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Case Number 230,2019

## IN THE SUPREME COURT OF THE STATE OF DELAWARE

STEVEN PIERCE,	)	
	)	
Defendant-Below,	)	
Appellant,	)	
	)	
V.	)	No. 230, 2019
	)	
STATE OF DELAWARE	)	
	)	
Plaintiff-Below,	)	
Appellee.	)	

# ON APPEAL FROM THE SUPERIOR COURT OF THE STATE OF DELAWARE

### APPELLANT'S OPENING BRIEF

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DATED: December 6, 2019

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#### NATURE AND STAGE OF THE PROCEEDINGS

On December 5, 2016, Steven Pierce was indicted on Murder First Degree and Possession of a Deadly Weapon During the Commission of a Felony.<sup>1</sup> He litigated multiple issues before trial. On October 2, 2017, the trial court suppressed a portion of his statement to police because he had invoked his right to counsel.<sup>2</sup>

On June 5, 2018, Pierce sought permission to file two "out of time" motions: a general motion to suppress certain evidence obtained from his cell phone and a *Daubert* motion to exclude Google Wifi location data obtained from his cell phone. The motion to suppress became moot when the parties reached an agreement. However, the trial court allowed Pierce to file the *Daubert* motion<sup>3</sup> and a hearing was conducted on November 27, 2018.<sup>4</sup> After post-hearing briefing, <sup>5</sup> the court found the evidence to be admissible.<sup>6</sup>

After about 7 days of trial, a jury convicted Pierce of both charges. He was later sentenced to life plus 25 years in prison.<sup>7</sup> This is his Opening Brief in support of his timely-filed appeal.

 $<sup>^{1}</sup>A20.$ 

 $<sup>^{2}</sup>$ A7-9.

<sup>&</sup>lt;sup>3</sup>A12, 13, 21.

<sup>&</sup>lt;sup>4</sup>A15.

<sup>&</sup>lt;sup>5</sup>A33, 57, 75.

<sup>&</sup>lt;sup>6</sup>State v. Pierce, 2019 WL 1077688 \*8 (Del.Super. March 6, 2019), Ex.A.

<sup>&</sup>lt;sup>7</sup>See May 17, 2019 Sentence Order, Ex.B.

#### **SUMMARY OF THE ARGUMENT**

1. The trial court abused its discretion when it failed to exclude evidence related to the Google Wifi location data obtained from Pierce's cell phone because the State failed to establish that it was sufficiently reliable under the *Daubert* standard. The State failed to explain the underlying methodology used by Google in determining cell phone location. The only evidence of methodology testing that was presented was relayed anecdotally by the State's witness. There was a complete absence of publication and peer review. Finally, the State presented no evidence that the methodology employed is governed by any set of standards.

#### STATEMENT OF FACTS

In July, 2016, Mary Stamper lived at 231 B Adams Street in Delaware City with her father, her daughter Heather and Heather's son Briane. Heather's boyfriend, Steven Pierce, had been released from prison on June 20, 2016 after having been incarcerated in default of bail since February 21, 2016 and was also staying in the house. Pierce shared Heather's bedroom in the basement. Mary's neighbor, David King, lived in the attached unit at 231A Adams Street. Mary told police that King "hit on" Heather and that Heather did not like it. 10

The attached units were constructed such that access to Heather's bedroom could be gained through both Mary's apartment, "231B", and King's apartment, "231A." As a result, it was not unusual for King to allow Heather and/or Pierce to gain entry to the bedroom by heading down his basement stairs across a shared laundry/utility room and over to her bedroom door on the other side of that room. Due to his proximity to Heather's room, King was able to see that, while Pierce was away, Anthony Lyons, ("Tony") frequently visited Heather.

<sup>8</sup> A582.

<sup>&</sup>lt;sup>9</sup> A595, 602.

<sup>&</sup>lt;sup>10</sup>A601.

<sup>&</sup>lt;sup>11</sup>A603.

<sup>&</sup>lt;sup>12</sup>A609-610.

