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The Imperfection of Protection Through Detection and Intervention

Lessons from Three Decades of Research on the Psychiatric Assessment of Violence Risk

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INTRODUCTION

As I began writing this article,[1] a "shooting rampage" at a West Palm Beach Wendy's restaurant was the latest nationally publicized instance in which an emotionally troubled individual used a firearm to maim and kill multiple victims. In this incident—as in many similar tragedies that have received national attention in recent years—the shooter fired at individuals whom he had never met and whom he had no apparent motive for harming; then, he took his own life.[2] The senselessness of these actions understandably provoked police investigators and the killer's acquaintances to wonder whether psychiatric problems influenced his final lethal acts.[3] Speculation and inquiries about links between the mayhem and mental illness also followed the April

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[1] This was in early March of 2008. In what struck me as a sobering coincidence, United States news media reported that another rampage-shooting-followed-by-suicide took place on the day I completed this article's main text. Ryan Lenz, *Argument Spurs Kentucky Worker to Kill 5, Himself*, N.Y. Times, June 26, 2008, *available at* http://www.usatoday.com/news/nation/2008-06-25-2334658670_x.htm (last visited Aug. 28, 2008).

[2] Rochelle E.B. Gilken et al., *Firefighter Dies in Shooting Rampage*, Backyard Post, Mar. 3, 2008, *available at* http://www.backyardpost.com/news/2008/mar/3/firefighter-dies-in-shooting-rampage/ (last visited Aug. 28, 2008).

[3] Peter Franceschina, *Final Report: Motive in Wendy's Shooting Will Never Be Known*, S. Fla. Sun-Sentinel, May 31, 2008, *available at* http://wap.sun-sentinel.mlogic3g.com/detail.jsp?key=39747&rc=pb_cty&full=1 (last visited Aug. 28, 2008) (witnesses reporting shooter was shaking but "had a calm look on his face, nothing even remotely crazy").

2007 killings at Virginia Tech,[4] the April 1999 killings at Columbine High School,[5] the February 2008 killings at Northern Illinois University,[6] and other "rampage shootings" over the past decade.[7]

These killings were, for some reason, especially disturbing and newsworthy in the United States,[8] though ours is a country that ordinarily tolerates—or, at least, does not deem pathological—high rates of gun violence and homicide attributable to firearms.[9] Seated in Washington, D.C.—a city once dubbed the United States "murder capital,"[10] and which still has the sixth highest homicide rate among large American cities[11]—the United States Supreme Court overturned[12] a law[13] created with the intent of reducing homicides by limiting individual ownership of firearms,[14] the most common instrument of

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[4] *See, e.g.*, Shaila Dewan & Marc Santora, *Officials Knew Troubled State of Killer in '05*, N.Y. TIMES, Apr. 19, 2007, at A1 (describing previous behavior of Cho Seung-Hui and efforts to have him committed); John Schwartz & Benedict Carey, *Experts Shy from Instant Diagnoses of Gunman's Mental Illness, but Hints Abound*, N.Y. TIMES, Apr. 20, 2007, at A20 (quoting mental health professionals' beliefs about possible diagnoses).

[5] Dave Cullen, *The Depressive and the Psychopath: At Last We Know Why the Columbine Killers Did It*, SLATE, Apr. 20, 2004, *available at* http://www.slate.com/id/2099203/ (last visited Aug. 28, 2008) (discussing conclusions from an FBI summit with mental health experts held shortly after the Columbine killings).

[6] Benedict Carey, *Reports of Gunman's Use of Antidepressant Renew Debate Over Side Effects*, N.Y. TIMES, Feb. 19, 2008, *available at* http://www.nytimes.com/2008/02/19/us/19depress.html (last visited Aug. 28, 2008) (discussing potential impact of shooter's having recently stopped medication).

[7] Ford Fessenden, *They Threaten, Seethe and Unhinge, Then Kill in Quantity*, N.Y. TIMES, Apr. 9, 2000, *available at* http://query.nytimes.com/gst/fullpage.html?res=9C02EEDC1231F93AA35757C0A9669C8B63 (last visited Aug. 28, 2008) (suggesting that "rampage killings" may reflect "society's lack of knowledge of mental health issues," and that "family members, teachers and mental health professionals missed or dismissed signs of deterioration").

[8] *Id*. (noting that although "rampage attacks . . . are rare when compared with other American murders, they have provoked an intense national discussion about crime, education and American culture").

[9] *See, e.g.,* Martin Killias, *International Correlations Between Gun Ownership and Rates of Homicide and Suicide*, 148 CAN. MED. ASS'N J. 1721 (1993) (showing positive correlations among rates of household gun ownership, national rates of homicide and suicide, and proportions of homicides and suicides committed with guns); *Rates of Homicide, Suicide, and Firearm-Related Death Among Children: 26 Industrialized Countries,* 46 MORBID. & MORTAL. WEEKLY REP. 101 (1997) (reporting that "[t]he firearm-related homicide rate in the United States was nearly 16 times higher" than in other industrialized countries); Wendy Cukier & Victor W. Sidel, THE GLOBAL GUN EPIDEMIC: FROM SATURDAY NIGHT SPECIALS TO AK-47S 17 (Hilary Claggett ed., 2006) (reporting that the United States ranks highest in firearm death rates among 25 high-income countries).

[10] Robert Barnes, *Justices to Rule on D.C. Gun Ban: 2nd Amendment Case Could Affect Laws Nationwide*, WASH. POST, Nov. 21, 2007, at A01.

[11] *United States Cities by Crime Rate*, *at* http://en.wikipedia.org/wiki/United_States_cities_by_crime_rate (last visited Aug. 28, 2008).

[12] Dist. of Columbia v. Heller, 128 S. Ct. 2783, 2799 (2008) (holding "on the basis of both text and history, that the Second Amendment conferred an individual right to keep and bear arms," though the right "is not unlimited").

[13] D.C. CODE §§ 7–2501.01(12), 7–2502.01(a), & 7–2502.02 (2001) (making carrying unregistered firearm a criminal offense; registration of handguns prohibited; registered long guns must be kept unloaded, disassembled, or locked).

[14] The *Heller* majority, per Justice Scalia, acknowledges this aim, but "enshrinement of constitutional rights necessarily takes certain policy choices off the table." *Heller*, 128 S. Ct. at 2822.

homicide.[15] Shortly after the ruling, both the Democratic and Republican presidential candidates expressed their support for the Court's majority position.[16]

Americans expect to see shootings and other violent deaths when they seek entertainment in their movie theaters and living rooms. Homicides (by villains and heroes) are a staple of American entertainment and have been the *sine qua non* of American action films such as the highly successful *Rambo* and *Dirty Harry* series and television programs like *Homicide*, *Law and Order*, and *Criminal Minds* for decades.[17] Only certain homicides—those that take place without reasons that we regard as rational, that involve individuals at otherwise low statistical risk for homicide, and that occur in schools, businesses, and other locations where violence is unusual—gain Americans' special attention and become targets for detection, prevention, and intervention.[18]

Mental health clinicians responded to accounts of the psychiatric history and failed treatment of Virginia Tech killer Seung-Hui Cho by asking whether they could prevent similarly violent future events by keeping "disturbed students from falling through the cracks."[19] In its report on the shootings, the Virginia Tech Review Panel described campus mental health professionals

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[15] "In 2006, firearms were used in 67.9 percent of the Nation's murders." Fed. Bureau of Investigation, *Crime in the United States 2006*, *available at* http://www.fbi.gov/ucr/cius2006/offenses/violent_crime/index.html (last visited Aug. 28, 2008).

[16] Linda Greenhouse, *Landmark Ruling Enshrines Right to Own Guns*, N.Y. TIMES, June 27, 2008, at A1 (discussing "full-throated support" from Senator McCain, "more guarded" support from Senator Obama).

[17] This was recognized decades ago. *See*, *e.g.*, Georger Gerbner et al., *Health and Medicine on Television*, 305 NEW ENG. J. MED. 901 (1981) (in which a content analysis for the National Institute of Mental Health reported that 10% of "normal" television characters appeared homicidal, while 23% of mentally ill characters were homicidal). For a much longer list of television programs, see Danielle M. Soulliere, *Prime-time Murder: Presentations of Murder on Popular Television Justice Programs*, 10 J. CRIM. JUST. & POPULAR CULTURE 12 (2003). Of particular importance for this article is Soulliere's finding that television typically uses individualistic explanations for murders, deflecting attention away from "more complex social-structural causes of crime and criminality." *Id*. at 32. The potential policy result, even for sophisticated decision makers, may be an overemphasis of personality-based solutions to crime and neglect of solutions that address social and structural underpinnings of violence. *Id*. The same point is discussed in David Fabianic, *Television Dramas and Homicide Causation*, 25 J. CRIM. JUST. 195, 201 (1997) (suggesting TV plot motives often legitimize crime fighting policies that emphasize individual responsibility rather than social causes).

[18] Kevin Buckler & Lawrence Travis, *Assessing the Newsworthiness of Homicide Events: An Analysis of Coverage in the* Houston Chronicle, 12 J. CRIM. JUST. & POPULAR CULTURE 1, 18 (2005).

> News organizations tend to focus their attention on homicides that are statistically deviant (e.g., involved female victims, multiple victims, unusual weapons, and were committed by strangers), involve a violation of strong cultural norms of behavior (e.g., robbery-related and stranger-related homicides), and command strong emotional reactions from the general public (e.g., those that involved multiple victims, minority offenders, strangers, and involve minority offenders who murdered non-minority victims).

[19] Miriam Shuchman, *Falling Through the Cracks—Virginia Tech and the Restructuring of College Mental Health Services*, 357 NEW ENG. J. MED. 105, 105 (2007).

as "ineffective in connecting the dots or heeding the red flags that were so apparent with Cho," noting that "particular behaviors and indicators of dangerous mental instability that threat assessment professionals have documented among murderers" were present in Cho's case.[20] Yet, evaluators and caregivers either missed or ignored these "warning signs."[21]

That mental health professionals would feel special concern about violent actions by mentally ill persons is not surprising. Violence committed by one's patient is damaging not only to the victim but to the patient as well,[22] and good therapists are dedicated to promoting healthy behavior by those whom they treat. But for more than three decades, preventing mentally ill patients from harming others has been a court-imposed duty for mental health professionals. Beginning with California's *Tarasoff* decisions[23] in the 1970s, the therapist's duty to protect the public from the foreseeable violence of patients has received affirmation by court decisions in most jurisdictions in which the question has arisen.[24]

One way of conceptualizing the *Tarasoff* doctrine is as a legal mechanism whereby society assigns mental health professionals the duty of reducing the risk of violence, with the threat of tort liability representing the professionals' incentive to accede to the duty.[25] Ironically, when the *Tarasoff* decisions became law, mental health professionals generally believed

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[20] VIRGINIA TECH REVIEW PANEL, MASS SHOOTINGS AT VIRGINIA TECH APRIL 16, 2007, at 52 (Aug. 2007). The phrase "red flags" occurs 17 times in the report.

[21] The phrase "warning signs" occurs 16 times in the Panel's report, which also includes an Appendix of "Red Flags, Warning Signs, and Indicators" of potential violence toward self or others. *Id.* at M3-4 (prepared by Roger L. Depue, Ph.D., a "forensic behavioral scientist"). Among these indicators are being a "misfit," "expressing disproportionate anger or humor," "inability to express . . . joy," and "use of alcohol/drugs." *Id.* The list of indicators does not include data on how frequent such signs are among college students, what proportion of students who display such signs become violent, or how to combine such signs into probabilities. For a further discussion of the mathematical limitations of such indicators, see *infra*, Section II.

For an outsider's perspective on this type of response to firearm violence, see Robbie Foy, *Life Under Liberty*, 335 BRIT. MED. J. 349 (2007) (noting National Public Radio discussion following the Virginia Tech shootings that focused on "psychological profiling and its poor predictability" rather than gun control, a response typical of Americans' "obsession with medical and technical solutions for social problems").

[22] *See* Stephen Rachlin, *Psychiatric Liability for Patient Violence*, in VIOLENCE AND SUICIDALITY: PERSPECTIVES IN CLINICAL AND PSYCHOBIOLOGICAL RESEARCH 19, 27 (Herman van Praag et al., eds., 1990) ("I am unaware of any patient who has been helped to grow psychologically by killing or maiming another person.").

