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S.C. SUPREME COURT

THE STATE OF SOUTH CAROLINA
In The Supreme Court

APPEAL FROM HORRY COUNTY
Court of Common Pleas

Honorable Benjamin H. Culbertson, Circuit Court Judge

Appellate Case No. 2017-002281

STEPHEN C. STANKO #6022.....PETITIONER,

v.

STATE OF SOUTH CAROLINA.....RESPONDENT.

APPENDIX
VOLUME 5 OF 14

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A. Generally, no. No sir.
Q. Fair enough.
Thanks very much, Investigator Gordon. Please answer any questions Defense counsel might have for you.
THE COURT: Cross-examination, please.
MS. WILLIAMS: Thank you, Your Honor. May it please the Court.
CROSS-EXAMINATION BY MS. WILLIAMS:
MS. WILLIAMS: Good morning, Officer Gordon.
A. Good morning, Ma'am.
Q. Just a few questions. The gun that you located, you said it what kind of gun?
A. It is a Taurus .357 Magnum Revolver, six-shot.
Q. And it has -- how many -- it's suppose to -- if it's fully loaded how many bullets are suppose to be in it?
A. If it's fully loaded the cylinder will hold six cartridges.
Q. So there were six in it when you found it?
A. That is correct.
Q. But there are five missing from the box?
A. That is correct.
Q. Okay. Bear with me.
A. Yes Ma'am.
MS. WILLIAMS: Beg the Court's indulgence.
Q. Have -- how long have you been a police officer?

A. About twenty-three years.
Q. What kind of gun do you carry now?
A. A nine -- correction -- .40 caliber Glock.
Q. A Glock. As part of your police training have you ever shot a .357?
A. I have.
Q. What do they sound like?
A. It depends on what kind of bullets. If you have a .38 in it it sounds like a .38. If you have a .357 it's a lot louder.
Q. What's -- I mean, so tell me what the .38 sounds like. Can you -- can you tell me that?
A. I can't explain it except to say it's a very loud noise. If you fired a .38 caliber weapon in here it would be loud enough to hurt your ears over here. If you fired a .357 in here it would probably be loud enough to hurt the ears of the last person down here in the green.
Q. Okay. So they are fairly loud?
A. Yes.
Q. Well, did you find any business cards in the truck?
A. We did.
Q. Do you know what was on those -- that would be a -- that was in this, State's 60?
A. I do not -- I don't know that there were any in it, I don't recall. Okay. Mr. Stanko's business card was in it.

There were other business cards in the truck.
Q. Do you recall if there were other business cards that had Mr. Stanko's name on it?
A. They did not.
Q. They did not. They were just other business cards?
A. Correct.
Q. Okay. I'm going to look one more time for the picture that I was looking for. Beg the Court's indulgence.
THE COURT: Yes Ma'am.
Q. Let me ask you, as part of your inventory in searching this truck did you find -- do you recall if you found some other items in there?
A. We found lots of items in the vehicle, yes Ma'am.
Q. Do you recall specifically if you found a suitcase?
A. I don't believe there was a suitcase found. There was basically bags, the Concourse bag, the Ozark Trial bag, the camera bag.
Q. Were there some other bags that had some other clothes in it, that you recall?
A. I would have to look at my notes.
MS. WILLIAMS: Thank you. I have no further questions.
THE COURT: Any redirect?
MR. HEMBREE: Nothing on redirect, Your Honor.
THE COURT: All right. Do you wish the witness to be excused?

MR. HEMBREE: Yes, we do.

THE COURT: Any objection?

MR. DIGGS: No objection, Your Honor.

THE COURT: All right. Sergeant, you are released from your duties. You may go back to your regular activities in Richmond County. All right, sir.

Your next witness, Solicitor.

MR. HEMBREE: The State calls Detective Neal Johnson to the stand.

THE COURT: All right, Detective, if you would come forward to be sworn, please.

NEAL JOHNSON, being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MR. HEMBREE:

Q. And Neal, are you a detective? Is your rank Detective?

A. Lieutenant.

Q. Lieutenant. I'm sorry. I apologize.

Lieutenant, who do you work with?

A. Georgetown County Sheriff's Office.

Q. And how long have you been so employed?

A. Approximately twelve -- twelve years. January will be twelve years.

Q. And what are your duties and responsibilities with the Sheriff's Office at this time?

A. I'm currently the Lieutenant over the Uniform Patrol

Division.
Q. Now, prior to that what were your responsibilities?
A. Prior to that I was the Public Information Officer, and prior to that I was the Evidence Custodian.
Q. Very good. And as the Evidence Custo -- were you the Evidence Custodian back in April of 2005?
A. I was.
Q. And did you have occasion to retrieve State's Exhibit 62 from the Richmond County Sheriff's Office in connection with a criminal investigation?
A. Yes, I did.
Q. And on what day did you retrieve that?
A. April 19th, 2005.
Q. And while it was in your custody and control did you change or alter that evidence in any way?
A. No, I did not.
Q. And at some point did you have occasion to relinquish that piece of evidence to another law enforcement officer?
A. I did.
Q. Who did you give it to?
A. Detective Anne Pitts with the Horry County Police Department.
Q. And when did you relinquish that piece of evidence to her?
A. On April 25th, 2005.

MR. HEMBREE: I don't have any further questions for you, Lieutenant. Please answer any questions Defense counsel might have.

THE COURT: Cross-examination.

MS. WILLIAMS: Beg the Court's indulgence just one moment.

Your Honor, we have no questions for this witness.

THE COURT: All right. Is there any reason the witness cannot be excused?

MS. WILLIAMS: Without objection from the Defense, Your Honor.

THE COURT: All right, Lieutenant, you are released from your Subpoena. You may go back to your regular duties, sir.

A. Thank you.

THE COURT: Yes sir.

MR. HEMBREE: Thank you, Your Honor.

THE COURT: Your next witness, please sir.

MR. HEMBREE: The State calls Anne Pitts to the witness stand.

THE COURT: All right, Ms. Pitts, if you would come forward, please.

MS. WILLIAMS: Your Honor, may we approach?

THE COURT: Certainly.

(BENCH CONFERENCE TAKES PLACE OFF THE RECORD.)

ANNE PITTS, being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MR. HEMBREE:

Q. Ms. Pitts, back in April, 2005, with whom were you employed?

A. The Horry County Police Department.

Q. And in the course of your employment -- I want you to take a look at State's Exhibit 62 in evidence. In the course of your employment did you receive this piece of evidence from Lieutenant Neal Johnson of the Georgetown County Sheriff's Office on April the 25th of 2005?

A. Yes sir.

Q. And did you relinquish control of that piece of evidence to the Evidence Department at the Horry County Police Department?

A. That's correct.

Q. Please answer any questions Defense counsel has for you. Thanks very much.

THE COURT: Cross-examination.

MS. WILLIAMS: Just briefly, Your Honor.

CROSS-EXAMINATION BY MS. WILLIAMS:

Q. Good morning, Detective Pitts. How are you?

A. Good morning.

Q. How long have you worked with the Horry County Sheriff's Office -- or, you work for the Police Department,

correct?

A. Correct.

Q. And how long have you been there?

A. I'm not currently there. I was there for nine years.

Q. Oh really. And currently you do -- I'm sorry, I missed that. I'm sorry. Tell me what you do now.

A. I live in the upstate of South Carolina. I'm employed by the South Carolina Department of Public Safety.

Q. Okay. And as part of what you did as -- in this case, you got some evidence and transported it, so you are part of the chain of custody in this. Is that right?

A. Correct.

Q. And tell me -- well, one second, please.

MS. WILLIAMS: Thank you. That's all the questions I have of this witness at this time, Your Honor.

THE COURT: All right. Any redirect?

MR. HEMBREE: No, Your Honor.

THE COURT: Do you wish the witness to be excused?

MR. HEMBREE: Yes, please.

THE COURT: Any objection?

MS. WILLIAMS: Without objection, Your Honor.

THE COURT: All right, Ms. Pitts, you are released from your Subpoena. You may go back to your regular duties now.

All right, Solicitor, your next witness.

MR. HEMBREE: The State calls Dr. Kim Collins to the

witness stand.

THE COURT: All right, sir. If you would -- I'm sorry, Ma'am. If you would come around and be sworn, Ma'am.

KIM A. COLLINS, M.D., being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MR. HEMBREE:

Q. Dr. Collins, if you would, please give us the benefit of your training and experience in the field of Forensic Pathology.

A. I'm a physician. I went to college at the University of Georgia and I received my Bachelors in Micro-Biology. I then attended medical school at the Medical College of Georgia and received my M.D.. Following medical school I went to Wake Forrest University School of Medicine for a five-year combined residency in Pathology, Anatomic and Clinical.

Following my residency I went to the Medical University of South Carolina where I completed a Forensic Pathology Fellowship, and I was on staff there as a Full Professor of Pathology and Laboratory Medicine, and I performed autopsies, scene investigations, courtroom testimonies for the statement of South Carolina.

Q. Dr. Collins, describe to this jury what the field, or I guess the sub-specialty -- what does it mean when you say Forensic Pathology?

A. Well, Pathology is the study of disease, and most of us

have actually been treated by a pathologist any time you've had your blood drawn, given a urine sample, had a PAP smear. All of that is diagnosed and received by a pathologist, and so a pathologist is a physician that diagnoses diseases and works with clinicians to treat patients.

Now, Forensic Pathology is a division or sub-division of Pathology where we use all the laboratories in the hospital, as well as further training, including work in the autopsy room, to study and investigate unnatural trauma and also death, so we will use the autopsy to determine the cause of death and to determine the manner of death.

Q. How many -- in your career, if you can estimate, how many autopsies have you performed?

A. Probably around twenty-seven hundred.

Q. And have you been qualified as an expert in the field of Forensic Pathology in courts of record in this State or other states?

A. Yes, I have.

Q. On roughly how many occasions?

A. About two hundred or more.

MR. HEMBREE: Your Honor, we would submit, or we would offer Dr. Kim Collins as an expert in the field of Forensic Pathology.

THE COURT: Do you wish to voir dire the witness as to her credentials?

MR. DIGGS: Your Honor, we don't need to voir dire, and we agree she's qualified.

THE COURT: All right. I'm going to qualify the witness to give her opinion.

MR. HEMBREE: Thank you, Your Honor.

Q. Dr. Collins, were you called upon to conduct an autopsy on the victim in this case, Henry Lee Turner?

A. Yes. We were notified, and we received the body April 9th, 2005, and we started the examination at approximately 2:30 in the afternoon.

MR. HEMBREE: Bear with me just a moment.

Your Honor, I have conferred with Defense counsel and he has indicated that he has no objection to the introduction of State's 71 -- excuse me -- 70, 71, 72, 73, 74.

THE COURT: So that's 70 through 74. Is that correct?

MR. HEMBREE: That's correct, Your Honor.

THE COURT: And as I understand it, without objection.

MR. DIGGS: Correct.

THE COURT: All right. So State's 70 through 74 are in evidence without objection.

MR. HEMBREE: Thank you, Your Honor.

(STATE'S EXHIBITS 70 THROUGH 74 ADMITTED INTO EVIDENCE. SEE INDEX FOR COMPLETE DESCRIPTION.)

Q. Dr. Collins, if you will, explain to the jury the process of conducting the autopsy -- sort of start -- where

you start when you begin the autopsy process with Mr. Turner and then proceed.

A. The body was transported to the Medical University in South Carolina, in Charleston, at the request of the Deputy Coroner, Mr. Dan Bellamy. So when the body came in, what we do first is, we examine the body as it is. We photograph the body, noting any abnormalities, certain clothing, etcetera, on the body. Then in certain cases, such as in this case, we x-ray the body, because we are looking for any foreign objects, any broken bones, any signs of trauma. Then we remove the clothing and we begin the autopsy. And an autopsy in a forensic case is always a complete autopsy, meaning that you are looking at all the organs, not necessarily those that deal with the cause of death but all the organ, so we examine the heart, the lungs, the kidneys, the prostate, the brain. We examine the arms and the legs, and we notice anything on the outside of the body or on the inside of the body that is normal or abnormal.

We also then remove the organs, and we dissect the organs and we take tissue samples from each one, and those tissue samples are then processed, and we look at those under the microscope, to look for any diseases or things that you just can't see with the naked eye.

And also during the autopsy it's a time where we gather evidence, including any foreign material such as bullets. We

can take fluids for other laboratory tests that I mentioned earlier, in the various pathology laboratories.

And we also photograph the body. We photograph the whole body, the face, any abnormalities or any foreign objects that we find on the body.

Q. And Dr. Collins, let's start, I guess, with the external examination. Were there any particular defects that you noted in the course of the external examination of Mr. Turner?

A. Yes. On the external examination we noticed that there was an abrasion which is like a -- where you scrape off the outer aspect or layer of the skin. There was an abrasion on the right forehead, and to the side of the right eyebrow.

And then we noticed to the thorax, or the trunk of the body, there is a gunshot wound, one on the front of the body on the right chest, and then there was also one on the back of the body.

Q. And I can probably do this easier if I bring this to you. Did you make a diagram as part of your examination ---

A. Yes.

Q. ---Documenting your examination?

A. Yes.

Q. And State's 70 in evidence, do you recognize that blow-up?

A. Yes. That's a copy of the body diagram which I do have

here. This is just the naked man body diagram so that you can see head to toe, front and back, and we have him just standing in anatomical position, with the palm of the hands facing forward, and that way we can diagram locations of any types of trauma, abnormalities, things of that nature.

THE COURT: Solicitor, I don't mean to interrupt, but if you want to stand here and hold it out that way in front of me, probably all the members of the jury could see it then.

MR. HEMBREE: Just a moment.

THE COURT: Ma'am, you've just got to remember now, you've got to speak real loud because you are not in front of the microphone.

Q. Now on State's 70, the diagram that you -- you prepared, if you will, indicate where the defects were to the thorax that you've just testified about.

A. When we are labeling gunshot wounds we use letters, because one gunshot wound may have two holes as it goes in and out, so letters is more -- or less confusing, more understandable. When we label them (A), (B), (C), (D), we start just arbitrarily from the top of the head to the bottom of the feet. Now if one has gunshot wound (A) that does not mean it came before (B). It just means it's located in a higher location.

And so what you are looking at here, we see the front of the body, near the mid-line, is gunshot wound (A). So this is

a round entrance wound that went into the body.

Also, look -- we'll stay on the front of the body. We also noticed below and medial to the left nipple was a purple area that had a bump if you felt it, and what this area was is a bullet underneath, so it did not come out.

Q. Would it be your testimony that it was the bullet that went in this way?

A. No.

Q. Okay. Okay.

A. Then when we turn the body over, below the right shoulder blade is gunshot wound (B), labeled (B) because it's lower on the body, so this is gunshot wound (B). And no other injuries were to the body aside from what I mentioned earlier on the right forehead.

What we designated here are other external findings such as a scar, a scar, another scar. So the wounds are gunshot wound (A), a bruising on the left chest because the bullet is underneath there, and then gunshot wound (B). So (A) and (B) are both entrance wounds. So (A) does not connect to (B). They are two separate gunshot wounds, and when we x-rayed the body there were two bullets within the body, so there were two entrance wounds, two shots, (A) and (B).

Q. And were both of the projectiles recovered during the course of the autopsy?

A. Yes, they were. And we designate bullets. When we

recover them we do give them a number, so we had bullet number one, and bullet number two.

Q. While you are here, while you are off the stand, I want to talk about gunshot wound (B). This is a gunshot wound ---

A. Yes.

A. ---To the back. Taking that pointer -- were you able to measure the angle of travel through the body?

A. Yes. The angle of travel means if you stand the person up, such as in this fashion, have them in this position, anatomical position, we connect the dots. Gunshot wound (B) entered in this location to the right back. It traveled through various organs, and ended up in this location, this bullet here. This connected with gunshot wound (B). And when we did the angle of (B), from (B) to where we found the bullet it is going forward, toward his front, into his back toward his front. It is going to his left, because remember this is his right back, this is his left chest, so it goes about forty-five degrees from right to left on his body, and slightly downward, so I couldn't even give it a number it was so slightly downward. So it's in a straight shot from right to left, is what we are looking at.

Q. And if you would take that pointer and sort of just demonstrate on me the -- basically the point of entry and the angle that the bullet traveled.

A. If my left finger is to the -- I'm sorry -- his right

chest is going -- now I'm trying to get backwards -- here we go -- to the left chest. It's in this angle. Okay. So it's not really up and down, it's kind of straight in to his left chest, in that direction.

Q. Dr. Collins, the -- you indicated that the bullet traversed or traveled through several organs.

A. Yes.

Q. What organs did it pass through?

A. As it entered here, in the right back, it went -- it hit ribs seven and eight, in this area, then it went into the heart. It went from the right side of the heart through the central part of the heart -- there's a wall in the middle of the heart -- then it went through the left side of the heart and exited the heart into this location, and the heart sits right under the left side of your chest. So it went in, it traveled to the left and through -- in and out the heart.

Q. As part of the autopsy do you measure the amount of blood in that -- that you would expect to have been caused by that wound and note that?

A. Yes, we did.

Q. And tell this jury about that.

A. When we looked inside, around the heart there was sixty milliliters. That's about, maybe a fourth of a cup of blood around the heart. And then in the left chest, where there's usually no blood, there was four hundred and fifty

milliliters. So that's about half of a quart, or half a liter.

Q. All right. Tell -- let's talk -- I want to shift gears -- well, let's talk about the gunshot to the front part of the body now.

A. Okay. This was gunshot wound (A). And gunshot wound (A), the direction that it went was toward his back, and it went down, and ended up about in this location. Right at the bottom of your ribcage, where you can feel your bottom rib, that's where the bullet ended up going, to that location.

Q. And this is -- point to it, please. That's where gunshot (A), as you noted with it -- on the diagram here where the (A) is, right there.

A. Right.

Q. That's gunshot (A).

A. So (A) goes into the right, and it stays on the right side. So it's going in and down, so -- get my numbers right -- so it's slightly to the left, about ten degrees, but down, so it's main path was down through the right side of the body.

Q. At a -- what, a forty-five degree angle?

A. Yes.

Q. So demonstrate on me again, if you will, for this jury, the path of that bullet, the angle of the bullet.

A. Okay. It goes in the right chest here, and it comes out about -- if you can imagine where his waist line is, so

it's about this direction, is where the bullet traveled. And that goes through the right lung, which is understandable. The right lung is the organ that's in that area. But it also goes into the liver. Your liver sits in this region. And it goes through the liver as it's making that downward path, so lung and liver.

Q. Now, if you will, tell the jury about the blood-letting that took place as a result of gunshot (A).

A. When we looked in the chest cavity where there's usually no blood there was only about a hundred milliliters of blood in the right chest, which isn't very much to have gone through an organ that has many blood vessels such as the lung. We also looked in the belly area where the liver is. It also nicked part of the right kidney, which sits in this region, and there was not any blood in that region. So even though the bullet went through the right lung, through the liver, and tore a piece of the kidney there wasn't bleeding going on, which indicates at that point the heart wasn't beating. So a little bit, hundred milliliters, which is about maybe a third of a cup of blood, is in the right chest and nothing in the belly.

