just don't--you know, wouldn't, wouldn't be acceptable in the scientific community. It's a different level of standard. You know, lots of people in the criminal justice system and, uh, but for the grace of God, they can end up in jail when the evidence really wasn't there. You know, and that's--it's just, it's really very sad.

**[42:27] Susan Simpson** Given these problems and the lack of empirical scientific testing on the use of cell phone location data, I asked Cherry whether its use can ever be valid in the courtroom.

**[42:36] Susan**

So, can cell phone location data be used at all to track someone's movement or to track their location?

**Michael Cherry**

At a gross level, sure, but in an--when you start getting very close and specific, absolutely not.



**[42:47] Susan Simpson** And the reason why not is that there are just too many variables that can affect how a cell site is going to connect to a given phone for a given call, things that can't be predicted and things that can't be determined when looking back at the records after the fact.

**[43:00] Michael Cherry**

So, it just doesn't belong in the courtroom unless you can answer all of these questions. And since they can't, it doesn't belong there.

**Susan**

Mm-hmm.

**Michael Cherry**

It's just someone's best guess.

**[43:19] Susan Simpson** So, yeah, even when you don't have this drive testing issue going on, the data still has problems. At best, the data could be used as the cell expert said it could be used in Adnan's trial, that it can be used to say, "Well, this witness's testimony is possible based on the cell records." But it can't be used to say, "Well, here's a call that was on this tower. Therefore, we know that the witness was here, or we know that the caller was here."

**[43:44] Colin Miller** Yeah, it's sort of like if I said I went to see *Jurassic World* the other night, and you looked and said, "Oh, well, this movie theater is the closest to your house. You probably went there." Well, maybe it was sold out there; maybe there is a theater with better seating or better sound a few miles away. Maybe I'm meeting friends at something closer to their house. So, it's something where, yeah, it could be that you were close to the cell tower when it pinged that tower, but for any number of reasons--the tower's down, there's a stronger tower, the phone has some issues--there's any number of reasons why this person might be miles away from the cell tower that it pings.

**[44:20] Susan Simpson** This data is probabilistic, as in "Here's a guess we can make based on what we know." And if you use it in that respect, it's fine. It can be useful, even, if potentially misleading. It's taking the next step and saying where someone was that causes this data to be a farce.

**[44:36] Michael Cherry**

So, what happens in, in the expert witness world, as far as we can see, is a lot of things that we would call probabilistic. In other words, "It's possible this...", "This is possible...", "That's possible..." are treated as if they're fact, deterministic. And that's the big problem in that expert witness world that you don't see in the scientific community.

**Susan**

So, how have you seen prosecution witnesses use cell phone data in criminal trials?

**Michael Cherry**

B--both prosecution and defense are, are trying to say that, that the, that the pho--that the nearest tower is the clearest tower.

**Susan**

Oh, so defense is saying it, too?

**Michael Cherry**

Yes, we started off with defense, but now we're starting to work with prosecutors, as well, because everyone is out there saying, "Well, the nearest tower is the clearest tower." And it rolls off your tongue. It's a great phrase, but it's just not true.

**Susan**

Is there any empirical data to support the claims of these witnesses that the closest tower is going to be the, the tower that a call is made on?

**Michael Cherry**

No. No, that's just fantasy.

**[45:43] Colin Miller** Yeah, and there's another case, too. This was a few years ago out of Illinois. It was *United States v. Evans*. It was a kidnapping case, and what the prosecution tried to do at trial was to claim that you could use these cell tower pings as a GPS, and the court basically said, "No, that's, that's improper. It can give you this, again, probabilities, but you can't use it to pinpoint locations. That is completely improper."

**[46:09] Susan Simpson** To explain why this data doesn't work the way the prosecution wanted it to work, let's start with what seems to be maybe the most basic part of cell site data, the location of the towers themselves. Without knowing where a tower is, there's just no way to interpret a call detail record, or a CDR, because all you get in the billing records is a list of tower designations, and you need maps to show where those tower designations matched up in the real world. Now, that sounds easy, right? You know where a tower is; you match it to a number. Good to go. Well, no, not at all. Something as basic as determining a tower location is way more complicated and way more problematic than you'd expect.

