

In the  
United States Court of Appeals  
For the Seventh Circuit

---

No. 14-2019

UNITED STATES OF AMERICA,

*Plaintiff-Appellee,*

*v.*

WAYNE HILL,

*Defendant-Appellant.*

---

Appeal from the United States District Court for the  
Northern District of Illinois, Eastern Division.  
No. 11 CR 850-1 — **Sharon Johnson Coleman**, *Judge*.

---

ARGUED SEPTEMBER 25, 2015 — DECIDED MARCH 21, 2016

---

Before WOOD, *Chief Judge*, and BAUER and EASTERBROOK,  
*Circuit Judges*.

WOOD, *Chief Judge*. They say the house always wins. Wayne Hill found out the hard way that if you have robbed a bank, that adage applies even if your trip to the casino was just to get change. Hill was caught attempting to launder a large amount of dye-stained currency, still in bank bands, by stuffing the bills into a slot machine at the Horseshoe Casino in Hammond, Indiana. He was ultimately convicted of bank

robbery, money laundering, and transportation of stolen funds.

Hill filed pretrial motions to suppress his arrest, the contents of his bags, and his statements at the time he was caught. He also filed a motion in limine seeking to exclude expert testimony under Federal Rule of Evidence 702 about historical analysis of cellular telephone sites. Hill appeals the district court's denials of all four motions. Because the district court properly resolved each one, we affirm its judgment.

## I

On November 19, 2011, Hill walked into the Illiana Financial Credit Union in Naperville, Illinois, pointed a pistol at the teller, and ordered her to give him money. While Hill threatened repeatedly to shoot her, another teller handed over roughly \$134,000 in cash. Hill fled the scene with a bag full of stacks of wrapped bills.

At that moment, Hill might have thought he was home free. But there was something he did not know: one of the tellers had managed to toss a dye pack into the bag along with the cash. As Hill fled from the bank, it exploded, staining most of his haul a telltale red. Three days later, Hill sought to remedy that problem. He drove to the Potawatomi Hotel and Casino in Milwaukee, Wisconsin, where he sat down in front of a slot machine and fed dye-stained bills into it without playing the game. Instead, he cashed out, receiving vouchers in the amount of money he had put into the machine. After repeating this maneuver on a number of machines, he redeemed the vouchers for unstained currency. He managed to rid himself of \$6,650 in stained bills that night.

On November 26, 2011, Hill tried to repeat his money-laundering gambit. He strolled into the Horseshoe Casino in Hammond, Indiana, with a backpack and a Santa hat filled with thousands of dollars of dye-stained bills. He sat down in front of a slot machine and began feeding it cash. But this time, a slot attendant noticed what he was doing and thought it strange. The slot attendant told Daniel Faulkner, a casino security employee, that there was a guest at a slot machine with a bag containing a large amount of money. He also told Faulkner that the money had red dye on it and that the guest was sticking the money into the machine and cashing it out without playing the slots.

Faulkner called over the radio, and Monaye Perry, another casino security employee, responded. By the time Perry arrived, Hill had told a casino employee that one of his bills had gotten stuck in the machine, and a slot attendant had opened the machine to recover it. Faulkner told Perry what Hill had been doing. Faulkner's report made Perry suspicious, because it was very unusual for a guest to be cashing out of the machine without playing, not to mention for the money to be stained red. Perry questioned Hill briefly. She noted that he seemed nervous and hesitant and that he was short with his responses. Perry then contacted Eugene Kasper, her shift manager. As she did so, Hill abandoned the slot machines and moved to the casino's cash-out area.

Kasper arrived with company: Hammond Police Lieutenant Patrick McKechnie. McKechnie was moonlighting as a security officer at the casino. Perry relayed Faulkner's account to Kasper and McKechnie and noted that she had received the information from Faulkner himself. McKechnie and Kasper followed Hill to the cash-out area and confront-

ed him. As Hill stood in line, McKechnie asked Hill why his greenbacks were red and where he had gotten the money. Hill did not respond to the first question, but in reply to the second he said that he had found the money while changing a tire near a lake.

