

FIBER EVIDENCE AND THE WAYNE WILLIAMS TRIAL

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On February 26, 1982, a Fulton County, Ga., Superior Court jury returned a verdict of "guilty as charged" on two counts of murder brought against Wayne Bertram Williams by a Fulton County grand jury in July 1981. Williams had been on trial since December 28, 1981, for the asphyxia murders of Nathaniel Cater and Jimmy Payne in April and May of 1981.

During the 8-week trial, evidence linking Williams to those murders and to the murders of 10 other boys or young men was introduced. An essential part of this case, presented by the Fulton County District Attorney's Office, involved the association of fibrous debris removed from the bodies of 12 murder victims with objects from the everyday environment of Williams.

Fiber evidence has often been an important part of criminal cases, but the Williams trial differed from other cases in several respects. Fiber evidence has not played a significant role in any case involving a large number of murder victims. The victims whose deaths were charged to Williams were 2 of 30 black children and black young men who were reported missing or who had died under suspicious circumstances in the Atlanta area over a 22-month period beginning in July 1979. During the trial, fiber evidence was used to associate Williams with 12 of those victims.

Fiber evidence is often used to corroborate other evidence in a case if it is used to support other testimony and validate other evidence presented at a trial. This was not the situation in the Williams trial. Other evidence and other aspects of the trial were important but were used to support and complement the fiber evidence, not the usual order of things. The "hair and fiber matches" between Williams's environment and 11 of the 12 murder victims discussed at the trial were so significant that, in the author's opinion, these victims were positively linked to both the residence and automobiles that were a major part of the world of Wayne Williams.

Another difference between this case and most other cases was the extremely large amount of publicity surrounding both the investigation of the missing and murdered children and the arrest and subsequent trial of Williams. Few other murder trials have received the attention that the Williams case received. . . . It is often difficult to get an accurate picture from press reports of the physical evidence introduced at a trial and the significance of that evidence. This article will also set forth in some detail the fiber evidence that linked Williams to the murder victims.

By discussing only the fiber evidence introduced at the trial, many other aspects of the case against Williams are being neglected. Additional evidence dealing with Williams's motivations-his character and behavior, his association with several of the victims by eyewitness accounts, and his link to a victim recovered from a river in Atlanta-was also essential to the case. . . .

Development of Williams as a Murder Suspect

Before Wayne Williams became a suspect in the Nathaniel Cater murder case, the Georgia State Crime Laboratory located a number of yellowish-green nylon fibers and some violet acetate fibers on the bodies and clothing of the murder victims whose bodies had been recovered during the period of July 1979 to May 1981. The names of those victims were included on the list of missing and murdered children that was compiled by the Atlanta Task Force (a large group of investigators from law enforcement agencies

in the Atlanta area). The yellowish-green nylon fibers were generally similar to each other in appearance and properties and were considered to have originated from a single source. This was also true of the violet acetate fibers. Although there were many other similarities that would link these murders together, the fiber linkage was notable since the possibility existed that a source of these fibers might be located in the future.

Initially, the major concern with these yellowish-green nylon fibers was determining what type of object could have been their source. This information could provide avenues of investigative activity. The fibers were very coarse and had a lobed cross-sectional appearance, tending to indicate that they originated from a carpet or a rug. The lobed cross-sectional shape of these fibers, however, was unique, and initially, the manufacturer of these fibers could not be determined. Photomicrographs of the fibers were prepared for display to contacts within the textile industry. On one occasion, these photomicrographs were distributed among several chemists attending a meeting at the research facilities of a large fiber producer. The chemists concurred that the yellowish-green nylon fiber was very unusual in cross-sectional shape and was consistent with being a carpet fiber, but again, the manufacturer of this fiber could not be determined. Contacts with other textile producers and textile chemists likewise did not result in an identification of the manufacturer.

In February 1981, an Atlanta newspaper article publicized that several different fiber types had been found on two murder victims. Following the publication of this article, bodies recovered from rivers in the Atlanta metropolitan area were either nude or clothed only in undershorts. It appeared possible that the victims were being disposed of in this undressed state and in rivers in order to eliminate fibers from being found on their bodies.¹

On May 22, 1981, a four-man surveillance team of personnel from the Atlanta Police Department and the Atlanta Office of the FBI was situated under and at both ends of the James Jackson Parkway Bridge over the Chattahoochee River in northwest Atlanta. Around 2 A.M., a loud splash alerted the surveillance team to the presence of an automobile being driven slowly off the bridge. The driver was stopped and identified as Wayne Bertram Williams.