On Saturday, July 9, 2016, at around 2:00 p.m., Christopher Mendez, his girlfriend and their daughter went to Mary's house for her grandson's birthday party. When they arrived, Pierce was setting up tables for the party and talking about Heather.<sup>13</sup> He expressed concern about Heather's apparent disappearance.<sup>14</sup> Pierce also purportedly speculated that she might be with Tony. 15 Mendez told the jury that he and his girlfriend helped Pierce look for Heather by driving around the neighborhood for a while. Having no luck, they returned to the house. 16 Pierce then asked Mendez to accompany him downstairs to Heather's bedroom to see if they could "break[] in there and bust[] the door down." Mendez agreed.

Pierce, followed by Mendez, went down Mary's basement stairs to the bedroom door and tried unsuccessfully to get inside. 18 When Mendez arrived, he banged on the door and got no answer. 19 He found the deadbolt unlocked so he used a knife and unlocked the lower lock and opened the door.<sup>20</sup> Inside, they found Heather laying face down on the bed.<sup>21</sup> From a distance, she

<sup>14</sup>A565.

<sup>&</sup>lt;sup>13</sup>A562, 565, 595, 596, 600.

<sup>&</sup>lt;sup>15</sup>A562.

<sup>&</sup>lt;sup>16</sup>A562, 600.

<sup>&</sup>lt;sup>17</sup>A563.

<sup>&</sup>lt;sup>18</sup>A563.

<sup>&</sup>lt;sup>19</sup>A598.

<sup>&</sup>lt;sup>20</sup>A564.

<sup>&</sup>lt;sup>21</sup>A559, 614.

appeared to Pierce to be sleeping as she always sleeps on her stomach.<sup>22</sup> Mendez remained at the door while Pierce walked in, leaned over Heather and looked at her.<sup>23</sup> Mendez told police that Pierce said that it looked like she had been shot in that head and that it looked like she was dead.<sup>24</sup> After Pierce left the room,<sup>25</sup> Mendez also went in, leaned over Heather and looked at her. He told police that he also believed it looked like she had been shot.<sup>26</sup>

According to the Chief Medical Examiner, who went to the scene later that same day, there was a lot of blood under Heather's face.<sup>27</sup> However, the bed sheet, her clothes and the rest of her body were clean and undisturbed.<sup>28</sup> Based on his observations, a subsequent autopsy and other tests that he performed, he concluded that the cause of Heather's death was blunt impact injury to the back of her head.<sup>29</sup> He identified a multitude of objects in Mary's home that could possibly create a blunt force injury similar to that which Heather suffered. <sup>30</sup> However, the actual object that caused Heather's injury

<sup>&</sup>lt;sup>22</sup>Court Exhibit #1 at p. 26.

<sup>&</sup>lt;sup>23</sup>A564.

<sup>&</sup>lt;sup>24</sup>A567.

<sup>&</sup>lt;sup>25</sup>A564.

<sup>&</sup>lt;sup>26</sup>A564-566.

<sup>&</sup>lt;sup>27</sup>A614.

<sup>&</sup>lt;sup>28</sup>A616.

<sup>&</sup>lt;sup>29</sup>A617-618.

<sup>&</sup>lt;sup>30</sup>A619-621.

was never identified. And the State did not identify Heather's actual time of death.

After Pierce discovered Heather's body and returned up the basement steps, he called 911. In his call, he suggested Tony as a possible person of interest.<sup>31</sup> He then waited at 231 Adams Street for police to arrive and he stayed there throughout the afternoon. According to police, for most of that time, Pierce remained speechless with his forearms on his thighs, hands cupped together and head down. When police decided to arrest him, they seized his cell phone.<sup>32</sup> And, before invoking his right to counsel, Pierce denied hurting or killing Heather.<sup>33</sup>

Meanwhile, Sgt. Dolan found Tony riding around the neighborhood on his bicycle. The officer testified that, when she stopped him, Tony seemed nervous and appeared to be shaking.<sup>34</sup> Tony admitted that he had been sexually involved with Heather at the time she was in a relationship with Pierce. He initially claimed the last time they were intimate was in February or March 2016.<sup>35</sup> However, at trial, he admitted this was a lie<sup>36</sup> and testified

<sup>31</sup>A559.

<sup>&</sup>lt;sup>32</sup>A568-570.

<sup>&</sup>lt;sup>33</sup>Court Exhibit #1 at p. 37.

<sup>&</sup>lt;sup>34</sup>A560, 580.

<sup>&</sup>lt;sup>35</sup>A584.