So, the reason this is is that the cell phone companies, the telecoms, they're not involved in the law enforcement business. They're just there with their billing records, and when law enforcement comes and asks them for data, they hand it over. They're not usually told why the data is wanted or what it's for, which affects what data is given over.

Say you're AT&T, and you have law enforcement say, "I want a list of cell sites for this area." What do you do? You give them a list of cell sites. You want a map? Here's a map. But the cell phone company hasn't been told what the maps are for, what they're needed for, or what the

relevant dates are, which means the map they're handing over may or may not actually correlate with the type of data that the law enforcement was looking to obtain.

In this case, let's start with the very first map that AT&T provided the detectives. In this map, which was a black-and-white street map with towers overlaid on it, um, which was sent to Ritz at his request, here's a list of all the towers that are incorrectly placed: L651, the Woodlawn tower; L653, the Edmondson Avenue tower, the one that the prosecution claimed had been pinged immediately after Jay and Adnan ditched Hae's car; L660, not actually pinged on January 13th, but according to this map that AT&T handed over, it was located directly in between the two Cathy towers and should have affected how a call from Cathy's got originated; and L654, this is the false Cathy tower that we've discussed previously, the one that should have been just south of Woodlawn but was instead listed next to Cathy's, too, which caused Jay to change his story to say he went to Cathy's three times that day.

**[48:35] Rabia Chaudry** So, I have a question.

**[48:36] Susan Simpson** Mm-hmm?

**[48:37] Rabia Chaudry** This is the first map that AT&T provided. What about down the road?

**[00:48:40] Susan Simpson** Well... They were better, I believe? They're certainly different. Um, for some of these towers, it's actually not possible to be certain which of the maps had the right tower locations. For some it is, though. For instance, L653. It's very easy to know which of the maps has the right tower location because the L653 on the initial maps and the GPS locations that AT&T sent to the defense are for a tower that never actually got built. It was a planned tower, a proposed tower, a tower AT&T was trying very hard to build but never got approval for. So, yeah, in that case we know which map is right, the one that doesn't have L653 at a location that was never ever built.

Others, it's more of an open question. We have maps that are different, and we know that they both can't be right... or maybe they can, far as I know. But they clearly both couldn't have been right on the same day. So, you want to know why Jay's story makes no sense? Well, there's a lot of reasons for that, but this is why in part: the story he was coached to match was based on this initial map from AT&T, the one with all these towers in the wrong spot, which is why, even though he had help from the detectives, he still couldn't tell a story that matched reality--'cause the detectives had maps that didn't match reality either.

**[50:07] Susan Simpson** So, let's pretend we know for a fact where all the towers actually are, not the ones that are going to be built or planned to be built or used to be there, but the ones that definitely existed and were definitely working as of the day in question. Then we have the issue of range, how far a tower signal can reach. According to the National Institute of Standards and Technology, cell towers can service phones a distance of up to 35 kilometers--approximately 21 miles--and may service several distinct sectors. Now, that's the

upper prediction of the range, and on the other end we have the FBI, who claims that cell sites have a two-mile range based on their training. Where that training came from, well, that's more of an open question. But there's no one answer. It depends on the conditions. It depends on the cell site. It depends on how it was set up. The answer's going to be different for any tower.

But even accepting the FBI's exceedingly conservative estimate--which, by the way, you shouldn't, it's not correct--it shows you how little that cell records can actually show in a case where all activities took place in a concentrated area like this one. Because from the northernmost tower pinged on January 13th to the southernmost tower pinged on January 13th, that's less than four miles. Theoretically, if a tower was in the middle of that area, it could cover the upper and lower range of where people were on January 13th, 1999.

