A Philadelphia Lawyer Analyzes the Shots, Trajectories, and Wounds

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Bullets inflicted certain wounds that killed President Kennedy on November 22nd, 1963. Since that time the Warren Commission has filed its report concerning them. (*Report of the President's Commission on the Assassination of President Kennedy*, United States Printing Office, Washington, D.C., 1964. References to this Report are designated by "W" followed by page number.) [The above title is also known as *The Warren Report*. See a complete online copy of *The Warren Report* at History Matters.] Chapter III of the report is entitled "The Shots From the Texas Book Depository" (W-61):

In this chapter the Commission analyzes the evidence and sets forth its conclusions concerning the source, effect, number and timing of the shots that killed President Kennedy and wounded Governor Connally. (W-61)

The Commission's conclusions in this chapter are

that the shots which killed President Kennedy and wounded Governor Connally were fired from the sixth-floor window at the southeast corner of the Texas School Book Depository Building. Two bullets probably caused all the wounds suffered by President Kennedy and Governor Connally. Since the preponderance of the evidence indicated that three shots were fired, the Commission concluded that one shot probably missed the Presidential limousine and its occupants, and that the three were fired in a time period ranging from approximately 4.8 to in excess of 7 seconds. (W-117)

If the reader will strip himself of all prejudice, we have work to do. Because of space limitations, we

will concede *for the purposes of this article only*, that a gunman was firing a 6.5 mm. Carcano from the sixth floor at the southeast corner of the Depository Building. Our efforts will be to explore the Commission's conclusion that all the shots came from the Texas Book Depository Building, and that the assassination was the accomplishment of a single gunman.

In forming its conclusion, the Commission has relied, *inter alia*, upon "motion-picture films and still photographs taken at the time of the assassination" (W-61), especially the motion picture films of Mr. Abraham Zapruder. (Hereafter, when reference is made to a specific Zapruder frame, it will be done by a "Z" followed by a number.)

The Fatal Wound

First let us review the fatal wound of the dead President. For all its detailed appearance, the Commission's report on this wound is very incomplete.

The autopsy report prepared in the National Naval Medical Center at Bethesda, Maryland describes the following wound on the side of the President's head:

There is a large irregular defect of the scalp and skull on the right involving chiefly the parietal bone but extending somewhat into the temporal and occipital regions. In this region there is an actual absence of scalp and bone producing a defect which measures approximately 13 cm. in greatest diameter. (W-540)

Dr. Robert N. McClelland of Parkland Hospital, in his statement prepared on November 22, 1963 at 4:45 P.M., said: "The cause of death was due to massive head and brain injury from a gunshot wound of the left temple" (W-526, 527).

In support of Dr. McClelland's statement, which is not discussed by the Commission at all, I would like to bring forward a comment made by a very material witness who was never examined by the Commission. In the November 24th, 1963, *Philadelphia Sunday Bulletin* there is an article datelined Dallas, Nov. 23rd, 1963. In this article, on page 3, titled "How the Suspect was Subdued," Father Oscar L. Huber, pastor of Holy Trinity Catholic Church, described how he administered the last rites to the President:

"The President was lying on a rubber tired table when I came in," Father Huber said. He was standing at his head. Father Huber said the President was covered by a white sheet which hid his face, but not his feet. "His feet were bare," said Father Huber . . . He said he wet his right thumb with holy oil and anointed a Cross over the President's forehead, noticing as he did, a "terrible wound" over his left eye.

As we write we notice that the advance Associated Press release of Jacqueline Kennedy's testimony before the Commission made reference to a gap in the transcript:

At this point in the transcript appear the words "reference to wounds deleted." This is one of the very few omissions noted in the transcript. (*The Philadelphia Evening Bulletin*, Nov. 23rd, 1964)

We were told by J. Lee Rankin, the Commission's counsel, that classified material involving national security was withheld from the transcript volumes (*The Philadelphia Inquirer*, Nov. 20, 1964). What possible connection can the wounds inflicted on the President by a lone assassin have with national security — unless they are not the wounds described by the Commission in its report?

At this point, we will discuss the films to cast light on the crucial question of whether Governor Connally was struck with the same bullet which first hit the President.