Q. Based on that -- the difference, significant different, four hundred fifty milliliters, I think you said ---

A. Yes.

Q. ---Sixty plus four hundred fifty milliliters, on

gunshot wound (B), and then a hundred milliliters, gunshot wound (A), do you have an opinion as to which gunshot was fired first?

A. It's my opinion that gunshot wound (B) was fired first. It caused the bleeding in the left chest, due to the tearing of the heart, but then as it goes through the heart the heart no longer is beating when gunshot wound (A) is fired, and that is why we don't see as much blood, just some oozing from gunshot wound (A) on the right side, and we don't see any in the belly, which was from gunshot wound (A).

MR. HEMBREE: Thank you, Dr. Collins. Please -- if you would go ahead and take the stand.

Q. Dr. Collins, I want to show you State's Exhibits 71 and 73, and ask if you can identify these for us.

A. Seventy-one is a photograph taken at the time of autopsy. It has my identifier on it, which says "FA", and that stands for "Forensic Autopsy", "05" for 2005, and "217", meaning it was the two hundred and seventeenth case of that year, and it has a number "1", so this is with bullet number one, and then 73 has the same type of identifier. It shows the bullet, and it has the number "2", so this is bullet number two.

Q. And if you would -- now bullet number one is -- is -- it's got some material in it.

A. Yes. Bullet number one has what we described as

bloody, but it was a synthetic material that has a -- it stuck, almost melted onto the bullet, and it's about four inches in length so it's a type of material that sometimes if a bullet goes through a material it will stick -- the material will stick to it, and so it's the foreign material that we found in the body.

Q. So it's literally -- the bullet is literally wrapped in this material?

A. Yes.

Q. Let me show you State's 72. Ask you to identify those for us, please.

A. This is a bullet vial. It has my label on it. It says bullet number one, and it is a gray cylindrical bullet, and in this bag is that white stained material that was stuck onto bullet number one, and that corresponded to the bullet that we retrieved under the bruised area on the chest from gunshot wound (B).

Q. Which is -- gunshot wound (B) is the gunshot wound to the back?

A. Yes.

Q. So bullet one goes with (B) ---

A. Yes.

Q. And then let me show you State's 70 -- I've showed you 73. That's bullet number two?

A. Yes.

Q. And that bullet was recovered from which gunshot?
A. (A). From the lower right back of (A).
Q. And then finally, showing you State's Exhibit 74. Identify that for us, please.
A. This is bullet number two, which was found in the lower back region, from gunshot wound (A).
Q. Dr. Collins, just to -- we started on this and I didn't finish it, and I want to go back a bit to the injuries, the other external injuries that you testified about to the head of Mr. Turner.
A. Yes.
Q. Tell the jury exactly what injuries that you observed to his head.
A. To the right side of the forehead was about a one-and-a half by one-and-a-half abrasion, and then there was another abrasion to the side of the right eyebrow that was about a half-inch by a half-inch, which abrasion is just a red area where the skin has been scraped off.

And then there was also a mark -- a post-mortem pressure mark on his forehead, the right forehead, which means the body was pressed up against something after death, and we get an indentation.

And when we reflect the scalp and we look underneath the scalp, and we looked at the muscle, which is on the side of the head that you can feel when you chew if you put your hand

here, when we looked at that muscle it was bruised underneath there, so that would relate to all the abrasions that we saw on the outside.

Q. So he essentially had a bruise on this side of his face?

A. Yes.

Q. And he had a pressure -- you said it was a pressure mark from where his head -- as if his head may have -- after -- you said a post-mortem, means after death -- that his head was resting on the floor, perhaps.

A. Resting face down on a first surface, yes.

Q. That would be consistent with his head resting on the floor.

A. Yes.

Q. The bruising to his -- this side of his head, would that be consistent with falling as a result of the gunshots?

A. Yes. We get -- we call them terminal falls, and they are on bony prominent, such as your forehead, your cheek region, and you can see it also underneath the scalp, and we see that as a result of the fall secondary to a gunshot wound, or anything that would cause an individual to collapse.

Q. The -- tell the jury -- tell this jury what defensive wounds are.

A. Defensive wounds are usually located on the knuckles of the hands, the elbows, the surface of the forearm when you are

trying to deflect a blow, such as in a fight, or if there is a knife. You are trying to deflect the blade coming toward you. Sometimes if the person is on the ground we will see defensive wounds on the bottom of the feet, as they are trying to push their attacker away.

Q. Were there any defensive wounds whatsoever discovered during the autopsy of Mr. Turner?

A. No, there were not.

Q. The -- I guess my final question. Within a reasonable degree of medical certainty can you testify as to the cause of death in this case?

A. Yes, I can.

Q. What was the cause of death?

A. The cause of death was cardiac perforation, or perforating the heart, due to a penetrating, indeterminant range, gunshot wound to the back, and contributory was a penetrating indeterminate range gunshot wound to the chest, and the word penetrating on both of those, that just means that the bullet remained in the body. Perforating would mean the bullet exited the body, but these are penetrating.

Q. And Doctor, within a reasonable degree of medical certainty, can you testify as to the manner of death?

A. The manner of death is homicide.

MR. HEMBREE: Please answer any questions Defense counsel has for you.

THE COURT: Cross-examination.

MS. WILLIAMS: Beg the Court's indulgence for just one moment.

THE COURT: Yes Ma'am.

MR. DIGGS: Your Honor, we don't have any questions at this time, of this witness.

THE COURT: All right. Very good.

Do you wish the witness to be excused?

MR. HEMBREE: Yes, we do, Your Honor.

THE COURT: Any objection to the witness being excused?

MR. DIGGS: No sir.

THE COURT: All right, Doctor, you are released from your Subpoena. You may go back to your regular duties.

A. Thank you.

THE COURT: Yes Ma'am.

All right. The next witness, please sir.

MR. RICHARDSON: The State calls Neal Livingston.

THE COURT: Please come around to be sworn, sir.

NEAL LIVINGSTON, being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MR. RICHARDSON:

Q. Mr. Livingston, where are you employed?

A. The Horry County Police Department.

Q. How long have you been with Horry County?

A. Twenty-four years.

Q. Please give us your title or rank.
A. I'm a Detective in the Violent Crimes Unit.
Q. All right, Detective Livingston, were you working on April 4th, 2005 -- excuse me -- April 9th, 2005?
A. April 9th. Yes. Yes sir, I was.
Q. Did you have an occasion to go to M.U.S.C.?
A. Yes sir. I attended an autopsy there.
Q. Is that the autopsy performed by Dr. Kim Collins?
A. Yes sir, it was.
Q. What was your purpose for going to that autopsy?
A. To be present for it, and to collect any items for -- collected during that procedure.
Q. I'll pass to you what is already in evidence as State's Exhibit Numbers 72 and 74. Please tell me if you recognize these items.
A. Yes sir, I do.
Q. And what are those items, Detective Livingston?
A. Two projectiles, and a sealed piece of fabric.
Q. All right. When you received those items were they already -- how were they packaged?
A. Just like they are now. They came in these same containers.
Q. And what did you do with those items?
A. I did the paperwork from the hospital, and also did my own paperwork, transported them back to the Police Department

in Conway, where they were placed in an evidence locker.
Q. At Horry County?
A. Yes sir, in the Horry County Police Department.
Q. Are those items substantially the same as when you collected them from Dr. Collins?
A. Yes sir, they appear to be.
MR. RICHARDSON: I have no further questions. If you would answer any questions Mr. Diggs might have for you.
THE COURT: Cross-examination.
MS. WILLIAMS: Your Honor, we don't have any questions of this witness.
THE COURT: Do you wish the witness be excused?
MR. RICHARDSON: Yes sir, please.
THE COURT: Any objection?
MS. WILLIAMS: Without objection.
THE COURT: All right, Detective, you are released from your Subpoena. You may go back to your regular duties, sir.
A. Thank you, Your Honor.
THE COURT: Yes sir.
All right, Solicitor, the next witness, please.
MR. RICHARDSON: The State would call Robbie Caulder.

JOHN CAULDER, being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MR. RICHARDSON:
Q. Where are you employed, Mr. Caulder?

A. The Horry County Police Department.
Q. How long have you been with Horry County?
A. For eleven years.
Q. All right. What is your title, please?
A. I am a Senior Crime Scene Investigator.
Q. All right. So how should -- are you -- do you have a title, I mean, would it be a detective or ---
A. An investigator.
Q. Investigator. All right, Investigator Caulder, did you have an occasion to transport some items to S.L.E.D. with regard to this case?
A. Yes sir, I did.
Q. And what date did you transport those items?
A. On the 13th of May, 2005.
Q. I'm handing you what has been marked as State's Exhibit Numbers 37, 38, 62, 72 and 74. These are already in evidence. Please tell me if you recognize those items.

(STATE'S EXHIBIT NUMBERS 37 AND 38 WERE ENTERED INTO EVIDENCE ON FRIDAY, NOVEMBER 13, 2009. SEE TRANSCRIPT FOR THAT DAY PREPARED BY COURT REPORTER BUCKNER.)

A. Yes sir. These are the items that I took the S.L.E.D. on the 13th of May.
Q. Okay. What did you do with those items upon taking them to S.L.E.D.?
A. I released them, or signed them into their evidence

intake there at S.L.E.D..

Q. And during the times that you had these items, State's 37, 38, 72, 74 and 62, did you tamper with them or change them in any way?

A. No sir.

Q. Or did anybody in your presence do so?

A. No sir.

MR. RICHARDSON: I have no further questions.

Please answer any questions that Mr. Diggs might have for you.

THE COURT: Cross-examination.

MS. WILLIAMS: Your Honor, we don't have any questions of this witness.

THE COURT: Do you wish to excuse the witness?

MR. RICHARDSON: Yes sir, please.

THE COURT: Any objection?

MS. WILLIAMS: No sir.

THE COURT: All right, sir. Investigator, you are released from your Subpoena and excused to go back to your regular duties, sir.

A. Thank you, Your Honor.

THE COURT: All right, very good.

All right. Ladies and gentlemen, why don't we take a short break for about -- it will be about five, ten minutes, and we will come back at that point in time. All right.

Just leave your pads right where they are, please.

(THE FOLLOWING TAKES PLACE AFTER A BREAK, AND WITHIN THE PRESENCE OF THE JURY.)

THE COURT: All right, Solicitor, your next witness, please sir.

MR. HUMPHRIES: Thank you, Your Honor.

THE COURT: All right. Please come around to be sworn, sir.

FRANK DAN DeFREESE, being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MR. HUMPHRIES:

Q. Mr. DeFreese, how are you employed?

A. I work for the South Carolina Law Enforcement Division, in the Forensic Services Laboratory in Columbia.

Q. And in what particular division are you currently assigned?

A. I'm assigned to the Department within the laboratory where we do the analysis of Firearm and Tool Mark Evidence.

Q. How long have you been so employed?

A. For forty-three years.

Q. Would you please give this jury the benefit of your education and training as it relates to those particular duties.

A. My principal training in the field of firearm and tool mark identification occurred at S.L.E.D., at the State Law

Enforcement Division. When I was employed I was assigned to the Firearms Laboratory where we do the analysis of firearm and tool mark evidence. I undertook a course of instruction that lasted approximately two and a half years. I was instructed by the gentleman that established the S.L.E.D. Laboratory when S.L.E.D. itself was established in 1947. His name was Millard Cate.

I was also trained by a gentleman named Carl Stokes who was also an examiner at that time.

After approximately two and a half years of training I began accepting cases on my own, and testifying as to my results. I've been doing that since 1969.

Q. Let me ask you, have you ever been offered and accepted as an expert in the area of Firearm and Tool Mark Identification?

A. I have.

Q. And on how many occasions, if you can estimate?

A. I actually don't know because I didn't keep track of it for many years, but I estimate it between six hundred and seven hundred times.

MR. HUMPHRIES: Thank you.

Your Honor, at this time we would offer Agent DeFreese as an expert in the field of Firearm and Tool Mark Identification.

MR. DIGGS: Your Honor, we don't have any objection.

THE COURT: All right. Very good. I'm going to qualify the witness to give his opinion.

MR. HUMPHRIES: Thank you, Your Honor.

Q. Agent Defreese, let's do this for the jury, first of all. Let's tell them what that Division actually does, the Firearms and Tool Mark Identification Division of the South Carolina Law Enforcement Division.

A. The most requested service that we get is for the identification of bullets and cartridge cases back to the firearms in which they were fired, or where the firearm is lacking to determine whether two bullets were fired by the same firearm barrel.

The identification is made based on markings that are placed on bullets and cartridge cases at the time of their firing by the firearms in which they were fired. Firearms that have riffling inside of their barrels -- now riffling is a series of spiraling grooves that are cut into the inside surface of a gun barrel, and they are put there for the purpose of imparting a spin on the bullet as the bullet is being expelled from the firearm. This is done for much the same reason as a quarterback puts a spin on a football, to keep the football from tumbling end over end in flight. It's there for stability, but it's been found that by looking at recovered fired bullets there is a signature that the barrel places on bullets fired in that particular gun barrel, and

where we can obtain bullets that are sufficiently undamaged we can compare these markings and from that conclude that a particular bullet was fired in a particular gun barrel. Similarly, with cartridges cases, because the fact that a very high pressure is developed inside the cartridge case to make the bullet leave the gun barrel, this causes marks that may be present on certain surfaces within the firearm to be impressed, or to be imparted on a cartridge case. For instance, when the firing pin actually strikes the primer at the rear of a cartridge it leaves an impression. When the cartridge expands within the chamber to encounter the firearm itself the imperfections that may be present on the breach face are transferred to the cartridge case. In some cases there are chamber marks that are imparted, and in the case of semi-automatic firearms there are sometimes extractor and ejector marks. All of these can be identified, and in certain cases we can conclude that a particular cartridge case was fired in one, or only one firearm, or where we have no firearm and several cartridges cases we can conclude whether they were or were not fired by the same gun.

Q. And are these markings unique enough in order to do just that, to identify a fired projectile as coming from a particular weapon, or a fired cartridge casing having been in a particular weapon when it was fired?

A. They are. As I say, when the bullet survives in

sufficiently good condition. Now sometimes bullets are not recovered. They are so badly damaged that you can't tell. And there are some guns that are so worn or improperly made that you may not be able to identify even the test bullets with each other, and in those cases we simply can't tell. But where a bullet is in sufficiently good condition, and the firearm is repeatable in it's markings we can conclude that a particular bullet or cartridge case was fired in a specific firearm.

Q. Let me ask you, did you receive certain items of evidence for just that type of testing and comparison in connection with the case of the death of Henry Turner?

A. I did.

Q. Let me show you a series of exhibits. These are all in evidence. They are State's 37, 38, 62, and 72 and 74. Let me ask you, first of all, to examine those items and tell me if you can identify them.

A. Yes sir, I can.

Q. And they are?

A. These are all items of evidence which I have received and previously examined.

Q. Now, if you will, give the jury the benefit of the testing and comparisons you made, and your conclusions, if any.

A. All right, sir. The firearm in this case, Item 62, is

a Taurus .357 Magnum caliber double-action revolver. It's serial number is ND938108. Along with the revolver there were six unfired cartridges, one Remington cartridge and five Winchester cartridges.

For the purpose of doing my tests I took this revolver and fired it with ammunition so that I would have known test specimens for comparison purposes. We don't directly compare a bullet with a gun barrel or a cartridge case, for instance, with a break face or firing pin. We obtain known test specimens and we use them to do our microscopic side-by-side comparison.

After test-firing the firearm and collecting certain information about it I compared test bullets which I knew that gun had fired with the -- the two bullets, State's Exhibits 72 and 74, which were marked bullet number one and bullet number two at autopsy, and I marked my item four and my item five respectfully.

I found the same matching individual striated markings on both of these bullets, and on test bullets fired by the Taurus revolver. From that I was able to conclude that both of these bullets were fired by that Taurus revolver.

Q. Very good.

A. Now, in the case of the two fired cartridge cases, State's Exhibits 37 and 38, while I found some similarities in the firing pin impressions I simply did not find enough in the

way of individual markings on either one of these cartridge cases to conclude for certain that they were fired in the Taurus revolver, in State's Exhibit 62. They could have been fired by that revolver, but I just can't say so for certain because there were just not enough markings present for me to make a conclusion.

Q. So they -- all right, they could be included in a group of items -- all right, they could be included in a group of handguns that could have fired them, one of which would be State's 62, this firearm?

A. Yes. State's Exhibit 62 could have fired these two cartridge cases, but they could have been fired by another firearm. In some cases I was not able to match all the test cartridge cases fired by State's Exhibit 62 with each other. It does not leave all that many markings on cartridge cases.

Q. Very good.

MR. HUMPHRIES: Agent DeFreese, thank you. Answer any questions Defense may have.

THE COURT: Cross-examination.

MR. DIGGS: Your Honor, I don't believe we have any questions of this witness at this time.

A. Thank you.

THE COURT: All right. Do you wish to excuse the witness?

MR. HUMPHRIES: I do. Thank you, Your Honor.

THE COURT: Any objection?

MR. DIGGS: No sir.

THE COURT: All right. Special Agent, you are excused, released from your Subpoena. You may go back to your regular duties.

A. Thank you, sir.

THE COURT: Yes sir.

Further witnesses on behalf of the State.

MR. HEMBREE: No, Your Honor. On behalf of the State, State of South Carolina, in the guilt phase of **State of South Carolina versus Stephen C. Stanko**, State rests.

THE COURT: All right. Very good.

All right. Mr. Diggs, Ms. Williams, you have some matters of law for the Court at this point in time?

MR. DIGGS: Your Honor, we have a matter we would want to take up.

THE COURT: All right. Very good.

All right, ladies and gentlemen of the jury, I'm going to need to ask that you go back to your jury room while I take up these matters of law.

Thank you very much.

Leave your notepads, please.

(THE FOLLOWING TAKES PLACE OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: All right, Mr. Diggs or Ms. Williams.

MR. DIGGS: Your Honor, with respect to the stage of the evidence we would ask for a directed verdict simply because the State's evidence doesn't show sufficiently Mr. Stanko's involvement with the actual shooting in the case. There is evidence, of course, which puts him at the Turner home earlier in the day. He is in possession of the automobile that was -- belonging to Mr. Turner. There is no evidence though about how Mr. Stanko got possession of that automobile, whether it was taken without permission. You simply can't rule out a -- an intruder coming into that home and killing Mr. Turner subsequent to Mr. Stanko's departure, can't rule out the fact that Mr. Turner might have given Mr. Stanko the access to the vehicle.

There is no -- if I understood the testimony directly the State's evidence can't put -- can't state that weapon is the murder -- or a murder weapon that might have been used in this case beyond any other category of weapons, and so we would make that motion based on that -- for a directed verdict based on those grounds.

THE COURT: All right. In -- it's not necessary, Solicitor.

MR. HUMPHRIES: I don't -- yes, Your Honor.

THE COURT: Thank you very much.

