

to show actual guilt." *Miller v. United States*, 320 F.2d 767, 773 (D.C.Cir.1963). Most importantly, the jury instruction should also make clear that flight or concealment is not sufficient in and of itself to establish guilt. See *United States v. Mesa*, 660 F.2d 1070, 1077 n. 2, reh. denied, 667 F.2d 93 (5th Cir.1981).

The court relies on *State v. Wright*, 198 Conn. 273, 502 A.2d 911 (1986), to support its position that the trial court was not required to instruct the jury that there could be another reason for the defendant's flight. This reliance is clearly misplaced for two reasons. First, in *Wright*, this court merely stated that the trial court "was not required to enumerate all the possible innocent explanations offered by the defendant." (Emphasis added.) *Id.* at 281, 502 A.2d 911. Although *Wright* does not give us the benefit of the trial court's instruction, an examination of the briefs in that case reveals that the court instructed the jury that it should consider any explanation offered by the defendant for his actions, and that evidence of flight is not conclusive and does not raise a presumption of guilt: "It is up to you to determine if any evidence of explanation of the flight from the scene has been presented in this case. Also, it is up to you to determine the probative weight, if any, that you give to any

6. Justice David M. Borden and Professor Leonard Orland have recommended that the trial judge use a balanced instruction when there is another possible explanation for the defendant's flight: "Flight, when unexplained, tends to prove consciousness of guilt. The flight of a person accused of crime is a circumstance which, when considered together with all the facts of the case, may justify a finding of the defendant's guilt. However, flight, if shown, is not conclusive. It is to be given the weight to which you, the jury, think it is entitled under the circumstances. Here there was evidence that the defendant knew he was being sought for this charge and fled from the area on the day of his arrest. There is also evidence tending to explain this flight, namely that the defendant was fleeing to escape arrest on other charges pending against him, and not this charge. If you find that he was fleeing from this charge, you may consider it as evidence of his consciousness of guilt; if you find that he was not fleeing from this charge, you should not consider it as evidence of his consciousness of guilt. It is up to you to give the evidence the weight to which you think it is entitled." (Emphasis added.) 5 D. Borden & L. Orland, *Connecticut Practice* (1986) § 3.15.

explanation of flight, if you find any explanation was presented by the defendant in this matter. However, flight, if shown, is not conclusive nor does it raise a legal presumption of guilt, but it is to be given the weight to which the jury thinks it is entitled under the circumstances shown." *State v. Wright*, Conn. Supreme Court Records & Briefs, Nov. Term, 1985, Pt. 4, Defendant's Brief p. 11, State's Brief p. 14.⁶ In the present case, the trial court neither instructed the jury that it could consider other reasons for flight, nor cautioned the jury that evidence of flight is not conclusive and does not raise a presumption of guilt.

Second, and more importantly, is that *Wright* relies on *United States v. Mesa*, supra, as its sole authority for holding that an evenhanded instruction is not required. *Mesa*, however, made clear that the instruction furnished by the trial court "was well balanced." *Id.* at 1078. The trial court in *Mesa* instructed the jury, in part, that "[i]n your consideration of the evidence of concealment, you should consider that there may be reasons for this which are fully consistent with innocence. These may include embarrassment at being arrested before family or friends. Also, a feeling of guilt does not necessarily reflect actual guilt." *Id.* at 1077-78 n. 2.

7. This instruction was preceded by the following: "The intentional concealment of a defendant immediately after the commission of a crime, or after he is accused of a crime that has been committed, is not, of course, sufficient [in and of] itself to establish his guilt; but it is a fact which, if proved, may be considered along with all other evidence in determining guilt or innocence. Whether or not evidence of concealment shows a consciousness of guilt, and the significance to be attached to any such evidence, are matters exclusively within the province of the jury." *United States v. Mesa*, 660 F.2d 1070, 1077 n. 2, reh. denied, 667 F.2d 93 (5th Cir.1981).

The desirability of an evenhanded instruction on flight is related to the defendant's claim that he should have been allowed to introduce evidence that, upon being arrested, the defendant waived his *Miranda* rights and admitted that he had struck the victim but denied having kidnapped or prostituted her. The defendant claimed that this evidence, together with the fact that he was on parole, suggested an alternative reason for his flight. The trial court excluded the proffered evidence. Surely, once the state opens the door by introducing flight or conceal-

III

The state did not have an overwhelming case against the defendant. Indeed, the state recognized the need 1a10 to bolster the credibility of the complainant, the only witness with firsthand knowledge of the alleged crime. Accordingly, I believe that admission of the hypothetical questions asked of the expert and the failure to instruct the jury that there could have been other reasons for the defendant's flight were incorrect, harmful and require a new trial.

Therefore, I respectfully dissent.



228 Conn. 610

STATE of Connecticut

v.

Roy E. SKIPPER.

No. 14744.

Supreme Court of Connecticut.

Argued Sept. 23, 1993.

Decided Feb. 22, 1994.

Defendant was convicted in the Superior Court, Judicial District of Fairfield, McGrath, J., of sexual assault in the second degree and risk of injury to child. Defendant appealed. The Appellate Court transferred the case, and the Supreme Court, Callahan, J., held that: (1) admission of probability of paternity calculated based on Bayes' Theorem was reversible error, and (2)

ment evidence for the purposes of showing consciousness of guilt, basic fairness and logic require that the defendant be permitted to introduce evidence showing consciousness of innocence.

Professor Wigmore makes a convincing argument for such evidence as follows: "[I]t is judicially conceded ... that the inference of consciousness of guilt is a highly dubious one, and that the evidence is never to be emphasized or treated as of much value. If this be so, why should we strain a doubt to admit a dubious inference against the accused, and yet refuse to

permitting state to question venirepersons regarding their ability to decide case impartially, despite evidence that victim had had an abortion, was not abuse of discretion.

Reversed and remanded for new trial.

1. Rape ⇨ 51(3)

In sexual assault prosecution, sexual intercourse is an element that must be proven by state beyond a reasonable doubt.