McKechnie found Hill's story bizarre and suspicious. He knew from his law-enforcement experience that bank employees often attempt to hide red dye-packs among stolen money during robberies. He could see red dye-stained bills, still wrapped in bank bands, in Hill's hand. Surveillance footage shows Kasper examining stacks of cash wrapped in bank bands as several casino security personnel stand by. It then shows Hill being led away, along with his bag and Santa hat, to an interview room. In the interview room, Hill was questioned further and his bag was searched, revealing the remainder of the money.

Hill was indicted for money laundering, bank robbery, and transporting stolen money in interstate commerce in violation of 18 U.S.C. §§ 1956(a)(1)(B)(i), 2113(a), (c), and (d), and 2314. Before trial, Hill filed motions to suppress his arrest, the search of his backpack and Santa hat, and his statements to McKechnie. He also filed a motion in limine seeking to exclude expert testimony regarding historical cell site analysis under Rule 702 of the Federal Rules of Evidence. The district court denied all four motions. A jury convicted Hill on April 7, 2014, and he was sentenced to 360 months' imprisonment. This appeal followed.

## II

Hill argues that his statements in the cash-out area and the evidence seized incident to his arrest should have been

suppressed because (1) Lieutenant McKechnie's initial conversation with Hill was an arrest for which McKechnie did not have probable cause; (2) if that encounter was not an arrest, McKechnie did not have adequate reasonable suspicion to perform an investigatory stop; and (3) McKechnie did not have probable cause to remove Hill to the interview room where the entirety of Hill's store of stolen cash was discovered. He also argues that the district court abused its discretion in admitting Agent Joseph Raschke's expert testimony regarding historical cell site analysis.

A

We look first at Hill's three motions to suppress. We review the district court's rulings under a dual standard: we apply the clear error standard to its factual determinations, with special deference to the district court's credibility determinations, *United States v. Villalpando*, 588 F.3d 1124, 1127 (7th Cir. 2009); we take a *de novo* approach to its conclusions of law. *Id.*

1

Hill contends that his initial encounter with McKechnie was an arrest, but we conclude that it was not. A seizure qualifies an arrest only if "a reasonable person in the suspect's position would have understood the situation to constitute a restraint on freedom of movement of the degree which the law associates with formal arrest." *Abbott v. Sangamon Cnty., Ill.*, 705 F.3d 706, 719 (7th Cir. 2013). This definition is somewhat circular. But it is clear that an arrest requires at minimum that the subject's "freedom of movement is terminated or restrained by intentionally applied physical force or submission to an assertion of authority." *Id.* (citing

*California v. Hodari D.*, 499 U.S. 621, 626 (1991)). Importantly, contrary to Hill’s arguments, the inquiry is objective and “presupposes an innocent person.” *Id.* (citing *United States v. Drayton*, 536 U.S. 194, 202 (2002)).

It is hard to offer a crisp definition of what exactly constitutes an arrest. But courts have made clear that “a brief, on-the-spot stop on the street and a frisk for weapons” does not qualify. *Dunaway v. New York*, 442 U.S. 200, 209 (1979) (citing *Terry v. Ohio*, 392 U.S. 1, 19–20 (1968)). McKechnie’s interview with Hill was not even as intrusive as a stop-and-frisk. He made no “assertion of authority” and used no “physical force.” Nor did his two questions contain any of the indicia of a traditional arrest, no matter the number of casino security personnel who were by then hanging around. At most, the interaction represented an investigatory stop. Indeed, the government maintains that it was consensual, and therefore did not even constitute a seizure under the Fourth Amendment. But we need not decide whether the interaction was consensual: even if it were not, McKechnie’s questioning of Hill qualified as a valid investigatory stop.