The Commission concluded, "Two bullets probably caused all the wounds suffered by President Kennedy and Governor Connally" (W-117), and "one shot passed through the President's neck and then most probably passed through the Governor's body" (W-111). According to Special Agent Robert A. Frazier, Governor Connally was hit no later than "at some point in between frames [Z] 235 and 240" (W-106). President Kennedy was finally hit, according to the Commission, at frame 313 (W-108). Therefore, the Commission, in weaving one shot through the President and the Governor, had to conclude that the first shot, and not the second shot to hit the President, hit the Governor. If the reader does not accept the Commission's finding that the first shot that hit the President also hit the Governor, the reader parts company with the Commission on the lone assassin concept. The Commission found that "three shots were fired, . . . one shot probably missed the car and its occupants. The evidence is inconclusive as to whether it was the first, second, or third shot which missed" (W-111). If we agree with the Commission's findings that one shot missed and that the last shot to hit the President did not hit the Governor then only one shot is left. This shot must be passed through both the President and the Governor, or the Commission runs out of rifle ammunition.

Let us not be driven off course by the Commission's assertion:

It is possible that the assassin carried an empty shell in the rifle and fired only two shots, with the witnesses hearing multiple noises made by the same shot . . . three empty cartridges were found . . . (W-110, 111)

This speculation conforms to none of the evidence. Analysis of the shot evidence will clearly show that the Commission's problem is quite the opposite of that which it suggests. The facts indicate that the shots fired at the assassination site were more than three and could not have been less than three.

Only if the first shot struck both the President and the Governor can the Commission rationally contend that no more than three shots were fired. Therefore the Commission's case must stand or fall with the validity or invalidity of this inference.

The Zapruder films indicate a definite reaction of the President to a hit in the neck region at frame 225 (W-112). Governor Connally's body shows no reaction to any hit at this frame (W-103). The Governor has repeatedly stated in the Report (W-112) and for the press and television, that he was not hit by the first shot that hit the President. Mrs. Connally corroborates her husband's testimony, stating:

that after the first shot she turned and saw the President's hands moving toward his throat, as seen in the films at frame 225. However, Mrs. Connally further stated that she thought her husband was hit immediately thereafter by the second bullet. (W-112)

Of the many eyewitnesses to the assassination, not one lends the slightest credibility to the Commission's inference that the first bullet to strike the President struck the Governor. The report is devoid of testimony to this effect. No newspaper or magazine account of the assassination (and I have read hundreds) ever suggests a witness who saw it that way.

As the objective evidence continued to mount against the Commission on this critical point of the double hit, the Commission tried to retreat into subjectivity:

If the first shot did not miss, there must be an explanation for Governor Connally's recollection that he was not hit by it. There was conceivably a delayed reaction between the time the bullet struck him and the time he realized he was hit . . . (W-112)

But the Zapruder films are more objective than the Commission and the Governor's nervous system. If the Governor were a sack of gelatine which could "realize" nothing, that sack would have probably lurched forward when pierced through from behind by a rifle bullet which exited at a speed of 1,776 feet per second (W-95). High school physics tells us that the law of action and reaction requires every action to have an equal and opposite reaction. The thrust of this bullet through the body of the Governor was not recorded by the Zapruder films. The pictures are excellent evidence that the first bullet to hit the President did not hit the Governor.

Now we turn to plane geometry and the trajectories of the shots. For this purpose, we start with the holes in the clothing of the President:

An examination of the suit jacket worn by the President by F.B.I. Agent Frazier revealed a roughly circular hole approximately one-fourth of an inch in diameter on the rear of the coat, 5 ³/8 inches below the top of the collar and 1 ³/₄ inches to the right of the center back seam of the coat. (W-92)

The shirt worn by the President contained a hole on the back side 5 \(^3\)4 inches below the top of the collar and 1 \(^{1}/8\) to the right of the middle of the back of the shirt. (W-92)

Strange Inferences

At the time the first bullet impacted upon the President, Governor Connally, according to the Commission, was seated in a position which placed him in front of the President (W-106). The first shot to hit the President was designated by the Commission as having hit the Governor at any place between Z frames 207 through 225 (W-106). During these frames the angle from a rifle in the sixth floor window of the Depository Building was roughly from 21° to 20° (W-102, 103).