Two days after Williams's presence on the bridge, the nude body of Nathaniel Cater was pulled from the Chattahoochee River, approximately 1 mile downstream from the James Jackson Parkway Bridge. A yellowish-green nylon carpet-type fiber, similar to the nylon fibers discussed above, was recovered from the head hair of Nathaniel Cater. When details of Williams's reason for being on the bridge at 2 A.M. could not be confirmed, search warrants for Williams's home and automobile were obtained and were served on the afternoon of June 3, 1981. During the late evening hours of the same day, the initial associations of fibers from Cater and other murder victims were made with a green carpet in the home of Williams. Associations with a bedspread from Williams's bed and with the Williams's family dog were also made at that time.

¹Prior to the publication of the February 11, 1981, newspaper article, one victim from the task force list, who was fully clothed, had been recovered from a river in the Atlanta area. In the 2Y.-month period after publication, the nude or nearly nude bodies of 7 of the 9 victims added to the task force list were recovered from rivers in the Atlanta area.

An apparent source of the yellowish-green nylon fibers had been found. It now became important to completely characterize these fibers in order to verify the associations and determine the strength of the associations resulting from the fiber matches. Because of the unusual cross-sectional appearance of the nylon fiber and the difficulty in determining the manufacturer, it was believed that this was a relatively rare fiber type, and therefore, would not be present in large amounts (or in a large number of carpets).

The Williams's Carpet

Shortly after Williams was developed as a suspect, it was determined the yellowish-green nylon fibers were manufactured by the Wellman Corporation. The next step was to ascertain, if possible, how much carpet like Williams's bedroom carpet had been sold in the Atlanta area-carpet composed of the Wellman fiber and dyed with the same dye formulation as the Williams's carpet. Names of Wellman Corporation customers who had purchased this fiber type, technical information about the fiber, and data concerning when and how much of this fiber type had been manufactured were obtained.

It was confirmed that the Wellman Corporation had, in fact, manufactured the fiber in Williams's carpet and that no other fiber manufacturer was known to have made a fiber with a similar cross section. It was also determined that fibers having this cross-sectional shape were manufactured and sold during the years 1967 through 1974. Prior to 1967, this company manufactured only a round cross section; after 1974, the unusual trilobal cross section seen in Williams's carpet was modified to a more regular trilobal cross-sectional shape. A list of sales of that fiber type during the period 1967 through 1974 was compiled. . . .Through numerous contacts with yarn spinners and carpet manufacturers, it was determined that the West Point Pepperell Corporation of Dalton, Ga., had manufactured a line of carpet called "Luxaire," which was constructed in the same manner as the Williams's carpet. One of the colors offered in the "Luxaire" line was called "English Olive," and this color was the same as that of the Williams's carpet (both visually and by the use of discriminating chemical and instrumental tests). It was learned that the West Point Pepperell Corporation had manufactured the "Luxaire" line for a five-year period from December 1970 through 1975; however, it had only purchased Wellman 181B fiber for this line during 1970 and 1971. In December 1971, the West Point Pepperell Corporation changed the fiber composition of the "Luxaire" line to a different nylon fiber, one that was dissimilar to the Wellman 181B fiber in appearance. Accordingly, "Luxaire" carpet, like the Williams's carpet, was only manufactured for a 1-year period. This change of carpet fiber after only 1 year in production was yet another factor that made the Williams's carpet unusual.

It is interesting to speculate on the course the investigation would have taken if the James Jackson Parkway Bridge had not been covered by the surveillance team. The identification of the manufacturer of the nylon fibers showing up on the bodies could still have occurred and the same list of purchasers of the Wellman fiber could have been obtained. The same contacts with the yarn and carpet manufacturers could have been made; however, there would not have been an actual carpet sample to display. It is believed that eventually the carpet manufacturer could have been determined. With a sample of carpet supplied by West Point Pepperell-which they had retained in their files for over 10 years-it would have been possible to conduct a house-by-house search of the Atlanta area in an attempt to find a similar carpet. Whether this very difficult task would have been attempted, of course, will never be known. A search of that type, however, would have accurately answered an important question that was discussed at the trial-the question of how many other homes in the Atlanta area had a carpet like the Williams's carpet. An estimation, to be discussed later, based on sales records provided by the West Point Pepperell Corporation indicated that there was a very low chance (1/7792) of finding a carpet like Williams's carpet by randomly