[23] Tarasoff v. Regents of the Univ. of Cal. (*Tarasoff I*), 118 Cal. Rptr. 129 (Cal. 1974) (finding duty to warn), *modified by* Tarasoff v. Regents of the Univ. of Cal. (*Tarasoff II*), 551 P.2d 334 (Cal. 1976) (finding duty to protect).

[24] *See, e.g.*, Lipari v. Sears, Roebuck & Co., 497 F. Supp. 185 (D. Neb. 1980); Jablonski by Pahls v. United States, 712 F.2d 391 (9th Cir. 1983); Peck v. Counseling Service of Addison County, Inc., 499 A.2d 422 (Vt. 1985).

[25] Alan A. Stone, *The* Tarasoff *Decisions: Suing Psychotherapists to Safeguard Society*, 90 HARV. L. REV. 358 (1976).

they could not accurately predict violence. Since the 1980s, however, mental health professionals have made significant advances in what they know about their capacity to rate violence risks and, at the same time, about their limitations in making such judgments. Yet, detecting a signal of genuine violence in advance—so that protective intervention can occur—remains a daunting task.

This article reviews what we currently know about the accuracy of risk assessments and the ability of mental health professionals to "connect the dots" that foreshadow violence. As we shall see, the problem with anticipating and intervening to stop rare but serious violence is not really a matter of connecting dots, but of having dots (more precisely, "risk factors") that are imperfect indicators of actual future violence.

The following section summarizes the *Tarasoff* decisions, which provided the first formulation of a protective duty that mental health professionals now take for granted. Section II explains why "warning signs" of violence that are apparent in retrospect merely provide an illusion that mental health professionals can detect violence in advance and stop it. Sections III and IV summarize research on the connection between violence and mental illness and on the ability of mental health professionals to assess the risk of (or less formally, to "predict") violence. Section V uses some hypothetical mathematical examples to show what would happen if professionals attempted to stop violence by mentally ill persons through efforts to predict and intervene through confinement. The Conclusion suggests a different approach, akin to that used in public health efforts, that might reduce violence as a "side effect" of better treatment for persons with severe mental illness.

I. THE *TARASOFF* DECISIONS: CREATING AND ACCEPTING A DUTY TO PROTECT[26]

A. Events Leading to the Lawsuit[27]

In September of 1967, Prosenjit Poddar came from India to the University of California at Berkeley to pursue graduate studies. He got to know Tatiana Tarasoff while attending folk dancing classes in the fall of 1968, but

[26]This section is adapted from Douglas Mossman, *Critique of Pure Risk Assessment or, Kant Meets* Tarasoff, 75 U. CIN. L. REV. 523, 532–49 (2006).

[27]For more detailed accounts, see Glenn S. Lipson & Mark J. Mills, *Stalking, Erotomania, and the* Tarasoff *Cases*, *in* THE PSYCHOLOGY OF STALKING: CLINICAL AND FORENSIC PERSPECTIVES 259–73 (J. Reid Meloy ed., 1998); Robert F. Schopp & Michael R. Quattrocchi, Tarasoff *, the Doctrine of Special Relationships, and the Psychotherapist's Duty to Warn*, 12 J. PSYCHIATRY & L. 13 (1984); LEON VANDECREEK & SAMUEL KNAPP, *TARASOFF* AND BEYOND: LEGAL AND CLINICAL CONSIDERATIONS IN THE TREATMENT OF LIFE-ENDANGERING PATIENTS 2-7 (2001); CHARLES PATRICK EWING & JOSEPH T. MCCANN, MINDS ON TRIAL: GREAT CASES IN LAW AND PSYCHOLOGY 57–67 (2006).

after he interpreted a casual kiss from Tatiana as indication of a serious commitment, Tatiana told Poddar that she did not desire a close relationship with him.[28]

Poddar reacted to Tatiana's rebuff by becoming seriously depressed; he neglected his appearance, meals, studies, and health. He followed her and sometimes audiotaped their conversations, and he told others he loved Tatiana and had thoughts about killing her.[29] As Poddar's mental condition deteriorated, he became socially isolated, spoke disjointedly, and often cried.[30]

Poddar improved a bit while Tatiana was traveling in South America during the summer of 1969. He accepted a friend's suggestion and sought outpatient treatment through the university's mental health service,[31] where Poddar became the voluntary outpatient of a psychologist employed by the university.[32] In August of 1969, Poddar told his therapist about his intent to kill someone (identifiable as Tatiana) when she returned to California. Poddar's psychologist and two psychiatrist colleagues agreed that Poddar needed commitment to a hospital. Poddar's psychologist then contacted the campus police, who took Poddar into custody. However, after satisfying themselves that he was rational, the police released Poddar on his promise to stay away from Tatiana.

Poddar stopped seeing his psychologist after the police detained him,[33] but he followed Tatiana,[34] and once overheard her talking about another man.[35] On October 27, 1969, Poddar went to Tatiana's home and stabbed her to death.[36]

Poddar's criminal trial yielded a conviction for second-degree murder. Poddar appealed, and following a decision in which a lower appellate court held that the trial court's jury instructions had contained an error,[37] the California Supreme Court reversed Poddar's conviction and ruled that he should be retried.[38] Rather than prosecute him again, however, the state of California

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[28] People v. Poddar (*Poddar II*), 518 P.2d, 342, 344 (Cal. 1974).
[29] People v. Poddar (*Poddar I*), 103 Cal. Rptr. 84, 86 (Cal. App. 1972).
[30] *Poddar II*, 518 P.2d at 344.
[31] *Id.*
[32] *Tarasoff II*, 551 P.2d at 340.
[33] *Tarasoff I*, 529 P.2d at 559.
[34] Though the term was not used this way in the 1960s, clinicians and law enforcement officials now regard Poddar's behavior as "stalking." *See, e.g.,* Robert Lloyd-Goldstein, *De Clérambault On-Line: A Survey of Erotomania and Stalking from the Old World to the World Wide Web*, *in* MELOY, *supra* note 27, at 198; Louis B. Schlesinger, *Stalking, Homicide, and Catathymic Process: A Case Study*, 46 INT'L J. OFFENDER THERAPY & COMP. CRIMINOLOGY 64, 69 (2002) (citing the *Tarasoff* case as an example of homicide following stalking).
[35] *Poddar I*, 103 Cal. Rptr. at 86.
[36] *Poddar II*, 518 P.2d 342, 345 (Cal. 1974)
[37] *Poddar I*, 103 Cal. Rptr. at 93.
[38] *Poddar II*, 518 P.2d at 350.

released Poddar on condition that he return to India,[39] where, a few years later, he reported being happily married.[40]

Tatiana's parents sued Poddar's therapist, his associates, and their employing institution, alleging, *inter alia*, therapist negligence for failure to detain Poddar and failure to warn the Tarasoffs of the grave danger that Poddar posed.[41] The Alameda County, California trial court dismissed the suit; an appeals court affirmed, holding that (A) the case could not proceed because an action for failure to detain was statutorily barred, and (B) the lack of a special relationship between the clinicians and either Tatiana or her parents precluded any duty to warn them.[42] The Tarasoffs then appealed to the California Supreme Court, which ruled that their claim against the clinicians and their employer could go forward.

B. The *Tarasoff* Rule

The defendant clinicians had raised three objections to the Tarasoffs' suit: (A) they had no treatment relationship with the Tarasoffs or Tatiana; (B) predicting violence is difficult; and (C) warning Tatiana would have constituted a breach of therapeutic confidentiality.

1. Lack of Treatment Relationship

The *Tarasoff* majority held that even in the absence of a treatment relationship involving Tatiana, the clinician's treatment relationship with the patient could "support affirmative duties for the benefit of third persons."[43] The majority's basis included a California case that gave physicians duties to control hospitalized patients,[44] a Washington case requiring physicians to warn patients themselves about conditions or medications that might endanger them or others,[45] and decades-old decisions from other jurisdictions that imposed on the physician a duty to warn potential contacts about a patient's contagious disease.[46]

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[39] Fillmore Buckner & Marvin Firestone, "*Where the Public Peril Begins": 25 Years After* Tarasoff, 21 J. LEGAL MED. 187, 195 (2000).
[40] Stone, *supra* note 25, at 357.
[41] *Tarasoff II*, 551 P.2d at431.
[42] *Tarasoff I*, 108 Cal. Rptr. at 880–87.
[43] *Tarasoff II*, 551 P.2d at 343.
[44] *Id*. at 344 (citing Vistica v. Presbyterian Hosp., 432 P.2d 193, 196 (Cal. 1967)).
[45] *Id*. (citing Kaiser v. Suburban Transp. Sys., 398 P.2d 14, 16 (Wash. 1965)).
[46] *Id.* (citing Wojcik v. Aluminum Co. of Am., 183 N.Y.S.2d 351, 357 (N.Y. 1959); Davis v. Rodman, 227 S.W. 612, 614 (Ark. 1921); Skillings v. Allen, 173 N.W. 663, 664 (Minn. 1919); Jones v. Stanko, 160 N.E. 456, 457 (Ohio 1928)).

2. Difficulty of Predicting Violence

Although acknowledging "the difficulty that a therapist encounters in attempting to forecast whether a patient presents a serious danger of violence,"[47] the *Tarasoff* majority said that mental health clinicians need only satisfy ordinary standards of (nonnegligent) practice. "[T]he therapist is free to exercise his or her own best judgment without liability; proof, aided by hindsight, that he or she judged wrongly is insufficient to establish negligence."[48] Because the facts that actually generated *Tarasoff* did not involve any prediction—Poddar's therapists responded to an explicit threat—the majority may not have appreciated how ambiguous many situations appear in advance of a tragic event.[49]

3. Confidentiality

The *Tarasoff* majority used a cost-benefit analysis to reject the importance of therapeutic confidentiality. The public health benefit of privacy in psychotherapy was merely "conjectural," while the "peril to the victim's life" was not.[50] Despite the existence of a "public policy favoring protection of the confidential character of patient-psychotherapist communications," this protection "must yield to the extent to which disclosure is essential to avert danger to others."[51]

4. Holding

The result was this conclusion by the *Tarasoff* majority:

> When a therapist determines, or pursuant to the standards of his profession should determine, that his patient presents a serious danger of violence to another, he incurs

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[47] *Tarasoff II*, 551 P.2d at 345. Among the publications the court cited in acknowledging the problem of prediction was a work of Professor John Monahan. *See Tarasoff II*, 551 P.2d at 344 (citing JOHN MONAHAN, *The Prevention of Violence*, *in* COMMUNITY MENTAL HEALTH IN THE CRIMINAL JUSTICE SYSTEM (John Monahan ed., 1975).

[48] *Tarasoff II*, 551 P.2d at 345 (citations omitted). Around the time this was written, psychologists were elucidating how judgment is affected by hindsight bias, the now-well-documented tendency of persons who know an outcome to exaggerate the ease with which the outcome was predictable in advance, or to exaggerate the advance likelihood of an event once it has already occurred. The classic articles include Baruch Fischoff, *Hindsight ≠ Foresight: The Effect of Outcome Knowledge on Judgment Under Uncertainty*, 1 J. EXPER. PSYCHOL. HUM. PERCEPTION & PERFORMANCE 288 (1975) and Scott A. Hawkins & Reid Hastie, *Hindsight: Biased Judgments of Past Events After the Outcomes Are Known*, 107 PSYCHOL. BULL. 311 (1990).

[49] Discussing a situation in which a patient talks to his therapist about a planned political killing, the majority writes: "We would hesitate to hold that the therapist who is aware that his patient expects to attempt to assassinate the President of the United States would not be obligated to warn the authorities because the therapist cannot predict with accuracy that his patient will commit the crime." *Tarasoff II*, 551 P.2d at 346. The problem here is that the majority characterizes a therapist's knowing that "his patient expects to attempt to assassinate the President" as a prediction, when what most likely would have occurred was that the therapist heard the patient describe his plans. *Id*. Clearly, hearing and understanding a patient's explicit threat is not the same thing as making a prediction about the patient's behavior.

[50] *Id*.

[51] *Id.* at 347.