 $<sup>^{36}</sup>A584.$ 

that, in reality, the last time he had sex with Heather was shortly before Pierce came home in June 2016.<sup>37</sup> He said that he lied because he did not want to be looked upon as a suspect.<sup>38</sup>

Based on his discussions with Mary and with Pierce, Detective Csapo learned that just before 7:00 p.m. on the night before the discovery of Heather's body, Pierce and Heather had gone in Heather's black Volkswagen Jetta to Clinton Street on the waterfront in Delaware City. <sup>39</sup> So, the detective obtained surveillance video from the area. The video revealed that Pierce and Heather left the waterfront in Delaware City at around 6:50 p.m. in the Jetta and drove north, seemingly out of the center of town. <sup>40</sup> At 7:23 p.m. the Jetta returned to the waterfront and parked at the end of Clinton Street near Crabby Dick's facing the water. <sup>41</sup> According to Pierce, after Heather got on the phone with someone and after he saw Tony peddling in the area on his 20-inch bike, he and Heather got into an argument. <sup>42</sup> The video shows Pierce drive off leaving Heather behind. He returned to 231B, packed up his clothes and left. <sup>43</sup>

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<sup>&</sup>lt;sup>37</sup>A583.

<sup>&</sup>lt;sup>38</sup>A583.

<sup>&</sup>lt;sup>39</sup>A 596; Court Exhibit #1 at p. 11.

<sup>&</sup>lt;sup>40</sup>A571-572, 599.

<sup>&</sup>lt;sup>41</sup>A573; Court Exhibit #1 at p. 13.

<sup>&</sup>lt;sup>42</sup>Court Exhibit #1 at p. 14 -15.

<sup>&</sup>lt;sup>43</sup>A597; Court Exhibit #1 at p. 17.

Pierce left Delaware City in the Jetta, passed the refinery and arrived at Shirley Blunt's apartment located at 1501 New Jersey Avenue in New Castle around 8:30 p.m. <sup>44</sup> Shirley's daughter Cheryl <sup>45</sup> and Cheryl's boyfriend Giancario lived with her but neither of them were home at the time. <sup>46</sup> Pierce waited for them. Giancario arrived about 10-15 minutes later and Cheryl arrived home about 9:00 p.m. <sup>47</sup> Pierce remained with Giancario and Cheryl until after midnight. Other than twice venturing out to a nearby liquor store, the threesome spent their time together talking and drinking at the apartment.

While Pierce was in New Castle, Heather went to a bar in Delaware City and got drunk. Then, as surveillance video reveals, around 8:45 p.m., she left the bar and stopped in a nearby market. Interestingly, the video also shows Tony in the area again. Heather then headed home.<sup>48</sup> King testified that he and his grandson arrived at 231B around 9:00 p.m. and found Heather "smell[ing] of booze," drunk and passed out in front of his house.<sup>49</sup> He woke her up and she came inside with him. King said that after Heather smoked a cigarette on his back porch, she proceeded down his basement steps to her

<sup>44</sup>A589.

<sup>&</sup>lt;sup>45</sup> "Cheryl" is Shirley E. Blunt's nickname which is used here to avoid confusion with her mom Shirley A. Blunt.

<sup>&</sup>lt;sup>46</sup>A586, 588, 589, 591.

<sup>&</sup>lt;sup>47</sup>A586, 588, 589, 590.

<sup>&</sup>lt;sup>48</sup>A574-579.

<sup>&</sup>lt;sup>49</sup>A604.

room. However, when he tried to help her, she said, "[d]on't f'ing touch me." So, he watched her walk down the stairs. He then heard her unlock and open the door, go inside then shut the door behind her. 51

King next provided crucial testimony that was significantly inconsistent with a wealth of the State's own evidence. While he could not recall the precise time, King claimed that at about 9:15 p.m. Pierce came and "pecked" at his window and King let him inside the front door and down the basement steps to Heather's room.<sup>52</sup> He went back to bed, then heard a loud sound coming from downstairs that he told police sounded like a door slamming. King said that, next, Pierce knocked hard on his basement door.<sup>53</sup> When King answered, Pierce said that Heather slammed the door on his face and told him to get out. He said that he would never see that "bitch again."<sup>54</sup>

According to King, Pierce had nothing in his hands.<sup>55</sup> Nor was there anything unusual about Pierce's clothes and there was no blood on Pierce.<sup>56</sup> Even after prompting during his second statement to police, King testified the entirety of the events involving Pierce at his house were over before 10:30

<sup>50</sup>A604, 609.