Okay, so we've got location. We've got range. Now, I've got direction. As was discussed earlier, antennas are directional. They're set up to cover different areas, and you'll have usually three--but not always--antennas on any given cell site. At trial, a cell expert testified that AT&T usually had a 30-150-270 set up, meaning that sector A is pointed at 30 degrees off of north, sector B is pointed at 150 degrees, and sector C is directed at 270 degrees. So, this is useful. This helps you put together, if not necessarily *where* the phone was, which direction it was in from the tower where the call was made.

**[52:14] Rabia Chaudry** So, let's say a phone pings the north side of a tower, that we, we can know for sure that there's no way that phone would be on the south side of the tower.

**[52:23] Susan Simpson** No, because, well, there's a thing called back load, which is the area directly behind the antenna that can get coverage from it. But there's also refraction, which can be a signal bouncing off something else. And there's also the fact that we don't always know which direction the antennas are actually pointing. So, if we know for sure which direction the antennas were facing at the time of that call, that helps a lot, but you still can't be certain that that signal didn't bounce off something and get coverage in an unexpected area

**[52:52] Colin Miller** And someone could have been, say, south of the tower and then the second call would be north of the tower, but the phone hadn't updated the location from south of the tower to north, right?

**[53:02] Susan Simpson** Yeah, or it just could be that the back load was covering both sides if they were close enough to the tower. And then there's overlap. The sectors are designed so they *both* will cover an area in between them so that there's no loss of coverage in that space. So the phone--even under perfect, ideal, nonexistent conditions--can still in one spot trigger equally two different sectors.

All that aside, that's all theoretical issues that could happen. How does it apply to this case? Why does it even matter for Adnan's case? To explain why, let's start with L689, the Leakin

Park tower, the biggie. Is there any reason to think that the expected coverage area of that tower might not match a computerized model? Well, yeah.

First, we have location. For L689, this one at least is easy. We know where it was. It was on the Bernard Mason apartment building . So, at least in this case, there's no question of where the tower was. Got that out of the way. L689 was positioned right north of Leakin Park, which is a park that no one lives in, has very limited cell phone coverage due to the hilly nature of it, you know, and doesn't even really provide solid service throughout the park itself. Leakin Park's basically a bowl with the park itself down in the scoop area, with the cell site L689 sitting up on one edge of the bowl. So this tower was not designed to cover Leakin Park because, one, it doesn't cover it very well, and two, that's just not how companies build cell sites.

**[54:49] Susan**

In this case there's a tower that we've been calling the Leakin Park tower, L689, which is centered kind of on the top of Leakin Park in Baltimore. At trial, the prosecution used exhibits, which depicted a colored blob which was supposed to represent L689's range, um, and it covered basically Leakin Park and nothing else. Is it likely that that tower would have been constructed there to cover only Leakin Park?

**Michael Cherry**

That's ridiculous. Uh, it, tha--I... it's just a bad use of money. No, the people who run, who design these things aren't stupid. So, no, it's unlikely that it was just for the park, particularly since people leave at night, you know, and, uh, in that era everyone was still looking to, to try to cover as much as they could because they didn't have the same number of towers that we have now.

**[55:49] Susan Simpson** So, we don't know the range but we do know from the coverage maps that the prosecution used at trial that the computer believed and generated results indicating that L689B was expected to cover areas as far as 1.5 miles from the tower itself, which means, according to AT&T's records, L689B was definitely capable of reaching a spot at least 1.5 miles away. And that doesn't mean *only* 1.5 miles away. That means it was expected to be the strongest 1.5 miles away. There's no reason to think--actually, we have every reason to know--that L689B had the strength to cover an area at least 1.5 and much likely farther away from the cell site.

That brings us to direction. L689 was treated at trial as if it was, like all the towers around it, at a 30-150-270 configuration. Well, it turns out it wasn't--at least it wasn't in October or November of '99. See, the maps we have don't actually show how the towers were set up or positioned in January '99, but we know at least in October and November of '99, L689 was different from all the rest. It was set up to face about 20 to 30 degrees counter-clockwise [*laughs*] of how the other towers were set up.