> an obligation to use reasonable care to protect the intended victim against such danger.[52]

What constituted "reasonable care" would "depend upon the nature of the case."[53] Appropriate action might include "warn[ing] the intended victim or others likely to apprise the victim of the danger . . . notify[ing] the police, or tak[ing] whatever other steps are reasonably necessary under the circumstances."[54]

C. Implicit Features of *Tarasoff*

Underlying the *Tarasoff* majority decision are subtle but crucial assumptions that should not escape notice.

1. Policy Setting for Public Safety

a. Psychotherapists as Public Protectors

First, *Tarasoff* establishes the notion that psychotherapists can and should play a vital role in defending society from violence. Citing several cases that involved mental patients who acted violently,[55] *Tarasoff*'s "policy decision" makes the therapist potentially liable for failure to address the unique risk posed by mental patients. As the following quote suggests, that risk, if avoidable, was one the court found unacceptable:

> Our current crowded and computerized society compels the interdependence of its members. In this risk-infested society we can hardly tolerate the further exposure to danger that would result from a concealed knowledge of the therapist that his patient was lethal. If the exercise of reasonable care to protect the threatened victim requires the therapist to warn the endangered party or those who can reasonably be expected to notify him, we see no sufficient societal interest that would protect and justify concealment. The containment of such risks lies in the public interest.[56]

This need helps justify the *Tarasoff* conclusion that the therapist-patient relationship creates an exception to the general rule that individuals have no duty to control the conduct of other persons.[57]

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[52] *Tarasoff II*, 551 P.2d at 340.

[53] *Id.*

[54] *Id.*

[55] *See Tarasoff II*, 551 P.2d at 344 (citing Vistica v. Presbyterian Hosp., 432 P.2d 193 (Cal. 1967); Semler v. Psychiatric Inst. of D.C., 538 F.2d 121 (4th Cir. 1976); Underwood v. United States, 356 F.2d 92 (5th Cir. 1966); Fair v. United States, 234 F.2d 288 (5th Cir. 1956); Greenberg v. Barbour, 322 F. Supp. 745 (E.D. Pa. 1971); and Merchs. Nat'l Bank & Trust Co. of Fargo v. United States, 272 F. Supp. 409 (D.N.D.1967)).

[56] *Tarasoff II*, 551 P.2d at 347.

[57] "This is true although the actor realizes that he has the ability to control the conduct of a third person, and could do so with only the most trivial of efforts and without any inconvenience to himself." RESTATEMENT (SECOND) OF TORTS § 315 (1965).

The idea that public protection is the *raison d'être* of mental health care reached its apotheosis in *Morgan v. Fairfield Family Counseling Center*, a 1997 Ohio decision that viewed therapy as "a special relation justifying the imposition of a duty upon the psychotherapist to protect against and/or control the patient's violent propensities."[58] Matt Morgan had killed his parents several months after a psychiatrist stopped his medication. While taking medication, said the court, Morgan had been "a medication-controlled . . . patient," and if Morgan had continued to take "medication, he would not have had the overt psychotic symptoms that led him to kill his parents and injure his sister."[59]

In addition to being able to control violence through medication, mental health clinicians have the power to initiate civil commitment procedures. "Thus," said the *Morgan* majority, "we conclude that the psychotherapist-outpatient relationship embodies sufficient elements of control to warrant a corresponding duty to control."[60] Moreover, said the *Morgan* court:

> Society has a strong interest in protecting itself from those mentally ill patients who pose a substantial risk of harm . . . . To this end, society looks to the mental health profession to play a significant role in identifying and containing such risks . . . . The mental health community, therefore, has a broadly based responsibility to protect the community against danger associated with mental illness.[61]

b. Utilitarian Calculus

Second, the *Tarasoff* majority conclusion that public policy favors disclosure to avert danger over protecting confidentiality in patient-psychotherapist communications suggests that one can demonstrate, through some utilitarian calculus, that therapeutic confidentiality is worth less than making psychotherapy serve as a line of defense against violence. *Tarasoff* employs a balancing test that considers several factors, including "'the policy of preventing future harm, the extent of the burden to the defendant and consequences to the community of imposing a duty to exercise care with resulting liability for

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[58] Estates of Morgan v. Fairfield Family Counseling Ctr., 673 N.E.2d 1311, 1313, 1327 (Ohio 1997). Five years earlier, Professor Monahan had noted:

> Throughout history and in all known societies, people have believed that mental disorder and violence were somehow related. . . .
> [T]his assumption has played an animating role . . . in the imposition of tort liability on psychologists and psychiatrists who fail to anticipate the violence of their patients.

John Monahan, *Mental Disorder and Violent Behavior: Perceptions and Evidence*, 47 AM. PSYCHOL. 511, 511 (1992).

[59] *Estates of Morgan*, 673 N.E.2d at 1323–24.

[60] *Id*. at 1324.

[61] *Id*.

breach, and the availability, cost and prevalence of insurance for the risk involved."'[62]

The *Tarasoff* majority made this calculation without any empirical evidence to support it, and the *Tarasoff* dissent insisted that the majority had gotten the calculation wrong. Absence of confidentiality would lead to absence of trust in one's therapist, "the very means by which treatment is effected."[63] Rather than reduce violence, said dissenting Justice Clark: "The duty to warn imposed by the majority will cripple the use and effectiveness of psychiatry. Many people, potentially violent—yet susceptible to treatment—will be deterred from seeking it."[64]

Subsequent scholarship suggested that, as an empirical matter, both the dissent and the majority were mistaken. Mental health professionals adjusted to *Tarasoff*'s new expectations, and when therapists had to issue warnings, "in most cases issuing the warning had a minimal or a positive effect on the psychotherapeutic relationship."[65] Because "almost half of the targets of patients' threats were family members, spouses, boyfriends, or girlfriends . . . the *Tarasoff* type of situation," rather than being detrimental for treatment, "may hold promise for family-oriented therapeutic interventions."[66]

However, if potential confidentiality breaches have not undermined psychotherapy, they may also not accomplish a public protection goal that justifies the majority's holding in *Tarasoff*. As psychiatrist Thomas Gutheil suggests, therapeutic decisions that require violating confidentiality may have worse outcomes than decisions that preserve confidentiality. Poddar's therapists, says Gutheil, could not have warned Tatiana immediately because she was out of the country, and telling family members would have been of questionable value because they might not have relayed the warnings to Tatiana.[67] If, however, Poddar's therapist had maintained confidentiality, Poddar might have continued in treatment and his rage and dangerousness might have been diminished. Also, Poddar's therapist could have helped Poddar to tell Tatiana himself, which would not have implicated the therapist's duty to maintain

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[62] *Tarasoff II*, 551 P.2d at 342 (quoting Merrill v. Buck, 375 P.2d 304 (Cal. 1962); Biakanja v. Irving, 320 P.2d 16 (Cal. 1958); Walnut Creek Aggregates Co. v. Testing Eng'rs Inc., 56 Cal. Rptr. 700 (Cal. App. 1967)). Missing from this list of factors is any concern for the impact of the policy on the patient. Such impact might include embarrassment and unnecessary commitment for individuals who, if handled differently, might desist from violence.

[63] *Tarasoff II*, 551 P.2d at 359.

[64] *Id.* at 360.

[65] Renee Binder & Dale McNeil, *Application of the* Tarasoff *Ruling and Its Effect on the Victim and the Therapeutic Relationship*, 47 PSYCHIATRIC SERV. 1212, 1212 (1996) (explaining that, following California's enactment of a statute prescribing specific conditions for dealing with threatened violence, almost half of psychiatry residents had issued *Tarasoff*-type warnings).

[66] Dale McNeil et al., *Management of Threats of Violence Under California's Duty-to-Protect Statute*, 155 AM. J. PSYCHIATRY 1097, 1100 (1998).

[67] Thomas G. Gutheil, *Moral Justification for* Tarasoff*-Type Warnings and Breach of Confidentiality: A Clinician's Perspective,* 19 BEHAV. SCI. & L. 345, 353 (2001).

confidentiality. The point, Gutheil concludes, is that one cannot make useful generalizations about warnings and other protective measures; without knowing the facts of a particular case, one cannot say what type of action best serves the patient and protects any potential victims.[68]

2. Models of Patients and Therapists' Knowledge

In a pithy, alliterative summary of therapeutic confidentiality versus the duty to prevent violence, the *Tarasoff* decision states: "The protective privilege ends where the public peril begins."[69] This pronouncement presumes the existence of a clear demarcation between those patients who pose "a serious danger of violence" and those who do not. At another point, the *Tarasoff* court refers to the "concealed knowledge of the therapist that his patient was lethal,"[70] which suggests that patients either are "lethal" or they are not.[71] These statements make intuitive sense: because death either occurs or it does not, one can logically dichotomize people who become victims of lethal violence as those who die and those who do not. With a clear definition of "serious injury,"[72] one could similarly divide victims into those who were injured seriously and those who were not. One also could logically dichotomize therapists' choices about patients: faced with a particular clinical situation, a therapist can either take some protective action or not do so.

But *Tarasoff* carries this dichotomization beyond the realm of facts about the world—violence either does or does occur, a therapist either does or does not take protective action—to the realm of therapists' knowledge about those facts, as though a therapist would either have knowledge about future violence or would not. By virtue of such knowledge, a therapist could either realize that a duty to take protective action has arisen or fail to realize this. Though *Tarasoff* does not explicitly require therapists to get every judgment right, it sees therapists' beliefs about the future as binary "yes-or-no" assessments about whether "a serious danger of violence" exists. More succinctly: because violence either will occur or will not, and because a therapist can either take

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[68] *Id.* Here, Dr. Gutheil has suggested treatment might be the most effective intervention for reducing the potential for violence. I return to the idea of treatment as a violence reduction measure *infra*, Section VI.

[69] *Tarasoff II*, 551 P.2d at 347.

[70] *Id.*

[71] Because the *Tarasoff* rule refers to "a serious danger of violence," the court's concerns presumably extend to violence that, though not lethal, results in significant injury.

[72] In any study of violence prediction, researchers must decide what actions "count" as violent events so that they can decide whether a particular person should be counted as having acted violently or not. An example of how violence is defined for such purposes appears in Henry J. Steadman et al., *Violence by People Discharged from Acute Psychiatric Inpatient Facilities and By Others in the Same Neighborhoods*, 55 ARCH. GEN. PSYCHIATRY 393, 395 (1998) (defining violence as battery that results in physical injury, sexual assaults, assaultive acts with weapons, or threats made while holding a weapon).

a protective action or not, *Tarasoff* assumes that therapists' beliefs about violence will be predictions that violence either will or will not occur.[73]

D. Subsequent Cases

Though the *Tarasoff* doctrine need not have been adopted outside California, its legal progeny[74] in other jurisdictions were even more unsettling for therapists. These cases adopted *Tarasoff*'s implicit assumption that clinical violence assessments are binary, will-or-will not judgments. The cases also expanded mental health professionals' prediction duties beyond situations in which patients made threats to harm specific persons to situations involving all "foreseeable" victims harmed by patients.[75]

E. Acquiescence of Mental Health Professionals

Mental health professionals at first objected to duties imposed by *Tarasoff*,[76] but now accept these duties as established, appropriate features of clinical practice. Thus, in a recent article in the *American Journal of Psychiatry*, psychologist Dale McNeil and colleagues write:

> [M]ental health clinicians are expected to be able to assess whether intervention is needed to protect third parties from patients' violence, to assess when patients pose a sufficient level of risk to justify involuntary civil commitment, and to assess when patients who have been hospitalized can be safely discharged to the community. Adverse outcomes associated with carrying out these risk assessments can expose clinicians to malpractice liability.[77]

To better assess risk and avoid potential liability, state McNeil and colleagues, mental health clinicians should receive "formal training in risk assessment for violence" that reflects "the many advances in the science of risk assessment

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[73] Quattrocchi and Schopp believe that viewing violence assessments as binary arises from *Tarasoff*'s origins in negligence law, where foreseeability is central to the existence of a duty. They believe that, in the case of possible future violence, prediction foreseeability "generates protective obligations that reflect dichotomous classification of persons. Those classified as not dangerous trigger no protective obligation on the part of the clinician and those classified as dangerous trigger a protective obligation." Michael R. Quattrocchi & Robert F. Schopp, *Tarasaurus Rex: A Standard of Care that Could Not Adapt*, 11 PSYCHOL. PUB. POL'Y & L. 109, 119 (2005).