2. Criminal Law ⇨ 338.2, 1169.1(7)

Admission of probability of paternity which was calculated by using Bayes' Theorem, a mathematical formula based on deoxyribonucleic acid (DNA) testing and operating on assumption of prior probability of paternity and was inconsistent with presumption of innocence in a criminal case, was reversible error.

3. Jury ⇨ 131(3)

Permitting state during voir dire to question venirepersons regarding their ability to decide sexual assault case impartially, despite evidence that victim had had an abortion, was not abuse of discretion; abortion was highly controversial topic and jurors' feelings on abortion quite possibly could have affected ability to remain impartial.

4. Jury ⇨ 131(2, 13)

In conducting voir dire examination, trial court's discretion is not absolute; voir dire should be limited to those questions which are pertinent and proper for testing capacity and competency of juror and which are neither designed nor likely to plant prejudicial matter in jurors' minds.

admit in his favor a scarcely more dubious one? Such an attitude is wholly inconsistent with itself and is out of harmony with the spirit of our law. Let the accused's whole conduct come in; and whether it tells for consciousness of guilt or for consciousness of innocence, let us take it for what it is worth, remembering that in either case it is open to varying explanations and is not to be emphasized. Let us not deprive an innocent person, falsely accused, of the inference which common sense draws from a consciousness of innocence and its natural manifestations." 2 J. Wigmore, *Evidence* (3d Ed.1940) p. 190.

5. Jury ⇐131(13)

Permissible content of voir dire questions cannot be reduced to simplistic rules, but must be left fluid to accommodate particular circumstances under which trial is being conducted; thus, a particular question may be appropriate under some circumstances but not under other circumstances.

6. Jury ⇐131(2)

Trial court has broad discretion to determine latitude and nature of questioning that is reasonably necessary to search out potential prejudice of jurors.

7. Searches and Seizures ⇐23

Sexual assault defendant's right to be free from unreasonable intrusion was not violated by court's order of visual inspection of his penis by state employee who had no medical training; defendant presented testimony of physician who testified that he had examined penis and found no bumps as described by victim, defendant offered that physician's testimony, not as that of a medical expert, but merely as that of an observer, and because physician had not testified as a medical expert, layperson could logically view and report what he had seen. U.S.C.A. Const. Amends. 4, 14; C.G.S.A. Const. Art. 1, § 7; Practice Book 1978, §§ 776, 778(7).

David H. Dworski, Bridgeport, with whom were John C. Dillman, Winsted, and, on the brief, Susan E. Guthrie, Raymond W. Ganim, Bridgeport, and Michael R. Brandt, certified legal intern, for the appellant (defendant).

Timothy J. Sugrue, assistant state's attorney, with whom, on the brief, were Donald A. Browne, state's attorney, and Steven J. Sed-

ensky III, assistant state's attorney, for the appellee (state).

Before PETERS, C.J., and CALLAHAN, BORDEN, BERDON and NORCOTT, JJ.

CALLAHAN, Associate Justice.

The dispositive issue in this appeal is the admissibility of the probability of paternity statistic calculated from DNA¹ evidence. The defendant was charged in a substitute information with eight counts of sexual assault in the second degree in violation of § 53a-71(a)(1),² eight counts of risk of injury to a child in violation of General Statutes § 53-21,³ and one count of assault in the third degree in violation of General Statutes § 53a-61(a)(1).⁴ He was found guilty by a jury on all counts of sexual assault in the second degree and risk of injury to a child. He was acquitted of the assault charge. The trial court sentenced the defendant to a term of imprisonment of twenty-four years, execution suspended after twelve years, followed by five years probation. Thereafter, the defendant appealed to the Appellate Court. We transferred his appeal to this court pursuant to Practice Book § 4023 and General Statutes § 51-199(c). We reverse the judgment of the trial court.

The jury could reasonably have found the following facts. The defendant began to make sexual overtures to the victim, who was the daughter of a neighbor and a friend of his own daughter, sometime in 1982, when the victim was approximately eight years old and in the third grade. In response to the victim's protests, the defendant told her that he would leave her alone if she allowed him to take topless photographs of her. When the victim complied, however, the defendant

endangered, or its health is likely to be injured, or its morals likely to be impaired, or does any act likely to impair the health or morals of any such child, shall be fined not more than five hundred dollars or imprisoned not more than ten years or both."

4. General Statutes § 53a-61(a)(1) provides: "A person is guilty of assault in the third degree when: (1) With intent to cause physical injury to another person, he causes such injury to such person or to a third person."

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Cite as 637 A.2d 1101 (Conn. 1994)

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persisted in his contact with her, threatening to show the photographs to her friends if she refused to see him. By the time the victim was in the fourth grade, the defendant had begun to molest her physically. At some point, while she was still in the fourth or fifth grade, the defendant began to have sexual intercourse with the victim. Even after she moved out of his neighborhood, the defendant continued on a regular basis to have sexual relations with the victim in his van at various locations.

When the victim was in the tenth grade, she told the defendant that she wanted him to leave her alone and that she no longer cared what he did with photographs he had taken. At that time, the victim's parents were in the process of attempting to adopt a little girl. When the victim persisted in her refusal to see him, the defendant intimated to her that the adoption would not go through if the authorities were notified of their relationship.

The sexual relationship between the defendant and the victim continued until March, 1989. At that time, the defendant, in an attempt to end a platonic friendship between the victim and a classmate named Marvin, told her to advise Marvin that she was pregnant and provided her with a falsified home pregnancy test that ostensibly displayed a positive result. Marvin promptly informed

the victim's parents. When confronted by her mother, the victim broke down and told her of the nature of her relationship with the defendant.

On March 9, 1989, the victim gave a statement to the police. The next day, the victim's mother took her for a medical examination that revealed that the victim was in fact pregnant. On March 22, 1989, the victim had an abortion.