<sup>&</sup>lt;sup>51</sup>A605.

<sup>&</sup>lt;sup>52</sup>A605.

<sup>&</sup>lt;sup>53</sup>A605, 608.

<sup>&</sup>lt;sup>54</sup>A605, 607, 613.

<sup>&</sup>lt;sup>55</sup>A612.

<sup>&</sup>lt;sup>56</sup>A606, 612-613.

p.m.<sup>57</sup> King's testimony is inconsistent with other evidence with respect to time in that other witnesses, video surveillance and call location history all established that Pierce was in New Castle from 8:30 p.m. until after midnight.

The State also presented evidence that Pierce visited a friend in Port Penn, Delaware around 1:00 a.m. on July 9, 2016. <sup>58</sup> He went to Sandra Ciccantelli's house and spoke outside with her and her niece. <sup>59</sup> Sandra claimed that when she inquired about Heather, Pierce responded that he hit her with a two-by-four. Sandra's niece said he was laughing so they did not take him seriously. <sup>60</sup> The niece also claimed that he said he was going back to jail on Tuesday because he did something very bad. <sup>61</sup> Despite this purported conversation, neither woman contacted police after seeing a news article that reported Heather's death by blunt trauma and requested information. <sup>62</sup>

Finally, video surveillance and call location evidence revealed that Pierce went to be with his mother in Elsmere the rest of that early morning.<sup>63</sup>

<sup>57</sup> A605, 610-611.

<sup>&</sup>lt;sup>58</sup> A627.

<sup>&</sup>lt;sup>59</sup> A622-623, 627-628.

<sup>&</sup>lt;sup>60</sup> A624, 628, 629-630.

<sup>&</sup>lt;sup>61</sup> A631.

<sup>&</sup>lt;sup>62</sup> A624-626.

<sup>&</sup>lt;sup>63</sup> A641.

I. THE TRIAL COURT ABUSED ITS DISCRETION WHEN IT FAILED TO EXCLUDE EVIDENCE PERTAINING TO THE GOOGLE WIFI LOCATION DATA OBTAINED FROM PIERCE'S CELL PHONE BECAUSE THE STATE FAILED TO ESTABLISH THAT IT WAS SUFFICIENTLY RELIABLE UNDER THE DAUBERT STANDARD.

### Question Presented

Whether the trial court abused its discretion when it refused to exclude evidence pertaining to the Google WiFi Location data obtained from Pierce's cell phone when the State failed to establish that it was sufficiently reliable under the *Daubert* standard.<sup>64</sup>

#### Standard and Scope of Review

This Court reviews a trial court's decision to admit expert testimony for abuse of discretion.<sup>65</sup>

### Argument

The admission of expert testimony is governed by *Delaware Rule of Evidence* 702 and *Daubert v. Merrell Dow Pharmaceuticals*, Inc.<sup>66</sup> Pursuant to *Rule* 702,

[a] witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to

<sup>&</sup>lt;sup>64</sup> A21.

<sup>&</sup>lt;sup>65</sup>Bowen v. E.I. DuPont de Nemours & Co., Inc., 906 A.2d 787, 795 (Del. 2006).

<sup>&</sup>lt;sup>66</sup> 509 U.S. 579 (1993).

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.

Daubert sets forth four non-exclusive factors that are helpful to determine the reliability of scientific or technical testimony: (1) whether the scientific theory or technique can be (and has been) tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) whether a particular technique has a known potential rate of error; and (4) whether the theory or technique is generally accepted in the relevant scientific community.<sup>67</sup> These factors are not necessarily a "definitive checklist or test" and "[m]any factors will bear on the inquiry" that involves "a preliminary of whether the reasoning assessment or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue."68 The inquiry to be undertaken by a trial court is "a flexible one" focusing on the "principles and methodology" employed by an expert, not on the conclusions reached.<sup>69</sup>

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<sup>&</sup>lt;sup>67</sup> Daubert, 509 U.S. at 593-595.

<sup>&</sup>lt;sup>68</sup> *Id.* at 592-593.