One would expect such a shot with a downward trajectory from the sixth floor, hitting the President 5 ¾ inches below the coat collar and not hitting any bone, (W-88) (the autopsy report describes the bullet entering "the upper right posterior thorax" [W-541]) would continue its path downward at a roughly 20° angle and emerge from the abdominal area. Instead, this remarkable bullet *turned upward*. It then exited from the President, who was sitting perfectly erect (W-102, 103), and tore through the left portion of his tie knot (W-91).

One would certainly, once accepting this unusual and highly improbable course of the bullet, have to concede that it would fly harmlessly over the Governor's head heading for the sky. But the Commission asks us to believe that this strange bullet *changed direction in mid-air*. No bullet ever has, unless spent. But this bullet was far from spent, for it had an entrance velocity after passing through the President of 1,858 feet per second (<u>W-95</u>).

In mid-air, the Commission *turned this bullet downward* into the back of the Governor, who was sitting erect with his back to the President (W-103). Then this extraordinary missile pierced the back of the Governor and emerged from his right nipple.

The United States Army ballistics experts, Drs. Olivier and Arthur J. Dziemian, "concluded that it was probable that the same bullet passed through the President's neck and then inflicted all the wounds on the Governor" (W-107-109). But the Commission is forced to conclude that: "The alignment of the points of entry was only indicative and not conclusive that one bullet hit both men" (W-107). As I see the alignment of the points of entry, they indicate conclusively that the same bullet could not have hit both men.

Dr. Frederick W. Light, Jr., the third U.S. Army ballistics expert,

testified that the anatomical findings were insufficient for him to formulate a firm opinion as to whether the same bullet did or did not pass through the President's neck before inflicting all the wounds on Governor Connally. Based on the other circumstances, such as the relative positions of the President and the Governor in the automobile, Dr. Light concluded that it was probable that the same bullet traversed the President's neck and inflicted all the wounds on Governor Connally. (W-109)

Dr. Light has seen things "in the relative positions of the President and the Governor" which were not apparent to him in the anatomical findings and which were not even seen by the Commission which stated that: "The alignment of the points of entry was only indicative and not conclusive that one bullet hit both men."

An Extra Bullet

Failing to support through evidence and introspection the proposition that the same first shot which struck the President also struck the Governor, the Commission next tried its hand at logic:

The bullet that hit President Kennedy in the back and exited through his throat most likely could not have missed both the automobile and its occupants. Since it did not hit the automobile, Frazier testified that it probably struck Governor Connally. (W-105)

This begs the question. Chapter III, entitled "The Shots from the Texas School Book Depository," did not prove that the shots originated exclusively from the Depository Building. We will show how the evidence of the Commission proves the contrary of the imputation.

A shot downward, into the erect back of the President, 5 ¾ inches from his collar top, and then up through the neck tie knot, describes a shot flying upward. It would indeed "have missed both the automobile and its occupants."

From our discussion thus far, I feel that the evidence of the Zapruder films, the testimony of Governor and Mrs. Connally, the impossible course or courses of the bullet described by the Commission, the demonstrative evidence of the bullet holes in the clothing of the President and the Governor, the contradictory ballistics testimony, the problem of the alignment of the President and the Governor, and the resort to logical fallacy on the part of the Commission spell out *at least one separate shot hitting the Governor after the President had been hit by a different bullet*. To conclude otherwise would be to grasp at not only the improbable but what photography, all the eyewitness testimony, logic, the laws of physics, and geometry tell us is impossible.

Once we conclude that a separate shot hit Governor Connally, we are confronted with an extra bullet, which puts the Commission theory of just three bullets from one gun into the limbo of

historical myth. We must not forget that another man, James T. Tague, was wounded by one of those bullets, a fact to which we will return.

The Time Factor

Also there is the time difficulty:

Examination of the Zapruder motion picture camera by the FBI established that 18.3 pictures or frames were taken each second, and therefore, the timing of certain events could be calculated by allowing ¹/_{18.3} seconds for the action depicted from one frame to the next. (W-97)

Tests of the assassin's rifle disclosed that at least 2.3 seconds were required between shots. (W-97)

Photographer Phillip L. Willis says he

snapped a picture at a time which he also asserts was simultaneous with the first shot. Analysis of his photograph revealed that it was taken at approximately frame 210 of the Zapruder film which was the approximate time of the shot that probably hit the President . . . (W-112)

President Kennedy's body showed reaction at frame 225 (W-112). "Governor Connally reviewed the film and testified that he was hit between frames 231 and 234" (W-106). According to Willis' photograph, the President was hit at frame 210 of the Z film. According to the Commission the President was clearly registering a hit at frame 225. We are now in a position to determine the time lapse between the hit on the President and the hit on the Governor by translating Z frames into units of time.