In accordance with the law of the State of South Carolina defendant is entitled to a directed verdict when the

State fails to produce evidence of the offense charged. My duty and responsibility at this point in time is to look at the existence of evidence, not with it's weight, not it's credibility, believability. That's ultimately the jury's job. My job is to see whether the evidence actually exists. If there is any direct evidence or substantial circumstantial evidence reasonably tending to prove the guilt of the accused then it would be the Court's responsibility to have the case proceed on. I would be authorized to grant a directed verdict motion when the evidence merely raises a suspicion that the accused is guilty.

In this particular matter, looking at the existence of evidence, there is more than sufficient evidence that exists, that if so believed by the jury in this matter would convict the Defendant beyond a reasonable doubt of the crimes charged, both as to murder and armed robbery, therefore, there being more than sufficient evidence being presented by the State to convict the Defendant of the crimes of murder and armed robbery, if that evidence is so believed by the jury, I respectfully decline to grant your directed verdict motion.

MR. DIGGS: Your Honor, I thank you.

There is one additional matter ---

THE COURT: Yes sir.

MR. DIGGS: ---At this time I would like to bring to the Court's attention. We had asked earlier in these

proceedings that the State be required, having been put on notice that there would be an issue of insanity in this case, we ask that the State be required to put on evidence in it's case-in-chief of sanity itself, and they have not done that, and so we would make a motion for a directed verdict on that ground, Your Honor, that the State has not proven sanity in it's case, even though it's own evidence raised the issue, I would submit, based on the young man's testimony from Columbia that talked about the irate state of anger that Mr. Stanko went into when simply one of the individuals there, Neil, I think was his name, the young man's name, simply questioned the veracity of one of the statements Mr. Stanko had made, and that raises the issue, not as fully, of course, as it could be raised, but because the State didn't attempt to put any evidence in it's case-in-chief on that issue, even though the issue is clearly in the case. State was put on notice. They have been given information about Mr. Stanko and his mental state, mental condition. They chose not to address it at the case-in-chief stage, and I would ask Your Honor to direct a verdict at this point of not guilty by reason of insanity.

THE COURT: Solicitor, do you wish to respond?

MR. HUMPHRIES: Your Honor, there is absolutely no requirement of law that the State prove sanity. I take issue with the Defense's characterization of the issue having been raised by the witness, Ryan Coleman, but in any event, there

is no requirement. Having been placed on notice certainly doesn't put the burden on the State to prove sanity, and there is nothing in this record, I would submit, that would raise that issue to the point the State would be required to do that, or that it would even create an issue as it relates to the jury, and so we ask that you deny that motion.

THE COURT: All right. There being no requirement of the law that the State must prove any defendant, in any criminal case, that they were saying at the time of the alleged crime, that being an issue to be raised as an affirmative defense by the Defense, I respectfully decline to grant your motion.

And as to the characterization by Mr. Coleman as to the Defendant's state or comment, that was just a characterization of how the Defendant was acting at the time, just as Ms. Putnam's characterization when she indicated that the Defendant agreed that the other individual that had committed the crime against the child at the hamburger place, that that was wrong and should not have happened, just a characterization of where the -- what the Defendant said or did at the time.

Thank you very much.

MR. DIGGS: Just for the record, too. I would ask the Court to incorporate the other motions that we had filed pre-trial with respect to the procedural issue at this time. We

had argued those motions in front of Your Honor. I don't know if Your Honor specifically ruled on that issue at that time, but ---

THE COURT: Tell me -- okay, let's be clear here. What issue are you talking about?

MR. DIGGS: At that time we -- I had filed a motion, pre-trial motion, having -- asking the Court to declare our requirement that insanity be an affirmative defense, and the requirement that Defense present evidence of insanity, and then allow the State to rebut that in reply, that that be declared unconstitutional. I don't know if -- and we also request ---

THE COURT: All right. Well, if you are asking me to declare the current state of the law of the State of South Carolina that it is the responsibility of the defense to raise the defenses of insanity or guilty but mentally ill, and then to allow the State to reply to those when those are raised, I will not declare the current state of law of State of South Carolina to be unconstitutional. I find it to be proper, and will be followed in this particular case.

MR. DIGGS: Yes. And Your Honor, I understand that, and I just wanted to remind the Court we had filed these motions pre-trial, and Your Honor did have a hearing on those issues. We argued them right here in the courtroom.

THE COURT: Well, I -- just so -- I've made the ruling

now in the record, so it's clear.

MR. DIGGS: Thank you.

THE COURT: All right. Very good. Anything else from the Defense?

MR. DIGGS: Your Honor, we don't have anything else by way of motion at this time. I would let the Court know that our first witness will be here in just a few minutes. He is here in town, in Conway. We have already called and asked him to be here, and it's going to take him probably just a couple of minutes to set up. He's going to have a projection onto the screen, over here, for use during the course of his testimony, and so I would just let the Court know of -- where we are at this point.

THE COURT: All right. Was there any issue as to that particular witness? And what is that witness's name again?

MR. DIGGS: Your Honor, his name is Brent Turvey.

Mr. Humphries and I have spoken earlier this morning about it, and I don't believe that the State is going to have any objection to any particular testimony that he's going to enter.

MR. HEMBREE: That's not accurate, Your Honor. He -- well, I don't know what he's going to testify to, so I can't say. I've read his report. I have a lot of objections to what is contained in his report, but I don't -- not knowing if he's going to testify what's in this report perhaps the Court

would like to review it first, and then we can talk about it --

THE COURT: Yes sir. If you don't mind, please.

MR. HEMBREE: ---And then we could talk about it.

THE COURT: Yes sir.

MR. HEMBREE: Let me get ---

THE COURT: Do y'all have a copy of it somewhere, please?

MR. HEMBREE: And I'm not from -- there's -- he doesn't have a C.V. attached. I'm not crystal clear on what his area of expertise is. I think it's crime scene analysis, much like a -- like one of our crime scene specialists who would be qualified to testify about ---

THE COURT: All right. Is there particular parts of the report that you would like to specifically point out to me?

MR. HEMBREE: Yes sir. Well, I could do it that way, but let me sort of interpose my general concern first, and then we can look at some specifics in the report.

THE COURT: All right.

MR. HEMBREE: It appears -- Mr. Turvey's analysis of the crime scene in the sense that he -- you know, he finds that there's some blood spatter so it means this, you know, some -- he analyzes some physical evidence in ways that I don't take issue with. I think it's consistent with what our

witnesses have said. It's consistent with additional evidence we could have gotten from witnesses, so parts of that I have no objection. But he kind of takes it a next step and he -- he not only -- and he not only interprets the crime scene but then he makes this leap and says, well, because the crime scene is like this the Defendant is like that, the Defendant is either suffering from rage or drug abuse, or some sort of mental defect, and he's not qualified, but he takes that extra leap that it outside the area of his expertise, number one, if he's a crime scene analyst, and number two, it's not proper -- it's confusing to the jury and it's not within the scope of proper expert testimony. It exceeds the scope of proper expert testimony. It involves things that certainly Defense counsel could argue. There are inferences that could be drawn from that that Defense could argue. The State could argue the other side of the inference but to have this expert get on the stand and say, well this is my inference, is confusing to the jury, and it's simply inappropriate for expert testimony.

THE COURT: All right. Can you point to those issues in the report that you have issue with?

MR. HEMBREE: Well, my first -- my first objection would be the second paragraph, and he starts talking about the criminal's modis operandi, it's comprised of learned behaviors, and it goes on to say that it -- "It can become less competent and less skillful over time, decompensating by

virtue of a deteriorating mental state or increased use of controlled substances."

THE COURT: So the entirety of the second paragraph?

MR. HEMBREE: Entirety of the second paragraph, Your Honor.

THE COURT: All right, sir.

MR. HEMBREE: There are a few factual findings that we would take issue with. He indicates on page two -- I'll just be specific.

THE COURT: Yes sir.

MR. HEMBREE: Bottom of the page, page two, Friday, April 8. It says, "Just after midnight there was an altercation." I have -- I take issue with that because there is no evidence that there was an assault. It implies that there was a mutual -- some sort of mutual ---

THE COURT: Well, that -- what he's talking about there, I don't assume the Defense is going to want him to talk about that.

MS. WILLIAMS: Your Honor, if I may, as we addressed briefly before the break, when -- part of our initial -- when we spoke with Mr. Turvey we were analyzing both scenes and comparing to them. We understand in the guilt phase there is nothing about the Ling murder that will come up as a part of this, so the report itself is not going to come into evidence. It's there for them. We don't intend to submit that.

His testimony will relate to the reconstruction and his analysis of the Turner scene. Now, there is no doubt that some of the things that he has learned from the prior incident -- which, Your Honor, is in testimony. I mean, there's a lot of testimony about the car. There was testimony that there was a national B.O.L.O. out on this car, that it was wanted, that when that car was located they pulled a S.W.A.T. Team in, I mean, so there's a prior incident that's out there, but he doesn't intend to discuss any of the details at all of the ling incident. And Your Honor ---

THE COURT: Well, I mean, obviously y'all need to be careful what questions you ask, and what answers he gives.

MS. WILLIAMS: Absolutely.

THE COURT: All right. Let's just talk about the ---

MS. WILLIAMS: Your Honor ---

THE COURT: Is he -- does he have any educational training that would go beyond forensic examination or crime scene investigation?

MS. WILLIAMS: Your Honor, absolutely, and I think it might benefit the Court if -- Mr. Turvey should be here. We -- I mean, he's thinking ---

THE COURT: All right. So he is some type of medical doctor or clinical psychologist of some kind?

MS. WILLIAMS: No sir. He is a -- he can recount it better than I can, but basically he has an M.S. in Forensic --

he's a Forensic Criminologist, he has a B.S. in Psychology. He's got a Master's in Forensic Psychology. He's working on his Ph.D. at this point. I mean there's a -- I mean it's a litany of things, and it may be ---

THE COURT: All right. Well, we'll hear from him and I'll see if he's going to be able to testify about anything beyond crime scene analysis as to anything about any kind of mental state or any type of behavior that he might believe about the Defendant in this case.

All right, we'll hear from him when he gets here. Thank you very much.

Tell me when he gets here, please.

MS. WILLIAMS: Yes sir.

(THE FOLLOWING TAKES PLACE AFTER A BREAK, AND OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: Yes Ma'am, Ms. Williams.

MS. WILLIAMS: Your Honor, Mr. Turvey is here if I could call him to the stand and ---

THE COURT: Please.

BRENT E. TURVEY, being first duly sworn, testifies as follows:

THE COURT: Yes Ma'am. You may proceed.

MS. WILLIAMS: Thank you, Your Honor.

DIRECT-EXAMINATION BY MS. WILLIAMS:

Q. Mr. Turvey, can I get you to tell me ---

MS. WILLIAMS: Your Honor, what we intend to do is present him as an expert in the areas of crime reconstruction and crime scene analysis.

THE COURT: Okay. All right, Ma'am.

MS. WILLIAMS: Thank you.

Q. Mr. Turvey, can you please tell us who your clients are?

A. Well, first of all, my name is Brent Turvey. That's spelled T.u.r.v.e.y., and I am from Sitka, Alaska, and my clients tend to be attorneys and law enforcement agencies, and very rarely, but once in a while, private individuals from all over the world, contacting me to do case examination. For example, I will have defense attorneys contacting me to do an examination related to a particular criminal case when there is a trial pending in a criminal matter, or I may have a civil attorney, either plaintiff or defendant, contact me to do an examination of a -- usually a crime in the context of a civil dispute, or I may have a private individual contact me regarding some questioned death or some questioned event in -- that exists in relation to one of their relatives or some loved one, and again, that's the most rarest kind of involvement, but generally it is attorneys.

And law enforcement will contact me either to give training or to examine unsolved cases. For example, I've served on, I think, either three or four serial rape or serial

homicide task forces over the last fifteen years, none of those within the last seven years, so -- or I'll have an agency contact me regarding maybe a false report on a rape, to do an examination on something related to that.

Q. Okay. Can you please give us the benefit of your educational background?

A. Certainly. My former education is in the area of undergraduate degree, a Bachelor's of Science in Psychology, and then I have a second Bachelor's of Science in History, and then I have a Master's of Science in Forensic Science.

Q. And are you currently an advance type degrees?

A. I am.

Q. Can you please tell us about that?

A. Certainly. Since February, or January of this year I have been enrolled as a Ph.D. candidate at Bond University in their criminology program. I'm studying the issue of forensic fraud, which is fraud committed by those proffering evidence to the court, usually in the context of them being either a forensic scientist or an expert of some kind.

Q. Okay. Can you please tell me if there are any courses that you have developed, instructed, participated in anything in that arena?

A. Certainly. That tends to be three-fold. First of all, I run a private company, and that company is called Forensic Solutions, and we teach online courses and also give workshops

in areas related to criminal investigation, criminal profiling, forensic science, and that's related to the areas of crime reconstruction and crime scene analysis.

Also, through -- I serve as an adjunct Professor of Justice Studies at Oklahoma City University where I teach a number of online courses related to, again, Crime Reconstruction, Introduction to Forensic Science, Behavioral Evidence Analysis, which is essentially criminal profiling related, a course on serial homicide investigation, a course on miscarriages of justice, and a course on -- right now we are teaching a course on criminal motivations.

I also, since 19 -- and that's been since 2002, 2003, I think, without looking at my Resume.

Also I have taught as a adjunct lecturer, and guest lecturer at Bond University since 1999. I go there for about three to four weeks a year, usually in March or April, and I teach at the Criminology Department. For example, last year I gave guest lectures in courses on criminal profiling, on forensic criminology, on -- in their Forensic Science, subject -- as a guest lecturer as well.. So -- and that relationship, as I said, has been going on for about, what, ten years now. Geez.

Q. Are you involved in any professional associations, professional activities?

A. I have.

Q. Can you tell us about those, please?

A. Certainly. Since -- again, since -- for a number of years now I have been serving as a -- on the Advisory Board for Bond University where I advise on curriculum. There's about ten or fifteen of us who sit down every year and we talk about the kind of curriculum they need to develop for their criminology program.

In addition to that I'm also actively involved as a founding member of the Academy Behavioral Profiling. We started working on that organization in 1998. It was me and five other -- excuse me -- four other individuals including a Forensic Psychologist, a retired N.Y.P.D. Detective, and a -- a retired F.B.I. agent, and -- oh, and a retired California D.O.J. Criminologist, and we -- I serve on the Board of Directors. I serve as the Secretary/Treasurer, and I also serve as the Editor of the ***Journal of Behavioral Profiling*** for that organization.

Q. So when we talk about the journals let's move into that. Have you ever published any textbooks, peer review works, chapters, articles, anything of that nature, that you could share with us?

A. Yes. Many times. In terms of textbooks, I published my first textbook in 1999, with what was then Academic Press. It was called ***Criminal Profiling and Introduction to Behavioral Evidence Analysis***, and that was done in the second

edition in 2002, and it was done in a Third Edition in 2008, and the editions are -- have grown greatly. It's a tremendously involved work. It's not just a -- the edition of a chapter, the swapping out of some case materials, each individual work was actually a whole new incarnation of the previous, so they are very distinct and discreet works.

In 2004, I worked with the then N.Y.P.D. sex crimes Detective John Savino, and we authored the -- I authored, and co-authored with him, the rape investigation handbook which was published with Academic Press. It was -- many other contributors provided chapters but we also -- we authored the majority of them, and we were served as a primary editors.

Then in 2006 I published a book that I brought with me today, just as a visual aid for the Court, called ***Crime Reconstruction***, with Jerry Chisholm. He was one of the founding members of the A.B.P.. He was a Senior Criminologist with the California Department of Justice. He was their Senior Crime Reconstructionist for many years. He served with them for thirty-eight years, retiring in 1998, and now he currently works in private practice, and he was my co-author on that text. He's also probably my senior since retiring -- since I received my Master's of Science in 1996. And that book is all about Forensic Science, crime reconstruction, interpreting evidence, interpreting behavior, and setting limits on those interpretation. That book was actually a

foundational document cited in the N.A.S. report which was recently the -- Congress's sort of research on D.N.A.S., the National Academy of Science. It's a Federally-funded organization started by Abraham Lincoln which advises Congress on how to spend our money, I guess. They decide what useful expenditures are in the area of scientific research, and recently they did a -- essentially a survey of the state of Forensic Science, and this was one of their source texts that they used.

In 2008, I co-authored a book called ***Forensic Victimology*** with Wayne Petherick, which is all about examining victims in violent crime context related to assessing risks, examining and determining behavior based on evidence, the whole area of the kind of things we are going to be getting in here today.

Then also in 2009 I published another textbook with William Petherick and Clair Ferguson. William Petherick, by the way, is the chair of the -- well, he's head of the Criminology Department at Bond University. We authored a textbook called ***Forensic Criminology***, which is essentially a textbook on how Criminology is applied to the Criminal Justice System by practitioners, and that was published, again, in 2009, and that was, again, a collaborative work. We have like ten contributors but we contribute the majority of the chapters and we serve as editors, and that is very much

related, again, to things like -- the kind of criminological analyses that we are talking about today, crime scene analysis and crime reconstruction.

Q. And those are the textbooks that you've done. Have you contributed, in any way, to other textbooks?

A. Yes, I have.

Q. Can you tell us about any of those?

A. Certainly. Over the last ten, fifteen years I have contributed many times to different textbook projects. Several textbook chapters I've written for a book called ***Digital Evidence Computer Crime*** by Owen Casey on reconstructing and interpreting digital evidence, and behavior related to different digital evidence, modus operandi behavior, again, related to the topic we will be talking about today.

And also, I've done submissions for recently a book called ***Crime and Deviance***, again by William Petherick, on things like sexual deviance and homicidal deviance, the concepts of homicide and sexuality as they apply to criminal cases, and as they apply to the social construct of deviance.

Also, I recently finished a -- it's not on my resume but I recently just -- just this week, finished another contribution for M.I.T. -- a contribution for M.I.T. Press on the textbook called ***Pathological Altruism***, by Dr. Barbara Oakley, and it's about, again, examining victims in the

context of being exaggerators or false reporters..

Also -- if I may, Your Honor, look at my resume to refresh my memory.

THE COURT: Yes sir.

A. Thank you. Just to make sure I haven't forgotten anything vital. In terms of -- just in terms of textbook contributions, let's see here, I've done some stuff on -- over the years, on autoerotic fatalities, and one of my articles that I wrote as a grad student was put into -- recently put into a textbook on -- called ***Constructions of Deviants*** by Adler and Adler, back in 2006.

I've also written textbook contributions on criminal profiling and the media for a textbook called ***Serial Crime***, First and Second Edition of William Petherick's book on serial crime, and that tends to be -- that's the majority of my contributions that would be related to my testimony today.

Q. Well, let me ask you this, just to make sure. So, are there any published articles in addition?

A. In addition, yes, article -- there are many other articles that are absolutely relevant. For example, in 1997 I was asked by Academic Press to author four different contributions for the ***Encyclopedia of Forensic Science***, on autoerotic fatalities, one on criminal profiling, one on modus operandi, and one on, I believe, offender signature behavior. This is not the handwriting signature, but the behavioral

signature that they leave behind at the crime scene. So those are directly related, obviously.