The defendant claims that the trial court improperly admitted testimony of the probability of paternity percentage based on DNA testing. We agree and, on this basis, reverse the judgment of the trial court and remand the case for a new trial.⁵

Kevin McElfresh, the state's expert witness and the director of Identity Testing Laboratories of Lifecodes Corporation (Lifecodes), testified at trial regarding the defendant's paternity index. The paternity index is an odds ratio, based on DNA tests,⁶ measuring the likelihood that the defendant would produce a child with the same phenotypes⁷ as the fetus in question as compared to an unrelated random male. 1 C. McCormick, Evidence (4th Ed. 1992) § 211, pp. 963-64. The paternity index in this case was 3496,⁸ indicating that only one out of 3497 randomly selected males would have the phe-

7. Every person inherits certain traits, such as eye color. "Different versions of a particular trait are known as phenotypes. For the inherited trait of eye color, for example, blue eyes are one phenotype, brown eyes are another." *Plemel v. Walter*, 303 Or. 262, 266, 735 P.2d 1209 (1987). Genes determine the specific set of phenotypes that every person possesses.

8. The paternity index is calculated by doing a battery of tests on blood-tissue specimens. Specifically, DNA was extracted from the victim's blood, the defendant's blood and from tissue from the product of conception. The DNA was then separated according to size by gel electrophoresis. The array of DNA fragments was arranged on a membrane and then exposed to polymorphic probes, which are used to observe the genetic differences between individuals. In the present case, six polymorphic probes, or genetic systems, were used. Each probe or genetic system represented a database of between 500 and 1500 randomly selected African-Americans.

The probes mark DNA fragments so that their lengths can be measured. The result is to give

5. Although the defendant raises several issues in his brief challenging the admissibility of the DNA evidence, the issue that we address is the only one that he properly preserved, and the only one that we have the requisite factual record to decide.

At the outset, we note that the admissibility of the probability of paternity statistic under our civil paternity statute; General Statutes § 46b-168(b); is not before us. Moreover, because we do not know in what other factual context Bayes' Theorem; see *infra*; may arise in criminal proceedings, we limit our holding to sexual assault cases that involve the application of Bayes' Theorem to the DNA test results of a victim, a defendant and a product of conception allegedly resulting from the sexual assault.

6. In the present case, Lifecodes performed DNA tests on blood samples from the defendant and the victim and on a tissue sample from the aborted fetus. Lifecodes is a private biotechnology company involved in DNA base identification, testing, research and development, and training in the use of DNA technology for identity tests.

notypes compatible with the fetus in question." See R. Peterson, "A Few Things You Should Know About Paternity Tests (But Were Afraid to Ask)," 22 Santa Clara L.Rev. 667, 684 (1982).

McElfresh further testified that the paternity index could be converted into a statistic indicating the percentage of the defendant's probability of paternity. In the present case, he testified that he had made that conversion and that the percentage of probability that it was the defendant who had fathered the fetus was 99.97 percent. The usual method for calculating the probability of paternity, and the method that McElfresh used in the present case, is Bayes' Theorem.¹⁰ 1 C. McCormick, supra, pp. 962-63. Bayes' Theorem, a mathematical formula in common use

an image of dark bands, called an autoradiograph, that can be read like an X ray. The pattern of bands is called the DNA profile. A visual inspection was then made of the autoradiographs to determine if each included the defendant as a possible biological father based on the DNA profiles. In the present case, the six probes visually indicated inclusion.

Based on the number of genetic systems in which the defendant is included, the paternity index is statistically calculated by applying a theory of population genetics, specifically Hardy-Weinberg Equilibrium. A statistical analysis was done using four of the probes. Each probe result was individually compared to a database of African-Americans to predict the frequency with which each identifying DNA pattern occurs in that population. The results of each test were then multiplied together to determine the probability of finding all of the genetic markers together in one human being. The resulting number is referred to as the paternity index.

9. Although the defendant asserts in his brief that there are 340 other individuals in Bridgeport who could have been the biological father based on the paternity index, we are unable to determine from the record how he arrived at that number. Our mathematical calculations, arrived at by dividing the number of African-American males, according to the 1990 census, in Connecticut and the United States by the paternity index, indicate that there are approximately twenty African-American males between sixteen and fifty years old in Connecticut, and 2138 in the United States, who could have been the biological father of the victim's fetus. The probability of paternity percentage cannot, however, tell us which of these males is the father. See R. Peterson, "A Few Things You Should Know About Paternity Tests (But Were Afraid to Ask)," 22 Santa Clara L.Rev. 667, 684 (1982).

by statisticians, is used for the purpose of "showing the effect of ... new [statistical] evidence on a previously [predicted] probability." Id.; I. Ellman & D. Kaye, "Probabilities and Proof: Can HLA and Blood Group Testing Prove Paternity?" 54 N.Y.U.L.Rev. 1131, 1148 (1979). In the context of determining paternity, Bayes' Theorem postulates the multiplication of the paternity index, i.e., the new statistical evidence, by an assumed prior percentage of probability of paternity in order to obtain a new percentage of probability of paternity.¹¹ In order to assume a prior probability of paternity, however, it is also necessary to assume a prior probability of intercourse.

¹⁰In Bayes' Theorem, the prior probability of paternity is not cast as any particular

10. A former Lifecodes employee testified for the state that Lifecodes had relied on accepted protocol, including Bayes' Theorem, to arrive at its statistical calculations in the present case. Moreover, McElfresh testified that he used the same statistical calculations and formulas that have been used in ABO blood grouping and human leukocyte antigen (HLA) testing, and that the same mathematical calculations apply to DNA as they do to blood grouping. Bayes' Theorem is consistently used in ABO blood grouping and HLA testing to arrive at the probability of paternity. See generally, 1 C. McCormick, Evidence (4th Ed. 1992) § 211.

11. The probability of paternity as computed under Bayes' Theorem may be illustrated as follows:

$$P \times \text{Odds (B)} = \text{Odds (B/P)}$$

P represents the new test evidence or the paternity index. B represents the event that the alleged father is the biological father and Odds (B) designates the prior odds of paternity in favor of this event. Odds (B/P) is the probability of paternity revised in light of the new test result or the paternity index. If the prior odds, Odds (B), are assumed to be fifty/fifty, expressed as odds of one, the probability of paternity will be equal to the paternity index. See 1 C. McCormick, Evidence (4th Ed. 1992) § 211, pp. 963-64; R. Peterson, "A Few Things You Should Know About Paternity Tests (But Were Afraid to Ask)," 22 Santa Clara L.Rev. 667, 683, 685 (1982).