[74] A Google search using the words "Tarasoff" and "progeny" yields scores of hits. However, I believe that the first publication to use this phrase was ALAN A. STONE, LAW, PSYCHIATRY, AND MORALITY: ESSAYS AND ANALYSIS 161 (1984).

[75] Key early cases include: Lipari v. Sears Roebuck & Co., 497 F. Supp. 185 (D. Neb. 1980); Jablonski by Pahls v. United States, 712 F.2d 391 (9th Cir. 1983); and Petersen v. State, 671 P.2d 230 (Wash. 1983). These cases are discussed in Mossman, *supra* note 26, at 546-49.

[76] Stone, *supra* note 25, at 358 (arguing that imposing a duty to warn potential victims is "counterproductive" because the duty would be "incompatible" with effective therapy and would increase violence by "deter[ring] both patients and therapists from undertaking treatment").

[77] Dale E. McNeil et al., *Impact of Clinical Training on Violence Risk Assessment*, 165 AM. J. PSYCHIATRY 195, 195 (2008).

that have occurred in the last 15 years" and that translates "the scientific knowledge base" about violence risk assessment "into skills that can be learned by practitioners."[78]

II. "WARNING SIGNS" AND THE CLARITY OF HINDSIGHT

Using risk assessments to detect and prevent future violence is an attractive-sounding strategy, especially when one learns about the "warning signs"[79] that frequently have preceded violent acts and would seem to have provided chances to stop those acts. When investigated in retrospect, events (especially adverse events) that were startling when they occurred often turn out to have antecedents that make the outcomes seem logical, understandable, and even foreseeable. Not having anticipated and interceded then looks like individuals responsible for public safety failed to "connect the dots" and intervene before the tragedy occurred.[80] Missed warning signs and missed opportunities for prevention are recurrent themes not just in United States media reports, but in advice offered by health professionals and government agencies.[81] It seems appropriate to wonder, if advance warnings so often point

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[78] *Id.*; *see also* TASK FORCE ON EDUCATION AND TRAINING, AM. PSYCHOL. ASS'N, REPORT ON EDUCATION AND TRAINING IN BEHAVIORAL EMERGENCIES (2000), *available at* http://www.apa.org/divisions/div12/sections/section7/tfreport.html (last visited Aug. 28, 2008) ("All practitioners need to be formally educated and trained to deal with" potentially violent behavior).

[79] Press reports on school shootings demonstrate this. By searching the Web using the strategy of either "Columbine" or "Virginia Tech" plus the phrase "warning signs," one finds hundreds of pieces of foreboding evidence that appear to foretell both tragedies.

In the months before the Columbine killings, the shooters threatened classmates and alluded to their violent intentions in homework assignments, Web pages, and videotapes. M.E. Sprengelmeyer & Michelle Ames, *Report Offers Columbine Hindsight: Interviews Show that Killers Dropped Hints of Rampage, but No One Gathered All the Pieces*, ROCKY MOUNTAIN NEWS, Nov. 22, 2000, *available at* http://denver.rockymountainnews.com/shooting/1122shad1.shtml (last visited Aug. 28, 2008).

More than a year before his deadly rampage at Virginia Tech, Seung-Hui Cho committed acts that seemed "extremely odd, frightening and/or threatening" to other students and faculty members. OFFICE OF THE INSPECTOR GENERAL FOR MENTAL HEALTH, MENTAL RETARDATION & SUBSTANCE ABUSE SERVICES, INVESTIGATION OF APRIL 16, 2007 CRITICAL INCIDENT AT VIRGINIA TECH 5 (2007), *available at* http://www.oig.virginia.gov/documents/VATechRpt-140.pdf (last visited Aug. 28, 2008). Cho rarely spoke to classmates and stalked female students. His behavior and the contents of his writing assignments disturbed teachers. *See* VIRGINIA TECH REVIEW PANEL, *supra* note 20, at 40–52.

[80] Following the attacks of September 11, 2001, failure to "connect the dots" was a frequent metaphor for explaining the behavior of United States intelligence agencies. *See, e.g.,* RICHARD C. SHELBY, SEPTEMBER 11 AND THE IMPERATIVE OF REFORM IN THE U.S. INTELLIGENCE COMMUNITY: ADDITIONAL VIEWS OF SENATOR RICHARD C. SHELBY 23 (2002), *available at* http://www.fas.org/irp/congress/2002_rpt/shelby.pdf (last visited Aug. 28, 2008) ("The most fundamental problem . . . [wa]s our Intelligence Community's inability to 'connect the dots' available to it before September 11, 2001 about terrorists' interest in attacking symbolic American targets.").

[81] *See*, *e.g.*, AM. PSYCHOL. ASS'N, WARNING SIGNS OF YOUTH VIOLENCE (2004), *available at* http://www.apahelpcenter.org/featuredtopics/feature.php?id=38 (last visited Aug. 28, 2008); U.S. DEPARTMENT OF EDUCATION, SCHOOL VIOLENCE WARNING SIGNS AND REMEDIES (2005), *available at* http://www.ed.gov/news/av/audio/2005/03232005.html (last visited Aug. 28, 2008); Press

clearly to such horrible events, why have persons in positions of responsibility failed to stop them? Should society insist that those responsible for protecting us at work and school do a better of job of recognizing warnings signs and responding to them? What could possibly explain such incompetence and even negligence by public safety officials?

Research in cognitive psychology over the last four decades suggests that when we ask such questions, we also should insist on asking whether our feelings reflect "hindsight bias." This phenomenon is one of a number of cognitive heuristics that our brains automatically invoke and that serve us well in contexts akin to the situations in which our thinking capacities evolved. However, these heuristics sometimes lead us astray in complex situations, especially those situations that involve hidden mathematical calculations.[82] Humans are mentally biased to remember danger and be attuned to risk, and we have a mental proneness to recall ambiguous (and perhaps very common) antecedents as unmistakably obvious warning signs. In hindsight, we perceive tragedies as being more easily foreseeable than they really were.[83]

It thus should come as no surprise that, after the tragedies of Columbine, Virginia Tech, and other atypical "shooting rampages," we can readily identify actions and comments by the perpetrators that clearly portended violence. Yet, even in the United States—an unusually violent place compared to most developed nations—such incidents are rare. How strong is the apparent link between shooters' mental problems and their actions? We need to know this because mental health clinicians can be expected to prevent future tragedies only if the violence-mental illness connection is significant. We also need to know how well mental health professionals can detect possible violence. The hope that clinicians can stop violence before it occurs hinges on being

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Release, American Association of Occupational Health Nurses, Critical Warning Signs of Workplace Violence Not What Employees Expect (Dec. 1, 2003), *available at* http://www.aaohn.org/press_room/workplace_violence_120103.cfm (last visited Aug. 28, 2008); Critical Incident Response Group, FBI ACADEMY, WORKPLACE VIOLENCE: ISSUES IN RESPONSE, *available at* http://www.fbi.gov/publications/violence.pdf (last visited Aug. 28, 2008).

[82] Our survival as a species once depended on our ability to remember risky situations (picture a caveman remembering that his buddy, Thog, tried to pet a lion right before it ate him), and our individual survival still does to some extent (for example, when we remember how boiling water once burned us).

[83] "[W]hen viewing past outcomes, both naive and trained decision-makers tend to perceive patterns where none exist, thus creating illusory meaning." Ed Bukszar, Jr., *Strategic Bias: The Impact of Cognitive Biases on Strategy,* 16 CAN. J. ADMIN. SCI. 105, 108 (1999). Random events may appear to follow orderly patterns or appear clustered together when viewed in hindsight. DANIEL KAHNEMAN ET AL., JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES 37 (1982). Also, people tend to ignore base rates. *See* Maya Bar-Hillel, *The Base-Rate Fallacy in Probability Judgments*, 44 ACTA PSYCHOLOGICA 211 (1980). Because of this, people tend not to consider how rare certain events (like, campus homicides) are compared to the things that seem (in hindsight) to lead up to them (such as thoughts or writings with violent content), especially when the events contain vivid and emotionally salient information. Colleen K. Cannon & Vernon L. Quinsey, *The Likelihood of Violent Behaviour: Predictions, Postdictions, and Hindsight Bias*, 27 CAN. J. BEHAV. SCI. 92 (1995).

able to distinguish true "signals"[84]—perceived, genuine indications of future aggression—from "noise"—the multitude of other perceptions that will not be followed by violence but that occur in the informational background.

III. VIOLENCE AND MENTAL ILLNESS—ANY CONNECTION?

Even though media attention focuses especially on killings that seem irrational, such killings comprise just a tiny fraction of homicides in the United States. A connection between perpetrators' mental disorders and irrational killings seems plausible. But, when all homicides and other types of serious violence are viewed in their entirety, is mental illness really a significant factor? The question is important because the notion of meaningful mental health intervention to prevent violence presupposes some sort of link between violent behavior and the conditions that mental health professionals treat.

No matter what their work setting is, twenty-first century mental health professionals confront, address, and (frankly) worry about their patients' dangerousness. Hall and Ebert list 27 types of treatment or assessment contexts that require mental health professionals to evaluate dangerousness.[85] Besides the already-discussed *Tarasoff* duty to protect the foreseeable victims of patients, judgments about future violence affect clinicians' decisions in such diverse areas as initiating emergency hospitalization and civil commitment proceedings, testimony about aggravating factors for purposes of capital sentencing decisions,[86] advice to stalking victims,[87] testimony on "sexually violent persons,"[88] and consultations to employers concerning hiring and fitness-for-duty.[89]

Although most health care providers usually do not address their patients' risk for intentional violence, societies and legal systems around the world expect mental health professionals to do so. Why should dangerousness fall within the purview of clinicians who assess and treat mental disorders? Part of the answer seems to be that it always has. "Throughout history and in

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[84] For an introduction to the use of "signal" and "noise" in detection problems, see THOMAS D. WICKENS, ELEMENTARY SIGNAL DETECTION THEORY 3, 3–15 (2002).

[85] HAROLD V. HALL & RONALD S. EBERT, VIOLENCE PREDICTION: GUIDELINES FOR THE FORENSIC PRACTITIONER 167–68 (2d ed. 2002).

[86] Mark D. Cunningham & Thomas J. Reidy, *A Matter of Life or Death: Special Considerations and Heightened Practice Standards in Capital Sentencing Evaluations*, 19 BEHAV. SCI. & L. 473 (2001).

[87] James Knoll, *Risk Management of Stalking*, *in* STALKING: PSYCHIATRIC PERSPECTIVES AND PRACTICAL APPROACHES 85, 85–106 (Debra A. Pinals ed., 2007).

[88] Eric S. Janus & Robert A. Prentky, *Forensic Use of Actuarial Risk Assessment with Sex Offenders: Accuracy, Admissibility and Accountability*, 40 AM. CRIM. L. REV. 1443 (2003).

[89] Kirk Heilbrun et al., *Risk Communication: Clinicians' Reported Approaches and Perceived Values*, 27 J. AM. ACAD. PSYCHIATRY & L. 397 (1999); Hall & Ebert, *supra* note 85, at 167–68.

all known societies," writes Professor Monahan, "people have believed that mental disorder and violence were somehow related."[90]

Until relatively recently, however, psychological science had scant proof that any violence-mental illness connection actually existed.[91] Over the last two decades, though, evidence supporting such a connection has accumulated.[92]

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[90] John Monahan, *Mental Disorder and Violent Behavior: Perceptions and Evidence*, 47 AM. PSYCHOLOGIST 511, 511 (1992). Monahan cites many examples from around the world to demonstrate this point. *Id*. at 511-13 (describing, *inter alia*, Greek and Roman literature, a medieval German commitment case, Benjamin Franklin's colonial-era efforts to establish a mental ward in Philadelphia, and anthropological studies from Laos, Australia, and the Western Hemisphere revealing a universal "assumption that mental disorder sometimes predisposes toward violent behavior").

[91] Psychiatrists and psychologists previously thought that after controlling for sociodemographic factors (including, male sex, youthfulness, and poverty) known to be associated statistically with violence, mental illness had no additional statistical impact on who committed violence. Elizabeth Walsh & Thomas Fahy, *Violence in Society*, 325 BRIT. MED. J. 507 (2002).