<sup>&</sup>lt;sup>69</sup> *Id.* at 594-595.

The State's theory in our case was that Pierce killed Heather after she went to bed. This theory centered around King's testimony. However, King claimed Pierce visited Heather at a time when, as video, call location<sup>70</sup> and other evidence established, Pierce was actually in New Castle. Thus, the State sought to introduce evidence that would place Pierce at 231 Adams Street at a time consistent with the rest of King's testimony and the rest of the State's evidence. So, the State sought to introduce analysis of the Google location data obtained from Pierce's cell phone in an effort to track his location for the evening of July 8, 2016 through the morning of July 9, 2016.<sup>71</sup>

Among other things, the Google data led the State's expert to conclude that from 12:20 a.m. through 12:37 a.m. on July 9, 2016, Pierce's phone was traveling from the area of New Castle to the area of Delaware City;<sup>72</sup> from about 12:45 a.m. through 1:08 a.m. on July 9, 2016 the phone remained in an area that encompassed 231 Adams Street;<sup>73</sup> and that from 1:16 a.m. through 1:22 a.m. the phone traveled toward an area including Port Penn.<sup>74</sup>

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<sup>&</sup>lt;sup>70</sup> From the cell phone records, the State's expert concluded, among other things, that at 9:55 p.m., Pierce was in a location which included Shirley's apartment and the Manor Park Liquor in New Castle- and not 213 Adams Street as King claimed. A633, 667-668.

<sup>&</sup>lt;sup>71</sup> There was no call data placing Pierce in Delaware City that night after he left the waterfront. A633-634, 665-666, 669-672.

<sup>&</sup>lt;sup>72</sup>A457-458, 640.

<sup>&</sup>lt;sup>73</sup>A459-460, 640.

<sup>&</sup>lt;sup>74</sup>A461-462, 640.

Pierce filed a motion to exclude evidence related to the Google Wifi location data obtained from his cell phone on the grounds that it was not sufficiently reliable under the *Daubert* standard. At a subsequent hearing, the State presented two witnesses, Andrew Rist, an engineer at Oracle Corporation, and Detective Anthony Vega, a member of FBI's Cellular Analysis Survey Team.

According to Rist,<sup>75</sup> as summarized by the trial court,

WiFi positioning system relies upon WiFi signals to determine the distance between the device and the signal access point ("AP"). WiFi Access Points are the devices that create a wireless local area network, such as a router in an office, business, or home, by projecting a Wi-Fi signal to a designated area. Included in the location data sent to Google by Android devices are Wi-Fi scans, which include a list of the Wi-Fi APs the device could "see" at that particular time and location. Generally, in order for a device to see a Wi-Fi AP, the device will be within 150 feet of a signal, much closer than with cell tower positioning. Google collects and stores the locations and strength of Wi-Fi APs, identified by their Media Access Control ("MAC") address, in order to locate mobile multiple devices. When signals are in range, Google Location Services uses multilateration to identify the device location, with more signals providing a more accurate location.<sup>76</sup>

<sup>&</sup>lt;sup>75</sup> A149, 154, 207, 224, 357.

<sup>&</sup>lt;sup>76</sup> State v. Pierce, 2019 WL 1077688 \*3 (Del.Super. 3/6/2019).

After post-hearing briefing, the trial court abused its discretion and found the State had established by a preponderance of the evidence that the Google Wi-Fi Location Data is reliable and denied Pierce's motion.<sup>77</sup>

# 1. The State Failed to Explain The Underlying Methodology Used By Google For Its Wi-Fi Positioning System.

Rist provided testimony explaining that Google collects WiFi readings that run its applications to provide location-based services. He also explained that with this information, Google has created a database, or reference map, that reflects the presumed locations of each AP that Google has identified.<sup>78</sup> But, neither Rist nor Vega could explain how Google quantifies this data to determine the location of an AP and, by extension, the location of a cell phone.

Google does not share its reference map or the algorithm it uses to calculate a phone's location in relation to one or more identified APs.<sup>79</sup> Rist candidly admitted that there is a scientific method underlying Google's algorithm, but he could not explain the method because he does not know the algorithm.<sup>80</sup> In *People v. Oquendo*, one of only a few cases in the country to

<sup>&</sup>lt;sup>77</sup> Pierce, 2019 WL 1077688 \*8.