The actual formula for Bayes' Theorem may be expressed as follows:

$$P(H_1/E) = \frac{P(E/H_1) P(H_1)}{P(E/H_1) P(H_1) + P(E/H_2) P(H_2)}$$

For a practical example of the application of Bayes' Theorem see E. Mansfield, "Statistics for Business and Economics (4th Ed. 1991) pp. 102-104.

figure. Generally, experts who testify in paternity proceedings choose a number to represent the prior probability. See I. Ellman & D. Kaye, 54 N.Y.U.L.Rev., supra, p. 1149. Most experts, as did McElfresh here, set the prior probability at 50 percent, expressed as odds of one, i.e., fifty-fifty, reasoning that 50 percent is a neutral starting point because it assumes that it is just as likely that the defendant is not the father as it is that he is the father.¹² See, e.g., *State v. Spann*, 130 N.J. 484, 493, 617 A.2d 247 (1993); 1 C. McCormick, supra, p. 963; E. Reischer & T. Bolk, "A Layman's Guide to the Use of Blood Group Analysis in Paternity Testing," 20 J.Fam.L. 657, 674 (1981-82). By adopting a prior probability of paternity of 50 percent,

12. In the present case, the defendant's paternity index, or the odds of the defendant's paternity as compared to a random male, was 3496 to 1. The assumed prior probability of paternity was fifty/fifty, expressed as odds of one. Using Bayes' Theorem, the probability of the defendant's paternity in the present matter would be calculated as follows:

$$3496 \times 1 = 3496$$

(odds of one)

This means that the odds that the alleged father is the biological father are also 3496 to 1. The corresponding probability of paternity is 3496/3497 or 99.97 percent. See 1 C. McCormick, Evidence (4th Ed. 1992) § 211, p. 964; R. Peterson, "A Few Things You Should Know About Paternity Tests (But Were Afraid to Ask)," 22 Santa Clara L.Rev. 667, 683 (1982).

We note that no testimony was elicited from the expert indicating that a 50 percent prior probability of paternity was used in calculating the probability of paternity percentage. The expert did testify, however, that "[t]he calculation is that the paternity index divided by the paternity index plus one, gives you the percentage. It's simply a conversion of the paternity index to the percentage. So, if it's 99.97 is basically 3500 to 1 which is odds ... expressed as a percentage." Based on these calculations, a 50 percent prior probability had to have been used because it is only by using a 50 percent prior probability that the paternity index equals the probability of paternity. See R. Peterson, 22 Santa Clara L.Rev., supra, 683, 685; 1 C. McCormick, supra, pp. 963-64.

Moreover, as one commentator has explained, "[w]hen 50% is used, the likelihood of paternity is mathematically identical to the probability of paternity. Hence when laboratories ignore the prior probability they are assuming it is 50%...." E. Reischer & T. Bolk, "A Layman's Guide to the Use of Blood Group Analysis in Paternity Testing," 20 J.Fam.L. 657, 674 (1981-82). "Traditionally, laboratories use a neutral figure of 50% in their calculations." Id. The

the formula operates on the assumption that the defendant and a random male had intercourse with the mother, "making them both equally likely to have fathered the child." R. Peterson, 22 Santa Clara L.Rev., supra, p. 685.

[1, 2] Our criminal justice system is built upon the premise that the prosecution must prove "every fact necessary to constitute the crime with which [the defendant] is charged" beyond a reasonable doubt." *State v. Salz*, 226 Conn. 20, 28, 627 A.2d 862 (1993), quoting *In re Winship*, 397 U.S. 358, 364, 90 S.Ct. 1068, 1073, 25 L.Ed.2d 368 (1970). The right to have one's guilt proven beyond a reasonable doubt is of constitutional dimen-

Joint AMA-ABA Guidelines specifically provide for the use of the fifty-fifty assumption in calculating the probability of paternity in paternity proceedings. H. Krause, J. Abbott, J. Miale, K. Sell, E. Jennings & W. Reiber, "Joint AMA-ABA Guidelines: Present Status of Serologic Testing in Problems of Disputed Parentage," 10 Fam.L.Q. 247, 262 (1976).

Although the probability of paternity is the mathematical equivalent of the paternity index if a 50 percent prior probability is used, the two statistics have different connotations. In the present case, the paternity index of 3496 means that if 3497 random males were chosen, 3496 would not have a DNA profile compatible with the fetus in question and one would have a DNA profile compatible with producing the fetus in question. This does not mean, however, that the probability that *this* defendant is the father of the fetus in question is 3496 to 1, or 99.97 percent. At best, the paternity index permits the statement that of 3497 randomly selected males, 99.97 percent would not have the DNA profile compatible with producing the fetus in question and 0.03 percent would have profiles compatible with the fetus in question. It is the application of Bayes' Theorem that says that the likelihood that *this* defendant is the father of the fetus in question is 99.97 percent. See *State v. Spann*, 130 N.J. 484, 493, 617 A.2d 247 (1993) (stating that the probability of paternity "is not intended to and does not mean that he is part of a small group who *might* be the father.... It means that even though there may be 1000 others who fit the bill, he is the father—the odds are not 999 to 1 against the possibility of his being the father, but a 96.55% probability that he is." [Emphasis in original.]). It is the fact that Bayes' Theorem, and an assumption of a 50 percent prior probability of guilt, yields the statistical conclusion that there is a 99.97 percent probability that *this* defendant had intercourse with the victim that implicates the presumption of innocence. Thus, we are not confronted in this case with deciding the admissibility of the paternity index.