[92] To my knowledge, the first such study was a re-examination of data originally used in the United States Epidemiologic Catchment Area study, in which a logistic regression model showed a clear contribution of mental disorder and (especially) substance misuse to violence, even after controlling for sex, youthfulness, and income. *See* Jeffrey Swanson et al., *Violence and Psychiatric Disorder in the Community: Evidence from the Epidemiologic Catchment Area Surveys*, 41 HOSP. & COMM. PSYCHIATRY 761, 769 (1990) (presenting logistic regression results).

Researchers debate the causal connections between specific psychiatric symptoms and aggression, as well as the reasons why psychiatric disorders are associated with violence. *See, e.g.,* Paul S. Appelbaum et al., *Violence and Delusions: Data from the MacArthur Violence Risk Assessment Study*, 157 AM. J. PSYCHIATRY 566 (2000) (reporting delusions appear not to increase overall risk of violence); Cameron Wallace et al., *Criminal Offending in Schizophrenia Over a 25-Year Period Marked by Deinstitutionalization and Increasing Prevalence of Comorbid Substance Use Disorders*, 161 AM. J. PSYCHIATRY 716 (2004) (arguing theories that attempt to explain the mediation of offending behaviors in schizophrenia by a single factor are not supported by results).

Nonetheless the presence of some link between mental illness and violence now seems well established. *See, e.g.,* Bruce G. Link et al., *The Violent and Illegal Behavior of Mental Patients Reconsidered*, 57 AM. SOC. REV. 275 (1992); Paul E. Mullen, *Schizophrenia and Violence: From Correlations to Preventive Strategies*, 12 ADV. PSYCHIATRIC TREATMENT 239 (2006); Henry J. Steadman et al., *supra* note 72; Jeffrey W. Swanson et al., *Psychotic Symptoms and Disorders and the Risk of Violent Behavior in the Community*, 6 CRIM. BEHAV. & MENTAL HEALTH 317 (1996); Jeremy Coid et al., *Violence and Psychiatric Morbidity in the National Household Population of Britain: Public Health Implications*, 189 BRIT. J. PSYCHIATRY 12 (2006); JOHN MONAHAN ET AL., RETHINKING RISK ASSESSMENT: THE MACARTHUR STUDY OF MENTAL DISORDER AND VIOLENCE (2001).

The link appears stronger in nations in which possession and use of firearms is less common than in the United States. *See, e.g.,* Louise Arseneault et al., *Mental Disorders and Violence in a Total Birth Cohort: Results from the Dunedin Study*, 57 ARCH. GEN. PSYCHIATRY 979 (2000) (finding mental disorders explain a substantial amount of community violence); Patricia A. Brennan et al., *Major Mental Disorders and Criminal Violence in a Danish Birth Cohort*, 57 ARCH. GEN. PSYCHIATRY 494 (2000) (finding significant positive relationship between major mental disorders and criminal violence); Paul Mullen et al., *Community Care and Criminal Offending in Schizophrenia*, 355 LANCET 614 (2000) (reporting persons with schizophrenia and substance abuse problems account for a disproportionate amount of offending); Jari Tiihonen et al., *Specific Major Mental Disorders and Criminality: A 26-Year Prospective Study of the 1966 Northern Finland Birth Cohort*, 154 AM. J. PSYCHIATRY 840 (1997) (finding a high prevalence of offenses among males with alcohol-induced psychoses and males with schizophrenia and comorbid alcohol abuse).

IV. THE ABILITY TO "PREDICT" VIOLENCE

In the 1970s and 1980s, mental health professionals believed they could not distinguish persons who would become violent from those who would not, especially when such assessments concerned conduct several months or years in the future. Moreover, mental health professionals believed that their predictions of violence usually were wrong.[93] This conclusion perplexed clinicians, in part because it seems intuitively clear that all of us have some ability to anticipate what others will do, especially in the near future.[94] By the late 1980s, mental health professionals had published research suggesting they could gauge dangerousness over the next few days reasonably well.[95]

Since the mid-1990s, however, mental health professionals have recognized that assessing violence risk involves more than making a binary, "he-will-or-he-will not" statement about an individual's future dangerousness.[96]

An excellent, thoughtful summary of this literature appears in Michael A. Norko & Madelon V. Baranoski, *The Prediction of Violence; Detection of Dangerousness*, 8 BRIEF TREATMENT & CRISIS INTERVENTION 73, 73–83 (2008). Drs. Norko and Baranoski conclude that substance abuse is "consistently correlated with violence," "[s]ociodemographic factors contribute significantly more to violence risk than do mental health factors," and research on the relationship between symptoms of mental disorders is "inconsistent and conflicting," *Id*. at 76.

[93] A principal source for this belief was JOHN MONAHAN, THE CLINICAL PREDICTION OF VIOLENT BEHAVIOR 47 (1981). This highly influential monograph famously claimed that "psychiatrists and psychologists are accurate in no more than one out of three predictions of violent behavior over a several-year period among institutionalized populations that had both committed violence in the past (and thus had high base rates for it) and who were diagnosed as mentally ill." *Id*. at 47-49. Monahan's earlier work suggesting that clinical predictions were not accurate had been cited in *Tarasoff II*, 551 P.2d at 344–45 n.10. Monahan's *Clinical Prediction* was cited in Barefoot v. Estelle, 463 U.S. 880, 901 n.7 (1983), and in countless scientific publications used by mental health professionals.

Shortly after the publication of *Clinical Prediction of Violent Behavior*, Professor Christopher Slobogin noted that psychiatrists' high level of accuracy in predicting who would not become violent had been an overlooked feature of the data Monahan presented. *See* Christopher Slobogin, *Dangerousness and Expertise*, 133 U. PA. L. REV. 97, 113 (explaining that violence predictions were better than flipping coins, notwithstanding a widely held impression to the contrary).

[94] John Monahan, *The Prediction of Violent Behavior: Toward a Second Generation of Theory and Policy,* 141 AM. J. PSYCHIATRY 10, 11 (1984) (discussing evidence supporting potentially "valid short-term assessments of dangerousness").

[95] Renée L. Binder & Dale E. McNeil, *Effects of Diagnosis and Context on Dangerousness*, 145 AM. J. PSYCHIATRY 728 (1988) (enumerating factors in assessing risk of inpatient violence); Dale E. McNeil & Renée L. Binder, *Predictive Validity of Judgments of Dangerousness in Emergency Civil Commitment*, 144 AM. J. PSYCHIATRY 197, 197 (1987) (noting that the "emergency commitment situation permits judgments of dangerousness with a relatively high degree of short-term predictive validity"); Dale E. McNeil & Renée L. Binder, *Clinical Assessment of the Risk of Violence Among Psychiatric Inpatients*, 148 AM. J. PSYCHIATRY 1317 (1991) (stating findings support utility of probabilistic assessments of violence risk).

[96] "Dangerousness," along with "dangerous" and "danger," are words that take on varied meanings in ordinary usage. Sometimes these words refer to actual aggressive behavior (including threats, acts that have harmful potential, or acts that actually result in harm). Sometimes the words designate the property of having an especially large probability of causing harm. Sometimes the words refer to any probability (great or small) of acting violently. Douglas Mossman, *Understanding Prediction Instruments*, *in* THE AMERICAN PSYCHIATRIC PUBLISHING TEXTBOOK OF FORENSIC PSYCHIATRY 501, 502

As a result, clinicians have completely revised their views about whether violence is predictable and whether they can accurately assess someone's dangerousness. The change in views is explained by changes in how mental health professionals make and quantify the accuracy of violence assessments.

A. "Actuarial" Methods Supplant "Clinical" Judgment

Recent literature on violence prediction contrasts two broad types of assessment methods—those that rely on "clinical judgment," and those that rely on "actuarial methods." In risk assessments made using clinical judgment alone, mental health professionals use traditional interviewing and history-taking techniques similar to those used in the common practice of outpatient medicine and psychotherapy. Among the information gathered might be the evaluee's present mental status and life history. Other sources of information—family, friends, and court records—might also be consulted, along with available test results and whatever else is available and seems relevant. Once gathered, the information is combined in the professional's head and, using his background and experience, the professional makes inferences about likelihood of violence.

By contrast, actuarial methods feature algorithms, formulae, or some other mechanical combination of information for classification purposes, and the resulting probability assessment is derived from relationships between risk factors and outcomes that have been established empirically.[97] The term "actuarial" is applied to this type of assessment because the process resembles what insurance companies do when judging the risk of some future event.[98] When professionals perform actuarial risk assessments for dangerousness, they look for information about prespecified items concerning their evaluees, then plug this information into a formula or other predetermined scoring system. The result is a numerical value or category that summarizes the evaluee's violence risk.

When it comes to a phenomenon as complex as human aggression, one might expect that unfettered clinical judgments, which take unlimited advantage of experienced professionals' knowledge and wisdom, would provide far better predictions than simple formulae could. Just the opposite is usually

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(R.I. Simon & L.H. Gold eds., 2004); Saleem A. Shah, *Dangerousness: A Paradigm for Exploring Some Issues in Law and Psychology*, 33 AM. PSYCHOL. 224, 224–25 (1978). Following a previous discussion in Douglas Mossman, *Dangerousness Decisions: An Essay on the Mathematics of Clinical Violence Predictions and Involuntary Hospitalization*, 2 U. CHI. L. SCHOOL ROUNDTABLE 95 (1995), I use "dangerousness" here in the last sense, that is, to refer to anyone's chance of acting violently. This means that we can (and should) regard all persons as displaying degrees of dangerousness. We also can designate certain individuals or groups of persons as having higher or lower than average probabilities of acting violently by referring to their "low" or "high" levels of dangerousness, respectively.

[97] This classic description appears in PAUL MEEHL, CLINICAL VERSUS STATISTICAL PREDICTION, A THEORETICAL ANALYSIS AND A REVIEW OF THE EVIDENCE 3, 3–6 (1954).

[98] Robyn M. Dawes et al., *Clinical Versus Actuarial Judgment*, 243 SCIENCE 1668 (1989).

the case, however; empirically based, statistical prediction methods probably provide more accurate assessments of dangerousness than does the unaided clinical judgment of mental health professionals.[99] In support of this position are numerous studies of various prediction tasks comparing actuarial techniques with predictions by unaided clinicians,[100] and finding that the former were better (more accurate) than the latter. The reason is that predicting is less like a complex pattern recognition task (for example, recognizing faces), at which human brains do well, and more like an extended calculation task (like totaling a grocery store bill) that is straightforward but hard to do mentally.[101] People (including clinicians) are overconfident in their own predictive capabilities, and human beings' ability to consistently use and manipulate arithmetic information is limited.[102]

Actuarial predictions may have other morally and perhaps legally relevant advantages over clinical judgment. First, actuarial judgment is based on variables or factors that have a demonstrable relationship to violence. Second, when used properly, actuarial judgment is systematic and consistent. Actuarial judgment also is explicit, replicable, and transparent. It starts with fairly objective data and uses an explicit, pre-specified approach to combining

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[99] Eric S. Janus & Robert A. Prentky, *Forensic Use of Actuarial Risk Assessment with Sex Offenders: Accuracy, Admissibility and Accountability*, 40 AM. CRIM. L. REV. 1443, 1455-58 (2003) (summarizing studies); John Monahan, *A Jurisprudence of Risk Assessment: Forecasting Harm Among Prisoners, Predators, and Patients*, 92 VA. L. REV. 391, 408-27 (2006) (summarizing common, valid actuarial predictive factors).

[100] The emphasis in this paragraph is on "unaided" or "unfettered" clinical judgment, that is, judgment based solely on the evaluator's mental combination of the data. Contrast with this the assessment of dangerousness using "structured clinical judgment" (or "structured professional judgment"). Here, the evaluator begins the evaluation using actuarial methods, but is permitted to adjust the predicted likelihood of violence to take into account factors that the risk instrument ignores. Whether structured clinical judgment is superior or inferior to purely actuarial judgment is controversial, but the majority of authors in this area endorse structured clinical judgment. For a short, informative discussion, see Anthony Maden, *Violence Risk Assessment: The Question Is Not Whether but How*, 29 PSYCHIATRIC BULL. 121 (2005) ("[E]vidence on this question, from both forensic and general psychiatry, is unequivocal; the best assessment of violence risk in an individual patient is provided by structured clinical judgment."). For a more extensive discussion, see Norko & Baranoski, *supra* note 92, at 73 & 80 (noting that "[a]ctuarial predictions of future violence based on static nonpsychiatric characteristics achieve greater statistical accuracy than purely clinical methods," but cautioning about the persisting, "substantial limitations of the science").