And then there's -- there are very few textbook -- or excuse me -- very few articles that I've written that aren't directly related to this kind of testimony that I would give. For example, I've written on false reports, with John Basa, in the ***General Behavioral Profiling***. Again, it's about examining victim behavior, examining victim and offender behavior in violent crime context, applying the scientific method, asking questions about it, and established what, exactly, happened, and what, exactly, didn't happen.

Then also I've written extensively on the subject of staged crime scenes. This is one of those areas that desperately has needed research over the years, and it's essentially related to crime reconstruction, did the offender do things at the scene to manipulate it to make it look like something else happened, for example, staging any homicide to look like a burglary gone awry by a stranger in a domestic situation where a husband kills a wife and tries to make it look like a burglar did it. That would be an example of staging.

And then also I have done -- published research on mass killings, sexual homicide, and in 2003 I published the -- what became the foundation for my -- what's now my Ph.D. thesis, so a study of forty-two cases of forensic fraud, and I was asked

to write a -- an article on police-involved domestic violence in 2003 by the Illinois Law Enforcement Executive Forum, and that was published in their -- in their publication.

Q. Let me ask you this, Mr. Turvey. You mentioned that you authored a book on Criminal Profiling.

A. Yes.

Q. Could you distinguish, just briefly, so the Court and we all understand the difference between what we asked you to perform in this case versus profiling?

A. Well, there's a real problem right now with the idea of -- with the way the profiling is done in practice by some, by others, and then the way it's perceived by the Court.

Criminal profiling, as you've seen on television, is essentially a fiction, so if we are watching television and thinking that we understand what criminal profiling is that is not the case. It is not psychic. It is not based on psychic abilities or intuitions, and criminal profiling is the last step of a very long analytical process.

There are Criminologist who practice Criminal Profiling just by looking at crime stats and saying, well, this offender -- twenty-five percent of all offenders drive V.W. bugs, therefore this one possibly a V.W. bug. That is an inductive statistical inference -- that is not what I do -- or saying that eighty percent or eighty-five percent of all homicides are one race committing it against another race, so obviously

if we have a white female victim we must have a white offender. That's an inductive inference. I don't do that. What I do is examine, first, the physical evidence, looking at what the evidence supports, what it doesn't support, and what still needs to be done in terms of establishing the crime. That is essentially crime reconstruction. So the first quarter of this criminal profiling textbook is about things like staged crime scenes, wound pattern analysis. It's about establishing crime scene characteristics, and then the next thing you have to do is, you have to examine the victimology, the history of the victim, their background, their risks, where the danger was coming from in their life. So again, it's very much -- and what sort of things happened to the victim, how were they chosen, asking those kinds of questions, doing those kinds of assessments. You start doing that -- you start examining the physical evidence. You start looking at victim offender behavior. You start looking at the victimology, and all of a sudden, once you've done those things, you are doing crime scene analysis. That's the -- crime scene analysis is a phrase that refers to this entire process of examining these things in a particular context. Criminal Profiling is taking all those different individual analyses that we just talked about, all those different types of analyses, putting them together, and seeing what you can infer specifically about the offender. So we say, aha, well,

we put this together here, we put this together here, therefore the offender must be "X", and the moment you start inferring offender characteristics in a case where the suspect is unknown, that's where you are dealing with a -- when you are dealing with a criminal profile.

Q. So profiling is when the -- true profiling aspect is basically when the offender is unknown, whereas in this case the offender is known?

A. Right. You can't profile a known offender. That would be called a criminal assessment, essentially, and that word gets thrown around a lot and misused a lot. The idea of profiling gets thrown around quite a bit inappropriately, or actually more appropriately when a psychologist does it it's a psychological assessment, and in this particular case we are doing a criminologist assessment of decision making related to modus operandi, and crime scene analyses, so you are talking just about the M.O, the M.O. that's evident in the crime scene, just related to the crime scene behavior, not trying to get inside the head of the person. You are not trying to specifically attribute sort of specific fantasies or specific needs or wants. What you are just trying to do is classify and categorize the behavior that you are seeing.

Q. And I'll clarify. Maybe we will go ahead and address this point. You mentioned modus operandi. Can you explain to the Court what that is to you, and how you use that in your

analysis that you performed?

A. Certainly. When you are examining criminal behavior the modus operandi refers to the method that the offender used to commit the crime. Those decisions, those actions, those events took place, that the offender directed, that they -- the actions they took, which relate to the actual commission of the crime, the things they needed to do to commit the crime. This is in contrast to the concept of signature behavior, which refers to the things the offender did during the commission of the crime that they didn't need to do, things they did which were extraneous, things they spent time on that more -- that speak to their psychological needs and wants and desires, and so -- and this is not some new concept that I just came up with. This has been around since the publication of Hans Gros's *Criminal Investigation* in 1894, or 1896, I think, so this is not a new idea. This is how law enforcement has been doing this for a very long time, and Criminologists have been doing this for a very long time, classifying offender behavior, and trying to understand what that means in terms of how they commit the crime, and from that you can ask -- you can ask questions like, what's the skill, what's the -- what's the rationality, what's the ability, what are the planning, and in this particular case -- well, we addressed some of those questions, and in other cases we can -- we can address whether or not there's evidence of

staging, things like that. So essentially the M.O. is the way that the crime has been committed, the choices the offender made in order to commit the crime.

Q. Okay. Now let me ask you this. Have you ever been called by -- in a court before as an expert?

A. Many times.

Q. Can you tell me in what areas you have qualified as an expert?

A. I can.

Your Honor, may I refer to my Resume?

THE COURT: Yes sir.

A. Thank you.

I have qualified as an expert in the areas of Forensic Science in general, in the areas specifically of crime reconstruction, interpretation of presumptive blood tests such as Luminal, Phenolphthalein and O-tolidine, crime scene analyses, crime scene investigation, case linkage related to motive and signature analysis, criminal profiling, staged crime scenes, false allegations, and victimology. And this has been in both criminal and civil cases, and also has included one Federal case.

Q. But you have never been qualified in South Carolina; is that correct?

A. No. I've only been here a couple of times. It's quite beautiful.

Q. I'm sorry. I don't know that I -- I think I -- do you know -- can you estimate the number of times you've been qualified as an expert to testify?

A. Between twenty-seven and thirty, and I say that because there are certain cases I've done that have been done twice, so I wouldn't -- I wouldn't necessarily count those as a second time because you've already been qualified once before, so you are just testifying again in the same court on a different date, under the same qualifications, so I've testified more times than I have listed on my Resume, but that's because we -- you do things over and over again sometimes.

MS. WILLIAMS: Your Honor, we intend to -- or would offer Mr. Turvey as an expert only in the areas of crime scene reconstruction and crime scene analysis.

THE COURT: Do you wish to question the witness about his credentials?

MR. HEMBREE: No, Your Honor. I believe Mr. Turvey is qualified to testify about Crime Scene Analysis and Crime Reconstruction. My concern is really about the propriety of the modus operandi testimony. The analysis of the actual facts and evidence that's there at the crime scene we don't have any issue with, for his qualifications to testify.

THE COURT: All right. Well, let me ask some questions of you, Counsel, so that I understand -- I mean, does he have

a foundational opinion that you are going to ask him?

MS. WILLIAMS: Yes sir. Mr. Turvey intends to testify that he basically came to three ultimate conclusions. It would be -- it would be easier for me to -- let me -- let me let you ask him and then you will hear what I intend to ---

THE COURT: I'll be glad for you to question him.

MS. WILLIAMS: Sir?

THE COURT: I will be glad for you to question him.

Q. Well, we'll just jump to it. And you performed the analysis in this case, correct?

A. I performed two analyses in this case, yes.

Q. And can you please tell us -- and did you reach a conclusion, and can you tell us what those were?

A. I reached three different conclusions. The first conclusion was related to a reconstruction of some of the events related to the Turner homicide scene, essentially that he was shot in the back first, that he turned around, and at some point was struck, and at some point went to his knees, and then was shot again, and the first shot was through the pillow, the second shot was not through a pillow, and that is, in essence, my opinion. There might be some extraneous stuff in there about what the different -- like, for example, the pockets were found pulled out at the scene. What does that mean? It might be it was a search for keys, might be a search for something else, but, for example, part of the M.O. did not

include stealing credit cards or other valuables that would have been in the home, so we eliminate these possibilities as to what the motive might have been, and that's -- again, that's related directly to modus operandi and crime scene analysis, related opinions.

Q. All right. You second conclusion.

A. Let me just -- if I may refer to my report, Your Honor.

THE COURT: Yes sir. Go right ahead.

A. Thank you.

The second one that has to do with, again, interpreting the M.O., the modus operandi behavior in this case, and it speaks to the facts that these related cases there's a lack of skill, a lack of foresight, and a lack of precaution, and what we are talking about, essentially, is the way the crimes were committed. They were committed in such a way that didn't actually evidence any real ability or knowledge or foresight. The consequences were not thought out. The skill was not really there to affect the crime competently in terms of failing to -- in terms of providing adequate precaution. And a precautionary act -- this is a concept, again, that's been around for decades. the notion that essentially offenders engage in acts to attempt to hamper law enforcement efforts to identify and apprehend them. A great example of a precautionary act would be, say, a mask. If the offender is going in to rob a bank and they wear a mask they are trying to

conceal their identity. The mask is a precautionary act. A rapist wearing a condom is another example of a precautionary act, to try and prevent the transfer of semen, so anything that prevents that identity.

There are, however -- and this is related to the first, to the second, and third opinion -- there are an abundance of what we call contradictory acts, and this was a term that my colleagues and I came up with about fourteen years ago because we had an abundance of criminal behavior. It was really around the area of Meth and mental illness that this came up. We had so many offenders -- we were examining cases that had either drug involvement or mental health issues, and they were engaging in acts that didn't actual -- that did not -- they weren't precautionary. They didn't prevent identification, but actually they were so bizarre and so irrational they were actually creating risks for the offender. They were actually creating the great likelihood that they would be apprehended. They were doing things that were going to insure that they would be both identified and apprehended by law enforcement, and because we have that in this case there's a great deal of irrationality. There is a great deal -- and that's, again, my third opinion -- that the -- there's -- it's -- that the M.O. in this case is high risk, and again, the concept of examining M.O. for risks is -- goes back many, many years, long before I, where we have this idea that we have to examine what risks

the offender is taking in their M.O. in order to acquire what it is they are trying to acquire, the target, in terms of whether it's -- the money is the target or a victim is the target, what risks are they willing to take, and in many cases if -- when the risk far outweighs the gain you are dealing with a different kind of offender, and again, the rationality of the M.O., and so for the purposes of my opinion that's where it's going to end. I'm going to talk about the M.O.. I'm going to talk about the M.O. based on the crime scene analysis, the decisions that were made during the commission of the crime, and how those led to increased offender risks of being both identified and apprehended, and that's where I end.

THE COURT: All right. Solicitor.

BY MR. HEMBREE:

Q. As to your second finding, Mr. Turvey, M.O. behavior in these related cases lack skill, foresight and precaution.

A. Yes sir.

Q. You make a finding immediately thereafter in your report that they involve rage, substance abuse or mental illness. Is that going to be part of your opinion?

A. Yes. Well, essentially I can't tell which is -- which of the three would be the case, in any way. When I see this kind of behavior, when you have this kind of irrationality, when you have this lack of precaution you are dealing with an irrational mind, but I have no idea what the origins of that

irrational mind are in a given case.
Q. Could it be other things?
A. Well, those are the three primary things. Could it be other things? Yes.
Q. Sure. Okay. So the ---
A. Could be better answer that question if I had a hypothetical, but those would be the three that I would go for first.
Q. I mean, isn't it fair to say that the inference -- you are drawing inferences based on your observations?
A. Yes, I am.
Q. And those inferences could be correct or incorrect?
A. The less accurate the information I'm using, the less accurate my inferences will be.
Q. I understand. And if you are given bad information or you make a bad assumption then your conclusion, or the inference you draw could be incorrect. I appreciate that. But these inferences that you are drawing, I understand that they are -- you know, you see this in a -- you know, a lot of cases, but -- but, I mean, criminals are unpredictable, in crimes a criminal is unpredictable by their nature, true?
A. It depends on the crime and the criminal. Some crime and criminals are very much unpredictable, and the more you have substance abuse, anger or mental illness, or some sort of other emotional instability that I'm not expressing adequately

with these three, the more unpredictable they are, however, there are -- there is a thing called the behavioral consistency theory which says that offenders will be the same across different crimes, and that's true in some cases, and that's not true in other cases, so it's a case by case thing.

Q. But the truth of it is, these are -- these -- this M.o. -- this M.O. material, or these M.O. opinions are merely your -- you look at the -- you look at the crimes, the evidence, and then you start drawing inferences from that inference. It's -- they are merely inferences. They are not things that you know. They are things that you think could be possibilities.

A. Well, they are -- I would not characterize it in that limited fashion. What I would say is, this is what we have evidence of in this case. We can't go with the things we don't evidence of. What we have evidence of is this, and that equals this.

Q. Well, now -- but it doesn't always equal that.

A. Depending. There are -- there are variabilities, absolutely.

Q. Yes. Exactly. So it's an inference. That's my -- that's what I'm trying to ---

A. Well, it's an opinion.

Q. It's an opinion. Correct.

A. Yes.

Q. It's an opinion. And certainly the inferences that are to be drawn from this case, or from the evidence in this case, are inferences that can be argued by counsel, and can be drawn by the jury. Those are inferences -- ultimately they are going to have to make a decision about those inferences.

A. And that's -- that's a really great way of putting it, however, the danger is -- especially with the area of Criminology, especially in the advent of television programs which inaccurately portray Criminologists and Criminology. Everyone thinks they are an expert in the area of Criminology, and everyone isn't. The reality is, when you are doing an M.O. analysis you are not just kind of looking at the gestalt and sitting back and going, well, I've been doing this a hundred years so I just know -- or twenty-five years and I just can tell, no, there are very specific things you've got to examine, and you have to do it in a very deliberate, analytical fashion. You also have to approach it from the correct mind set, which is a scientific one, one of not trying to prove a theory, but disprove it. One of not trying to be emotionally involved or attached, and having a vested interest in the outcome, but one of not caring about the outcome, not having -- not caring about the family, not caring about the victims, just looking at the evidence and going, okay, here's what it means, regardless of how I feel, regardless of personal thoughts or beliefs. It's a very disciplined,

rigorous, methodical process, and not one that everyone can do, and the great danger with -- again, with Criminology, is that many people believe that because they watch a lot of television and they see a lot of movies that they are experts in this area. I assure you it is not the case.

Q. All right. However, in the United States jurors decide cases.

A. That's a fact, and in my job I see -- as I see it, it's to educate the jury so that when they are making those decisions they have the best quality, the best -- the completest picture of information available, so I don't see myself as the thirteenth juror, in any regard. I see myself as a -- an educator. When I'm teaching I'm an educator. When I'm speaking to a jury I'm an educator, and they can take that information or not, give whatever weight to it they want, and incorporate that into their ultimate finding.

MR. HEMBREE: I don't have anything further, Your Honor.

THE COURT: Let me ask you a question, Mr. Turvey, if I could. Ultimately your conclusion would come down to a statement that you believe the Defendant acted in an irrational manner because of rage, substance abuse or mental illness?

A. I think that is a -- not to be insulting, Your Honor, but a simplistic reduction, because that's not really what I

would say. I wouldn't say that with -- to the crime scene evidence, evidence is a modus operandi that's being influenced by one of these three things.

THE COURT: But ultimately that's what you are going to be saying to the jury?

A. Yes, but I wouldn't use the words, the offender, or I wouldn't be talking specifically about the offender. I'm talking about what the evidence shows, because if there were other evidence that would be provided to me I could look at that as well, but what I'm talking about is just what we have.

THE COURT: If you are not talking about the Defendant I don't see the purpose of what he's doing here.

A. There's a great caesium of difference between talking about the crime scene behavior and the criminal, because you take the crime scene behavior and then you use that as a foundation for someone else to talk about the criminal on the behavior. I am not a psychologist, and I don't know how it's done in your Court, Your Honor, but in many courts around the United States I'm required to limit my testimony just to what the crime scene says, and that's sort of my objective.

THE COURT: Well, and I appreciate that. What I'm concerned about it you opining some opinion that, in the Court's opinion, you may not be qualified to give. That's my problem.

A. I'm also concerned about that. Yes sir.

THE COURT: That's the problem I have.

MS. WILLIAMS: Your Honor, if I may. I don't -- Mr. Turvey, I think -- if I may -- I mean the Court is -- what I hear the Court is concerned is, are you going to say that -- those exact words, that modus operandi has led up -- I'm going to get the exact words of that, those three things that you narrowed it down to, or are you just going to basically stick to your actual findings, and finding three being that this was an extreme irrational high risk behavior?

A. That's essentially where I will be. The idea of rage, substance abuse or mental illness as co-coun -- as opposing counsel have already mentioned, those are just one of many possible influences on M.O., and it would be -- in a case of irrational M.O. behavior it would be almost silly not to address the possible influences in the things that we look for, but I can't come down and say what they are, and I won't, so ---

THE COURT: I would say to you counsel -- and you tell me if you are wanting the witness to go beyond this. I don't see any problem -- let me say it and then you can comment on it. Okay. I'm asking for a comment from you.

That the witness would be able to testify as he talked about, the reconstruction of the crime at Turner's house, interpreting the M.O. to opine there was a lack of skill or foresight, that it was not -- there was no adequate

precautions take, or there are contradictory acts that created risks for the Defendant to be identified and/or caught, and then following up that -- all that, to say that he engaged in high risk behavior that far outweighed any potential gain to him. What I've got a problem with then is any characterization of this being -- using the words irrational, or using the word, rage, substance abuse, mental illness, those kinds of opinions, as he -- as in number three he says the -- the persistence of bizarre, contradictory and irrational M.O. behavior is characteristic of unplanned offenses that involve rage, substance abuse or mental illness. I would have a problem with that. I don't see how, in anything that he has talked about here today, that under the cases of, you know, **State v., counsel, Jones I** and **Jones II** he's qualified to give that opinion in any way.

Again, in the second part of it he said, right after number two, where he says that the M.O. behavior in these related cases lacks skill, foresight or precaution. Don't have any problem with that, but then he follows up with, "This type of M.O. behavior is characteristic of unplanned offenses that involve rage, substance abuse or mental illness." I don't see how he's qualified to give that opinion at all.

MR. DIGGS: Your Honor, what if we struck that line out of the report?

MS. WILLIAMS: Well, the Report is ---

THE COURT: Well, it's not -- the Report is not going in. What I'm ---

MR. DIGGS: Well, from his testimony.

THE COURT: What I'm saying is, that's where I have a question, and see where he oversteps -- for want of a better word, he oversteps his credentials. Okay. That's -- those -- that's where -- when he's talking about that this is, you know, characteristic of those types of things.

Now, other than that, I really don't see a problem with his testimony and what he is saying. It's just when I see that he takes what I perceive to be a leap that is not based in any expertise that he has, based on what he has testified to here today.

A. Can I respond to that, Your Honor?

THE COURT: No sir. You may not.

A. Okay. All right. Thank you.

THE COURT: I'm talking to counsel.

MS. WILLIAMS: Beg the Court's indulgence.

THE COURT: Yes Ma'am.