sion. *State v. Johnson*, 214 Conn. 161, 179, 571 A.2d 79 (1990), citing *In re Winship*, supra, 397 U.S. at 362, 90 S.Ct. at 1071. In a sexual assault prosecution, sexual intercourse is an element that must be proven by the state beyond a reasonable doubt.¹³ The utilization of Bayes' Theorem by the prosecution, however, permitted the introduction of evidence predicated on an assumption that there was a fifty-fifty chance that sexual intercourse had occurred in order to prove that sexual intercourse had in fact occurred. See *State v. Hartman*, 145 Wis.2d 1, 426 N.W.2d 320 (1988) (probability of paternity statistic inadmissible in a sexual assault case). The fifty-fifty assumption that sexual intercourse had occurred was not predicated on the evidence in the case but was simply an assumption made by the expert. In dicta in a civil paternity suit, we have said that "[b]ecause this probability calculation [is] based upon an assumption of sexual intercourse during the period of conception, its use in proving intercourse would be incorrect." *Moore v. McNamara*, 201 Conn. 16, 32-33, 513 A.2d 660 (1986); see also *State v. Hartman*, supra, 145 Wis.2d at 16, 426 N.W.2d 320.

In *State v. Spann*, supra, in a somewhat complex opinion, the Supreme Court of New Jersey held that it was reversible error to admit expert testimony of the probability of paternity based on an assumption of a 50 percent prior probability of paternity in a sexual assault case without revealing this assumption to the jury. Because the defen-

dant only objected to the implication that the adoption of a 50 percent prior probability was "neutral,"¹⁴ the court concluded that "[p]robability of paternity opinion, if admissible at all, is only admissible if the expert states that the calculations leading to that statistic assume a prior probability of paternity of 50 percent."¹⁵ *Id.*, 130 N.J. at 499, 617 A.2d 247. The court noted that it was not confronted with the issue with which we are confronted: the admissibility of the probability of paternity statistic in a criminal case in which the defendant has not conceded the propriety of any prior probability of paternity. *Id.*, at 500, 617 A.2d 247.

Although the New Jersey intermediate appellate court had concluded that "the State cannot prove intercourse through a formula that assumes intercourse"; *id.*, at 496, 617 A.2d 247, the Supreme Court stated that that conclusion was incorrect because "[t]he 50 percent probability assumption... says only that the chance that [the] defendant is the father is fifty-fifty, that it is just as likely that he is not the father as that he is..." (Emphasis in original.) *Id.*, at 496, 617 A.2d 247. The court went on to say that the statistic assumes "a substantial possibility, 50%, that he had intercourse with the victim, but [n]ot that he positively did." *Id.*, at 497, 617 A.2d 247; see also D. Kaye, "The Probability of an Ultimate Issue: The Strange Cases of Paternity Testing," 75 Iowa L.Rev. 75, 105 n. 153 (1989) ("[a]lthough the use of the prior probability of 50% ... does

spection, this concept of 'neutrality' turns out to be vacuous").

15. In *State v. Spann*, 130 N.J. 484, 499, 617 A.2d 247 (1993), the defendant conceded that "the probability of paternity ... was admissible if the jury itself found that the prior probability was .5...." In the present case, the defendant does not make such a concession.

The *Spann* court held that although an expert could testify to the probability of paternity statistic if he or she revealed the assumption of a 50 percent prior probability of paternity, the jury would still be required to use its own estimate of the prior probability of paternity based on the non-scientific evidence in the case. *Id.* Furthermore, the expert would be required to explain what the probability of paternity statistic would be for a range of prior probabilities. For reasons we discuss in footnote 18, we decline to allow the jury to adopt a prior probability.

13. In fact, under General Statutes § 53a-71(a)(1); see footnote 2; given the age of the victim, sexual intercourse is the only element necessary to be proved to support a conviction of sexual assault in the second degree.

14. Many commentators question the neutrality of the automatic adoption of the 50 percent prior probability. See, e.g., D. Kaye, "The Probability of an Ultimate Issue: The Strange Cases of Paternity Testing," 75 Iowa L.Rev. 75, 94-95 (1989); I. Ellman & D. Kaye, "Probabilities and Proof: Can HLA and Blood Group Testing Prove Paternity?" 54 N.Y.U.L.Rev. 1131, 1150 (1979) ("[a]s the application of Bayes' Theorem shows, making such an assumption ensures that in every case in which any recognized blood test does not exclude the defendant, one will find that he is probably the father, thus satisfying the burden of proof in civil cases"); I. C. McCormick, Evidence (4th Ed.1992) § 211, p. 963 n. 16 ("[u]pon in-

not assume that intercourse definitely took place, it does presuppose a substantial probability of intercourse between the defendant and the mother").¹⁶ The court concluded nonetheless that "[o]pinions based on Bayes' Theorem ... are far from universally accepted for forensic purposes, especially in criminal cases.... [W]e leave the determination of the admissibility of the probability of paternity opinion to the trial court after a full hearing on the matter." *State v. Spann*, supra at 505, 617 A.2d 247.

The assumption that there is a substantial possibility that the defendant had intercourse with the victim, however, raises serious concerns in sexual assault cases. It is antithetical to our criminal justice system to presume anything but innocence at the outset of a trial. It is not until the defendant has been convicted that the presumption of innocence disappears. *Herrera v. Collins*, 506 U.S. —, —, 113 S.Ct. 853, 860, 122 L.Ed.2d 203, reh. denied, — U.S. —, 113 S.Ct. 1628, 123 L.Ed.2d 186 (1993). "The defendant's presumption of innocence until proven guilty is an 'axiomatic and elementary' principle whose 'enforcement lies at the foundation of the administration of our criminal law.'" *State v. Allen*, 205 Conn. 370, 376, 533 A.2d 559 (1987), quoting *Coffin v. United States*, 156 U.S. 432, 453, 15 S.Ct. 394, 403, 39 L.Ed. 481 (1895). The presumption allocates the burden of proof in a criminal trial to the state. *Bell v. Wolfish*, 441

U.S. 520, 533, 99 S.Ct. 1861, 1871, 60 L.Ed.2d 447 (1979). "[T]o implement that presumption, courts must be alert to factors that may undermine the fairness of the factfinding process. In the administration of criminal justice, courts must carefully guard against dilution of the principle that guilt is to be established by probative evidence and beyond a reasonable doubt. *In re Winship*, [supra, 397 U.S. at 364, 90 S.Ct. at 1072]."¹⁷ *State v. Woolcock*, 201 Conn. 605, 613, 518 A.2d 1377 (1986); *Estelle v. Williams*, 425 U.S. 501, 503, 96 S.Ct. 1691, 1692, 48 L.Ed.2d 126 (1976).