An investigatory stop is valid when supported by “a reasonable, articulable suspicion that criminal activity is afoot.” *Illinois v. Wardlow*, 528 U.S. 119, 123 (2000). A “reasonable, articulable suspicion” is less than probable cause; it requires only “a minimal level of objective justification.” *Id.* In deciding whether the officer’s suspicion was justified, the court must consider the “totality of the circumstances” surrounding the stop. *United States v. Arvizu*, 534 U.S. 266, 273 (2002). The officer may “draw on [his or her] own experience and specialized training to make inferences from and deductions about the cumulative information available ... that might

well elude an untrained person.” *Id.* (internal quotation marks omitted).

The district court found as a fact that McKechnie had learned a great deal before he confronted Hill. Perry had told him directly that (1) a slot attendant had seen Hill trying to cash out a large amount of red-dyed money through a slot machine; (2) the slot attendant had told Faulkner what he saw; (3) Faulkner had told Perry; and (4) Perry had questioned Hill and found his answers and demeanor suspicious. Additionally, McKechnie knew from experience that dye packs are used to mark stolen currency. He said that he would find it suspicious if someone were using a slot machine “as a change machine.” None of these factual findings were clearly erroneous. The information McKechnie possessed represented far more than “a minimal level of objective justification.” See *Wardlow*, 528 U.S. at 123. It was sufficient to arouse reasonable suspicion that Hill had committed a crime, and thus to make McKechnie’s interaction with Hill in the cash-out area a valid investigatory stop.

2

Hill argues that even if his initial interview with McKechnie was a valid investigatory stop, he was arrested without probable cause when he was escorted to the interview room. This argument can succeed only if, at that time, McKechnie lacked probable cause to believe Hill had committed a crime. But the record supports a finding of probable cause by then. Hill was therefore validly arrested when he was taken to the interview room.

An arrest is lawful under the Fourth Amendment so long as it is made based on probable cause. *Rodriguez v. United*

*States*, 135 S. Ct. 1609, 1621 (2015). Probable cause “means facts and circumstances within the officer’s knowledge that are sufficient to warrant a prudent person, or one of reasonable caution, in believing, in the circumstances shown, that the suspect has committed, is committing, or is about to commit an offense.” *Michigan v. DeFillippo*, 443 U.S. 31, 37 (1979). Whether probable cause exists is a “commonsense, practical question” made considering the totality of the circumstances. *Illinois v. Gates*, 462 U.S. 213, 230–31 (1983). When a court reviews probable cause determinations, the evidence must be weighed “as understood by those versed in the field of law enforcement.” *Id.* at 232 (quoting *United States v. Cortez*, 449 U.S. 411, 418 (1981)).

Once he approached Hill in the cash-out line, McKechnie could see that Hill was holding a stack of currency stained with red dye and wrapped in bank bands. Based on Perry’s report, his own observations, and his prior experience, McKechnie surmised that the money was from a bank robbery and that Hill was trying to launder it. McKechnie asked Hill why the money was dyed red and where he had obtained it. Hill initially refused to answer either question, but then offered the unlikely story that he found it while changing a tire by a lake. Hearing this, McKechnie was justifiably suspicious. A reasonably prudent person in McKechnie’s position would think that Hill had committed or was committing a crime. See, e.g., *United States v. Curry*, 538 F.3d 718, 730 (7th Cir. 2008) (search warrant based largely on observation of suspect handling red-dyed currency “clearly supported a determination of probable cause”). McKechnie therefore had probable cause to arrest Hill.



## 3

Finally, the search that revealed Hill's remaining currency was unobjectionable. A search incident to arrest is valid if it does not extend beyond "the arrestee's person and the area within his immediate control." *Arizona v. Gant*, 556 U.S. 332, 339 (2009) (internal quotation marks omitted). The zone of "immediate control" includes "the area from within which [the suspect] might gain possession of a weapon or destructible evidence." *Id.* When he was detained, Hill was holding the bag containing his hoard of dye-stained cash and was plainly exercising immediate control over it. McKechnie's search was therefore a permissible search incident to arrest, and the district court was correct to deny Hill's motions to suppress.