Something's different about L689. For some reason, the engineers decided that it should not have a standard configuration and it should be different from, for instance, the Woodlawn tower or the Cathy tower, how they were set up. Well, why? Why is L689 positioned differently from the others? We don't know; in fact, we have no idea how it was positioned in January '99, but the fact it's different in October suggests that it's not being treated the same way other towers were, which means we have reason to question even more any results about where its coverage was or how it was expected to perform.

And there's another reason, too, to think that L689's coverage area may have gone farther than would be normally expected based on the cell site configuration in that area, and that's because when L689--again, the Leakin Park tower--was built, there were no towers to the south of it until you got to the Cathy towers. That's the two towers that allegedly pinged from Cathy's apartment. So, that's all the way down in Arbutus. From there to Leakin Park there are no other AT&T towers, which means when L689 was built, AT&T would've had every reason to make sure that it and the Cathy towers could cover as much of that dead zone in the middle as possible. Again, south of Leakin Park to Arbutus? I mean, we've got Patrick's house that's square in the middle of everything; we've got Josh, Nicole's boyfriend's house; we've got a couple other friends of Jay's live there. We've got a place where Jay was arrested in January. We've got other people Jay--we've got a lot of area there, and it's very likely that parts of it wouldn't have had coverage at all because, again, these towers were very far apart when they were put in, but if a signal could reach, the phone would connect.

**[59:36] Rabia Chaudry** As phone calls are made and received, right, they're going to ping certain towers for lots of different reasons. As you discussed, there are so many different variables, and it's a little hard to figure out where a phone might be. You, you can maybe assess it could possibly be in a certain area. But there also seems to be a difference between incoming and outgoing calls. And I remember when Susan first pointed something out to me, and this was a communication from AT&T that--you know, I'd looked at this document plenty of times before, and the little things, you know, you just kind of look over, especially when you're talking about the cover sheet to a fax, you know, like, it's a cover sheet. I never really paid attention to the cover sheet until Susan pointed something out to me on a fax that AT&T sent to the State, and I was floored.

**[1:00:25] Susan Simpson** When the detectives initially acquired the cell phone data from AT&T, they were faxed back these records with a cover sheet from AT&T with some instructions on how to interpret that data. If you read down through the cover sheet it says, you know, here's what certain abbreviations and initials stand for. And here's how to interpret what it looks like when someone's checking a voicemail versus receiving a voicemail, which, as we've discussed before, the prosecution clearly didn't read that either, or if they did they clearly got it wrong.

And lastly we come to this. It says, with the first three words underlined for emphasis:

“Outgoing calls only are reliable for location status. Any incoming calls will NOT be considered reliable information for location.”

And the “not” is in all caps.

**[1:01:14] Rabia Chaudry** And those Leakin Park calls around the 7 o'clock hour were--guess what? They were incoming calls.

**[1:01:24] Susan Simpson** So AT&T is providing this data to the detectives that they used to say Adnan was in Leakin Park and here's how we can prove it. But AT&T itself was saying, in the instructions it's giving to the detectives, those incoming calls are *not* to be considered reliable information for location.

Now, the reason why they're not consider reliable is not explained, but there are at least three major reasons for why incoming calls are even more useless for tracking location than the rest of the calls would be.

The first reason for this warning would be check-in lag, an issue involving the phone's last reported status to the network. When a phone is in idle it'll send regular updates to the network going, “Hello, here I am,” and the network will therefore record that and know where to find the phone and which tower to use to find it if an incoming call is made to that phone. Problem is, if that hasn't been updated since the phone's been moved, the last recorded location is going to not match the actual location, and the tower that the network uses to try and find the phone is not going to match where it actually is. Since all we have to go on in the records is the very first tower recorded, this means the only tower we get to see is the first tower the network tried to use to find the phone. As a result, we have no idea if an incoming call is tracking where the phone actually *is* or where it was last time the phone checked in.