selecting occupied residences in the Atlanta area. Only the West Point Pepperell Corporation was found to have manufactured a carpet exactly like the Williams's carpet. Even though several manufacturers had gone out of business and could not be located, it was believed that, considering the many variables that exist in the manufacture of carpet and the probable uniqueness of each carpet manufacturer's dye formulations, it would be extremely unlikely for two unrelated companies to construct a carpet or dye the carpet fibers in exactly the same way. A large number of other green fibers, visually similar in color to Williams's carpet, were examined. None was found to be consistent with fibers from the Williams's carpet.

Probability Determinations

To convey the unusual nature of the Williams's residential carpet, an attempt was made to develop a numerical probability-something never before done in connection with textile materials used as evidence in a criminal trial. The following information was gathered from the West Point Pepperell Corporation:

1. West Point Pepperell reported purchases of Wellman 181B fiber for the "Luxaire" line during a 1-year period. The Wellman 181B fiber was used to manufacture "Luxaire" carpet from December 1970 until December 1971, at which time a new fiber type replaced that Wellman fiber.

2. In 1971, West Point Pepperell sold 5,710 square yards of English Olive "Luxaire" and "Dreamer" carpet to Region C (10 southeastern states which include Georgia). "Dreamer" was a line of carpet similar to "Luxaire" but contained a less dense pile. In order to account for the carpet manufactured during 1971, but sold after that time, all of the "Luxaire" English Olive carpet sold during 1972 to Region C (10,687 square yards) was added to the 1971 sales. Therefore, it was estimated that a total of 16,397 square yards of carpet containing the Wellman 181B fiber and dyed English Olive in color was sold by the West Point Pepperell Corporation to retailers in 10 south-eastern states during 1971 and 1972. (In 1979, existing residential carpeted floor space in the United States was estimated at 6.7 billion square yards.)

(This information was taken from a study by E. I. du Pont de Nemours & Co. concerned with the existing residential floor space with carpet in the United States. This study was reported in a marketing survey conducted by the Marketing Corporation of America, Westport, Conn.)

3. By assuming that this carpet was installed in one room, averaging 12 feet by 15 feet in size, per house, and also assuming that the total sales of carpet were divided equally among the 10 southeastern states, then approximately 82 rooms with this carpet could be found in the state of Georgia.

4. Information from the Atlanta Regional Commission showed that there were 638,995 occupied housing units in the Atlanta metropolitan area in November 1981. Using this figure, the chance of randomly selecting an occupied housing unit in metropolitan Atlanta and finding a house with a room having carpet like Williams's carpet was determined to be 1 chance in 7, 792 a very low chance. To the degree that the assumptions used in calculating the above probability number are reasonable, we can be confident in arriving at a valid probability number. The probability figures illustrate clearly that the Williams's carpet is, in fact, very uncommon. To enhance the figures even further, it is important to emphasize that these figures are based on the assumption that none of the carpet of concern had been discarded during the past 11 years. In fact, carpet of this type, often used in commercial settings, such as apartment houses, would probably have had a normal life span of only 4 or 5 years.

Information regarding the number of housing units in the Atlanta metropolitan area was obtained from a report provided by the Atlanta Regional Commission. The report, dated November 11, 1981, contained population and housing counts for counties, super districts, and census tracts in the Atlanta metropolitan area.

Information about carpet similar to Williams's carpet was developed through contacts with carpet manufacturers and carpet salesmen in Georgia. It was determined that this type carpet was often installed in commercial settings, such as apartments, and in those settings, had an average life span of 4 to 5 years.

The Williams Trial

To any experienced forensic fiber examiner, the fiber evidence linking Williams to the murder victims was overwhelming. But regardless of the apparent validity of the fiber findings, it was during the trial that its true weight would be determined. Unless it could be conveyed meaningfully to a jury, its effect would be lost. Because of this, considerable time was spent determining what should be done to convey the full significance of the fiber evidence. Juries are not usually composed of individuals with a scientific background, and therefore, it was necessary to "educate" the jury in what procedures were followed and the significance of the fiber results. In the Williams case, over 40 charts with over 350 photographs were prepared to illustrate exactly what the crime laboratory examiners had observed. . . .