Without first assuming a prior probability of paternity, i.e., guilt, Bayes' Theorem cannot be applied, and the probability of paternity cannot be computed in sexual assault cases. R. Jonakait, "When Blood Is Their Argument: Probabilities in Criminal Cases, Genetic Markers, and, Once Again, Bayes' Theorem," 1983 U.Ill.L.Rev. 369, 403 (1983). Because Bayes' Theorem requires the assumption of a prior probability of paternity, i.e., guilt, its use is inconsistent with the presumption of innocence in a criminal case such as this, in which Bayes' Theorem was used to establish the probability of paternity, i.e., that the defendant was the father of the product of conception of an alleged sexual assault. See *id.*, pp. 406-408. Whether a prior probability of 50 percent is automatically used or whether the jury is instructed to adopt its own prior probability,¹⁸ when the

ty of paternity despite a previous successful vascotomy).

16. It should be noted that the probability of paternity statistic in *State v. Spann*, 130 N.J. 484, 617 A.2d 247 (1993), was based on the results of a human leukocyte antigen (HLA) test. With both HLA and DNA testing, however, Bayes' Theorem is used to calculate the probability of paternity. "The overall logic of the probability calculation—multiplying prior odds by a likelihood ratio—is the same...." I. C. McCormick, Evidence (4th Ed.1992) § 211, p. 968. Moreover, "it has been suggested that the exquisite power of some DNA probes to discriminate individual characteristics may yet obviate the need for detailed calculations of the troublesome 'probability of paternity.'" *Id.*

17. Indeed, one might question the probativeness of a statistic that assigned a probability of paternity of 99.91 percent to a sterile man. See *O'Bannon v. Azar*, 435 So.2d 1144 (La.App.1983) (affirming a verdict in a civil paternity case for the defendant who had a 99.91 percent probabili-

18. It has been suggested that jurors be shown a chart illustrating a range of prior probabilities and the resulting probabilities of paternity. See M. Finkelstein & W. Fairley, "A Bayesian Approach to Identification Evidence," 83 Harv. L.Rev. 489 (1970). Permitting the jury to derive its own prior probability to arrive at a corresponding probability of paternity, however, still implicates the presumption of innocence. See, e.g., L. Tribe, "Trial by Mathematics: Precision and Ritual in the Legal Process," 84 Harv.L.Rev. 1329, 1368-75 (1971). "It may be supposed that no juror would be permitted to announce publicly in mid-trial that the defendant was already burdened with, say, a sixty percent probability of guilt—but even without such a public statement it would be exceedingly difficult for the accused, for the prosecution, and ultimately for the community, to avoid the explicit recognition that,

probability of paternity statistic is not introduced, an assumption is required to be made by the jury before it has heard all of the evidence—that there is a quantifiable probability that the defendant committed the crime. In fact, if the presumption of innocence were factored into Bayes' Theorem, the probability of paternity statistic would be useless. If we assume that the presumption of innocence standard would require the prior probability of guilt to be zero, the probability of paternity in a criminal case would always be zero because Bayes' Theorem requires the paternity index to be multiplied by a positive prior probability in order to have any utility. *Id.*, 406. "In other words, Bayes' Theorem can only work if the presumption of innocence disappears from consideration." *Id.*, 408.

12. We conclude that the trial court should not have admitted the expert testimony stating a probability of paternity statistic. Moreover, we cannot say with any degree of confidence that a probability of paternity statistic of 99.97 percent, as testified to by the state's expert, would not have influenced the jury's decision to convict the defendant of

having been forced to focus on the question, the rational juror could hardly avoid reaching some such answer. And, once that recognition had become a general one, our society's traditional affirmation of the 'presumption of innocence' could lose much of its value." *Id.*, 1370.

Moreover, allowing the jury to adopt a prior probability and, hence, arrive at a probability of guilt, raises concerns in criminal cases regarding the burden of proof of guilt beyond a reasonable doubt. In adopting a prior probability of guilt and viewing the corresponding probability of paternity on a chart, the jury is left "with a number that purports to represent [its] assessment of the probability that the defendant is guilty as charged. Needless to say, that number will never quite equal 1.0, so the result will be to produce a quantity ... which openly signifies a measurable ... margin of doubt. ..." *Id.*, 1372; see also R. Jonakait, "When Blood Is Their Argument: Probabilities in Criminal Cases, Genetic Markers, and, Once Again, Bayes' Theorem," 1983 U.Ill.L.Rev. 369, 415-20 (1983). "[A]ny conceptualization of reasonable doubt in probabilistic form is inconsistent with the functional role the concept is designed to play." C. Nesson, "Reasonable Doubt and Permissive Inferences: The Value of Complexity," 92 Harv.L.Rev. 1187, 1225 (1979); see also *State v. DelVecchio*, 191 Conn. 412, 417-18, 464 A.2d 813 (1983) (jury instruction using a football field simile and instructing the jury that "it ... is up to you to

both sexual assault and risk of injury. Because the admissibility of the probability of paternity statistic involves a constitutional issue, and because we cannot say that the admission of that statistic here was harmless beyond a reasonable doubt, a new trial is required. See *State v. Colton*, 227 Conn. 231, 253, 630 A.2d 577 (1993).

II

Our resolution of the above issue disposes of the appeal. Because, however, "[w]e ordinarily address 13. legal issues likely to arise following a remand for further proceedings," we will address two of the defendant's additional claims. *Gaudet v. Safeco Ins. Co.*, 219 Conn. 391, 400, 593 A.2d 1362 (1991). We find neither to be persuasive.