The fewest possible frames separating the hit of the President and the Governor is 6 (President hit at Z 225 and Connally hit at Z 231). The greatest possible frames separating the hit of the President and the Governor is 24 (President hit a Z 210 and the Governor hit at Z 234). To translate this into time is a simple operation of allowing ¹/_{18.3} seconds for each frame. We get thereby a time span of 0.34 to 1.31 seconds separating the first hit on the President from the first hit on the Governor.

We know that the top accomplishment of the Commission's expert marksmen, firing the 6.5 mm. Carcano at stationary, not moving targets, was a minimum firing time of 2.3 seconds. The time span of the hits, 0.34 to 1.31 seconds, is below the minimum firing time. Therefore, we can safely infer that the photographic evidence indicates the existence of at least another gunman, not the alleged Carcano operator, who was firing at that time.

How does this inference stack up with the auditory clues of eyewitnesses? The Commission's testimony about the bunching of two shots helps disprove a finding that one gunman did the firing from a bolt-action rifle. Here is the Report:

. . . a substantial majority of the witnesses stated that the shots were not evenly spaced. Most witnesses recalled that the second and third shots were bunched together. (W-115)

From *The New York Times*, November 24th, 1964, page 30, we get the following testimony of Special Agent R. H. Kellerman of the Secret Service who was in the President's car. He stated he

heard a "flurry of shots," which "... shells came in all together." He said "... it was like a double bang-bang, bang."

In answer to a question of Arlen Specter on behalf of the Commission as to whether he heard two shots in that flurry in addition to the head shot, he said: "Yes sir; yes sir; at least."

Now back to the Report:

As previously indicated, the time span between the shot entering the back of the President' neck and the bullet which shattered his skull was 4.8 to 5.6 seconds. (W-117)

If 2.3 seconds is a minimum firing time, and the time span between the first and last hits on the President is 4.8 to 5. seconds, then bunching of two shots by one rifleman is impossible. On this score, the Commission and the writer are in accord, for

if the three shots were fired within a period of 4.8 to 5.6 seconds, the shots would have been evenly spaced. (W-193)

Therefore, if we conclude, as we must, that three separate hits were made, two on the President, and one on the Governor, then the Commission's findings leave the realm of credibility on another score. For in such a case states the Commission

the gunman would have been shooting at very near the minimum allowable time to have fired the three shots within 4.8 to 5.6 seconds, although it was entirely possible for him to have done so. (W-117)

Possible? Among the Commission's experts, and they were top shots, who fired at stationary targets,

one of the firers in the rapid fire test in firing his two series of three shots, hit the target twice within a span of 4.6 and 5.15 seconds. (W-194)

So, none of the Commission's top marksmen could score three hits on the stationary targets in the span of 4.8 to 5.6 seconds within which all the hits on the limousine's occupants occurred.

And the alleged assassin's ratings as a rifle shot never rose to any level capable of inspiring awe. We will take the word of the Commission's expert on this.

Based on the general Marine Corps ratings, Lt. Col. A. G. Folsom, Jr., head, Records Branch, Personnel Department, Headquarters U.S. Marine Corps, evaluated the sharpshooter qualifications as a "fairly good shot" and a low marksman rating as a "rather poor shot" (W-191).

As an additional problem, the alleged assassin was using a defective scope which caused accurately aimed shots to carry "high and to the right of the target" (W-194). The Commission, however, was quick to convert this disadvantage into an advantage by asserting: "Moreover, the defeat was one which would have assisted the assassin aiming at a target which was moving away" (W-194). It would be perhaps too hasty to assume that on the basis of this assertion, a new, defective design will be designed for rifle scopes which will direct shots "high and to the right of the target." So, we must conclude that the timing factor too weighs heavily against the Commission's inference that one assassin made all the hits on the President and Governor with a single, bolt-action carbine. The evidence indicates that the time separating the hits on the President and the Governor was under the minimum firing time, and much above the time required for any bullet to be in transit from the

President to the Governor. No rifle expert could get three hits on stationary targets in the time span of the assassination shots. Our alleged assassin was at best only a "fairly good shot" and at worst "a rather poor shot." He operated a gun that had a faulty scope which directed shots "high and to the right."