We actually have an example of this phenomenon from the cell phone records. Later in January, Adnan had a track meet down in the city. The track meet started at 3:45 p.m., and we know that all the students get on a bus and drive from Woodlawn to the track meet. On the day of the track meet, there's an incoming call to Adnan's phone at 3:45 p.m. on the nose. The Woodlawn High School team was at the track meet then, but according to the network, Adnan's phone was not, even though he had been on the bus with the rest of the team. The network, however, thought that Adnan's phone was triggering a tower called L652, and that's actually another Leakin Park tower. It's on the east side of Leakin Park rather than the north, but it's also directly on the edge of Leakin Park.

So, why was Adnan's phone saying he was in Leakin Park when he was actually in downtown Baltimore? Well, again, it's because in order to get to the city, the track bus had to go through the area covered by L652. So later on, when an incoming call came at 3:45, the network tried to find his phone in Leakin Park.

**[1:04:04] Colin Miller** The second issue with incoming calls pinging cell towers was revealed in the prosecution of Bulos Zumot. This was a murder-arson case in California, and the prosecution relied heavily on cell tower pings to prove the location of Mr. Zumot on the day in question. On cross examination of the cell tower expert, though, Mark Geragos, the defense counsel, pointed out some interesting things in the cell tower data. For instance, there were two incoming calls six seconds apart, one pinging a tower in Palo Alto, one pinging a tower in San Jose, those two towers being 19 miles apart. We also had a ping for a Palo Alto tower and a San Mateo tower that were four seconds apart for incoming calls. Those two cities and the towers were 14 miles apart. And then, finally, we had on one day an incoming call pinging a tower in Palo Alto and then two hours later pinging a tower in Hawaii.

And so on cross-examination, when asking about these pings, basically, Geragos asked the expert, "Is it possible for the person to have been in these two locations with this separation in time?" And all the expert could offer in response was, "It depends on your mode of transport."

So, obviously, this is ridiculous. It couldn't have happened, but it could because what that case revealed was there's a quirk with AT&T as a service provider--and this quirk existed in 1999--and that's that incoming calls often ping the tower that was closest to the caller, the person making the call, and not the tower closest to the person receiving the call. And we know in this case that several people who were sort of involved either in an indirect or direct role, people like Patrick and Josh, lived near Leakin Park. And so it's easy to imagine the 7:09 and 7:16 calls being placed by people in or around Leakin Park despite the fact the Adnan's phone was nowhere near that park.

**[1:06:00] Susan Simpson** When we're looking at this data, we could be looking not at the tower that Adnan's phone was connecting through for the call, but the tower that the phone of whoever was calling Adnan was connecting through.

**[1:06:11] Colin Miller** Yes, his phone could have been 20, 30 miles away from Leakin Park, and if the person making that call was close to this L689 tower, that might be reflected in the record. That's what obviously was the case for at least these few of these pings in the Zumot case.

**[01:06:26] Susan Simpson** Again, just a hypothetical, but if Patrick happened to have AT&T as his phone provider, well, he lives smack dab in L689B's range. So, if he's calling Adnan's phone, according to AT&T, we don't know if the tower data comes from Adnan's phone or Patrick's phone.

**[01:06:43] Rabia Chaudry** It might be helpful if we had a record of the incoming call numbers though, right?



**[01:06:46] Susan Simpson** Yeah, the incoming data would have been very useful. I mean, for many reasons and, among them, to figure out if this is a known issue with the way AT&T recorded cell sites could have been a factor here.

**[01:06:57] Rabia Chaudry** So the question then is this: was that information available in 1999? We're going to explore that in next week's episode.

**[01:07:13] Colin Miller** What we do know about this case, though, is exactly what Susan has said before, which is that AT&T itself said incoming calls are not reliable for determining location. Let's go back to the legal standard we discussed before.