Representatives of the textile fiber industry, including technical representatives from the Wellman and West Point Pepperell Corporations, were involved in educating the jury regarding textile fibers in general and helped lay the foundation for the conclusions of the forensic fiber examiners. The jury also was told about fiber analysis in the crime laboratory. The trial, as it developed, can be divided into two parts. Initially, testimony was given concerning the murders of Nathaniel Cater and Jimmy Ray Payne, the two victims included in the indictment drawn against Williams in July 1981. Testimony was then given concerning Williams's association with 10 other murder victims.

The fiber matches made between fibers in Williams's environment and fibers from victims Payne and Cater were discussed. The items from Williams's environment that were linked to either or both of the victims are shown in the center of the chart. (See Figure 1.) Not only is Payne linked to Williams's environment by seven items and Cater linked by six items, but both of the victims are linked strongly to each other based on the fiber matches and circumstances surrounding their deaths.

In discussing the significance or strength of an association based on textile fibers, it was emphasized that the more uncommon the fibers, the stronger the association. None of the fiber types from the items in Williams's environment shown in the center of Figure 1 is by definition a "common" fiber type. Several of the fiber types would be termed "uncommon." One of the fibers linking the body of Jimmy Ray Payne to the carpet in the 1970 station wagon driven by Williams was a small rayon fiber fragment recovered from Payne's shorts. Data were obtained from the station wagon's manufacturer concerning which automobile models produced prior to 1973 contained carpet made of this fiber type. These data were

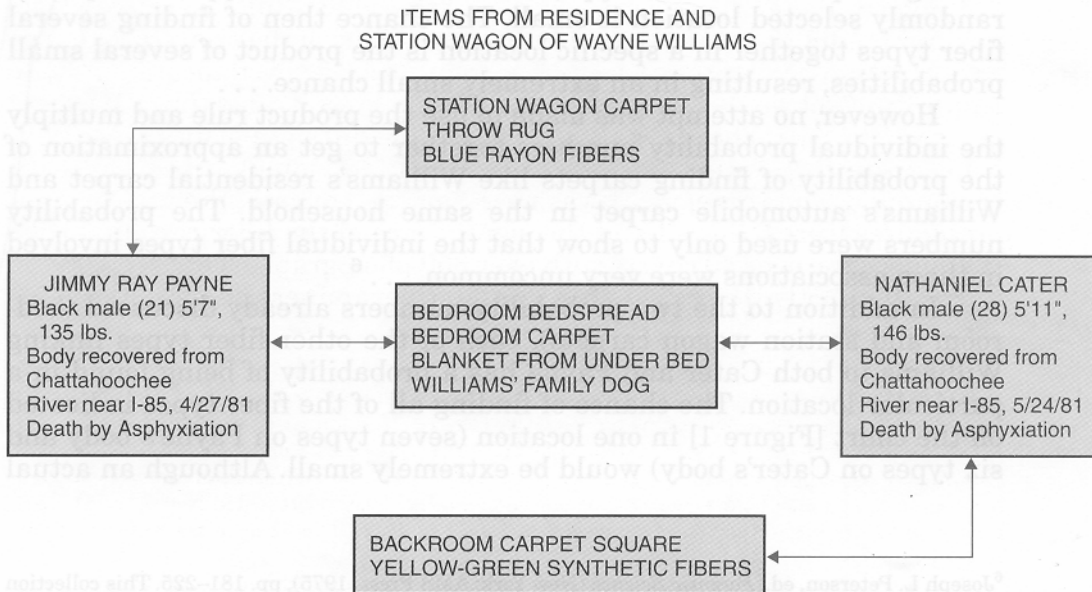


FIGURE 1 Items from residence and station wagon of Wayne Williams that were found on Jimmy Ray Payne and Nathaniel Cater.

coupled with additional information from Georgia concerning the number of these models registered in the Atlanta metropolitan area during 1981. This allowed a calculation to be made relating to the probability of randomly selecting an automobile having carpet like that in the 1970 Chevrolet station wagon from the 2,373,512 cars registered in the Atlanta metropolitan area. This probability is 1 chance in 3,828, a very low probability representing a significant association. Another factor to consider when assessing the significance of fiber evidence is the increased strength of the association when multiple fiber matches become the basis of the association. This is true if different fiber types from more than one object are found and each fiber type either links two people together or links an individual with a particular environment. As the number of different objects increases, the strength of an association increases dramatically. That is, the chance of randomly finding several particular fiber types in a certain location is much smaller than the chance of finding one particular fiber type.