Life's Three Versions

Now we must turn our attention to the head wound or wounds of the President once again. For this purpose I find the October 2nd, 1964 issue of *Life* magazine invaluable. This issue contains excellent color reproductions of some of the Zapruder frames. I purchased three different copies — with surprising results. Each of the three copies differs in one important respect from the other two. The area of difference in each case is crucial in the determination of the direction of the final shot to hit the President. I will designate for expository purposes, the copies as "A," "B" and "C."

Copy "A" contains a caption for a picture designated no. 6. The picture appears on page 45 of this issue. The caption on page 42 reads as follows:

6. The assassin's shot struck the right rear portion of the President's skull, causing a massive wound and snapping of his head to one side.

What one sees on page 45 of copy "A" in frame "6" is a Zapruder picture, taking up half a page. In this picture a bullet is impacting on the President's head and causing a burst of red at the right parietal region of the skull. N.B. *Life*'s caption for the picture states the result of the impact of the bullet from the back (Book Depository Building) is "a snapping of his head to one side." We must return to the law of action and reaction. A hit aimed from the back and above, on a car moving away from the source of the shot, hitting with such force that it carries away major parts of the skull (W-540), would not cause "a snapping of his head to one side." Rather such a hit on the head that is facing front, as the President's was, would have snapped the head forward and downward. *Life* erred, I guess.

Well, let us now shift our attention to my "B" copy of *Life*. On page 42 thereof there is a changed caption for picture "6" which appears on page 45. The caption reads as follows:

6. The direction from which shots came was established by the picture taken at instant bullet struck the rear of the President's head, and, passing through, caused the front part of his skull to explode forward.

But things still seem to be wrong in *Life*! For upon turning to the Zapruder frame marked "6" on page 45 of "B" copy, I see that *Life* has an entirely different no. 6. This picture appears to be a later one than that which appeared in copy "A." The shot in question has apparently done its work. Here, indeed, we see that the President is being driven over sideways and leftward by the fatal impact. He is falling into his wife's lap. This is strong evidence that the shot came not from the back, i.e., the Depository Building, but rather, the right side (north side of Elm Street), to wit, the elevated grassy knoll area.

Now, we must look at copy "C" of *Life*. This copy contains, on page 42, the caption identical to the caption found in copy "B." The frame designated no. 6 on page 45 of "C" is identical with the frame which appears in copy "A."

But the damage cannot be undone, because all three shots show on page 46, no. 7 (all identical

now), the President being impelled to his left side by the hit shown impacting in no. 6 of page 45 in copies "A" and "C." Such a force had to originate on his right and not from his back. Since his head was bent slightly forward and facing front when this wound was inflicted, the force of a shot from the back which carried away so much bone of the skull would have caused him to fall towards the Governor in front of him.

Another Man Wounded

Is there any other evidence in the report to the effect that there was a gunman or gunmen on the grassy elevated knoll on the north side of Elm Street? Yes, there is. We will now examine it.

The Commission reviewed the testimony of the following persons who believed that the shots came from the grassy knoll: Frank E. Reilly, an electrician on the railroad bridge, stated that he heard three shots that seemed to come from the trees "on the north side of Elm Street at the corner up there" (W-76). Thomas J. Murphy said the two shots he heard "came from a spot just west of the Depository" (W-76). Lee E. Bowers, Jr. "and others saw a motorcycle officer dismount hurriedly and come running up the incline on the north side of Elm Street" (W-76). "Mrs. Jean L. Hill stated that after the firing stopped she saw a white man wearing a brown overcoat and a hat running west away from the Depository Building in the direction of the railroad tracks" (W-640). S. M. Holland heard "four shots which sounded as though they came from the north side of Elm Street where he saw a puff of smoke" (W-76).