## B

Hill's other argument focuses on expert testimony from Agent Raschke about historical cell-site analysis. This testimony, he contends, violated Federal Rule of Evidence 702 because the district court improperly applied the rule and the Supreme Court's framework in the line of cases beginning with *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 589 (1993). We review the analytical approach the district court took *de novo* and its application of that framework to the facts before it for abuse of discretion. *Lees v. Carthage Coll.*, 714 F.3d 516, 520 (7th Cir. 2013).

Historical cell-site analysis uses cell phone records and cell tower locations to determine, within some range of error, a cell phone's location at a particular time. A cell phone is essentially a two-way radio that uses a cellular network to

communicate. Aaron Blank, *The Limitations and Admissibility of Using Historical Cellular Site Data to Track the Location of A Cellular Phone*, 18 RICH. J.L. & TECH. 3, 5 (2011). Each cell tower covers a certain geographic area. That geographic area depends upon “the number of antennas operating on the cell site, the height of the antennas, topography of the surrounding land, and obstructions (both natural and manmade).” *Id.* In urban areas, cell towers may be located every one-half to one mile, while cell sites in rural areas may be three to five miles apart. *Id.* When a cell phone user makes a call, the phone generally “connect[s] to the cell site with the strongest signal,” although “adjoining cell [towers] provide some overlap in coverage.” *Id.* While the proximity of the user is a significant factor in determining the cell tower with which the cell phone connects, it is not the only one. *Id.* Other factors include the towers’ technical aspects, including geography and topography, the angle, number, and directions of the antennas on the sites, the technical characteristics of the relevant phone, and “environmental and geographical factors.” *Id.* at 7.

The parties here do not dispute that testimony about historical cell-site analysis is expert testimony. That proposition is not, however, universally applied, and perhaps not even universally accepted. Some circuits have treated some kinds of historical cell-site analysis as lay testimony. See, e.g., *United States v. Graham*, 796 F.3d 332, 364 (4th Cir. 2015) (finding no abuse of discretion in admitting Sprint/Nextel employee’s lay testimony that cell phones connect to the tower emitting the strongest signal and cell towers in urban areas have a two-mile maximum range, and law enforcement officer’s lay testimony and maps regarding the defendant’s location based on cell phone records and cell sites); *United States v.*

*Henderson*, 564 F. App'x 352, 364 (10th Cir. 2014) (nonprecedential) (law enforcement agent's plotting of the defendant's locations through historical cell-site analysis was proper lay testimony so long as the agent did not testify about how cell towers operate), *reh'g en banc granted*, 624 F. App'x 75 (4th Cir. 2015).

Agent Raschke's testimony in this case included statements about how cell phone towers operate. In our view, this fits easily into the category of expert testimony, such that Rule 702 governs its admission. See *Graham*, 796 F.3d at 364 (holding historical cell-site analysis testimony about how cell phones and towers connect "clearly 'based on scientific, technical, or specialized knowledge within the scope of Rule 702.'" (quoting FED. R. EVID. 701(c))); *United States v. Yeley-Davis*, 632 F.3d 673, 684 (10th Cir. 2011) ("[T]estimony concerning how cell phone towers operate constituted expert testimony because it involved specialized knowledge not readily accessible to any ordinary person.").

When evaluating whether an expert's testimony should be admitted, a court must consider whether the expert's testimony is "supported by appropriate validation" and "will assist the trier of fact to understand or determine a fact in issue." *Daubert*, 509 U.S. at 590–92; *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 147 (1999) (extending the *Daubert's* "gate-keeping function" to all expert evidence). Rule 702's purpose is to "establish[] a standard of evidentiary reliability." *Kumho Tire*, 526 U.S. at 149 (quoting *Daubert*, 509 U.S. at 590). The Supreme Court emphasized the importance of carefully vetting expert testimony, noting that it "can be both powerful and quite misleading because of the difficulty in evaluating it." *Daubert*, 509 U.S. at 595 (quoting Jack B. Weinstein, *Rule*

*702 of the Federal Rules of Evidence Is Sound; It Should Not Be Amended*, 138 F.R.D. 631, 631–32 (1991)).