<sup>&</sup>lt;sup>78</sup> A149.

<sup>&</sup>lt;sup>79</sup> A192-193, 201.

<sup>80</sup> A281-282.

address the issue, the judge excluded Google location evidence due, in part, to the witnesses' lack of "knowledge of the particular algorithm used[.]"81

Rist did not know how Google weighed the data or what information was factored into the data set.82 Nevertheless, he claims that Google can calculate a phone's location based on its proximity to a single AP.83 When asked how many phones need to probe an AP before Google can accurately identify its location, Rist responded, "I don't know that it's a question of how many deices as to how many particular readings."84 Yet he did not know the number of readings Google required, either.85

Similarly, Rist could not explain how Google determines that a previously identified AP has moved to a new location. 86 There are no published studies or guidelines concerning Google's process of updating its reference map when a new AP first comes "online" or when an identified AP is taken "offline." Rist guessed that it took Google about one week to report

<sup>81</sup> People v. Oquendo, 16-1154 (N.Y. Oct. 26, 2017) A345-351.

<sup>&</sup>lt;sup>82</sup> A226, 241.

<sup>83</sup>A208. "Well you need-you know, one [WiFi reading] would allow you to get a fix. But, then, that fix is less accurate than if you have two, and less accurate if you have three."

<sup>84</sup> A209.

<sup>&</sup>lt;sup>85</sup> A210.

<sup>86</sup> A210, 262-263.

<sup>&</sup>lt;sup>87</sup> A210-211.

an AP's new location.<sup>88</sup> He recalled an instance in which a router (or AP) was moved from Washington to San Francisco but, for the next several days, Google continued to identify Washington as the location of that AP.<sup>89</sup> The State did not introduce any evidence indicating how frequently that type of error occurs.

Further, Rist conceded that Google's WiFi data does not reveal (1) the technique Google used to identify a phone's location or (2) the number and quality of signals the phone observed. But those are two of the three factors that determine the accuracy of a WiFi positioning system. The third factor-the accuracy of the reference AP map- is also unknown. Although Rist testified that a "very high percentage" of Google's reference map is accurate, he could not give an exact figure and felt "pretty certain ... that they are not all accurate at any one moment."

<sup>&</sup>lt;sup>88</sup> A262-264.

<sup>&</sup>lt;sup>89</sup> A264.

<sup>&</sup>lt;sup>90</sup> A212, 229-230.

<sup>&</sup>lt;sup>91</sup> A164, 357. "So the more WiFi signals that the phone can see, the better the reading. The stronger the WiFi signals, the better the reading."

<sup>&</sup>lt;sup>92</sup> A200-201.

<sup>&</sup>lt;sup>93</sup> A279-280.

<sup>&</sup>lt;sup>94</sup> A263.

accurate."95 To reach this conclusion, Rist relied on what his own "research has shown."96

2. Andrew Rist's "Own Research" Was Not Sufficient To Establish That Google's Wi-Fi Positioning System Is The Product Of A Reliable Scientific Process.

The trial court erroneously cites to Rist's "own research" as generally providing an indication of reliability. Through his employment at Oracle, Rist built a "rig" that allows him to intercept and break the encrypted data sent from a cell phone to Google. After breaking the encryption, Rist turns the data into a readable text-based communication. He testified that this rig serves to "research" and "educate people about what data is sent" to Google.

Over a two-year period, Oracle's rig has intercepted approximately 40,000 WiFi-based location readings from 20 different cell phones. Rist attempted to find the locations of each WiFi AP-identified by its unique media access control (MAC) address- in Google's Geolocation API. Only half of

<sup>&</sup>lt;sup>95</sup> A263.

<sup>&</sup>lt;sup>96</sup> A263.

<sup>&</sup>lt;sup>97</sup> A127.

<sup>&</sup>lt;sup>98</sup> A128.

<sup>&</sup>lt;sup>99</sup> A133-134.

<sup>&</sup>lt;sup>100</sup> A214-215.