[101] Dawes et al., *supra* note 98, at 1672.

[102] Michael A. Bishop & J.D. Trout, *50 Years of Successful Predictive Modeling Should Be Enough: Lessons for the Philosophy of Science*, 68 PHIL. SCI. s197, s200–02 (2002); William M. Grove & Paul E. Meehl, *Comparative Efficiency of Informal (Subjective, Impressionistic) and Formal (Mechanical, Algorithmic) Prediction Procedures: The Clinical-Statistical Controversy*, 2 PSYCHOL. PUB. POL'Y L. 293, 316 (1996) ("The human brain is a relatively inefficient device for noticing, selecting, categorizing, recording, retaining, retrieving, and manipulating information for inferential purposes."); William M. Grove et al., *Clinical Versus Mechanical Prediction: A Meta-analysis*, 12 PSYCHOL. ASSESSMENT 19, 25 (2000).

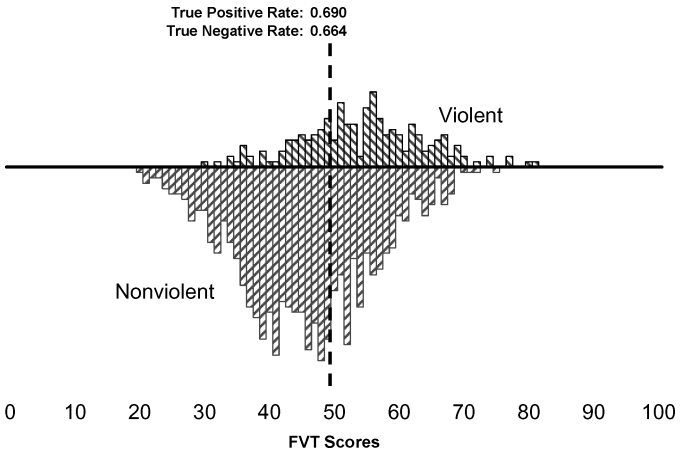

FIGURE 1. Histogram of score distributions from a hypothetical Future Violence Test (FVT), including the sensitivity and specificity at a cut-off score of 50.

and using those data, making its "results open to inspection, questioning, and when necessary, critique."[103]

B. Quantifying Prediction Accuracy: Receiver Operating Characteristic (ROC) Analysis

To understand the last two decades' advances in quantifying the accuracy of violence risk assessments, let us examine the results of a hypothetical method for implementing actuarial judgment. The Future Violence Test (FVT) evaluates future violence potential of individuals by assigning them scores from 0 to 100, with higher scores implying higher likelihood of violence. Suppose 1,000 individuals were evaluated with the FVT and 200 of them turned out to be violent during the follow-up period. The results appear in Figure 1, where we see that the violent individuals' scores tend to lie to the right (that is, they tend to be higher than) scores of nonviolent persons. Notice, though, that the violent and nonviolent subjects' score distributions overlap.

Suppose we intended to use the FVT to make yes-or-no predictions about violence, and picked ≥ 50 as our decision threshold. Figure 1 shows that most violent subjects fall at or above 50, and our true positive rate (TPR)—the fraction of actually violent people identified correctly by the FVT—is 0.690. Similarly, our "true negative rate" (TNR)—the fraction of actually

[103] Mossman, *supra* note 26, at 516. Professor Slobogin recognized many of these virtues a quarter-century ago. *See* Slobogin, *supra* note 93, at 122–23. He also comments: "Arguably, actuarial prediction promotes greater fairness than clinical prediction because it explicitly recognizes the variables relied upon, whereas clinical prediction allows the conscious or unconscious submergence of untidy evaluative factors." *Id.* at 151.

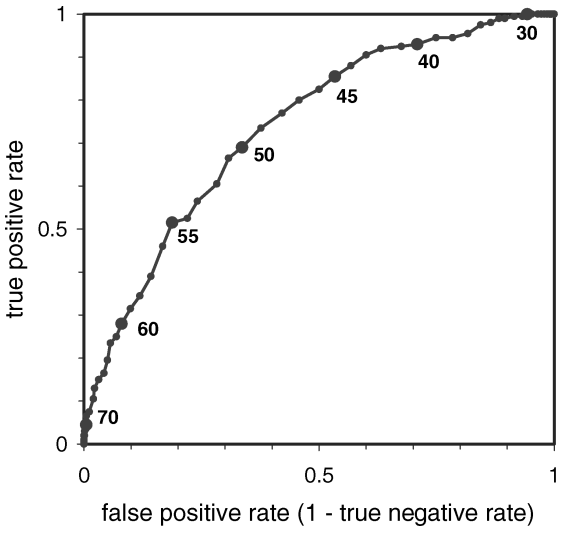

FIGURE 2. ROC graph based on the histogram in Figure 1, with FVT scores associated with decision thresholds.

nonviolent people identified correctly by the FVT—is 0.690.[104] Yet, because we could have chosen other cut-offs, these two values for TPR and TNR do not completely summarize what the FVT does.

However, Figure 2 provides a much fuller picture of the FVT's sorting capabilities. Here, all possible values of TPR and TNR appear. Figure 2 is a receiver operating characteristic (ROC) graph showing how the FVT performs across its entire range of possible cut-offs.[105] The ROC graph portrays an essential feature of the FVT, which is that the test's performance consists of trade-offs between true positive results and true negative results. Unless a test is perfect, the only way to increase the fraction of violent subjects detected is to increase the fraction of nonviolent subjects falsely identified as violent. This feature of violence prediction was recognized in several articles published in the mid-1990s,[106] and since then ROC analysis has become the standard way to describe the accuracy of violence predictions.[107]

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[104] In medical journals, TPR is usually termed "sensitivity" and TNR is "specificity." *See, e.g.,* Curtis P. Langlotz, *Fundamental Measures of Diagnostic Examination Performance: Usefulness for Clinical Decision Making and Research*, 228 RADIOLOGY 3, 4-5 (2003).

[105] As is customary, Figure 2 plots TPR as a function of the false positive rate (FPR), rather than TNR. However, because TNR = 1 – FPR, it is easy to interconvert these values.

[106] Douglas Mossman, *Assessing Predictions of Violence: Being Accurate About Accuracy*, 62 J. CONSULTING & CLIN. PSYCHOL. 783 (1994) [hereinafter *Being Accurate*]; Douglas Mossman, *Further Comments on Portraying the Accuracy of Violence Predictions*, 18 LAW HUM. BEHAV. 587 (1994); Marnie E. Rice & Grant T. Harris, *Violent Recidivism: Assessing Predictive Validity*, 63 J. CONSULTING & CLINICAL PSYCHOL. 737 (1995); William Gardner et al., *Clinical Versus Actuarial Predictions of Violence in Patients with Mental Illness*, 64 J. CONSULTING & CLINICAL PSYCHOL. 602, 602–09 (1996).

[107] ROC graphs are now used to describe prediction or detection accuracy in a host of circumstances. *See, e.g.*, Lewis O. Harvey, Jr. et al., *Application of Signal Detection Theory to Weather Forecasting*

Though ROC methods give investigators many options for analyzing accuracy, the single most popular choice is the area under the ROC curve (AUC). AUC provides a single-number summary of a detection system's overall accuracy, and also has the following practical meaning[108] where predicting violence is concerned: AUC equals the probability that a prediction method will identify a randomly selected violent individual as more likely to be violent than a randomly selected nonviolent person. Thus, if the FVT always identified violent and nonviolent persons correctly, its AUC would be 1.0; if the FVT were really no better than a coin toss (in other words, gave no information), its AUC would be 0.5. For the FVT shown in Figures 1 and 2, the AUC is 0.738.[109]

Recognizing and incorporating ROC methods into research on violence prediction has changed what scholars and researchers previously thought about mental health professionals' ability to assess dangerousness. Mental health publications now assume—based on numerous studies supporting the assumption—that psychiatrists and psychologists can meaningfully assess violence potential, whether the time period covered by the assessment involves days, weeks, months, or years of future behavior. The change began with applications of ROC methods to previously published data,[110] and was followed shortly thereafter by studies that used ROC methods to evaluate newly gathered data.[111] Within 10 years, several studies had consistently shown that mental health professionals could sort individuals into groups with higher and lower probabilities of acting violently.[112] Evidence that mental health professionals can validly rank individuals' dangerousness continues to accumulate.[113]

Behavior, 120 MONTHLY WEATHER REV. 863 (1992); Linda Drazga Maxfield, *Measuring Recidivism Under the Federal Sentencing Guidelines*, 17 FED. SENTENCING RPTR. 166 (2005) (quantifying accuracy of prediction model for criminal recidivism using ROC analysis).

[108] For an explanation and derivation, see James A. Hanley & Barbara J. McNeil, *The Meaning and Use of the Area Under a Receiver Operating Characteristic (ROC) Curve,* 143 RADIOLOGY 26 (1982).

[109] In some cases, the ability of a diagnostic test to separate populations is referred to as the test's "effect size." Because the FVT separates the violent and nonviolent populations by one standard deviation, its effect size is about 1. For additional discussion of this relationship, see Marnie E. Rice & Grant T. Harris, *Comparing Effect Sizes in Follow-up Studies: ROC, Cohen's d, and r*, 29 L. & HUM. BEHAV. 615 (2005).

[110] *Being Accurate*, *supra* note 106 (showing that, contrary to what had previously been thought, clinical predictions of violence typically have clearly-above-chance accuracy).

[111] Kevin S. Douglas et al., *Assessing Risk for Violence Among Psychiatric Patients: The HCR-20 Violence Risk Assessment Scheme and the Psychopathy Checklist: Screening Version*, 67 J. CONSULTING & CLIN. PSYCHOL. 917 (1999); Gardner et al., *supra* note 106; Rice & Harris, *supra* note 109.

[112] Alec Buchanan & Morven Leese, *Detection of People with Dangerous Severe Personality Disorders: A Systematic Review*, 358 LANCET 1955 (2001); John Monahan, *The Scientific Status of Research on Clinical and Actuarial Predictions of Violence*, *in* MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY 423 (David L. Faigman et al., eds., 2002); Douglas Mossman, *Assessing the Risk of Violence—Are "Accurate" Predictions Useful?,* 28 J. AM. ACAD. PSYCHIATRY & L. 272 (2000); Marnie E. Rice et al., *The Appraisal of Violence Risk,* 15 CURR. OPIN. IN PSYCHIATRY 589 (2002).

[113] *See, e.g.*, R. Karl Hanson & Kelly E. Morton-Bourgon, *The Accuracy of Recidivism Risk Assessments for Sexual Offenders: A Meta-analysis,* Public Safety Canada (2007), *available at*

Recent research on assessing dangerousness has focused on actuarial methods rather than clinical judgment, with investigators commonly reporting AUCs between 0.70 and 0.80 for ARAIs used in various populations and settings.[114] This means that the hypothetical FVT discussed in this article has a typical level of accuracy. When such findings are combined with the evidence connecting violence and mental illness, they appear to justify giving mental health professionals important roles in legal determinations based on future dangerousness.

Risk assessment has serious practical limits, however. The next section explains how these limits arise from mathematical features of risk assessments and the contexts in which we might try to apply what those assessments tell us.

V. DETECTING UNUSUAL EVENTS

Mental health professionals can assemble factors pointing to future violence well enough to produce valid rankings of dangerousness. These rankings are good enough that 70% to 80% of the time psychologists and psychiatrists can correctly differentiate a randomly chosen person who will become violent in the future from a randomly chosen person who will not become violent. This seems to suggest that mental health professionals have tools that would let them intervene effectively to prevent violence. In fact (as explained below), mental health professionals do have such tools—but they are not prediction methods. To understand why, we need to examine the "false positive paradox" as it applies to unusual or rare events.[115]

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http://www.publicsafety.gc.ca/res/cor/rep/cprmindex-eng.aspx (last visited Aug. 28, 2008)(reporting metaanalysis summarizing accuracy for detection methods for sex offender recidivism); Alec Buchanan, *Risk of Violence by Psychiatric Patients: Beyond the "Actuarial Versus Clinical" Assessment Debate*, 59 PSYCHIATRIC SERV. 184, 184-85 (2008) (describing studies since 2000 with AUCs of 0.61 to 0.82).