MS. WILLIAMS: Your Honor, I would first respond that obviously Mr. Turvey testified that he's done a tremendous amount of criminal profiling, which is you -- if I understand it correctly is, you analyze everything and you have an unknown perpetrator, so we are trying to figure out what kind of perpetrator we are looking for, what kind of

characteristics, what kinds of behavior, things like that. In this situation he didn't have to get to that point, and he -- he's discussed a tremendous amount of training to -- that that's part of what he does. He analyzes it to look for characteristics of the perpetrator, and that's what I think we are trying to get to.

But if I may, Your Honor, if I may re-question him, if I could elicit more testimony that might be the Court's ---

THE COURT: I'll be glad for you to question him. I don't have any problem with that.

MS. WILLIAMS: Thank you, Your Honor.

BY MS. WILLIAMS CONTINUED:

Q. Mr. Turvey, would you please give us, in your opinion, what, in your educational experience, background, training that would make you suitable to testify in that area?

A. In terms of the effects on M.O. behavior, the concept of examining modus operandi behavior, and at the same time examining those things that influence them, I've written extensively on the subject, extensively on the issue of M.O., and the things that influence it, such as substance abuse, such as the different motivations. I've got multiple chapters in many of the textbooks I've written on the issue of the different types of motive that exists, from profit to rage, power reassurance, power assertiveness, sadistic behavior. Motive is an integral part of, again, crime scene analysis.

You are not talking about the motive of the offender, you are talking about the motive that exists in the behavior. For example, if you go to a crime scene and the till is popped open, and there is money taken out, you've got evidence of a profit motive, these kinds of basic 101 level inferences that we are talking about.

And in terms of the modus operandi, if you have, again, this disjointed, distorted, high risk, low gain modus operandi, what are the things that influence modus operandi. This is something I've made a study of my entire career. So to suggest that you can study the subject of M.O. and be an expert in that area, and not have knowledge of the things that influence and impact M.O. is almost -- it doesn't make sense. You have to know the things that impact it. You have to have an understanding of not only that things are actually impacting it, but how they impact it. For example, I've testified regarding the -- in the past regarding how drugs and alcohol may influence an offender's M.O. and make them less competent, less skillful, how they may impact a victim's memory so we don't take their statements as clear-cut, and we are required to compare them with physical evidence. All these things are part of examining and evaluating M.O. behavior.

And you don't come -- like I said before, I would be remiss if I cam to a certain opinion about the influence in

this case if I -- unless I had direct evidence. I don't in this particular case. There are things, however, that -- there are influences that you have to talk about, and you can talk about in general, what are the things that modus operandi are influenced by. They are influenced by, say reading materials. I've worked cases of serial rapists who collect, for example, my textbooks and another book called *Men Who Rape* by Nick Roth. They are refining their M.O.. I have had students who have enrolled in programs who are there to learn to get better, who buy books and take college university courses to get better, or people watch using televisions, and television, and those things affect their M.O.. Those things affect their behavior. So I don't discriminate between the issue of substance abuse, the issue of mental illness, or the issue of motivation as it affects M.O.. All these things affect modus operandi. What I don't do is, I don't get into the business of diagnosing. I don't get into the business of talking about individual toxicology and what that might mean, so I know perfectly clear where I stop and someone else starts. And if a Criminologist is not qualified to testify on the issue of what affects modus operandi I would be very interested to know the expert that is, because most psychologists, for example, they don't deal with criminals on a regular basis unless they are doing forensic mental health evaluations all the time. A Criminologist only works with

criminals, so the Criminologist is uniquely qualified to examine M.O. behavior and the influences on it.

Q. Let me ask you this. Is it safe to say that in this case you don't intend to come in here and say, this particular Defendant was suffering from rage, mental anxiety, mental illness, any of those things at the scene? You are not getting that specific with regard to him at that scene; is that correct?

A. No, nor would I.

Q. What I think I hear you saying is that the perpetrator of the scene exhibited -- that would be consistent with those characteristics.

A. What I'm saying is, the scene evidences those characteristics, not the perpetrator, and there is a -- there's a huge difference.

THE COURT: All right. What you are saying is, based upon your analysis of the scene, that whoever committed the crime had to be suffering from rage, substance abuse or mental illness?

A. No. What I'm saying is, those are three of the possible primary influences.

THE COURT: What are all the other possibilities?

A. I couldn't possibly imagine them. I would have to -- if someone had an idea ---

THE COURT: So those would be the only three you intend

to tell the jury?

A. Those are the three that I have seen in my education, training and experience, in the many cases that I have worked. Those are the primary ones.

THE COURT: Again, that's where I see him overstepping his credentials. Okay. He's making an argument where he's bootstrapping his credentials by saying, I've written all these articles. This is not going back to the analysis that the Court has to perform under, Counsel, **Jones I** and **Jones II**, and to go back to that, so that we are clear about that, those are publications and peer review of the technique, other people that have gone through and looked at what he has done, analyzed it and says they agree with it, and all that he has done. He is saying, I've done all these things -- and that's good -- but I don't hear any reports of peer reviews of other people saying, I have taken the analysis that this individual has done, and agree or disagree with it. I don't hear about the prior application of this method to the type of evidence involved in this case that we are here about today, quality control procedures used to insure reliability, and the consistency of the method with recognized scientific laws and procedures. I just don't see how -- again, I don't have any problem with all of the other things that he is saying. They seem to be well-grounded in what is before the Court, and what he has analyzed, and his ability to do, but then to take the

next leap and say, this type of M.O. behavior is characteristic of unplanned offenses that involve rage, substance abuse or mental illness. That's where I have the problem. Other than that I don't have a problem with it at all.

MS. WILLIAMS: So as -- and let's be clear. So as long as he doesn't say this type of M.O. is involved, either rage, substance abuse or mental illness ---

THE COURT: He takes that next leap, is what I'm talking about. The other matters -- again, the reconstruction of the crime at the Turner's house, the interpreting the M.O. to show lack of skill, foresight, or if you want to classify it as incompetence, with not adequate precautions being taken, contradictory acts, creating risks for the Defendant to be identified or caught, that it's high risk behavior that far outweighs the possible gain. Any and all of that I don't have a problem with that. Where I see he fails, under our State law, based upon what he has testified to, is when he takes that leap, and I see it's unfounded in anything I've heard here today, to say this type of M.O. behavior is characteristic of unplanned offenses that involve rage, substance abuse or mental illness. I find it completely unfounded in anything I've heard today to say this type of M.O. behavior is characteristic of unplanned offenses that involve rage, substance abuse or mental illness. I find it

completely unfounded in anything I've heard today.

MS. WILLIAMS: Beg the Court's indulgence for one moment.

Your Honor, I think that is -- that is fine. He will -- Mr. Turvey has heard your instructions to not say that in court.

MR. DIGGS: Your Honor, could I add, we have the record, note our objection, and I think we understand the Court's ruling, and I think we are probably prepared to move on.

THE COURT: All right. Is there anything else the State would like to add?

MR. HEMBREE: No, Your Honor. I guess -- I don't know if they are going to attempt to introduce the PowerPoint. Well here -- we've got a problem. We've got a problem we need to take up now. And I -- I was provided with this report two days ago, okay. First time I heard about this fellow here was two days ago. That's okay. I didn't complain about it, and the first time I heard -- you know, got his report, two days ago. I'm sorry. The -- haven't ever been provided a C.V.. Got Dr. Sachy's updated report today. He is suppose to testify today. Judge, you know, these are just -- I mean, flagrant violations of the Scheduling Order we had, numerous meetings we had with the Court, and now -- and now -- and this is -- this ---

THE COURT: Can I interrupt real quick?

MR. HEMBREE: Yes sir.

THE COURT: Mr. Turvey, let me show you this Report here, okay. Is that a copy -- look through it and tell me if that's a copy of your Report.

A. It is, indeed.

THE COURT: All right, sir. When did you author that? When did you reduce that to writing?

A. November 6, 2009

THE COURT: November 6, of 2009.

A. That's the date on the Report.

THE COURT: All right.

Go ahead, sir.

MR. HEMBREE: And we walked back into court from the break and I look up and I see a PowerPoint presentation getting ready to be shown to the jury. Judge, I don't know anything about a PowerPoint presentation. I've not seen any of it. I have not been provided -- even a mention of it, and it would be the State's request that this witness be required -- he can testify. I think he's going to be able to testify in accordance with the Court's ruling but, you know, I can't just -- I can't just be stepped on again and again and again and not object to, you know, just the Defense's ignorance, or just ignoring, flagrantly ignoring the discovery process.

THE COURT: All right. Mr. Turvey, when did you produce the materials that you were going to use to project on the screen for the jury's view?

A. Well, they are reductions from my report, so the findings that are in the PowerPoint presentation are from the report, and they were done last night at the request of counsel, because I learned that the -- many of the things that were in the report were not going to be allowed in to direct testimony, specifically those things related to the Ling homicide scenes. And I was under the impression that I would be able to talk about those things in open court, so I had no need to prepare anything separate, but when I learned that it was going to be -- that those things were going to be restricted, last night, I took to the task of putting together a PowerPoint that was a reduction of those opinions, not anything new or anything different, with some photographs inserted that I think are already in evidence.

THE COURT: All right. Do you have a hard copy of it, counsel?

MS. WILLIAMS: Your Honor, I do not have a hard copy of this PowerPoint.

THE COURT: So, as we stand here today, other than the witness we don't know what's in it?

MS. WILLIAMS: I have not reviewed this with him

THE COURT: So -- that's what I'm saying. So as we

stand here today the only person that knows what's in the PowerPoint is the witness, correct?

MS. WILLIAMS: And that -- that's fair. Yes sir.

THE COURT: All right.

MS. WILLIAMS: And Your Honor ---

THE COURT: What is the State asking me to do?

MR. HEMBREE: I am asking, Your Honor, to confine the witness's testimony to whatever he offers from the -- from the witness stand. Certainly if there are photographs that he wants to refer to that are admissible I'm sure that we can work through those, just do it without the PowerPoint.

MR. DIGGS: Your Honor, could I make a statement here?

THE COURT: Yes sir.

MR. DIGGS: It's my understanding that the photographs that are encompassed within the PowerPoint are either photographs that were provided to us by the State, or that Mr. Turvey took when he had access to the evidence, you know, in the company of the -- Mr. Humphries was there, for example, and the crime scene investigator.

THE COURT: Okay. And did you -- the ones that he took, did you turn copies of those over to the State?

MR. DIGGS: No. Your Honor, I don't know.

MS. WILLIAMS: No. They were there when he took them.

MR. DIGGS: Yes. They -- I mean, they were there ---

THE COURT: I appreciate that.

MR. DIGGS: No. To my knowledge we haven't done that.

THE COURT: All right. Understanding -- you know you had an obligation to do so.

MR. DIGGS: Well, I don't have them. I mean, that's --

THE COURT: If your expert has them you have them.

MR. DIGGS: Okay.

THE COURT: Okay. We are not playing that kind of semantics. Okay. If your expert has them and took them you have them, and you have a duty and responsibility, under the laws of our State, to turn them over to the State, and from what you are telling me is, if there are photographs that Mr. Turvey took that are in this PowerPoint they have not yet been turned over to the State, even as we sit here right now, correct?

MR. DIGGS: I believe so. Yes.

THE COURT: So you have basically put me in a position as to it being impossible to cure the defect.

MR. DIGGS: Well, other than allowing the State to look at it right quickly. I don't know how long it would take to go through the photographs. I would imagine there are probably very few in number.

MS. WILLIAMS: Your Honor, I would also like to make sure that that objectionable language isn't in there.

THE COURT: Why don't y'all -- how long is it going to

take -- how long is the PowerPoint?

A. The PowerPoint, I believe, is thirty-three slides long, and with Your Honor's new instruction, I would request, obviously, that I would go through the PowerPoint and make sure that the objectionable language you've got in there I would have to take out. I can only think of two instances in there, and I believe there are a total of five pictures that I took myself, two or three of the evidence viewing, and then two or three of Kimberly Drive, so this is -- so there's nothing new here.

THE COURT: Why don't we -- we'll just take a break. I'll allow the State and the Defense to -- with the witness, to go over the PowerPoint.

After you have viewed it, Solicitor, if you have some objections let me know, understanding that, again, you know, if you've got a PowerPoint that's in there that makes this statement as you did on page eight of your Report, or let's see, page nine of your Report, about this type of M.O. behavior is characteristic of unplanned offenses that involve rage, substance abuse or mental illness, or the persistence of bizarre, contradictory or irrational M.O. behavior is characteristic of unplanned offenses that involve rage, substance abuse or mental illness, that would have to be taken out or redacted out of the PowerPoint, so y'all go through it, y'all talk about it, and then we will take a short break.

Just so that I know, Madame Clerk, when did you plan to have lunch for the jury?

CLERK OF COURT: I'm having it delivered at 12:30.

THE COURT: All right. And they need some time to set it up, or that would take -- that would just take -- basically it wouldn't take very long?

CLERK OF COURT: No sir.

THE COURT: All right. Y'all look through it and then tell me when you are done, please, and do it as quickly as possible.

CLERK OF COURT: But it's not hot food so, I mean ---

THE COURT: Right.

CLERK OF COURT: ---It will be okay.

(THE FOLLOWING TAKES PLACE AFTER A BREAK AND OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: All right, Solicitor, having an opportunity to view the PowerPoint, do we have any issues that we need to resolve?

MR. HEMBREE: No, Your Honor. We have reviewed the PowerPoint. We have no objection to it's introduction into evidence at this point in it's redacted form.

THE COURT: All right. Great. All right.

MS. WILLIAMS: Well, Your Honor, just for clarification, I just want to make sure the Court is aware.

THE COURT: Yes Ma'am.

MS. WILLIAMS: What the Solicitor and I discussed is, once this is over with, later today, what I will do is go back to the office, actually put it on the diskette, and we can introduce that into evidence, but I want a real hard -- I mean, actual disk to introduce.

THE COURT: Certainly.

MS. WILLIAMS: I just don't have it in my possession.

THE COURT: That's fine. That's not going to be a problem, is it, Solicitor?

MR. HEMBREE: No, Your Honor. No. We have agreed to that.

THE COURT: Yes, great. All right. Good deal.

All right. Then is the State ready for the jury to come in then?

MR. HEMBREE: Yes, Your Honor.

THE COURT: Defense.

MR. DIGGS: Yes sir.

THE COURT: Very good. Ask the jury to come in, please.

(THE FOLLOWING TAKES PLACE WITHIN THE PRESENCE OF THE JURY.)

THE COURT: All right, Mr. Diggs, you first witness, please sir.

MS. WILLIAMS: Thank you, Your Honor.

THE COURT: Oh, Ms. Williams.

MS. WILLIAMS: The Defense would call Brent Turvey to the stand.

THE COURT: All right. Please come around and be sworn, sir.

BRENT E. TURVEY, being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MS. WILLIAMS:

A. My name is Brent Turvey, T.u.r.v.e.y., and I am from Sitka, Alaska.

Q. Mr. Turvey, can you tell me where you are currently employed and what you currently do?

A. I am a Forensic Criminologist and Forensic Scientist, with my own private company. It's named -- the company's name is Forensic Solutions, and that is run out of my office in Sitka, Alaska.

Q. Can you tell me primarily who your clients typically are?

A. My clients tend to be either attorneys in criminal and civil trials, or law enforcement agencies investigating unsolved crimes, and then very, very rarely, private individuals.

Q. Can you please give us the benefit of your formal education and training?

A. Certainly. I have a Bachelor's of Science in History, a Bachelor's of Science in Psychology, and I also hold a

Master's of Science in Forensic Science.

Q. Are you currently seeking any type of advanced degree?

A. I am.

Q. Can you please tell us about that?

A. Since, I believe, January or February is when my confirmation occurred, I have been enrolled as a Ph.D. candidate at Bond University in Gold Coast, Australia, as a Ph.D. candidate in Criminology, studying Forensic Fraud, which is essentially when experts lie in court about evidence and things of that nature.

Q. Are you currently in any professional activities, associations, or member of?

A. I am.

Q. Can you please tell me about those?

A. Certainly. I am currently serving as the -- I'm currently a founding member of the Academy of Behavioral Profiling. We founded it in 1998 or so, and held our first meeting in 1999. It was myself and four other individuals. One is a retired D.O.J. Criminalist from California, the other one is a retired F.B.I. agent, and the other one is a Forensic Psychiatrist, and we formed an organization called The Academy of Behavioral Profiling. I'm a founding member, a Board member, so I make decisions about different administrative issues and rules and ethics complaints and that sort of thing, and I also serve as the editor of the Journal of Behavioral

Profiling. But I have also -- since 1999, I've been a member of the Bond Criminology Curriculum Advisory Board. Essentially the decisions about what kinds of courses they run in their Criminology Department. I sit on a Board and -- what I haven't said yet is that every year I spend about three or four weeks in Australia, and I give guest lectures there as well, but one of the other things I do is participate in their Advisory Board.

Q. Mr. Turvey, can you tell me if you've participated in any type of course development or instructed any type of courses related to your practice?

A. Certainly. As I already mentioned, since -- boy. Since 1999, I've been a guest lecturer, and also I served for a couple of years as an adjunct lecturer at Bond University, teaching courses on things like Criminal Profiling, I think Criminal -- I think I taught a Criminal Motivations class, but also a Serial Homicide class as well, but more often than not when I'm visiting what I'm doing is dropping in and giving guest lectures in their subjects. For example, they have a Miscarriages of Justice class they teach, and I would go and give a lecture on a case I worked where there was an exoneration, for example, or last year I was there and they have a Forensic Science subject they run and I gave a guest lecture on the N.A.S. report, which recently came out. It's a rather large development in the Forensic Science community.

So, lectures in various sub-specialty areas related to Forensic Science. For many years I've been doing it, since 19 -- like I said, since 1999.

That's part of my Ph.D., however, I will actually be going over to teach for a semester, for four months, from January 15th or 18th until February 20-something. I will be teaching, again, Behavioral Evidence Analysis. And that's my teaching for Bond, but I also have my private company which I mentioned. I do teaching for them as well, for my own company as well, on-line courses in the area of Forensic Science, Crime Reconstruction, areas related to Criminal Profiling, Criminal Motivations, Serial Homicide Investigation, that sort of thing.

And then additionally, my company is often contacted by different law enforcement agencies and different professional organizations to come either give guest lectures or run work shops. For example, in 2005, I was invited back for the second time to the People's Republic of China where I spoke at -- let's see, it was in People's Police Security University, which is essentially their Criminology program at their public university that they have, where all law enforcement have to go. If they want to become an officer they have to get a degree in Criminology, and so I taught -- they use my textbook over there. They actually translated it into Chinese. And so I taught at their -- in Beijing. I've spoken at the Police

Bureaus in Hunan, Gansu, Shanghai, and then this last visit I spoke at Sichuan, which was their old capital a thousand years ago.

Q. You've mentioned textbooks. Can you give us the benefit of any involvement with regard to textbooks?

A. Certainly. In 1999, I published my very first textbook, called Criminal Profiling and Introduction to Behavioral Evidence Analysis, which is essentially about the whole process of crime investigation, crime reconstruction and Forensic Science, criminal behavioral, how you derive one from the other, and then how you examine that and interrupt offender characteristics, to sort of de-mystify the sort of T.V. image that's portrayed from the actual practice of the -- of the discipline.