The following example can be used to illustrate the significance of multiple fiber matches linking two items together. If one were to throw a single die one time, the chance or probability of throwing a particular number would be one chance in six. The probability of throwing a second die and getting that same number also would be one chance in six. However, the probability of getting 2 of the same numbers on 2 dice thrown simultaneously is only 1 in every 36 double throws—a much smaller chance than with either of the single throws. This number is a result of the product rule of probability theory. That is, the probability of the joint occurrence of a number of mutually independent events equals the product of the individual probabilities of each of the events (in this example— $1/6 \times 1/6 = 1/36$). Since numerous fiber types are in existence, the chance of finding one particular fiber type, other than a common type, in a specific randomly selected location is small. The chance then of finding several fiber types together in a specific location is the product of several small probabilities, resulting in an extremely small chance. . . .

However, no attempt was made to use the product rule and multiply the individual probability numbers together to get an approximation of the probability of finding carpets like Williams's residential carpet and

Williams's automobile carpet in the same household. The probability numbers were used only to show that the individual fiber types involved in these associations were very uncommon. . . .

In addition to the two probability numbers already discussed (bedroom and station wagon carpets), each of the other fiber types linking Williams to both Cater and Payne has a probability of being found in a particular location. The chance of finding all of the fiber types indicated on the chart [Figure 1] in one location (seven types on Payne's body and six types on Cater's body) would be extremely small. Although an actual probability number for those findings could not be determined, it is believed that the multiple fiber associations shown on this chart are proof that Williams is linked to the bodies of these two victims, even though each fiber match by itself does not show a positive association with Williams's environment.

Studies have been conducted in England that show that transferred fibers are usually lost rapidly as people go about their daily routine. Therefore, the foreign fibers present on a person are most often from recent surroundings. The fibrous debris found on a murder victim reflects the body's more recent surroundings, especially important if the body was moved after the killing. Accordingly, the victims' bodies in this particular case are not only associated with Williams but are apparently associated with Williams shortly before or after their deaths. It was also pointed out during the trial that the locations of the fibers-on Payne's shorts and in Cater's head hairs and pubic hairs-were not those where one would expect to find fibrous debris transferred from an automobile or a house to victims who had been fully clothed.

Although from these findings it would appear that the victims were in the residence of Williams, there was one other location that contained many of the same fibers as those in the composition of various objects in his residence-Williams's station wagon. The environment of a family automobile might be expected to reflect, to some extent, fibers from objects located within the residence. This was true of the 1970 station wagon. With one exception, all of the fiber types removed from Payne and Cater, consistent with originating from items shown in the center of Figure 1, were present in debris removed by vacuuming the station wagon. The automobile would be the most logical source of the foreign fibers found on both Payne and Cater if they were associated with Williams shortly before or after their deaths. It should also be pointed out that two objects, the bedspread and the blanket, were portable and could have at one time been present inside the station wagon.

Both Payne and Cater were recovered from the Chattahoochee River. Their bodies had been in the water for several days. Some of the fibers found on these victims were like fibers in the compositions of the bedroom carpet and bedspread except for color intensity. They appeared to have been bleached. By subjecting various known fibers to small amounts of Chattahoochee River water for different periods of time, it was found that bleaching did occur. This was especially true with the carpet and bedspread fibers from Williams's bedroom. Two crime laboratory examiners testified during the closing stages of the first part of the trial about Williams's association with Payne and Cater. They concluded that it was highly unlikely that any environment other than that present in Wayne Williams's house and car could have resulted in the combination of fibers and hairs found on the victims and that it would be virtually impossible to have matched so many fibers found on Cater and Payne to items in Williams's house and car unless the victims were in contact with or in some way associated with the environment of Wayne Williams.

After testimony was presented concerning the Payne and Cater cases, the Fulton County District Attorney's Office asked the court to be allowed to introduce evidence in the cases of 10 other victims whose murders were

similar in many respects. Georgia law allows evidence of another crime to be introduced . . . if some logical connection can be shown between the two from which it can be said that proof of the one tends to establish the other as relevant to some fact other than general bad character. There need be no conviction for the other crime in order for details about that crime to be admissible.