[114] "The use of actuarial methods for the prediction of violent recidivism among sex offenders routinely achieves ROC areas in the range from 0.74 to 0.79." Grant T. Harris & Marnie E. Rice, *Actuarial Assessment of Risk Among Sex Offenders*, 989 ANN. N.Y. ACAD. SCI. 198, 207 (2003). This is true of violence prediction also. *See*, *e.g.*, Douglas et al., *supra* note 111; KEVIN S. DOUGLAS ET AL., HCR-20 VIOLENCE RISK ASSESSMENT SCHEME: OVERVIEW AND ANNOTATED BIBLIOGRAPHY 6–10 (Jan. 10, 2007) (containing tables listing AUCs found in several studies), *available at* http://kdouglas.wordpress.com/hcr-20/ (last visited Aug. 28, 2008).

[115] LARRY GONICK & WOOLLCOTT SMITH, THE CARTOON GUIDE TO STATISTICS 49 (1993). The "false positive paradox" is hardly unique to violence prediction. *See, e.g.*, Khondkar E. Karim & Philip H. Siegel, *A Signal Detection Theory Approach to Analyzing the Efficiency and Effectiveness of Auditing to Detect Management Fraud*, 13 MANAGERIAL AUDITING J. 367 (1998) (arguing that auditors must accept high false alarm rates to effectively detect management fraud). For a recent discussion of this problem in the context of detecting terrorism, see Cory Doctorow, *The Odds Are Stacked Against Us*, GUARDIAN, May 20, 2008, *at* http://www.guardian.co.uk/technology/2008/may/20/rare.events (last visited June 23, 2008).

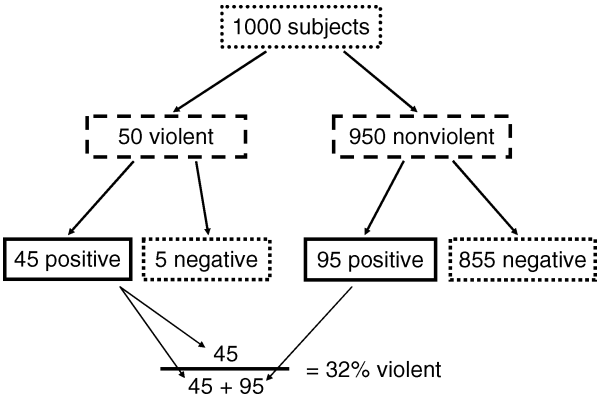

FIGURE 3. Frequency interpretation of results from a highly accurate test (where sensitivity = 0.90, specificity = 0.90), but the base rate of violence is just 5%.

Let us begin with a simple example. Suppose a test for future violence has two outcomes: "positive" (predicting the subject will become violent) and "negative" (predicting he or she will not). Suppose further that the test's true positive rate (TPR) and true negative rate (TNR) both are 90%, meaning that the test registers positive in 90% of cases in which subjects do become violent and registers negative in 90% of cases in which subjects do not become violent. Suppose the test is used in a population where 5%—a very large fraction—of individuals are expected to become violent during the next six months. If a subject tests "positive," what is the likelihood that he or she will become violent?

Figure 3 does the calculation for us. Assume that the population under study has 1,000 subjects, 50 (5%) of whom become violent. Of those individuals, 45 (90%) will test positive. Among the 950 nonviolent individuals, 855 (90%) will test negative, but 95 will test positive. Thus, of all the individuals who test positive, fewer than a third actually become violent.

Being wrong two-thirds of the time may not seem troublesome if the violence we are concerned with is serious. But in reality, the situation actually faced by mental health professionals is more complicated mathematically, and the results are more dismal. The results are more complicated because, as we have seen, prediction measures do not have single values of TPR and TNR, but adjustable thresholds that entail trade-offs between these fractions. The results are more dismal because the test results explained by Figure 3 assume a far higher level of accuracy than current violence prediction measures allow—indeed, a level far higher than we can reasonably expect. To understand this, notice that the FVT performance described in Figures 1 and 2 includes (at a cut-off of 50) the values TNR = 0.664 and TPR = 0.690. Recall that this FVT represents an average level of accuracy based on published studies. If

a predictive measure had an AUC = 0.80, we might expect it to include a point where TNR and TPR equal 0.73.[116] AUCs of 0.90 have been reported for very small samples evaluated under ideal circumstances;[117] ROCs for such prediction measures could include a point at which TNR and TPR equal 0.82. It is simply unrealistic to hope for a violence prediction measure for which TNR and TPR simultaneously equaled 90%.

Suppose, however, that we had a "Super FVT," a dangerousness assessment method that consistently yielded results reflected in an AUC = 0.92 in a population at high risk for acting violently. Recent studies have found that, among subjects with schizophrenia who participated in the United States Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE), the six-month prevalence of serious violence was 3.6%.[118] Imagine that it were practical and legal to preventively confine individuals with schizophrenia for six months, and that the Super FVT would be used to make decisions about their confinement.

Suppose the Super FVT evaluates 1,000 individuals with schizophrenia. Obviously, with an imperfect test, the only way to prevent all violence is to confine everyone. If the 3.6% prevalence rate applied, we would expect that 36 individuals would have been violent if not confined, and 964 would not have been violent. Suppose we decide that this policy is unacceptable, and that we should try to confine only those at highest risk. As was the case with the FVT described in Figures 1 and 2, the Super FVT will rank individuals from higher to lower probabilities of future violence.

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[116] The calculations in this paragraph assume that the test's ROC curve arises from two underlying normal distributions with equal variances. Under these conditions, the ROC curve is symmetric about the negative diagonal through the ROC square. Its position can then be described as $\mathbf{M}^{-1}(\text{TPR}) = A + \mathbf{M}^{-1}(\text{TNR})$, where $\mathbf{M}$ is the cumulative unit normal distribution function and $\mathbf{M}^{-1}$ is its inverse. When this is true, $\mathbf{M}^{-1}(\text{AUC}) = \text{A}/2^{1/2}$, and (rearranging), $\text{AUC} = \mathbf{M}[\mathbf{M}^{-1}(\text{TNR}) + \mathbf{M}^{-1(}\text{TPR})/2^{1/2}]$. For more explanation, see *Being Accurate*, *supra* note 106, at 785.

[117] Harris & Rice, *supra* note 114, at 202.

[118] Jeffrey W. Swanson et al., *A National Study of Violent Behavior in Persons with Schizophrenia*, 63 ARCH. GEN. PSYCHIATRY 490, 493 (2006) (finding 3.6% of the persons studied committed "serious violence," defined as "assault resulting in injury or involving use of a lethal weapon, threat with a lethal weapon in hand, or sexual assault," over a six-month period).

That this is a high rate of violence is demonstrated by recent statistics on violence in the United States. For 2006, the FBI estimated that there were 473.5 violent crimes per 100,000 United States inhabitants, or about 0.5% per year. FEDERAL BUREAU OF INVESTIGATION, CRIME IN THE UNITED STATES 2006, *available at* http://www.fbi.gov/ucr/cius2006/offenses/violent_crime/index.html (last visited June 23, 2008).

Because many individuals who commit violent offenses commit more than one such act a year, the number of discrete individuals who are charged with violent crimes is much lower. Of course, many violent acts do not get reported as crimes. However, these statistics suggest that the rate of violence among persons with schizophrenia is elevated above the population rate overall. *See* Seena Fazel & Martin Grann, *The Population Impact of Severe Mental Illness on Violent Crime*, 163 AM. J. PSYCHIATRY 1397, 1400 (2006) (over a 13-year period, the violent crime rate for never-hospitalized persons was 45 per 1,000; for persons hospitalized with schizophrenia, the rate was 328 per 1,000).

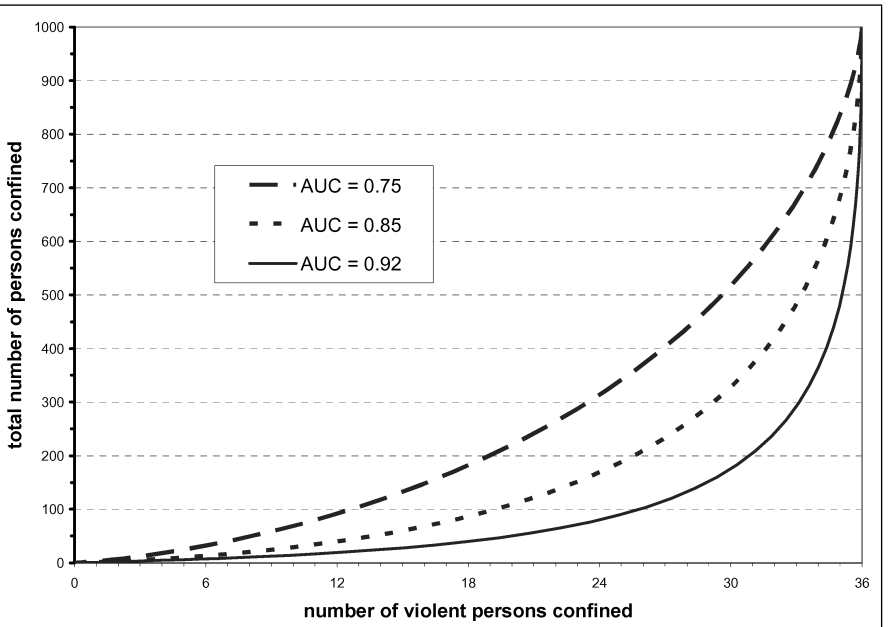

FIGURE 4. Total number of persons confined plotted as a function of the number of violent persons confined when base rate = 0.036, using violence detection methods with accuracies that are currently realistic (AUC = 0.75), possibly achievable (AUC = 0.85), and unrealistically high (AUC = 0.92).

Figure 4 examines the consequences of adjusting the cut-off to curtail more and more of the violence. To reduce violence by half (from 36 to 18 incidents), the Super FVT would need to confine approximately 40 individuals in all, and this rate of erroneous confinement might seem acceptable.[119] Any further confinement-produced decrease in violence would come at a much higher price. For example, to reduce violence by two-thirds (from 36 to 12 incidents) would require confinement of about 40 additional individuals (80 in all). Eliminating six more incidents would require confining 100 more individuals (180 in all).

The results for screening measures with more realistic, potentially achievable capabilities are far more troubling. If a detection method could routinely perform at an AUC = 0.85 accuracy level, about 90 persons would have to be confined to prevent half of the expected violence. For a detection method with typical performance, massive confinement would be required

[119] In this group, the expected rate of serious violence over six months is 18/40 = 45. In the United States, at least 20 states have laws permitting indefinite confinement of sex offenders if they seem "likely" to commit another sex offense in their lifetimes. I discuss the mathematics of detecting sex offender recidivism in connection with the legal interpretation of "likely" in Douglas Mossman, *Analyzing the Performance of Risk Assessment Instruments: A Response to Vrieze and Grove (2007),* 32 LAW & HUM. BEHAV. 279, 286–87 (2008).

to cut violence in half (190 confinements to prevent 18 incidents). Whether such a practice might be legally repugnant or not, this simple mathematical exercise shows that it would be costly and still leave unstopped half the violence.

The above calculations assume a high risk of serious violence based on one study. According to one recent Australian estimate, the annual risk of conviction for violent acts is one in 150 individuals with schizophrenia, and the annual risk of a homicide conviction is approximately one in 10,000.[120] Most violence is not committed by persons with mental illness: studies suggest that individuals with schizophrenia account for only 5% of the violence that occurs society wide.[121] Moreover, most violence committed by persons with mental illness (and by other persons) is directed toward family members and close acquaintances. Attempts that aim to prevent events like those that took place at Columbine and Virginia Tech by focusing on detection and intervention among persons with severe mental illness will not make society much safer.[122]

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[120] Wallace et al., *supra* note 92, at 723; Mullen, *supra* note 92, at 239.

[121] Elizabeth Walsh et al., *Violence and Schizophrenia: Examining the Evidence*, 180 BRIT. J. PSYCHIATRY 490, 494 (2002).