In 2002, we did a second edition of it, which was, again, a very advanced -- we advanced it quite a bit, and a lot of developments occurred, and then in 2008, we updated it again with a third edition, and I've brought the third edition with me just so you can see that it's real. Anyway. That was published, again, by -- the first two editions were published by Academic Press, the third edition was published by Elsevier Science, and that's because Elsevier took over Academic in, I think, 2004, 2005.

In 2004, I published with Academic Press. I co-authored with John Savino who is -- at the time he was a -- the senior

detective with the Manhattan Special Victims Squad, their sex crime squad. He and I served on a task force together in the late nineties, a serial rape task force, and because of that a relationship developed, and he and I co-authored a textbook called the Rape Investigation Handbook.

And then in 2006, I co-authored a textbook with Jerry Chisholm, the Criminologist from D.O.J. who I mentioned previously with the Academy of Behavioral Profiling.

Q. I don't mean to interrupt you ---

A. Sure.

Q. ---But you used the acronym D.O.J..

A. Yes.

Q. What is that?

A. California, like many states, is very large and has what's called the Department of Justice. It's their State law enforcement agency, essentially, run by their Attorney General, and so they have a Forensic Science arm and they have an investigative arm, and Jerry Chisholm was the Senior D.O.J. Reconstructionist for the California Criminalistics Institute in the Department of Justice. He was there doing that work in their Crime Lab System as law enforcement, then as a Crime Lab Director, then as a Reconstructionist for the career that span thirty-eight years when he retired in 1988 or '99, and he -- when I graduated in '96 that's when I moved to California, and I became -- essentially he's like the greatest influence on me

in my career. He's essentially one of my most powerful mentors. He remains my mentor to this day, and he and I co-authored a textbook right here called Crime Reconstruction, which is about how you interpret evidence, not just the doing of the tests or the examinations, or the -- what you collect at the crime scene, but how do you interrupt what it means, and that's what crime reconstruction is about. We can -- we get into that later.

Q. Let me ask you this just briefly.

A. Uh huh **(indicating positive)**

Q. They are textbooks. Textbooks for whom?

A. That's a great question. There are, the professional community, two kinds of textbooks. There are college textbooks which are written to be used by college students in the instruction of university courses, and then there are professional manuals which are designed to be used as applied guides for people who are actually doing case work. All right. I've written both. In fact, we do now what's called a hybrid text, sort of a hybrid text manual, because we are serving both markets. Criminal profiling is used all over the world, and in fact, used in colleges and universities all over the world, and that's our primary market.

Crime Reconstruction is primarily a professional manual written, not for college students, but written for people who are practicing in the field, people who are actually working

in law enforcement or working in crime labs, who are actually involved in crime reconstruction, to give them a guideline of how to approach their craft.

Q. Okay. Let me ask you, have you done -- have you authored or participated in any peer review type articles or --

A. The vast majority of what I do is pier review. For example, these textbooks that you see before you, they are reviewed by -- obviously Elsevier has their own standards and guidelines that they have -- the proposal that you do goes through it's own review, and then the pre-publication text gets reviewed as well, by different professionals, and it has to suffer that crucible before your ideas are allowed into the community. The same thing is true with journal articles that I've published. I serve as the Editor of the Journal of Behavioral Profiling, and the number of the articles I published are with that journal, but I still have to submit my articles to blind review, which means somebody gets it, they don't know I've written it, and they have to beat it up before it comes back, and it's -- it can be a long and terrifying process. I was just involved in, for example, an article that I wrote called Victimology and Pathological Altruism for Barbara Oakley's volume with M.I.T. Press on Pathological Altruism, and it goes ---

Q. Pathological?

A. Altruism. It's a condition where someone who gives so much of themselves that they actually harm themselves. Anyway, it often comes up in criminal behavior because people do things that they shouldn't do, or they hurt themselves in ways that they shouldn't, and it causes some kind of criminal effect. At any rate, the process of peer review is ongoing. It will take you -- you write something and it doesn't get published. It takes sometimes one to two years of going around and around and back and forth with edits and peer review before you -- that will -- before it will be accepted. So almost all -- I can't think of one right now, off the top of my head, other than stuff that I wrote in college that it wasn't peer reviewed.

Q. Can you tell us approximately how many articles you have written?

A. It's more than -- it's more than thirty. And they are in the areas of Forensic Science, Crime Reconstruction, Staged Crime Scenes, which is related to Crime Reconstruction, Criminal Profiling, Criminal Motive, Modus Operandi, and we can talk about the individual ones that relate to my testimony today if you would like.

Q. Let me ask you this you -- and I -- have you actually not -- you've authored your textbooks, but have you participated in anyone else's textbooks?

A. Yes, I have. As I mentioned, the volume that I just

wrote for was -- with M.I.T. Press, the Barbara Oakley's book on Pathological Altruism, Victimology as it relates to that, and Victimology is simply the study of victims.

I have authored things on modus operandi, and investigative reconstruction for Owen Casey's volume on Digital Evidence in Computer Crime, and I've also authored an article on the D.C. Sniper case and media involvement and profiling for Wayne Petherick's First and Second Edition of his Serial Crime textbook, and let's see -- and then a number of the articles I've written in the past have been incorporated into current textbooks. I think an article I wrote on Autoradic Fatality was actually incorporated into a volume called Crime and Deviance for -- or Constructions of Deviance by two individuals named Adler, for a course they were running on Crime and Deviance.

And then also I just completed work on a book called Crime and Deviance where I wrote on Homicidal Deviance and Sexual Deviance, so it's a -- fairly common for me to be asked by other authors to write in their book.

Q. Let me ask you this. Have you ever been qualified as an expert in any State or Federal Court?

A. I have, both.

Q. Can you tell me what areas that you have been qualified as an expert in?

A. Certainly. I've been qualified in the areas of

Forensic Science, Crime Reconstruction, in particular as a sub-discipline of Forensic Science, and then also a specialty area of interpreting presumptive blood stain tests, as well as Victimology, Crime Scene Investigation, Crime Scene Analysis. I have actually qualified in the area of Criminal Profiling, Criminal Motivations, Modus Operandi Behavior, and Offender Signature Analysis.

MS. WILLIAMS: Your Honor, at this time we would offer Mr. Turvey as an expert in Crime Scene -- Crime Reconstruction and Crime Scene Analysis.

THE COURT: Do you wish to question the witness?

MR. HUMPHRIES: No, Your Honor. Thank you.

THE COURT: All right. I'm going to allow him to give his opinion in the field of Crime Reconstruction and Crime Scene Analysis.

MS. WILLIAMS: Thank you, Your Honor.

Q. Mr. Turvey, did you have an occasion to become involved in this case?

A. I did.

Q. Can you tell me how that came about?

A. I was contacted, I believe by you initially, by e-mail, when you let me know that you were involved in this case, it involved certain behaviors, and certain aspects of the crime scene where -- that you felt needed to be examined and reconstructed and interpreted in the way that we do it with

Crime Scene Analysis, and so you wrote me a couple of e-mails and I believe we spoke at length, and then after that you decided to retain my services.

Q. As a result of our conversation did you, indeed, perform any analysis in this case?

A. Yes. As with any case that I get the first thing you have to establish is whether or not you are going to do an analysis, and then what kind of analysis you are going to perform, what's appropriate, and then I produced a -- a list of materials that I required to perform that analysis, and that was -- in this case I needed to do some reconstruction work, and I needed to do what was called a -- what's called a crime scene analysis.

Q. Can you tell the jury exactly what that means?

A. I can, and this might be a good time to go through the -- to start the PowerPoint, to show exactly what it is I do, and what I did in this case, the kinds of analyses I was doing in this case.

MS. WILLIAMS: With the Court's permission.

THE COURT: Yes Ma'am.

A. Can we turn it on over there? That's all I need to do. I just need to turn the L.C.D. projector on.

Your Honor, may I get up -- may I approach the ---

THE COURT: Yes sir.

A. Thank you.

This is a PowerPoint presentation that I prepared in anticipation of my testimony today, and it's based on a report that I wrote dated the 6th of November, and before I can give you my findings I kind of have to tell you what it is that I did, so ---

Q. Please -- please do that. Can you tell us -- begin with telling us what you did for us.

A. All right. I present this just for me, so that I can keep my thoughts organized and I won't get lost. But this will be -- I'll make this as brief as possible so please bear with me.

In essence, Crime Reconstruction is a sub-discipline of Forensic Science. Forensic Science is the application of scientific principles to the Law, or to the analysis of evidence in the resolution of legal conflict. So, we are doing crime reconstruction because there has been a crime committed; we don't know what's happened, and what we are trying to do is determine the actions and events surrounding the commission of the crime. Right. We do that based on a comparison of victim and suspect statements to the complete record of physical evidence, but that doesn't mean that we have all the evidence that exists. It just means what has been documented and collected. So as much as we have we use that to compare it against the statements that have been made. All right, and that's the essence of crime reconstruction.

The statements are the theories about what happened. People may lie, they may not lie. The physical evidence is used as the record as a buffer, to put up against and say, okay, what does the physical evidence support, what doesn't it support.

What we are talking about is the invocation of analytical logic, scientific method, and Locards Exchange Principle. And I hope -- I'm not here to talk about logic because I'm assuming everybody knows what that is, so let's hope -- let's hope we don't have to cover that.

But the scientific method is one of those things that people kind of -- they think they know, and they've heard used but it's a phrase that people mis-use and misunderstand a lot, and when you are approaching a case like this it's important to have a skeptical doubting mindset, the mindset, essentially, of a scientist, someone who is questioning, using critical thinking, applying the scientific method to the analysis of cases. They don't have an investment in the outcome, they don't care what the results are, they are just trying to figure out what happened, and the scientific method is the best way we have found to investigate how or why something works or happened. You -- the steps, in general, are the -- you identify a problem, and or ask a question and then you observe and gather -- or gather facts related to that question, related to a phenomenon, and then you develop a hypothesis about what might have occurred to cause that

problem, or to answer that question, and it becomes a theory that you -- you have a working theory, and then you try very hard not to prove it, but to disprove it, because any fool can dis -- can prove a theory. You can -- I can convince myself of anything because I think I'm great, I think I'm right about everything, but then my wife reminds me that I'm not. She comes along and disproves everything. So that's the thing. You've got to have that critical mindset. It's not how great you think your idea is, but what are the weaknesses. And if your theory can survive repeated attempts at falsification then it's a good theory and that's the kind of theory you can present, say, in court, or -- and assign to the paper. All right. And that's the crux of the scientific method. Not trying to prove your theories, because you can do that, you can prove yourself anything. You can convince yourself of anything. It's trying to disprove it and having the theory survive that matters. So the disprove theories have to be discarded. You have to be -- have no emotional investment in the outcome. You've got to let them go. All right. And if you have success of failure to disprove the theories of multiple times and multiple issues, multiple areas, and multiple people have tried, or multiple methods have been tried, then that becomes, again, the theory that you advance with. Sorry.

Q. So, what that means is, you set out -- you test -- if

I'm hearing you right what it means is, you set out to say, if this then that, and if I can't get there because of that reason then I toss that away?

A. Right. One of the things that might make that not true -- so here's my -- here's my theory, what evidence supports it, and what evidence refutes it, and if there's evidence that refutes it you've got to let it go, and we are going to see some applied examples in this case, so this won't remain an abstract, but that's, in general, the approach, very critical, very doubting of yourself, and of your theories, and then under -- you are not precious. You can't be precious about your theories. That's essentially what it comes down to. Locards exchange principle. This has been around for a long time. It was -- and this is Edmond Locards. This is the picture of him. It comes from the textbook.

His theory is essentially that whenever there is a -- whenever there is violence, or whenever violence occurs there is going to be some kind of trace resulting from the contact, and that's the best version I can give you of his exchange principle. Over the years it's come down to this, every contact leaves a trace, when two objects come into contact there is an exchange of material. That is Locards Exchange Principle, and that is the fundamental principle of Forensic Science. It is the cornerstone of crime reconstruction without which we can't really make the assertions that we

make.

Now you can have two items have evidence -- have contact, and if you can't find any evidence you don't have proof of contact, so what you can say is, we don't know. But that doesn't mean they didn't contact, means -- it doesn't mean they did contact, just means you don't have proof, but if you don't have evidence of it you can't argue it, so what we are looking for is evidence or the absence of evidence. So in this context, not only is looking for evidence important, but also the absence of evidence is important. Right. So that's the concept of Locards Exchange Principle. Every contact leaves a trace, every -- every time you touch something, every time somebody goes somewhere and steps somewhere there is some kind of trace left behind, and we are looking for proof, we are looking for evidence of that to establish it.

But your second type of analysis -- aside from crime reconstruction which gives us our behavior -- that's what we are trying to do. With crime reconstruction that tells us what happened, what behaviors are supported by the evidence, what behaviors occurred, not all the behaviors, but what ones we know occurred by virtue of the evidence, what can we prove happened. Crime Scene Analysis is a process of sitting down with that behavior and establishing the victimology, the history of the victim, the forensic evidence, and the characteristics of the scene, and that is the decision the

offender made at the crime scene, how did they get in, how did they get out, what did they bring with them, what did they leave behind, what kind of sexual act did they engage in, if any, what kind of -- we are going to talk about -- specifically in this case we are going to talk about some of these crime scene characteristics, and that -- in essence, establishing those crime scene characteristics is an offender's modus operandi, how they committed the crime, and that's -- you do so -- doing this crime scene analysis requires that you establish the modus operandi, how the offender committed the crime. It also -- you are trying to ask the question of what's the offense risk or the exposure. The M.O. that the offender uses exposes them to certain risks, or not, depending on their skill level, and that's another important question that you are looking to answer, so it's not just an analysis for the sake of categorizing all the behavior and just making a pedantic list. You are doing this analysis to ask questions of the modus operandi, how skillful was it, how much risks did they expose themselves to. And risk and exposure, they are different -- they are very closely the same thing but they are not. They are very different things. One is what might happen, and exposure means what's actually happening at a given time, so you are asking questions of -- it's establishing all this information and then asking questions of it to assess it's quality. All right. That's

what Crime Scene Analysis is.

And modus operandi. We talked about that already, but the -- essentially it's an offender's method of operation, the choices the offender made, the acts that he committed to further the accomplishment of the crime. It involves learned behaviors that evolve over time, and we can also -- we can say that it can either increase or decrease, based on various influences. Okay. So what we are trying to do is appreciate, from the evidence that we have, whether or not the M.O. is skillful or not, exposes them to risk or not, whether it increases or decreases or not, over time. And that can happen within a single offense, or it can happen in many cases in serial cases that I've worked.

So what does the offender risk in exposure. The general amount of exposure to discovery, identification or apprehension experienced by the offender. And that -- we are referring specifically to the issue of witnesses and law enforcement. What -- is what they are doing going to expose them to risk of being seen doing the crime, or being seen leaving the crime scene, or is it going to expose them to risk of identification and then apprehension by law enforcement. All right. And again, lots of specific examples of that in this case.

Q. Well, I was going to say, does that basically mean it's their risk of being caught?

A. Right. Their risk of being -- apprehension, the risk of being caught, and -- first identified, and then also being caught, and you can be caught without being identified, and you can be identified without being caught. Very often they happen together. Once you are identified the risk of being caught goes up, so these things matter, categorizing these things and classifying the matter. All right.

So, -- oh, sorry. This is -- these are the findings.

Q. Well, I was going to say, did you -- based on your examinations did you reach some findings in this case?

A. I did.

Q. Can you tell us about those briefly?

A. I can, hopefully, and I'll be as brief as possible.

All right, there are three general findings that I had in this case, and the first one is, I came up with a reconstruction of some of the events, the key events in the Turner crime scene, all right, so some of the actions and events surrounding the commission of that crime I was able to establish using the physical evidence. All right. And I will talk about those specifically, subsequent to this.

Q. Yes. We'll come to it. What I want you to do -- what I'm asking you to do right now is just tell me briefly what you found, and then when we get to it I want you to explain to me the foundation of why you reached that finding.

A. In this case what we have is a individual who was

standing in front of the mirror, likely shaving their head, and who was shot from behind first, through a pillow, and then he turned around and, more likely than not, grabbed the shooter, and then at some point fell to his knees, and at some point was struck in the head, and then was shot a second time in the chest, but not through a pillow this time, and then subsequently died, fell down -- fell over and died ---

Q. Okay.

A. ---And that's what the reconstruction -- and then, of course, the -- someone then -- then, of course, the Defendant then stole the truck and left the scene with that, and that's supported as well.

Q. Okay. So you've got your brief -- tell us your summary. You've done that?

A. Yes.

Q. Now, can you tell me what basis that you have that you reached those particular findings?

A. I can. All right. Oops. There you go. Oh, excuse me. What the heck. Here we go.

Right. In this particular case, with respect to the reconstruction -- that's my first finding -- and as you saw I previewed there -- we have three main findings. I'll go over them as swiftly as possible. I didn't find any evidence that there was an altercation prior to the shooting of Mr. Turner, and that's fairly important to establish, was there a fight,

was there some event that occurred that precipitated the shooting, or was there some other event that occurred, or some decision that was made by the offender. In this case we have no evidence of an altercation, so remember I said before, it's not just looking for what's there, but what's not there, and what we don't have is evidence of an altercation.

Q. And how can you say that?

A. I -- I came to that -- that opinion because of -- primarily, not limited to, but including these findings here, and that is, first of all, we know that the victim, Mr. Turner, drove to McDonald's around eight o'clock and came back around eight -- of his own volition, went there on his own, came back on his own, and then subsequently had breakfast, so this is not the act of somebody who is in a violent conflict or someone who is deeply involved in some -- some altercation just immediately prior to the shooting. It was regular -- the course of a regular day is occurring, is what I'm getting at, and he is able to leave the scene on his own. He's not being held captive or something like that, is what I'm getting at.

The second thing is, shaving. The second thing is that we have evidence that he was shaving, and we can see in this shot here -- that's my laser pointer -- I'm pointing that at the scene -- on the -- the photo on the left, this is a photo taken -- these two photos were taken were taken by the crime scene investigators at the scene, and you can see some hair in

the sink, and you can see that as he has turned around and collapsed. Actually the electric razor that he was using, it's right there -- was actually found next to his body. So from these events you can -- you can -- and the position that he was in, was that he was shot, and then we'll get to that in a second -- you can infer of the activity.

And also, you've got to look at the rest of the home too. Is there any evidence that there was like broken furniture, or knocked over items. You have a back room that's very messy, and there's a bullet hole that goes from the back bathroom, through the wall, into the back bedroom on the other side of the trailer, but there's no evidence that that's related to this crime at all. So you don't have any evidence of this prior altercation. You don't have any evidence of some -- of somebody who is being held captive or against their will. You have the shooting that just occurs without evidence of an antecedent that we can see.