Again, in Maryland the test is *Frye*. The question is: is expert evidence reliable? That's reliability if the language used by AT&T is the same language used by the court. And it's a very easy test. I used to teach in Illinois, and I consulted on several of these cases. What happens is, if you have disputed expert evidence, very easily opposing counsel--in this case Gutierrez--asks for a *Frye* hearing and asks for the evidence to be deemed inadmissible. And if AT&T itself is saying these incoming calls are unreliable, under the *Frye* test the evidence is *per se* inadmissible.

Uh, so I consulted in the prosecution of R. Kelly. This was the case where he was alleged to have engaged in sexual acts with a minor, and there was the video in that case where his--we didn't have his face being able to be identified, and so they tried to have biometric experts come in and testify to the vein pattern in his hand. And the biometrics expert said this isn't generally accepted yet, at least not in the United States. It is in parts of Asia. It's not deemed to be reliable here. Very easy, the court said, "Okay, under *Frye*, it's not generally accepted; it's not reliable. It doesn't come in."

If Gutierrez simply made a motion, put into evidence this cover sheet--AT&T says itself this is *not* reliable--the incoming calls would be excluded. The jury would have never heard about the Leakin Park pings. The calls at 2:36 and 3:15 being incoming calls, they could not have been used to prove the location of the phone. If this case is ever retried again, whatever attorney handles it can very easily step in. Again, Maryland is still a *Frye* state. Ask for a *Frye* hearing. Foregone conclusion, the court's going to say these incoming calls cannot be used by the prosecution to prove the location of the cell phone. It's not legally relevant. It's not factually relevant. AT&T itself says there are issues with incoming calls. They're meaningless. They mean absolutely nothing in determining guilt or innocence.

**[1:09:28] Susan Simpson** So, let's pretend for a moment that none of these issues existed, that all the calls made that day were outgoing calls and this whole incoming call issue was not a problem, that we knew exactly where the towers were and how the sectors were arranged on January 13th, 1999. If all these questions were answered, could we then rely on the cell phone data?

Well, the problem is that there is no scientific data supporting this. I have looked, and I've been able to find exactly *one* scientific study that attempted to measure the accuracy of cell phone location data based on historical cell site data. This isn't something that scientists are looking at or that AT&T is examining. This is something that's only ever done in courtrooms and was never intended to be done by the cell phone companies or by the people who made the databases or who recorded the data. It's an artifact of the system that law enforcement has been using to try and make cases. But it was never proved as a matter of science. It's not something we have empirical data to use to compare against. Again, I found that one study that has been done, and it found that even moving a few feet can change a tower, that waiting a few minutes can change the tower, and that up to five towers can cover the same area.

One of our listeners also contacted me about a case that she had handled in which a defendant's cell phone records were entered into evidence. In that case, however, what's interesting is that the defendant was under surveillance, so his location during various calls could actually be verified. And based on this and based on expert testimony, it was shown that up to six towers covered his house at the same time. So a call made from his house could have gone to any of those six towers.

Here's what Michael Cherry said when I asked him about whether it could be expected that in Baltimore, on the AT&T network in 1999, the cell sites there would have overlapped in the areas they covered:

**[1:11:18] Michael Cherry**

Yeah, they have to overlap. So if the towers are--don't overlap and, and one tower's busy, you'd be just stuck. Your tower was busy. You would just have to wait until you, until that tower freed up so you could make a call or receive a call, so--

**Susan**

When you say---

**Michael Cherry**

...they better overlap.

**Susan**

When you say a tower is busy, what does that mean?

**Michael Cherry**

That it was--it's at capacity. It can't handle any more calls and provide decent clarity.

**[1:11:43] Susan Simpson** So, yeah, based on what empirical data we do have, however limited it may be, there's no reason to think that there's some kind of one-to-one mapping that can be done between a cell site and location.

Finally, the cell expert's own testing and AT&T's own maps show just how imprecise all this data is. To give some examples from what the expert found, in his drive testing he found a spot near Leakin Park, where Jay says he was parked in a car, could have a call originated on a tower 2.5 miles away despite the fact there were *seven* cell sites closer than that tower was.