Rule 702 sets out four criteria for the admission of expert testimony:

- (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

FED. R. EVID. 702. In applying those criteria, courts must also bear in mind the fact that “the gatekeeping inquiry must be tied to the facts of a particular case.” *Kumho Tire*, 526 U.S. at 150 (internal quotation marks omitted). The trial judge has “broad latitude” to determine how to evaluate expert testimony and whether to hold an evidentiary hearing in any particular case. *Id.* at 153.

District courts that have been called upon to decide whether to admit historical cell-site analysis have almost universally done so. See *United States v. Jones*, 918 F. Supp. 2d 1, 5 (D.D.C. 2013) (collecting cases). Ironically, one of the few exceptions involved Agent Raschke himself. See *United States v. Evans*, 892 F. Supp. 2d 949, 956 (N.D. Ill. 2012) (admitting traditional historical cell-site analysis, but rejecting Raschke’s novel and “wholly untested” theory of “granulization”). The government argues that the numerous district court decisions to admit historical cell-site analysis constitute “general

acceptance” of the technique. But judicial acceptance is not relevant; what matters is general acceptance in the relevant *expert* (scientific or otherwise) community. See *Daubert*, 509 U.S. at 594; *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 148 (1997) (Breyer, J., concurring) (“[J]udges are not scientists and do not have the scientific training that can facilitate the making of such decisions.”).

No federal court of appeals has yet said authoritatively that historical cell-site analysis is admissible to prove the location of a cell phone user. The Sixth Circuit gave the technique an unfavorable appraisal recently in *United States v. Reynolds*, 626 F. App’x 610, 616–17 (6th Cir. 2015) (nonprecedential). Because the government there used historical cell-site analysis to prove that certain people were *not* in a certain area at a particular time, the court did not need to rule on the technique’s reliability for proving where a person *was* at a given time. The court noted, however, that claims of successful use by law enforcement personnel were “precisely the sort of ‘ipse dixit of the expert’ testimony that should raise a gatekeeper’s suspicion,” were it “not subject to independent peer review,” and “fail[ed] to establish an error rate with which to assess reliability because there was no information on how many times the technique was employed *unsuccessfully*.” *Id.* at 616 (quoting *Kumho Tire*, 526 U.S. at 157). The Fifth Circuit, in contrast, has affirmed the admission of historical cell-site analysis under Rule 702 to prove an individual’s location. See *United States v. Schaffer*, 439 F. App’x 344, 347 (5th Cir. 2011) (nonprecedential). But the Sixth Circuit singled out *Schaffer* for criticism in *Reynolds*. 626 F. App’x at 616–17. And even the Fifth Circuit only remarked that “[t]estimony established that the field is neither untested nor

unestablished.” 439 F. App’x at 347. This is hardly a ringing endorsement.

The contested cell-site analysis in Hill’s case covers two days. The first is November 14, 2011. Agent Raschke testified that Hill’s cell phone records and the locations of relevant cell towers indicated that on that day, Hill’s T-Mobile cell phone used a tower that was roughly a mile and half from the Credit Union that was later robbed. Agent Raschke also used historical cell-site analysis to trace the whereabouts of Hill’s phone on November 19, 2011, the day of the robbery. Most significantly, Agent Raschke testified that at 11:54 am—16 minutes after the robber fled the Credit Union—Hill’s Nextel phone engaged a tower in Naperville, Illinois, that was located approximately 11 miles east of the Credit Union and 35 miles south of Hill’s residence. Agent Raschke then traced connections between Hill’s cell phone and towers moving north along the interstate. The clear implication of the testimony was that Hill’s cell phone was in the general area of the Credit Union shortly after the robbery, and then moved rapidly northward along the highway immediately afterward. It wound up near his residence at 12:28 pm before moving north again at 1:08 pm and ending at his work address at 1:33 pm.