It was ruled that evidence concerning other murders could be introduced in an attempt to prove a "pattern or scheme" of killing that included the two murders with which Williams was charged. The additional evidence in these cases was to be used to help the jury . . . decide whether Williams had committed the two murders with which he is charged.

There were similarities between these additional victims and Payne and Cater. (See Figure 2.) Although some differences can also be seen on this chart, the prosecution considered these differences to fit within the "pattern of killing" of which Payne and Cater were a part. The most important similarities between these additional victims were the fiber matches that linked 9 of the 10 victims to Williams's environment. The fiber findings discussed during the trial and used to associate Williams to the 12 victims were illustrated during the trial. (See Figure 3.)

The 12 victims were listed in chronological order based on the dates their bodies were recovered. The time period covered by this chart, approximately 22 months, is from July 1979 until May 1981. During that time period, the Williams family had access to a large number of automobiles, including a number of rental cars. Three of these automobiles are listed at the top of Figure 3. If one or more of the cars was in the possession of the Williams family at the time a victim was found to be missing, the space under that car(s) and after the particular victim's name is shaded. Four objects (including the dog) from Williams's residence are listed horizontally across the top of Figure 3, along with objects from three of his automobiles. An "X" on the chart indicates an apparent transfer of textile fibers from the listed object to a victim. Other objects from Williams's environment which were linked to various victims by an apparent fiber transfer are listed on the right side of the chart. Fiber types from objects (never actually located) that were matched to fiber types from one or more victims are also listed either at the top or on the right side of the chart.

Fourteen specific objects and five fiber types (probably from five other objects) listed on this chart are linked to one or more of the victims. More than 28 different fiber types, along with the dog hairs, were used to link up to 19 objects from Williams's environment to 1 or more of the victims.

VICTIM'S NAME	DATE VICTIM MISSING	DAYS MISSING	BODY RECOVERY AREA	CAUSE OF DEATH	AGE	WEIGHT	HEIGHT
EVANS	7/25/79	3	WOODED AREA S.W. ATLANTA	PROBABLE ASPHYXIATION/ STRANGULATION	13	87 LBS.	5'4"
MIDDLEBROOKS	5/18/80	1	NEAR STREET S.E. ATLANTA	BLUNT TRAUMA TO HEAD	14	88 LBS.	4'10"
STEPHENS	10/9/80	1	NEAR STREET S.E. ATLANTA	ASPHYXIATION	10	120 LBS.	5'0"
GETER	1/3/81	33	WOODED AREA FULTON COUNTY	MANUAL STRANGULATION	14	130 LBS.	5'4"
PUE	1/22/81	1	NEAR HIGHWAY ROCKDALE CO.	LIGATURE STRANGULATION	15	105 LBS.	5'5"
BALTAZAR	2/6/81	7	NEAR HIGHWAY DEKALB CO.	LIGATURE STRANGULATION	12	125 LBS.	5'4"
BELL	3/2/81	31	SOUTH RIVER DEKALB CO.	ASPHYXIATION	16	100 LBS.	5'2"
ROGERS	3/30/81	10	NEAR STREET N.W. ATLANTA	ASPHYXIATION/ STRANGULATION	20	110 LBS.	5'3"
PORTER	4/10/81	1	NEAR STREET S.W. ATLANTA	STABBED	28	123 LBS.	5'7"
PAYNE	4/22/81	5	CHATTAHOOCHEE RIVER FULTON COUNTY	ASPHYXIATION	21	135 LBS.	5'7"
BARRETT	5/11/81	1	NEAR STREET DEKALB CO.	LIGATURE STRANGULATION (3 PUNCTURE WOUNDS)	17	125 LBS.	5'4"
CATER	5/21/81	3	CHATTAHOOCHEE RIVER FULTON COUNTY	ASPHYXIATION/ STRANGULATION	28	146 LBS.	5'11"

FIGURE 2 Chart used during the trial to show similarities between Payne and Cater and 10 other murder victims.