Q. Let me make clear for a point -- to make sure we clarify. You actually went to the crime scene, is that correct?

A. That's correct. Part of the things that I did to prepare in my analysis is I -- like I said before, I requested a great deal of material and I received quite a bit of discovery material, including autopsy reports, medical examiner's -- medical examiner's trauma-grams of the body,

crime scene reports, police crime scene reports, police investigators' reports, and crime scene photos and autopsy photos to evaluate in determining and in making my analysis, but then on top of that I also went out to the scene recently so not -- not proximate to the crime, not at the same time as the crime, but just to understand the spacial relationships of different -- of the different rooms, to get an understanding, because when you look at a photograph -- maybe you have experienced this in your own life -- but the photograph tends to distort things. It's a -- you take a three-dimensional object and you flatten down to two dimensions and it distorts things. It can make very small areas look very large. It can make very large areas look very small. So you want to experience these things for yourself firsthand to get a sense of the dimensions. All right.

And also, I went and viewed the evidence myself, some of the evidence, and the evidence that I wasn't able to view myself I had the -- one of Ms. Williams' investigators go and take photographs that I directed her to take, so that's part of what I did to prepare in my analysis. It wasn't just based on the material that I receive.

Q. All right. May we continue?

A. Yes. All right.

The second point to make here is that Mr. Turner was first shot in the back through his shirt, so he wasn't naked

when he was shot. He was wearing his clothes, and he was engaged in regular activity, regular day activity of shaving, and we have in the Autopsy Report that gunshot wound (B), which is labeled gunshot wound (B) in the Autopsy Report, has a trajectory of -- of forward left and slightly downward -- and this is consistent with a -- a shooter that's standing and aiming slightly downward. This is just basic trajectory analysis. We are just following the path of the bullet. It's consistent with somebody who is standing because the -- we know -- we know the -- we know the victim is standing upright shaving. The offender would have to be at a standing position or a little higher to achieve that angle over the victim. All right.

And the shot -- this is the gunshot right here. We've -- this is the photograph from the autopsy and a photograph from the crime scene for comparison side by side. This is where the gunshot entered, and the bullet -- the projectile was recovered from the victim's body.

The -- in this case -- in this crime scene photo here, taken at the scene, you can see that there is blood soaking into the jeans, down the back. There's also blood from the injury, but it's soaked down the jeans, down the buttocks, and dripped onto the calves and onto the back of the shoes. It's all over the place. And there's actually -- you can't see it very well in this photograph -- I apologize for the lighting

but that's just the way it is -- there's blood dropped all over the floor here as well. So you have this. And so what that means is, that requires time, all right. What we have established here is, you have this injury, and it had -- there's time for the blood to drip down the back and drip down the shoes and drip onto the floor. So this is not the second shot. This is the first shot because of the time, and also because of the position that he's in.

Q. And what position would that be?

A. Upright, facing the mirror.

Q. So he was standing?

A. He was standing upright, facing the mirror, engaged in the activity of shaving.

Q. Okay.

A. And according to the Medical Examiner this was the fatal wound, it wasn't immediately fatal, but it was subsequently fatal, and I'm not a medical examiner so I don't know how long it took. I only know what events I have here. All right.

Excuse me. The -- gunshot wound (B), this gunshot wound to the back, was inflicted through a pillow that was recovered from the victim's bed at the scene. We established this, again, with the application of Locards' Exchange Principle. It's very basic, but it requires sort of a -- being careful in your analysis and considering what the evidence transfer was.

We have an absence of soot, or a muzzle imprint or stippling on the skin tears, and this is indicative of an intermediate object when we have this close or contact gunshot wound. If you've got a very close range, and somebody is shooting at a close range, you are going to expect to see some kind of stippling, the gunpowder is going to hit the body if you are within a certain -- like three or fou -- within like two or three feet, depending on the type of firearm. Depending on the type of ammunition, you are going to be able to tell the range from the stippling. We had no stippling in this case. We had no muzzle imprint. We had no soot, and we had no skin tearing which happens when you put a gun right up to the body and you fire it, the skin will actually -- the gas will go in and tear the skin, and we don't have any of that so that starts to suggest to us that we have an intermediate object. And the pillow from the scene that was found on the bed -- the bed is photographed here, and the pillow was found on the bed, and it appears, just from looking at it -- and I was able to examine the pillow myself in evidence, it appears to have been fired through by a gun. It's quite obvious, in fact. There is an exit hole that appears to have -- there's also an exit hole on the other side that appears to have received bloody transfer. And the projectile recovered from the gunshot was covered in material consistent with the pillow stuffing according to the Medical Examiner. So not only do we

have the soot on one side, bloody transfer on the other, but we also have the projectile itself that was recovered in association with the shot, actually took pillow stuffing with it and was covered with it when it was pulled out.

And there were also white fibers found on the back of the purple shirt associated with the bullet hole, and this is, again, according to the Medical Examiner, consistent with the -- with the pillow.

So, these two photographs I believe that I took -- I know that I took -- and this is a photograph that the Medical Examiner took.

And here we have a shot of the entrance hole, and you can see you have the soot and you have evidence that the gun was pushed right up against it because of the way it tore. It tore in a nice symmetrical pattern, as though it was being sucked back up inside the bullet -- the -- excuse me -- sucked up back inside the barrel of the gun as it was being fired as the gas has expanded inside the flesh, and so it blew the -- it caused the blowback of the actual gases creating this pattern. It's very common on material where there is a contact wound against -- material against anything.

So, this is the other side, that bloody transfer I was talking about. We have the actual blood going back up inside the pillow as it's contacting that wound. And then this is the -- if I'm not mistaken -- and I could be -- but I'm pretty

sure that's a picture of the projectile still covered by the material. I don't know that it is. I'm pretty sure that it is. You will have to ---

Q. But you are pretty -- that's the material ---

A. I know that it's the -- I know that it's the material that was recovered. Yes. This is actually the material that was recovered from that pathway, and it appears to have the shape of the bullet in it, but in the Medical Examiner's Report he makes it very clear that the material was covering the bullet so I'm going to believe the Medical Examiner and believe that the bullet is inside there, and they measured it and it was like, either four inches or four centimeters long, four centimeters long, or something like that. I can't remember -- in my report, but it's irrelevant. The material is consistent with having come from that pillow. All right. So let's not labor that point too far.

After the first shot Mr. Turner turned around and walked toward the shooter just inside the bedroom. Again, how do we know this. That seems like a lot. We didn't have a video camera there. We can't just tell these things. Well, in point of fact, we have low velocity impact spatter right across the grate there, so we have blood, not in the area where he was shot, standing in front of the mirror where he was shaving and turned around, but now he's turned back around and at least his body has gone from in front of the mirror to

this point right in front of the grate, in the doorway. And he was shot facing the shooter the second time. All right. So that also supports the inference that he's facing and that he's turned around. All right. And -- he's turned around, he's found in this position, the low velocity drops from blood dripping out of his wound, strongly -- well, they indicate strongly that he was actually walking this -- would be very -- would be next to impossible to stage this, for the offender to make it look like this. So it's a reasonable inference to say that he turned around and was shot, and was walking -- after he was walking this way.

The low velocity impact spatter right there is actually not disturbed or touched by anything so it's not like he was dragged. If we had a -- if we had blood and the victim was moved by the offender there would be drag marks through the blood, if that makes sense, and we don't have that.

There's also a bloody transfer -- you can't see it very well here but it's -- I can't see it either. It's somewhere on this door frame there is -- I think maybe there, if I'm right, there is a -- again, low velocity spatter, impact spatter from blood just dripping out of a wound -- all right -- or dripping off of clothing, or coming off an object that's moving slowing, not like an object that's swinging or not like a high velocity gunshot wound type of blood stain pattern but from just movement, from walking.

And the other thing is also, he was found face down inside the bedroom and his feet just in the bathroom door frame. So you have all these things. You have the blood on the floor, you have the blood on the door frame, and you have the fact that it's undisturbed -- it's not like he's been dragged through it -- and you have the body resting in this position, face forward, and you have this gunshot front forward, so we know that he turned around, after he was shot he walked out, and then he was subsequently going to be shot again.

Q. Okay.

A. After facing the shoot -- toward the shooter Mr. Turner was struck in the head, fell to his knees, and may have grabbed the shooter. In no particular order. I have no idea what order this occurred in, but I do know that it happened before he was -- well, I know that it probably happened before he was shot.

Q. How do you know that?

A. Well, I'll get to that.

Q. Okay.

A. Okay. Let me do -- if I keep it in sequence it makes it easier to -- so we have the bloody transfer dripping behind the knees. That's the first thing. This -- we have the blood that's -- remember we talked about the time and the blood dripping back, down the victim's back. It doesn't get -- it

doesn't get into this -- behind the knees in this area at all, and barely gets into the area behind -- this area at all. So it's going down, and it's dripping, but not dripping down the pant leg all the way. It's dripping onto the back of the ankles. That indicates that he's in a kneeling position at some point when this dripping is occurring. So after some time passes he's on his knees and the blood is dripping onto the ankles. All right.

There's gunshot residue on the -- I believe it's Mr. Turner's right palm, which would not be on the person who fired the gun unless they were -- unless he was facing the shooter, but if he turns around and grabs somebody who has fired a gun he's going to get that exchange, again, Locards Exchange Principle, two objects come into contact there is going to be an exchange, and that's what we are talking about here. How does he get the gunshot residue on his hand? He's not firing a gun, and he's not facing the person when he's being shot. How does it get there? More like than not he grabbed him. And this is supported by the -- what I see as the injury to the -- to the head here. There are two blunt force abrasions to the head prior to the victim collapsing. And you notice it's not -- there's one here, down here, and that may be from falling over, or from a strike, I can't tell, but this one goes all the way around the head. It's not just from falling face forward. This is something that it's --

goes in three dimensions around the skull, or around the forehead, so that's not consistent with just falling forward. That's being struck. All right.

And then at some point when he does fall down and he does lay there the actual pressure of the floor against his head where his -- where his forehead is resting, creates what we call blanching effect. It -- the pressure prevents blood from soaking into that tissue, which is why you get this whitening effect there. All right. So -- and that's just what's called a pressure abrasion, across the blunt force abrasion, and that's consistent with a blow to the shooter from the head, and the -- the sequence of events that you get is the -- so far is, you have the shooter shooting the victim from behind through the pillow, he turns around, he walks out, at some point he falls down, maybe because of his injury, or maybe because he's knocked down, and then grabs the shooter with his right hand, and then the shooter maybe -- maybe before or after that, responds by hitting him. But then we do know that at that point that's when he's shot again, because of that next part.

After falling to his knees Mr. Turner was shot a second time and that's -- because it's -- because of the blood stain patterns on the -- behind the knees -- excuse me, not behind -- not being behind the knees in the time required that's why I infer it's after he's down, but also because of the angle of

the shot.

The entrance of gunshot wound (A) is to the front chest, so he's facing the shooter, but the trajectory is not like it was before. It's not like that sort of downward angle like that. It's like at a forty-five degree angle. It's not just minor, it's majorly -- it's an extreme angle, according to the Medical Examiner, forty-five degrees downward and ten degrees to the left. The shooter could not easily achieve the superior angle on his own. In that room the only thing he could hope to do is maybe stand on a chair or stand on the bed if the victim was standing while he was shot, and those two scenarios seem very unlikely to me. It seems more likely that the victim was on their knees.

And there is -- like I said, we talked about the absence of bloody transfer behind the knees indicates the kneeling position. So this extreme angle, the absence of blood behind the knees, and the unlikelihood of using these other objects in the room to gain that superior position to get that extreme angle. All right. And that's the basis for those opinions so far.

Now, this is important. The second shot did not go through the pillow. All right. There is only evidence of one entrance hole in the pillow, only evidence of one projectile in the pillow, and only one exit hole in the pillow. Okay. So we don't have evidence that he used it again. It was used

only for the first shot.

Additionally, Mr. Turner's pockets were found turned inside out, consistent with maybe a search for the vehicle keys or for something else that I have no idea what was taken because we don't know what we -- what he doesn't have. We don't have any other apparent search for valuables at the scene, that I'm aware of, and we know that the truck was subsequently taken to the scene. These credit cards and identifications, and A.T.M. cards were all found in -- on Mr. Turner's person. I believe -- I believe they were found in his back left pocket, and they were laid out and arranged like this by law enforcement so they could take a picture of it on the bed. So this isn't how it was found at the scene. It's just -- excuse me -- these photographs were taken by law enforcement investigators. So this isn't how they were found, but these were just laid out for expedience, to get a good picture of them, and they were taken off the victim. So the offend -- and they were actually -- if you -- in the photographs they were actually hanging out of his back pocket, so the shooter would have seen them, so it's not -- and he was searching the pockets, so it's not like he didn't come across these things, so he didn't take them, so that is interesting. So we have no evidence of a search for valuables. We have valuables left behind, and I.D.s left behind, and we have the truck taken, and the keys for the truck taken. All right.

And that's just coming directly from the physical evidence.

Right. So the second finding. Do we want to talk about that?

MS. WILLIAMS: Yes. And you reached a second finding?

A. Yes, I did.

Q. Can you explain this one to us?

A. I can. This is the mo -- the examine -- the analysis of the modus operandi. Every single case that I work I have to ask the same general questions of it if I'm doing a crime scene analysis, or if I'm trying to analyze offender behavior, and the purpose of doing that is to evaluate the nature of that M.O., to give it -- to explain sort of the skill and the precaution that's involved, and we'll talk about what those things mean but in this case the M.O., the modus operandi behavior, in these related incidents, they lacked skill, they lacked foresight, and they lacked precaution. All right.

We talked about a precautionary act. Precautionary act is something that's done by an offender to hamper the efforts of law enforcement, and we are going to talk about that more. Like an example would be an offender who wears a mask during a robbery to keep their face from being seen. That's a very specific type of precautionary act. And what we have in this case is a lack of skill, lack of foresight, and lack of precaution. When we are talking about skill we are talking about ability to commit the crime, not the desire to commit

the crime, not their intelligence level, because skill and intelligence are not related. You can be very intelligent and lack the skill to do something, and very skillful and lack intelligence, so I'm not talking about intelligence. I'm just talking about the ability to effect the crime skillfully.

Q. And these are the things -- and I take it when you are looking for this and do that there are certain things that you evaluated about this particular case. Is that correct?

A. That's right. We have to look at the same set of crime scene characteristics in every case, their presence or their absence, to help us understand what the M.O. is and what the skill and the level of precaution is.

Q. Okay.

A. In this case the first thing we -- and this is generally in the order that I do it every time, because it sort of goes from start to finish through the crime. First of all we look at the scene, the selection of the scene, what scene was selected to commit the crime. We have the vehicle being stolen from Ms. Ling. Her vehicle was connected directly to the Defendant. It's taken from his place of residence, and the vehicle -- it's a vehicle he commonly uses, so it's something he would be associated with. So again, this goes right back to a lack of precaution. He's taking something that he's associated with commonly, and people are know it's not his. People are going to see it, they are going

to recognize it. There is a -- the skill there is very low. If you are going to steal something and not be seen you want to take something you are not associated with. You want to take something you are not going to be recognized with, and you are going to take something that's not going to lead to your identified and capture.

And also the location he took it from is -- again, he's directly related to it, so we have the missing vehicle taken from the scene, and it's a place that he lives, so he's associated with the vehicle, and he's associated with the scene. And the lack of precaution there is just one thing. And what I want to caution -- I caution myself against this all the time and my students. This is a very important concept to grasp. We can't just look at one thing. If you look at just one thing, and try to take one behavior in isolation you will miss everything, so you've got to look at the whole picture of the evidence. So just looking at this just one thing doesn't give you my conclusion. It's looking at all these things, and considering the total of all of them, so that's why we are going to go through them all. So this by itself wouldn't give me my conclusion, is what I'm giving you.

So we also have the victim selection. The way it's -- it's connected again directly to the Defendant. He's got an intimate relationship with the person he took the vehicle from, and with that -- with that incident and that scene.

And then Henry Turner is connected to the Defendant. He's over there all the time. He's a know friend. They -- people in the neighborhood know who he is. They know his car. It's not a stranger. All right. It's -- he's doing something with somebody that he's associated with, so he's going to be on the short suspect list. All right.

The next thing are the methods of control. And we are just looking at -- the methods of control just refers, in general, to how the offender maintained or failed to maintain control of the crime scene, and either that all evidence skill or not. In this case, the remain -- he kept physical custody of this vehicle while it had a nationwide be-on-the-lookout alert for it, this particular vehicle, so we have -- that's -- again, it goes right back to a lack of skill, or a lack of foresight. He's not thinking about the consequences of this behavior.

Again, keeping physical custody of the Mustang. Then on top of that, at the Turner scene, the force that's used is -- we are not talking about brutal levels of overkill or sadistic torture. We are talking about administrative force, and that's just the force that's needed to accomplish the task. He shot him, and when he wasn't dead he shot him again, and then there was maybe a stri -- there was a strike in between there that was maybe, get your hands off me. Okay.

And the weapon that was used was this available weapon,

and it doesn't reflect any planning or any deliberation, or some prior altercation or anything like that. It just seems to come out of nowhere in terms of the evidence. We have no evidence of where this came from.

Again, in every case it's not always relevant, and in this case we have to ask the question, is there sexual activity. You always have to ask, and in this case we have no evidence of that. Right. So it's not just documenting what was there, but what wasn't there. So there's no sexual component to this crime that I'm aware of.

Also planning and preparation. And what is that? It's sitting down prior to the commission of the crime of deliberating about how you are going to commit it, and you either bring things with you to the scene, or you make lists, or you go through it and dry-run it with somebody -- these are things that would evidence sort of foresight about your committing the crime, or maybe you've set a surveillance and you are watching -- you are watching tape of something over and over again so you can plan and effect your crime more skillfully. There is no evidence of any of that.

The Ling Mustang was an available vehicle, was taken based on availability and expedience, not based on precaution.

The Turner crime scene also involves methods and means that are all available on the scene within reach. We have no evidence that there was some planning or any preparation

related to the attack. What we do have -- and we have no evidence of planning or preparation related to leaving the scene. In fact, when he leaves the scene he takes the victim's truck, which is another truck from another scene that he is totally associated with, and again, shows a lack of foresight and precaution.

There is also an utter absence, in my view, of precautionary acts and an absolute persistence of what we call contradictory acts.

Q. Explain that, please.

A. And that leads into my third conclusion where I explain these things. All right, so M.O. behavior in these crimes evidences a persistent lack of precaution while insuring the Defendant's eventual identification and apprehension. In my opinion this modus operandi exposes the offender to a high risk of both identification and apprehension. So his M.O. -- it's not just that he's stupid, it's not just this is just another dumb criminal, this is some -- a criminal whose every single decision that they are making about this crime is going -- is insuring that they will be both identified by witnesses, identified by law enforcement, and captured by law enforcement.

And I will go through those things now and this is my final opinion. What's a precautionary act. I want to give this very -- this is the explicit -- this is the definition

right from the textbook. "Behaviors that an offender commits before, during or after an offense that are conscientiously intended to confuse, hamper, or defeat investigative and forensic efforts for the purposes of concealing the offender's identity connection to the crime or the crime itself." Another example would be wearing gloves to prevent the transfer of fingerprints. We've all seen this in television and movies, I assume, or we've heard in the news about serial rapists who wear condoms to prevent the transfer of D.N.A. evidence during sexual contact. All right. Those are examples of precautionary acts. Another great one that we see from the movies would be -- which I have seen only once in real life, but I'm sure it happens elsewhere, is switching license plates out so you can -- so again -- but these are example of precautionary acts, things that an offender does to hamper or defeat the efforts of law enforcement in their identification and apprehension.