The government used Agent Raschke’s historical cell-site analysis against Hill for two purposes at closing. The first was to argue that Hill’s alibi statement to Agent Hoogland—that he was at work at 12:30 pm on November 19, 2011, and therefore could not have been at the Credit Union at 11:38 am—was a lie. As this involved proving where Hill was not, rather than where he was, this use is uncontroversial. See, *e.g.*, *Reynolds*, 626 F. App’x at 617. But, more problematically,

the government used Agent Raschke's testimony to argue that Hill *was* in the general vicinity of the Credit Union 16 minutes after it was robbed on that day, and that he then drove rapidly north back to his house, before continuing on to work 40 minutes later.

In his trial testimony, Agent Raschke emphasized that Hill's cell phone's use of a cell site did not mean that Hill was right at that tower or at any particular spot near that tower. This disclaimer saves his testimony. Historical cell-site analysis can show with sufficient reliability that a phone was in a general area, especially in a well-populated one. It shows the cell sites with which the person's cell phone connected, and the science is well understood. *Evans*, 892 F. Supp. 2d at 956 (noting that methods of "historical cell site analysis can be and have been tested by scientists"). The technique requires specialized training, which Agent Raschke has and has employed successfully on hundreds of occasions. A mathematical error rate has not been calculated, but the technique has been subjected to publication and peer criticism, if not peer review. See, e.g., Matthew Tart *et al.*, *Historical Cell Site Analysis – Overview of Principles and Survey Methodologies*, 8 DIGITAL INVESTIGATION 185–86 (2012); Blank, 18 RICH. J.L. & TECH. at 3–5; Herbert B. Dixon Jr., *Scientific Fact or Junk Science? Tracking A Cell Phone Without GPS*, 53 JUDGES' J. 37 (2014). The advantages, drawbacks, confounds, and limitations of historical cell-site analysis are well known by experts in the law enforcement and academic communities. Agent Raschke described many of them at trial.

Nonetheless, we have some concerns about Agent Raschke's testimony. On cross-examination, he admitted that he did not know any of the particular characteristics of the

cell tower with which Hill's phone connected at 11:54 am, including its power or the direction its antennae were facing. He did not perform any tests of that cell tower's area of signal coverage. Based on his experience, he disputed defense counsel's suggestion that a cell phone could connect from 20 or 10 miles away from a particular cell site, but he admitted that it could travel "over 5 miles." On re-direct he stated that his experience was that the range of Chicago area towers was "very limited," and that he had never, in hundreds of investigations in Chicago, seen a cell phone "jump" to connect with a cell tower 20 miles away. Based on this testimony, the jury could reasonably and reliably infer that at 11:54 am on November 19, 2011, Hill was within a five-mile radius of the cell tower located 11 miles east of the Credit Union. The testimony is relevant and probative, and therefore somewhat helpful to the trier of fact—even if not *that* helpful.

Our concern is that the jury may overestimate the quality of the information provided by this analysis. We therefore caution the government not to present historical cell-site evidence without clearly indicating the level of precision—or imprecision—with which that particular evidence pinpoints a person's location at a given time. The admission of historical cell-site evidence that overpromises on the technique's precision—or fails to account adequately for its potential flaws—may well be an abuse of discretion. In this case, however, Agent Raschke's testimony on both direct and cross-examination made the jury aware not only of the technique's potential pitfalls, but also of the relative imprecision of the information he gleaned from employing it in this case. The science and methods upon which the technique is based are understood and well documented. Admitting Agent Raschke's testimony was therefore not an abuse of the dis-



district court's considerable discretion under either Rule 702 or Rule 403.

III

Because the district court did not err in denying any of Hill's four motions, we AFFIRM its judgment.