<sup>&</sup>lt;sup>101</sup> Google's Geolocation application programming interface (API) returns a location and accuracy radius based on information about cell towers and WiFi nodes that the mobile client can detect. For WiFi access points, the client's geolocation request must contain two or more WiFi access point

those MAC addresses could be located using Google's API "probably because they are not in Google's database." <sup>102</sup>

Rist's rig was not designed to test the reliability of Google's WiFi positioning system. Oracle asked Rist to find out what personal information an Android cell phone sent back to Google.<sup>103</sup> The rig allowed Rist to "watch the communications going back and forth" from an Android phone and Google.<sup>104</sup> But this only confirms that the rig has intercepted the same location information that is stored by Google. It does not explain how Google then weighs that data, calculates the approximate location of a device, or maintains its reference AP map.

In fact, the data that Oracle's rig collects is not even the same data provided by Google pursuant to a search warrant. Google reports the purported location of the phone and the accuracy of that reading. Oracle, on the other hand, intercepts the MAC address, the received signal strength

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objects. The MAC address is required; all other fields are optional. A391. https://developers.google.com/maps/docuentation/geolocation/intro.

<sup>&</sup>lt;sup>102</sup> A215.

<sup>&</sup>lt;sup>103</sup> A125.

<sup>&</sup>lt;sup>104</sup> A125-126.

<sup>&</sup>lt;sup>105</sup> A182-183, 186-187.

<sup>&</sup>lt;sup>106</sup> A186-187. Location is expressed using latitude and longitude coordinates. Accuracy is expressed as a number that represents the maximum distance the phone might be from that location, (i.e., the uncertainty value).

(or RSSI value), and the channel of the signal.<sup>107</sup> While Google may include those data points in its algorithm, its mathematical calculations have not been proven reliable.

# 3. Google's Wi-Fi Positioning System Was Not Subjected To Adequate Peer Review.

Equally concerning is the complete absence of publication and peer review. 108 The trial court tries to justify this with its own commentary that, "[t]he pace of technology advances within the computer science field results in peer review different from the peer review process in other sciences, such as life sciences." 109 Despite his ability to convert encrypted data into a readable text format, Rist has not subjected his research to the scrutiny of other experts in the field. His tests are anecdotal at best and he provided no studies to the court or results of tests. Nevertheless, the State asks this Court to accept his untested and unverified conclusions as evidence that Google's WiFi positioning system is reliable.

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<sup>&</sup>lt;sup>107</sup> A140, 163, 357.

<sup>&</sup>lt;sup>108</sup> A194, 230, 278.

<sup>&</sup>lt;sup>109</sup> Pierce, 2019 WL 1077688 n.35.

4. The State Failed To Present Any Evidence That Google's Wi-Fi Positioning System Is Subjected To Any Rigorous Guidelines or Standards.

Unlike other technologies such as Global Positioning System (GPS),<sup>110</sup> Google's WiFi positioning system is not controlled by any guidelines or minimum performance standards. Google's technique does not rely on a well-known mathematical formula or require a minimum number of signals to ensure accuracy. Nor does Google have control over the APs identified in its reference map. And unlike a GPS satellite, a WiFi AP does not broadcast its location to a cell phone. Therefore, Google must attempt to calculate two unknowns: the location of the phone and the location of the AP.

Thus, the record reveals no basis to conclude that Google follows a rigorous scientific process. And, in situations such as ours, "where 'the precepts of science have not caught up with all of the claims of the plaintiff[]' [the Court must] steadfastly guard the gates of the courtroom and demand that the science, if it is to advance, be enriched in the laboratories, hospitals, universities or other research centers where serious scientists consider such matters. The State failed to prove that Google's "self-fulfilling [WiFi

<sup>&</sup>lt;sup>110</sup> See, e.g., hhtps://www.gps.gov/multimedia/poster/poster-web.pdf.

<sup>&</sup>lt;sup>111</sup> Scaife v. Astrazeneca LP, 2009 WL 1610575 (Del.Super. June 9, 2009) (quoting Minner v. American Mortg. & Guar., Co., 791 A.2d 826, 848 (Del.Super. 2000).

positioning] system" is reliable. 112 Therefore, the trial court should have found all testimony that purported to identify Pierce's whereabouts based on his WiFi data to be inadmissible.

<sup>&</sup>lt;sup>112</sup> A261.

## **CONCLUSION**

For the reasons and upon the authorities cited herein, Pierce's convictions must be reversed.

Respectfully submitted,

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