Better evidence than the verbal testimony of the above witnesses is the wounding of James T. Tague off the assassination site. This incident is of tremendous importance in arriving at conclusions concerning the source of the assassination shots. So as not to run the risk of misinterpreting what the Commission has said on this occurrence, I will quote all of the Report's testimony on this vital matter:

At a different location in Dealey Plaza, the evidence indicated that a bullet fragment did hit the street. James T. Tague, who got out of his car to watch the motorcade from a position between Commerce and Main Streets near the Triple Underpass, was hit on the cheek by an object during the shooting. Within a few minutes Tague reported this to Deputy Sheriff Eddy R. Walthers, who was examining the area to see if any bullets had struck the turf. Walthers immediately started to search where Tague had been standing and located a place on the south curb of Main Street where it appeared a bullet had hit the cement. According to Tague, "There was a mark quite obviously that was a bullet and it was very fresh." In Tague's opinion, it was the second shot which caused the mark, since he thinks he heard the third shot after he was hit in the face. This incident appears to have been recorded in the contemporaneous report of Dallas Patrolman L.L. Hill, who radioed in around 12:40 P.M.: "I have one guy that was possibly hit by a ricochet from the bullet off the concrete." Scientific examination of the mark on the south curb of Main Street by FBI agents disclosed metal smears which, "were spectrographically determined to be essentially lead with a trace of antimony." The mark on the curb could have originated from the lead core of a bullet but the absence of copper precluded the possibility that the mark on the curbing section was made by an unmutilated military full metal-jacketed bullet such as the bullet from Governor's Connally's stretcher. (W-116)

Here is a gold mine of material. Tague was between Commerce and Main Streets. The bullet or bullet fragment hit the South curbing of Main Street. From my view of the maps, diagrams, photographs, and after a personal inspection of the situs, at no point would Tague have been in the

line of fire from the Depository Building to the Presidential limousine. He was some 1 ½ blocks from the Depository Building, about a block south of the limousine. But he was directly across from the grassy knoll on the north side of Elm Street. The simplest and therefore best explanation of the source of that bullet is the grassy knoll north of Elm Street. If this was the source of Tague's wound, then Tague was very much in the line of fire since the limousine was then between him and the knoll. The trajectory is consistent with an elevation beginning about 25 feet above street level (my estimate from personal inspection of the height of the grassy knoll) downward to the curbing and thence into his cheek. As between the Depository Building and the grassy knoll as the source of this shot, any speculation that it came from the Depository Building must be considered the more improbable of the two.

The Commission's conclusion that the fragment that hit Tague could not have been a whole bullet appears to be an overly hasty one. The F.B.I. experts disclosed metal smears which "were spectrographically determined to be essentially lead with a trace of antimony" (W-116). The Commission rightfully concludes that the bullet mark on the curbing, since it lacked copper, could not have been "an unmutilated military full metal-jacketed bullet such as the bullet from Governor Connally's stretcher" (W-116). This could have been a lead bullet without a metal jacket designed to inflict gaping wounds on the target by maximizing the area of damage. This could have been another type of bullet fired from another rifle. But the Commission never considered this possibility, despite supporting evidence in its Report. Let us look at this supporting evidence.

Dr. Alfred G. Olivier, chief of the Army Wound Ballistics Branch for 17 years, stated that from his long experience he did not believe that the type of head wound suffered by the President could have been inflicted by a copper jacketed bullet. But after a series of tests on a reconstructed human skull, he was persuaded that this case had an extraordinary aspect for which his 17 years of ballistics experience had not prepared him. Here is his testimony after the test result as furnished to him:

It [the test result] disclosed that the type of head wounds that the President received could be done by this type of bullet. This surprised me very much, because this type of stable bullet I didn't think would cause a massive head wound, I thought it would go through making a small entrance and exit, but the bones of the skull are enough to deform the end of this bullet causing it to expend a lot of energy and blowing out the side of the skull or blowing out fragments of the skull. (W-87)

The evidence of the Report concerning the shots, trajectories, and wounds is convincing. It convinces me that this killing of one man and wounding of two could not have been the work of one man firing a bolt-action rifle from the Book Depository Building. The involvement of two or more people in the commission of this crime would point to a conspiracy — unless it turns out that they were, independently of one another, firing on the same target.