[3] The defendant contends that the trial court abused its discretion by permitting the state, during the voir dire, to question venirepersons regarding their ability to decide the case impartially despite evidence that the victim had had an abortion. We are unpersuaded.

decide" where reasonable doubt lies between the fifty yard line and one hundred yard line diluted the constitutional standard of proof beyond a reasonable doubt).

Allowing jurors to reach their own prior probability also presents practical problems. See L. Tribe, 84 Harv.L.Rev., supra, pp. 1359-66. We cannot say that merely introducing a chart illustrating a range of prior probabilities for educational purposes without requiring the jury to adopt a specific figure would alleviate our concerns. "[W]hether the benefits of using this method of statistical inference solely to educate the jury by displaying the probative force of the evidentiary findings would be worth the costs in terms of time-consumption and possible confusion is a close ... question." I. C. McCormick, *Evidence* (4th Ed. 1992) § 210, p. 959; D. Kaye, "The Admissibility of 'Probability Evidence' in Criminal Trials—Part II," 27 Jur. 160, 171 (1987); but see *State v. Spain*, 130 N.J. 484, 518, 617 A.2d 247 (1993) ("[w]e ... believe that appropriate jury instructions can cure all of [the] problems with letting the jury derive its own prior probability), or at least diminish their risk to the point that the advantages of the expert's calculation outweigh these risks, assuming the opinion is otherwise admissible"). For an exhaustive explanation of the practical problems associated with a chart approach, see L. Tribe, 84 Harv.L.Rev., supra, pp. 1358-68, and R. Jonakait, 1983 U.Ill.L.Rev., supra, pp. 403-405.

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During the voir dire, the state questioned the venirepersons about their general feelings concerning abortion. It followed up by asking each venireperson if evidence that the victim had had an abortion would affect his or her ability to return a verdict of guilty, provided the defendant's guilt was proven beyond a reasonable doubt. The defendant claims that such questions were impermissible because they injected a "collateral fact" into the voir dire and allowed prospective jurors to draw the inference that sexual intercourse had occurred between the defendant and the victim, thereby prejudicing him.

[4] "The court has wide discretion in conducting the voir dire ... and the exercise of that discretion will not constitute reversible error unless it has clearly been abused or harmful prejudice appears to have resulted." *Bleau v. Ward*, 221 Conn. 331, 340, 603 A.2d 1147 (1992), quoting *State v. Dahlgren*, 200 Conn. 586, 601, 512 A.2d 906 (1986). "[I]n exercising its discretion, the court should grant such latitude as is reasonably necessary to accomplish the twofold purpose of voir dire: to permit the trial court to determine whether a prospective juror is qualified to serve, and to aid the parties in exercising their right to peremptory challenges." (Internal quotation marks omitted.) *State v. Couture*, 218 Conn. 309, 318, 589 A.2d 343 (1991). In conducting the voir dire examination, however, the trial court's discretion is not absolute. Voir dire should be limited to those questions "which are pertinent and proper for testing the capacity and competency of the juror ... and which are neither designed nor likely to plant prejudicial matter in [the jurors' minds]." *Bleau v. Ward*, supra, quoting *Duffy v. Carroll*, 137 Conn. 51, 57, 75 A.2d 33 (1950).

Abortion is a highly controversial topic. A juror's feelings on abortion quite possibly could affect his or her ability to remain impartial. The fact of the victim's abortion was foreseeable a part of the state's proof in the case. The state's questions were designed to

19. One venireperson actually stated that her feelings concerning abortion would affect her ability to decide whether the defendant had committed a crime.

"[The State:] Would your feelings about abortion cloud your judgment in being able to decide

probe the ability of each venireperson to render an unbiased verdict regardless of his or her sentiments concerning abortion and were essential to enable it to exercise its peremptory challenges intelligently." "[I]f there is any likelihood that some prejudice is in the juror's mind which will even subconsciously affect his decision of the case, the party who may be adversely affected should be permitted questions designed to uncover that prejudice." *State v. Rogers*, 197 Conn. 314, 318, 497 A.2d 387 (1985); *State v. Fritz*, 204 Conn. 156, 161, 527 A.2d 1157 (1987); *State v. Higgs*, 143 Conn. 138, 142, 120 A.2d 152 (1956).

[5, 6] Moreover, "[t]he permissible content of the voir dire questions cannot be reduced to simplistic rules, but must be left fluid in order to accommodate the particular circumstances under which the trial is being conducted. Thus, a particular question may be appropriate under some circumstances but not under other circumstances." *Bleau v. Ward*, supra, 221 Conn. at 345, 603 A.2d 1147 (*Berdon, J.*, concurring in part and dissenting in part). The trial court has broad discretion to determine the latitude and the nature of the questioning that is reasonably necessary to search out potential prejudices of the jurors. See *State v. Couture*, supra, 218 Conn. at 317-19, 589 A.2d 343; *State v. Cross*, 72 Conn. 722, 730, 46 A. 148 (1900); *State v. Lewis*, 26 Conn.App. 574, 578, 602 A.2d 618, cert. denied, 221 Conn. 923, 608 A.2d 688 (1992). We cannot say that the court abused its discretion in the present case.

III

[7] The defendant also claims that his constitutional rights under the fourth and fourteenth amendments to the United States constitution and article first, § 7, of the Connecticut constitution were violated by the court's order of a visual inspection of his

whether or not the defendant committed any crime?"

"[Venireperson:] I think so, yes.

"Q. So, you might somehow hold that against the victim when she gets up to testify?"

"A. Yes."

penis by a state employee who had no medical training.²⁰

The victim testified that she had observed, during their relationship, that the defendant's penis had white, pimple-like "bumps" underneath the head. As part of his defense, the defendant presented the testimony of Harry Anderson, a physician, who testified that he had examined the defendant's penis and found no such bumps. In making his observations, however, Anderson testified that he had not noticed whether the defendant was circumcised and had not physically pulled the defendant's foreskin back. The defendant concedes that he called Anderson not as a medical expert but as a witness to what he had observed.