[122] This approach actually was tried in the United States, with the following result:

> After the Columbine shooting, schools became so hypersensitive to the issue of violence that if a young child wrote the word "bomb" on his desk, he was immediately removed from the classroom for evaluation. Most of these children were not at high risk of committing violence. Violent imagery is common in children, particularly boys.

Robert Freedman et al., *Psychiatrists, Mental Illness, and Violence*, 164 AM. J. PSYCHIATRY 1315, 1315 (2007).

Even among persons with higher risks of violence, attempts to prevent aggression through confinement might not work even for those persons who are confined. Presumably, individuals confined because of risk of violence would need to be released at some point, and a multi-month hospitalization would not eliminate inpatients' risk of violence in the community once they were discharged. Also, this whole mathematical exercise has ignored the possibility that hospitalized individuals might commit acts of violence (directed toward staff members or fellow patients) while hospitalized. Confinement might merely relocate violence from the community to mental health facilities. Inpatient violence is a common phenomenon on psychiatric units. *See, e.g.*, James R.P. Ogloff & Michael Daffern, *The Dynamic Appraisal of Situational Aggression: An Instrument to Assess Risk for Imminent Aggression in Psychiatric Inpatients*, 24 BEHAV. SCI. LAW 799, 805–06 (2006) (noting that in a group of 100 patients, there were 285 aggressive incidents over a six-month period); Michael Doyle & Mairead Dolan, *Evaluating the Validity of Anger Regulation Problems, Interpersonal Style, and Disturbed Mental State for Predicting Inpatient Violence*, 24 BEHAV. SCI. LAW 783, 788 (2006) (observing that 5 of 94 inpatients committed a total of 10 physically aggressive acts in 12 weeks; during the same period, 22 of these 94 inpatients made "clear unambiguous threats of violence").

CONCLUSION—TREATMENT: AN EFFECTIVE RESPONSE

The response of politicians and commentators to a few widely publicized homicides have included proposals (some enacted) to make it harder for persons with mental illness to obtain firearms, to make it easier to civilly commit mentally ill individuals who display signs of dangerousness, and to seek better methods for detecting persons who might become violent. Yet, as this article and others have explained, attempting to detect and prevent uncommon events often is a high-cost, impractical strategy that yields very limited protection from danger.[123] Violence prediction alone may be a futile approach to reducing violence.

However, studies that elucidate factors associated with violence retain their scientific importance for practicing clinicians, and violence by patients is a legitimate concern of mental health clinicians. Research about factors that link violence and mental illness suggests that clinical interventions of direct potential benefit to patients (which is sufficient justification in itself) may also reduce violence among individuals with psychiatric disorders.

For example, a link between substance abuse and violence by persons with mental illness runs through several studies published over the last two decades.[124] Paul Mullen notes that reducing substance abuse among mentally ill individuals "is far from a panacea for [their] propensities to violence," but it is nonetheless "an important therapeutic goal, central to improving both symptom control and quality of life . . . [that] will almost certainly decrease antisocial behaviour."[125]

Other studies suggest that failure to consistently obtain recommended psychiatric treatment (often termed "nonadherence" or "noncompliance") is another risk factor for violence among individuals with mental disorders. Demonstrating a direct connection between reduced violence and either more consistent psychiatric treatment or other psychosocial interventions is

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[123] *See, e.g.*, Mossman, *supra* note 26, at 571-77; Mullen, *supra* note 92, at 244; Douglas Mossman, *Commentary: Assessing the Risk of Violence—Are "Accurate" Predictions Useful?*, 28 J. AM. ACAD. PSYCHIATRY L. 272 (2000) (arguing that achievable differences in risk levels likely will be insufficient to justify different treatment approaches).

[124] *See, e.g.*, Eric B. Elbogen et al., *Treatment Engagement and Violence Risk in Mental Disorders*, 189 BRIT. J. PSYCHIATRY 354, 358 (2006) (finding substance misuse is the clinical variable with the strongest association to violence); Gerald Melnick et al., *Use of the COVR in Violence Risk Assessment*, 57 PSYCHIATRIC SERV. 139, 142 (2006) (reporting that rates of violence increase with increasing substance abuse among people with mental disorders); Steadman et al., *supra* note 72, at 393 (finding substance abuse raises rate of violence); Marvin S. Swartz et al., *Violence and Severe Mental Illness: The Effects of Substance Abuse and Nonadherence to Medication*, 155 AM. J. PSYCHIATRY 226 (1998) (reporting that medication noncompliance combined with either alcohol or substance abuse was associated with serious community violence); Wallace et al., *supra* note 92, at 716 (finding higher rates of criminal conviction among patients with substance abuse problems).

[125] Mullen, *supra* note 92, at 241.

difficult.[126] However, a recent study by McNiel and Binder[127] suggests that placing jail detainees under the supervision of a specialized mental health court may substantially diminish their rearrest rates, including arrests for violent offenses.[128] This finding—which deserves replication in other settings—provides encouragement for those who hope that violence by persons with severe psychiatric disorders might be reduced through non-hospital programs that provide intensive community monitoring and promote adherence to treatments that improve mental stability.

One might wonder why treatment would help, especially in view of findings such of those from the CATIE study, which show the same factors that indicate dangerousness in nonpsychiatric populations—youthfulness, childhood conduct problems, and history of arrest—are strongly correlated with violence by individuals who have schizophrenia.[129] However, the CATIE study suggests that "positive" symptoms of psychosis (especially suspiciousness) increase violence risk while "negative" symptoms lower it, a finding that (if true) may help clinicians better grasp how severe mental disorders lead to aggression. Moreover, the chief effectiveness of antipsychotic medications lies in their capacity to reduce positive symptoms, and recent research suggests

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[126] Some studies have shown that outpatient commitment and assiduous community follow-up can increase patients' continuation of treatment after hospitalization. Virginia A. Hiday & Teresa L. Scheid-Cook, *A Follow-up of Chronic Patients Committed to Outpatient Treatment*, 40 HOSP. & COMM. PSYCHIATRY 52 (1989) (reporting that patients committed to outpatient treatment were significantly more likely to use aftercare services and continue treatment). In one large North Carolina trial, however, outpatient commitment reduced hospital readmissions and violent behavior only in patients for whom court orders were sustained beyond six months; otherwise, the committed patients' outcomes did not differ from the control subjects. Marvin S. Swartz et al., *Can Involuntary Outpatient Commitment Reduce Hospital Recidivism? Findings from a Randomized Trial with Severely Mentally Ill Individuals*, 156 AM. J. PSYCHIATRY 1968 (1999); Jeffrey W. Swanson et al., *Involuntary Out-patient Commitment and Reduction of Violent Behaviour in Persons with Severe Mental Illness*, 176 BRIT. J. PSYCHIATRY 324 (2000). A Bellevue Hospital pilot study of New York State's outpatient commitment law (N.Y. MENTAL HYG. § 61.4 (McKinney 2008)) found no difference between court-ordered treatment and enhanced services alone. Henry J. Steadman et al., *Assessing the New York City Involuntary Outpatient Commitment Pilot Program,* 52 PSYCHIATRIC SERV. 330 (2001). Recently, a series of studies from Australia have raised additional questions about whether compelled community treatment can reduce rehospitalization. Stephen Kisely & Leslie Anne Campbell, *Does Compulsory or Supervised Community Treatment Reduce "Revolving Door" Care? Legislation Is Inconsistent with Recent Evidence*, 191 BRIT. J. PSYCHIATRY 373 (2007) (summarizing these studies).

[127] Dale E. McNeil & Renée L. Binder, *Effectiveness of a Mental Health Court in Reducing Criminal Recidivism and Violence*, 164 AM. J. PSYCHIATRY 1395 (2007) (finding a mental health court program was associated with sustained reductions in recidivism and violence after graduates were no longer under court supervision).

[128] The study compares a mental health court group with individuals who underwent treatment as usual by the criminal justice system. In the 18 months after mental health court participants exited the program, their likelihood of arrest for a new offense was 39% lower than was true for the as-usual persons, and the mental health court group's likelihood of violent offenses was less than half of the as-usual group's rate. McNeil & Binder, *supra* note 127, at 1399.

[129] Swanson, et al., *supra* note 92, at 493.

that newer, second-generation antipsychotic medications may be particularly capable of diminishing aggression in persons with schizophrenia.[130]

A better grasp of risk factors linking violence to mental illness may "improve the ability of clinicians, courts, and criminal justice staff to make informed decisions about treatment" for mental illnesses.[131] Yet, "[v]iolence prevention rather than violence prediction is the appropriate focus of clinical attention."[132] Acting violently rarely is productive for the violent person, and preventing violence is (along with many other things) an appropriate interest of clinicians who treat psychiatric patients. For this reason, clinicians pay attention to and address clinical facts—threats, nonadherence to medication regimes, and use of drugs or alcohol—that subvert treatment and (also) increase risk of violence. Insofar as clinicians successfully address these risk factors, treatment will reduce violence while helping patients function better. But when clinicians help patients avoid acting violently, they are not making calculations about probability or "predictions." Instead, they are trying to identify and alleviate present symptoms and behavior that impede health and recovery.

The perspective advocated here should sound familiar to readers knowledgeable about the science of public health. We know that behaviors and conditions, such as smoking and obesity, are clearly associated with poorer health. Though medicine responds to diseases (for instance, cancer and diabetes) that are linked to smoking and obesity and makes efforts to monitor and detect them, the optimal approach is to adopt a "population strategy of prevention . . . where risk is widely diffused through the whole population,"[133] rather than to try to detect who will die prematurely. Social strategies that broadly reduce health risks may not appeal to politicians and news outlets because they "lack the glamour of high-technology medicine, but what they lack in excitement they gain in their potential impact on health, precisely because they deal with the major causes of common disease and disabilities."[134]

Preventing violence is not really different. Everyone is "dangerous" to some degree because to each of us is attributable some finite, non-zero probability of becoming violent. Hindsight makes "warning signs" clear, but before violent tragedies occur we cannot efficiently distinguish the signs that

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[130] Jeffrey W. Swanson et al., *Effectiveness of Atypical Antipsychotic Medications in Reducing Violent Behavior Among Persons with Schizophrenia in Community-based Treatment,* 30 SCHIZ. BULL. 3 (2004) (explaining how a lower violence rate among persons receiving atypical antipsychotic medications leads author to recommend their consideration in managing risk of violence).

[131] Melnick et al., *supra* note 124, at 142.

[132] Robert I. Simon, *The Myth of "Imminent" Violence in Psychiatry and Law*, 75 U. CIN. L. REV. 631, 642 (2006).

[133] GEOFFREY ROSE, THE STRATEGY OF PREVENTIVE MEDICINE 14 (1992).

[134] *Id*. at 101.

point to violence from those that will turn out to be false positive signals.[135] A society sincerely concerned about reducing violence will seek broad measures that address known risks for violence among persons both with and without mental health problems.

"All patients with serious mental illnesses—not just those at risk of violence—could benefit from accurate assessment of their problems, timely services . . . evidence-based interventions, diligent clinical follow-up, and appropriate outreach," writes Professor Swanson, "and if they did, it is likely that much patient violence—and a great deal of human heartache all around—would be averted." However, one can give many solid (and better) reasons for treating mental illness besides reducing violence, and mental illness contributes to just a small fraction of the violence that Americans experience.[136] Asking mental health professionals to do better at predicting and intervening before their patients act violently will not make many of us much safer.

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[135] Some comments that followed the Virginia Tech shootings recognized this point:

> To Dr. Hare, the nagging question is recognizing the traits that will lead to violence. Most warning signs often stand out only in retrospect, he said, and many of Mr. Cho's traits were "not all that uncommon."
> The population of killers is very small, and no one knows how prevalent their common traits are in the population at large.

Schwartz & Carey, *supra* note 4, at A20.
Similarly, a group of the nation's eminent forensic psychiatrists noted:

> Early, sustained assessment and treatment of mental disorders, offered to all affected individuals and their families whether or not violence seems imminent, may be more effective in reducing violence than efforts aimed solely at detection of specific future acts.

Robert Freedman et al., *supra* note 122, at 1315.

[136] Jeffrey W. Swanson, *Preventing the Unpredicted: Managing Violence Risk in Mental Health Care*, 59 PSYCHIATRIC SERV. 191, 193 (2008).