In other parts of this testing, he found that L651, the Woodlawn tower, had coverage 1.7 or 1.6 miles away, depending on where the tower actually was, away from where a test call was made. He also found that while making a test call near Gilston Park, despite the fact he was at a location a mere 0.3 miles away from the Gilston Park tower, the call would instead originate on L649, a tower in Patapsco State Park that was 1.8 miles farther away than the Gilston Park tower, so 2.1 miles away in all.

This is not because the Gilston Park tower is somehow weaker and didn't cover as much area. The expert's testing found that Gilston Park could cover areas up to 1.4 miles away, too.

I showed some of these results to Michael Cherry, and I asked him what the significance was:

**[1:13:14] Susan**

For instance, in one of his test results, he hit a tower that was 2.5 miles away even though there were seven other towers that were closer to that location.

**Michael Cherry**

So, sometimes I throw the dice and get a 7, I get a seven, and sometimes I throw the tested dice and I get a four. What does this all mean? What, what--how does it all pla--tie into the meaning of life? The only thing that's strange is that somehow it got into a courtroom. That's the only weird thing about it.

**[1:13:45] Susan Simpson** So, again, just because a place is closer to a certain tower doesn't mean you can predict that a call will be made on that tower.

**[1:13:52] Colin Miller** The bottom line, I think we've all heard something to this effect, which is that cell tower evidence can really only tell you where a phone isn't and not where a phone is. And so, you have a series of, say, 10 pings of towers around Baltimore, it means the person wasn't in Delaware, Pennsylvania or Oklahoma, but it can't tell you precisely within Baltimore where that phone was. That's the only utility, which is to say it can contradict and lay bare the lie that someone was in a completely different state or a state that's reasonably far away, but it can't tell you *within* a relatively small radius in a major metropolitan area where precisely that person was at any particular point in time.

**[1:14:35] Susan Simpson** And even if we pretended that this prosecution's theory was true, all it would do is to show that Jay's story is even more nonsensical than we already know it is because if you buy this theory, for instance, the "come and get me" call that was made at Jenn's house couldn't have been made at Jenn's house. Jenn's house was 1.05 miles away from the

Woodlawn tower that that call pinged, and it was only 0.6 miles away from the tower across from Westview Mall, which means if calls really did go to the closest tower, Jay was lying about being at Jenn's prior to getting a call from Adnan on January 13th.

**[1:15:15] Rabia Chaudry** I've read and heard enough to now know that cell tower evidence--specifically, the cell site location data--is just not reliable in determining location. It's not GPS, folks. It never was. The most it can do is tell us whether it's possible if a call was made in a certain location or not. That's why in numerous states around the country this evidence has been made inadmissible in court and why a lot of experts call it "junk science".

But one thing that can be very useful with cell records are the call logs themselves: knowing what calls a phone made and received and when can help fashion a story. It can sketch an outline, at least, of who was using the phone, and in a case where so much of the narrative relies on these calls, it can confirm or condemn that story. Now, remember, in this case we never had the incoming call records. In other words, we had to take Jay at his word when he said that the two incoming Leakin Park calls at 7:09 and 7:16 p.m. were actually from Jenn and the "come and get me" call at 2:36 p.m. was from, well, wherever it was from.

So, without these incoming records we'll never know. But you know who might know? The prosecutors in the case.

That and the Nisha call next time on the *Undisclosed: Addendum*.

**[1:16:37]** Many thanks to Ramiro Marquez for our theme music and photography, to Christie Williams for our website, and to Ballookey, who designed our logo. Our production consultant is Rebecca Lavoie. She's a true crime author and hosts the podcast *Crime Writers on Serial*. Dennis Robinson is our producer. And you can find us online on social media on both Facebook and Twitter. Our Twitter handle is [@Undisclosedpod](#). Make sure to tweet us your comments and questions using the hashtag #Undisclosed.