The state, in order to test Anderson's observations, requested, pursuant to Practice Book § 776, that the defendant's penis be photographed or, in the alternative, that an agent of the state be permitted a visual inspection. Over the defendant's objection, the trial court ordered the defendant to submit to such an inspection.

Thereafter, Richard Godwin, the victim's advocate in the Fairfield state's attorney's office, viewed the defendant's penis, apparently in an anteroom off the courtroom, in the presence of counsel both for the state and for the defendant. He subsequently testified that he had observed three small white bumps that resembled pimples under the head of the defendant's penis. He stated that these bumps were not visible to an observer unless the foreskin of the defendant's uncircumcised penis was pulled back.

20. Because the defendant failed to brief or analyze independently his state constitutional claims, we limit our review to the relevant federal constitutional claim. *State v. Woodson*, 227 Conn. 1, 18-19 n. 11, 629 A.2d 386 (1993), citing *State v. Joly*, 219 Conn. 234, 258 n. 16, 593 A.2d 96 (1991).

21. Practice Book § 776 provides: "Upon motion of the prosecuting authority, the judicial authority by order may direct a defendant to participate in a reasonably conducted procedure to obtain nontestimonial evidence under Sec. 775, if the judicial authority finds probable cause to believe that:

Section 776²¹ authorizes a reasonably conducted procedure to obtain nontestimonial evidence if the judicial authority finds probable cause to believe that the evidence may be of material aid in determining whether the defendant committed the offense charged and that the evidence cannot practically be obtained from other sources.²² Practice Book § 778(7) specifically authorizes "reasonable body surface examinations" as part of a procedure to obtain nontestimonial evidence. The defendant argues that the examination of his penis¹⁹ ordered by the court was not reasonable because it was not performed by a physician. We disagree.

The purpose of the fourth amendment to the United States constitution, made applicable to the states through the due process clause of the fourteenth amendment, "is to safeguard the privacy and security of individuals against arbitrary invasions by governmental officials."²³ *State v. Floyd*, 217 Conn. 73, 80, 584 A.2d 1157 (1991), quoting *Camara v. Municipal Court*, 387 U.S. 523, 528, 87 S.Ct. 1727, 1730, 18 L.Ed.2d 930 (1967). "[T]he test of reasonableness under the Fourth Amendment is not capable of precise definition or mechanical application. In each case it requires a balancing of the need for the particular search against the invasion of personal rights that the search entails." *State v. Smith*, 207 Conn. 152, 174, 540 A.2d 679 (1988), quoting *Bell v. Wolfish*, supra, 441 U.S. at 559, 99 S.Ct. at 1884. "A crucial factor . . . is the extent to which the [search] procedure may threaten the safety or health of the individual. . . . Another factor is the extent of intrusion upon the individual's dignitary interests in personal privacy and bodily integrity." *Winston v.*

"(1) The evidence sought may be of material aid in determining whether the defendant committed the offense charged; and

"(2) The evidence sought cannot practically be obtained from other sources."

22. The trial court found, and the defendant does not contest, that probable cause existed under Practice Book § 776 to seek such nontestimonial evidence.

23. The fourth amendment to the United States constitution provides in pertinent part that "[t]he right of the people to be secure in their persons, houses, papers and effects, against unreasonable searches and seizures, shall not be violated. . . ."

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1994 Donald E. BRYANT, Jr.

v.

Helen V. BRYANT.

No. 14621.

Supreme Court of Connecticut.

1994 Argued Sept. 28, 1993.

Decided March 1, 1994.

Lee, 470 U.S. 753, 761, 105 S.Ct. 1611, 1617, 84 L.Ed.2d 662 (1985).

The defendant concedes that, under the circumstances, the state was entitled to an examination of his penis. He argues, however, that the examination was unreasonable because it was conducted by a layperson. The defendant makes this argument notwithstanding the fact that he had offered Anderson's testimony, not as that of a medical expert, but merely as that of an observer. The trial court noted that because Anderson had not testified as a medical expert, a layperson could logically view and report what he had seen. The examination²⁰ did not require any medical expertise but merely the ability to see and relate what had been observed. There is no indication in the record that Godwin was unable to do so impartially.

The visual examination of the defendant's penis ordered by the court posed no safety or health threat to the defendant. Although it may have intruded upon his personal privacy to a degree, it did not constitute "an unduly extensive imposition on [his] personal privacy and bodily integrity" merely because the observation was made by a layperson rather than by a physician. *Winston v. Lee*, supra at 762, 105 S.Ct. at 1617. Regardless of who examined the defendant's penis, there would have been a measure of personal discomfort. We cannot say either that the court, under the time constraints of a trial in progress, abused its discretion by ordering, pursuant to § 776, that the defendant's penis be viewed by a layperson or that the observation was an unreasonable intrusion that resulted in a fourth amendment violation.

The judgment is reversed and the case is remanded for a new trial.

In this opinion the other Justices concurred.



Ex-wife filed motion for contempt claiming that ex-husband failed to make required alimony and child support payments. Ex-husband filed motion for modification. The Superior Court, Judicial District of Danbury, Gen. J., granted motion for contempt. Ex-husband appealed. The Appellate Court, O'Connell, Norcott and Heiman, JJ., affirmed. Ex-husband appealed. The Supreme Court, Palmer, J., held that: (1) contempt order requiring ex-husband to make partial payment toward established arrearage and to submit proposed payment plan was a final appealable order; (2) trial court improperly found ex-husband in civil contempt without sufficient evidence that he had willfully failed to make payments required by dissolution decree; and (3) statute did not mandate that trial court consider ex-husband's motion for modification jointly with ex-wife's motion for contempt.

Reversed and remanded with direction.

1. Divorce ⇨280, 312.1

Contempt order requiring ex-husband to make partial payment toward established alimony and child support arrearage was a final, appealable order; in such a circumstance, civil contempt findings so substantially resolved rights and duties of parties that further proceedings relating to judgment of contempt could not affect them.

2. Appeal and Error ⇨80(6)

Immediate appeal of orders which are not readily classifiable as either final or interlocutory may be taken where order or action terminates separate and distinct proceeding or where order or action so con-