NAME OF VICTIM	ADDITIONAL ITEMS FROM WILLIAMS' HOME, AUTOMOBILES OR PERSON											
	VIOLET-GREEN BEDSPREAD	WILLIAMS' BEDROOM GREEN CARPET	WILLIAMS' BEDROOM DOG HAIRS	WILLIAMS' DOG	WILLIAMS' BLANKET	BLUE RAYON FIBERS HOME	1978 PLYMOUTH TRUNK LINER	1979 FORD CARPET	1970 CHEVROLET CARPET			
Alfred Evans	X	X					X			YELLOW NYLON	FORD TRUNK LINER	
Eric Middlebrooks	X						X			YELLOW NYLON WHITE POLYESTER BACKROOM CARPET	FORD TRUNK LINER	
Charles Stephens	X	X		X						KITCHEN CARPET		
Lubie Geter	X	X						X		WHITE POLYESTER BACKROOM CARPET		
Terry Pue	X	X								YELLOW NYLON WHITE POLYESTER HEAD HAIR GLOVE JACKET	PIGMENTED POLYPROPYLENE	
Patrick Baltazar	X	X	X					X				
Joseph Bell	X			X						YELLOW NYLON	PORCH BEDSPREAD	
Larry Rogers	X	X	X					X			PORCH BEDSPREAD	
John Porter	X	X	X	X				X				
Jimmy Payne	X	X	X	X				X		BLUE THROW RUG		
William Barrett	X	X	X	X				X		GLOVE		
Nathaniel Cater	X	X	X	X						BACKROOM CARPET	YELLOW-GREEN SYNTHETIC	

FIGURE 3 Fiber findings discussed during the trial and used to associate Williams with the 12 victims.

Of the more than 28 fiber types from Williams's environment, 14 of these originated from a rug or carpet. The combination of more than 28 different fiber types would not be considered so significant if they were primarily common fiber types. In fact, there is only 1 light green cotton fiber of the 28 that might be considered common. This cotton fiber was blended with acetate fibers in Williams's bedspread. Light green cotton fibers removed from many victims were not considered or compared unless they were physically intermingled with violet acetate fibers which were consistent with originating from the bedspread. It should be noted that a combination of cotton and acetate fibers blended together in a single textile

material, as in the bedspread, is in itself' uncommon. . . . The previous discussion concerning the significance of multiple fiber matches can be applied to the associations made in the cases of all the victims except Bell, but especially to the association of Patrick Baltazar to Williams's environment. Fibers and animal hairs consistent with having originated from 10 sources were removed from Baltazar's body. These 10 sources include the uncommon bedroom carpet and station wagon carpet.

In addition to the fiber (and animal hair) linkage, two head hairs of Negroid origin were removed from Baltazar's body that were consistent with originating from the scalp area of Williams. Head hair matches were also very significant in linking Williams to Baltazar's body. In the opinion of the author, the association based upon the hair and fiber analyses is a positive association.

Another important aspect of the fiber linkage between Williams and these victims is the correspondence between the fiber findings and the time periods during which Williams had access to the three automobiles listed on the chart. Nine victims are linked to automobiles used by the Williams family. When Williams did not have access to a particular car, no fibers were recovered that were consistent with having originated from that automobile. Trunk liner fibers of the type used in the trunks of many late-model Ford Motor Company automobiles were also recovered from the bodies of two victims.

One final point should be made concerning Williams's bedroom and station wagon carpets where probability numbers had been determined. Fibers consistent with having originated from both of these "unusual" carpets were recovered from Payne's body. Of the 9 victims who were killed during the time period when Williams had access to the 1970 station wagon, fibers consistent with having originated from both the station wagon carpet and the bedroom carpet were recovered from 6 of these victims. The apparent bleaching of several fibers removed from the bodies of Payne and Cater was consistent with having been caused by river water. Several fibers similar to those from Payne and Cater were removed from many of the victims whose bodies were recovered on land. Consistent with the bleaching argument, none of the fibers from the victims found on land showed any apparent bleaching. The finding of many of the same fiber types on the remaining victims, who were recovered from many different locations, refutes the possibility that Payne's and Cater's bodies picked up foreign fibers from the river.

The fact that many of the victims were involved with so many of the same fiber types, all of which linked the victims to Williams's environment, is the basis for arguing conclusively against these fibers originating from a source other than Williams's environment.

It is hoped that this article has provided valuable insight concerning the use of fiber evidence in a criminal trial, has provided answers to questions from those in the law enforcement community about textile fiber evidence in general, and has presented convincing arguments to establish Wayne Williams's association with the bodies of the murder victims.

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