Q. So precautionary acts, in simplified terms, might be the things that you do to make sure you can get away?

A. That you don't get -- not just that you can get away, but that you don't get seen while you are doing it, that you don't leave any evidence behind while you are doing it, and so that you can get away without being caught in the act, as it were.

Q. Okay.

A. All right.

But, there is the flip side of that, and that is the contradictory acts, and this is -- again, this is the definition -- and right from the textbook -- these are behaviors that increase the offender's likelihood of drawing the attention of the authorities and being identified during the subsequent commission of the crime, they are indicative of low intelligence, criminal inexperience, or substance abuse, and that's -- those are the reasons why we came up with this concept, because you have so many offenders who commit crimes under different mental states, or different influences, so we have to -- we want to -- some sort of barometer for whether or not that's going on in a crime scene, and this is the -- the contractory acts are the way of evalua -- are our way of evaluating that.

Q. Let me ask you something.

A. Certainly.

Q. In the contradictory acts there -- you stated here -- that's what they are indicative of, but basically these acts are things that -- that would likelihood draw attention ---

MR. HUMPHRIES: I'm going to object to the leading nature of the question, Your Honor.

MS. WILLIAMS: Sorry. I'll rephrase.

THE COURT: Well, I -- anyway, you rephrase, but I'm going to allow you to ask the question.

MS. WILLIAMS: Thank you.

Q. I just want to make sure that the contradictory acts, if I understand it, in simplified terms, are acts that might -- or that are known to draw attention to you.

A. Well, not just draw attention, but they -- but they provide -- it's not just the failure to do something smart. That's not a contradictory act. The failure to do something smart, well, okay, that's just being normal, but when you are doing something that either draws attention to you, as you said, or leaves evidence behind, or insures that you are going to be identified at some point, and associated with the crime at some point, if you are doing things specifically which will provide for that that's a contradictory act.

Q. Do you know that all or -- and part of what you do, if there's contradictory acts, do we know that they are intentional, not intentional, or that's just -- that they are just there?

A. We can't tell. I mean, that's a different level of analysis. I can't tell the intent. I mean, I think a reasonable person could -- can make their own conclusions about that. You can have them both way, is what I'm getting at.

Q. Okay. So we don't know that that's intentional. You are just simply looking at what is there and what it's indicative of?

A. Right. There are certain acts that we are going to know -- that we are going to talk about today that are absolutely intentional, the offender has sat down and thought about them as they are doing them, and thinking that they are doing something precautionary, and it's actually their lack of skill, their lack of experience, their lack of foresight is doing something that's going to provide for their identified and capture. So we will talk -- we will be able to see some very obvious, intentional ones, and I don't need to point that out. I think the people will be able to tell. All right.

All right. So, bear with me, please. I believe there are twenty-four of these, all right, so just be prepared, and I'll try to go through them as quickly and expeditiously as possible.

First of all, in every case you have to look at whether or not there was an attempt to conceal the crime entirely, or to stage it to look like something else, all right, maybe stage a homicide to look like a suicide, for example. Okay. Or may -- you have a domestic homicide and there's a body, and you take the body and you dismember it and you bury it somewhere so there is no evidence of the crime at all. So either destroying evidence that the crime occurred at all, or staging it to look like something else. Those are precautionary acts. There's no evidence of that. All right. So, one thing the offender failed to do was conceal the fact

that the crimes occurred, so the crimes are going to be found out. All right. The car is missing, there is -- I believe there has been testimony about A.T.M. -- an A.T.M. that was -- we are going to be talking about that, an A.T.M. visit, and then the homicide at the Turner residence. All right. These crimes are not concealed or staged in any way, and they are going to be found out. All right. And that becomes important to every single other subsequent point.

The Defendant was found -- he was picked up with a suitcase that had blood on the inside of it. He did not try to clean this up at any point after leaving the area of where these incidents occurred, and it's not just that he's got a bloody suitcase, but that he didn't try to clean it up. He didn't try -- and anybody who saw that suitcase would see blood on it, and they would go, huh, what's that, why is there blood all over the suitcase, what's that from, so it raises a question. It draws attention, draws unwanted attention. All right. And it's not just like a blood drop. I think we would all look at that and we would know it's not like somebody just dripping blood, just standing there from a bloody nose or something. That's like some movement is involved, so we have -- we would raise a question. It wouldn't look like just some incidental thing.

Q. Okay.

A. Yes. Go ahead.

All right, the Defendant stole this 1994 red Mustang convertible. Now, I don't know what the resale value is, and I don't know what the -- how commonly this kind of vehicle is stolen. What I do know is, stealing a Mustang convertible that's red is a conspicuous vehicle by itself. So we have a conspicuous make in color, we have a nationwide B.O.L.O., alert for this vehicle is out, and we also have it associated directly back with his girlfriend. So he's -- at one point during this evening he's driving around in this car that everybody is looking for, that's bright -- well, I don't know if it's bright red, but it's red. It's a convertible Mustang. It's a conspicuous make and model, and he's associated with it, so if he gets stopped, pulled over with this, he's associated not only with the vehicle, but everything that happened prior to that, so it's a very conspicuous choice, and actually provides for identification, apprehension, and, you know, being associated with the crimes, as we will see.

So, at some point after stealing this Mustang he proceeds to an A.T.M. to withdraw money from Ms. Ling's bank account where he would be photographed in her car committing a crime. I don't think there is anybody left that doesn't know that you are being filmed at a bank. Banks are aware, we have our security, okay. Maybe some schools have them, maybe they don't, maybe some places of business have it, some places you don't, but we know that banks do. All right. So this is not

some bizarre possibility. You are going up to the A.T.M., you are going up to the bank, you are going to where they keep the money. That's where you are being filmed. And he's not just being filmed, he's being filmed in this very conspicuous red vehicle. All right.

So, that's -- goes back to, again, exposing to high risk of identification and apprehension. And he also didn't leave the area or get rid of the Mustang. He continued to drive it. It wasn't like he went to some remote place where he -- where that vehicle wouldn't be recognized. He went to -- he stayed in the area where people knew her, and I don't know if they knew her vehicle or not, but that's an issue that's the be considered, and then on top of that we have him not getting rid of it, he keeps driving around. So the conspicuous vehicle, continued commission of the crime, the driving it around in the area where she lives and works. All right. That's a problem.

So where does he drive to after this -- I believe it's sometime after three o'clock in the morning he drives to Mr. Turner's home. Mr. Turner has close neighbors. He lives in a cul-d-sac, a trailer court cul-d-sac where the Defendant would likely be seen and recognized, because not only has he been seen there before he -- I believe a couple of people there know his name, and they know that he drives that red Mustang, and he's been there several times over the last few weeks, so

it's not a place that he's a stranger to.

Yes.

Q. Can you take your pointer and show us which one of those homes in that picture is Mr. Turner's home?

A. I can. This right here, this is Kimberly -- the end of Kimberly -- the cul-d-sac in Kimberly Drive, I believe it is. That's his -- that's the back end of his trailer, the -- this is the room where the gunshot hole was in the spare bedroom, and Mr. Turner's bedroom is in the back, at the far back.

So you can see that it's just a couple of car's lengths between here and to the -- car widths, rather, from here to the next trailer. And then if we go -- and this trailer here is also that trailer there, so there's another one that's even close -- it's just as close rather. So we have a close proximity. And this photograph was taken -- as I turned around, facing away from Mr. Turner's driveway, you could see out the cul-d-sac. This is the cul-d-sac here. You could see a neighbor there with their red vehicle. There's also another house, I believe, in there, and then there is -- excuse me -- trailer, and then there's these other trailers. So you are not just in these -- in this neighborhood where, you know, there's miles between neighbors. They are right on top of each other. It's trailers so they are not like built really well. I don't know what the acoustics are, but they are not built to be sound-proofed. So you have, as you are going in

there, not an expectation of privacy. Okay. There is no expectation of privacy. You are going to a place where the Defendant has been recognized before, in a vehicle he's been seen in before, and it's a conspicuous red thing on top of that, so it's not like they are not going to see it if they are looking.

Q. Okay.

A. So we get better than that.

Now, he doesn't go there and kill Mr. Turner, evidencing some plan or some pre-thought-out motive, as far as I can tell. What we have is this older gentleman who is an alcoholic and could have been easily overtaken by someone who of -- such as the Defendant, who is younger and presumably stronger than a seventy-four year old alcoholic male. The visit was actually prolonged. He didn't do it under the cover of dark. He waited, and the attack didn't actually occur until the morning, until people were up and moving around and there was daylight. So when he left it would be more easy for people to see him leaving. So that's -- we have -- that's it's own little special problem.

Now, what's also interesting is, according to Mr. Turner his girl -- according to Mr. Turner's girlfriend she received a call not long after Mr. -- not long after the Defendant arrived. She received a call from Mr. Turner who told -- who woke her up and told her he -- this gentleman is here, and he

is telling me about his dead father, he wants -- he needs to be consoled, apparently, and that's the story that's being told to him, so he's gone there, told him this story and sat with him talking with him all night about it.

Now this is important because it's not just that it happened, but it's that now we have somebody outside the crime -- the eventual crime scene knows that he's there, and that it's him, and can identify him as being a person who is there with -- at the scene. All right. So that, again, raises the risk of being identified and then eventually apprehended. Okay.

Now, again, we go back to -- this is a recap of -- we have this -- until the early hours of the morning, left to go get breakfast and then returned around -- at eight o'clock in the morning, and then he went into his own private bathroom to shave, and there's just no evidence that there was an altercation prior to this shooting. You have all this stuff going on, that he was able to leave and go get breakfast. That's the key point to this paragraph down here. He was able to leave. There's no telling who he could have contacted, who he could have told, or if he was suspicious about something, or something going on he could have brought help back. Who knows what stakes could have been raised by letting this person leave and come back. It creates all kinds of unforeseen events, so that shows, again, a lack of skill and a

lack of foresight. If he is planning to kill him letting him leave is not a good idea. All right.

Now, the act of killing Mr. Turner, it change -- it ups the stakes. We have changed it from what was going on before to now this even increased likelihood of being witnessed during the commission of another crime, and the intensity of law enforcement efforts and interest. There is already a B.O.L.O. alert, on-the-lookout for the car. He has already committed the crime in the car of going and stealing the money from the account. Now we have him killing somebody at this location, so whatever interest law enforcement had before it has just gotten more intensified. It's gotten more directed, more focused. All right.

Now, in this case the Defendant killed Mr. Turner with a .357 Taurus handgun from the scene. It's a loud and powerful firearm that would not be silenced by a pillow. I don't -- I don't ---

Q. I was going to interrupt for a second.

A. Yes. Uh huh **(indicating positive)**

Q. When you just said it was a loud and powerful firearm, tell me how you can make that statement.

A. I can make that statement because, as I mentioned at the beginning of my testimony, I live in Alaska. I actually own quite a few firearms, and one of them is a .357 Taurus T.I.. It's a cruddy titanium thing. Don't ever buy one

because they seize up after you put about seventy rounds through them, but that's irrelevant -- but they are very loud, however, you can use either .357 ammunition, which is one level of expense, or you can use the .38 ammunition which is cheaper, and in this case we have -- when it was recovered it had .38 shells in it. So don't be confused by that. You can have -- you can fire .38 shells through a .357, just so you know. But regardless of that, it's a -- it's a cylinder gun. It has a wheel on it where bullets rest, and when you fire it -- you've probably seen in the movies where you have a silencer on the end of such a gun. That would never work, because you cannot silence the sound coming out of the actual cylinder, because that's where it's coming from. That's a movie thing. Firing a bullet through a pillow to silence it, that's a movie thing. It doesn't work in real life. All right. The person who committed this crime did not have an appreciation for that, so they fired this very loud gun in an enclosed space -- I can imagine their ears would have been ringing, and they would have thought, oh, my goodness, this is not going to work, so this movie behavior shows a lack of knowledge and a lack of foresight, and suggests that whatever thought they are having is not very well planned out.

Q. Can we pause for a second with that, and we are talking about, and I'm going to show you what's been marked and entered into evidence ---

A. Right.
Q. ---As State's Exhibit Number ---
THE COURT: It's on the opposite side that you are -- opposite side of you. Turn the box around. It's on the opposite side of the box.
Q. Thirty-six. Got it. It's in evidence. I'm going to put it right here.
A. I'll get this out of the way.
Q. Can you tell me about that and this -- this pillow with regard to what you were talking about.
A. Your Honor, may I stand and receive the items?
THE COURT: Yes sir. Just remember you've got to keep your voice up. That's all.
A. Right, into the microphone.
May I touch the garment, Your Honor?
THE COURT: Yes sir.
A. This is the pillow that I -- this is the pillow that I examine, yes, and it has, as you can see, one side where there's soot, in a nice symmetric stellate pattern on one side where the entrance shot is, and this is the exit hole, and you can clearly see the bloody material inside, on the outside as well, and you can see the opening of the pathway, of the projectile pathway, so that -- this is it, and it ---
Q. And tell me about -- if you have an opinion regarding the effectiveness of this for what it was used for.

A. Well, it's a fact -- it's just a fact -- I don't have an opinion, but it's a fact, pillows don't work to silence firearms. It's just -- that's not how it works. That's movie behavior. All right. So even if you pick this up you should be able to feel it and know that it's not going to silence a firearm. If you are at all familiar with firearms use at all you are going to know that it's not going to work. It's not going to stop a bullet, and it's not going to -- and it's not going to silence it. I give one caveat. I did work a case one time where a .22 bullet was recovered from a very, very dense couch pillow that had a very thick leather hide around it, and that slowed it down some, but this had a material cover on it. All right.

Q. Okay. Please continue.

A. All right.

Q. Let's move to our next area of analysis.

A. Sure. The -- in this case item number (L), Defendant stayed at the Turner residence until after daylight. Again, the vehicle would be plainly visible, he would be easily identified by neighbors if he's seen leaving, and the two loud gun blasts that just went off would have drawn attention to the activities of the home. But even at that time of day that's when people are leaving and getting ready for work, so if anybody has a normal, you know, nine to five type schedule, this is when they are out moving around. So again, lack of

precaution, a lack of foresight, a lack of skill, all right, doing things that absolutely puts him in the road for being identified and then later apprehended. So he stole -- what does he take? He takes Mr. Turner's vehicle, a 1996 Mazda B2300. It's not a conspicuous vehicle like the -- like the Mustang, like the red Mustang, but the red Mustang he leaves right at that scene, right out in the open. He doesn't attempt to conceal the red Mustang, it being seen, or park it somewhere else down the road and not have it associated with it. He has it -- he associates that red Mustang with that event, all right, providing for his identification or, again, at that location, as if he hadn't done enough already to do that. This would be the first thing the police would be on the lookout for once they discovered this homicide. All right.

The Defendant left Ms. Ling's red Mustang at the scene and it would be associated -- we already talked about that -- and this makes the vehicle change moot, so if you are going to say well, he changed vehicles because he's smart and he's clever, he's thinking ahead, no, by leaving the vehicle there, the red Mustang, right in the opening, makes that moot, and it shows, again, a lack of skill, a lack of foresight with the thinking here, these persistent, again, persistent contradictory acts.

Now it is true that after the commission of this crime

the offender did drive across the State, and you will have to forgive me. I am not familiar with the State of South Carolina. I've only been here a couple of time, but it's very beautiful, but I had to look at a map to see how far these things were from the -- where this was committed, in Conway, to Columbia, and then on to Augusta, I believe it was, where he ultimately was found. So he went to two different places, Columbia one day, and then Augusta the next, I believe. So he didn't leave the geographic region, and if there's a nationwide B.O.L.O. alert out for that Mustang they are going to find the Mustang at that house and they are going to know that the truck is missing and they are going to be looking for that next, so he's not really covered any tracks there.

Now, once he gets in this vehicle he's got it for several days. He doesn't try to get rid of it, and he doesn't try to get rid of any of the identifying information that's in the vehicle that's associated with Mr. Turner, so if he just does what he did -- and we'll talk about that in a second -- starts up a regular life with other people in it, he's going to have potential witnesses, you are going to see that it's not his truck, and maybe start asking questions. So in the truck we have evidence of his prior connection to this event, so he doesn't try to get rid of it, and in the context of sort of engaging in regular behavior, non-precautionary behavior, and having people in -- more close people in his life --

excuse me -- he's going to provide for his identification and apprehension.

The same thing is true with the murder weapon. He kept it in the truck. He didn't try to get rid of it. He didn't go dump it in the river. He didn't go bury it like I've seen a lot of offenders do or just throw it along the side of the road -- very common for that to happen -- he kept it. All right. So I mean, he kept it in the stolen truck, so if police found the truck they are also going to find the weapon, so it's not just that he's associated himself with the scene, he's associated himself with the scene and with the murder. All right.

Another thing that we find in the truck is a spiral notebook that had the name Laura Ling in it, so not only is this vehicle going to be associated directly with this Turner homicide, it's going to be associated directly back to Laura Ling, and back to her vehicle. Okay. So everything you need to connect this person to these crimes is in this truck, and he's kept it all, even though there is no reason to do so.

Now, immediately after -- well, not immediately, within that day -- and I use that -- that's how I use the term immediately, so it's not like there's time for an emotional cooling off period -- he frequents multiple public places, bars, and engages in conspicuous spending behavior following these incidents, and he's easily remembered by other patrons.

It's not like he goes there and he's this forgettable drinking himself into a stupor-type person to forget his woes, he's there, he's being gregarious, telling stories and spending money, and doing things that will be memorable, okay, the absolute antithesis -- it's not just that he goes there to a public place, but he's doing things that will get him noticed and remembered.

In the vehicle he also kept a bag that had a card case in it, and this silver card case contain -- has his real name on it, as well as a card inside with his real name and an address on it from the -- from Murrells Inlet. Again, if he's just going about his regular activities and trying to lay low this is going to work against that, especially if he's using another name. He gives another name, Christopher -- Stephen Christopher Alexander. That's the name he gives to Ms. Putnam when he meets her.

Ms. Putnam -- he meets her at a bar -- sorry about that. He meets her at a bar in Augusta, and he is -- when you meet somebody and you start spending a lot of time with them, and it's intimate time -- I'm not saying it's sexual, I'm just saying it's intimate -- and you are meeting them with this intimate time they are getting to know you. They are getting to know your face, they are getting to know your name, they are getting to know your habits, they are getting to know your possessions. By bringing this person into his life, without

getting rid of all this stuff, he's doing stuff that's putting him at risk to be identified and apprehended in association with all these crimes, and the name he chooses isn't even that different from his own, so if there's a B.O.L.O. alert, and they associate his name with this vehicle that they've found, and his name gets put on the news, which it did, his name is not so different that it's going to be -- that it's going to cast out. It's actually going to arouse suspicion, which of course it did.

So the final thing that I'll talk -- that I'll mention, is sort of the -- the capstone on this entire series of events, which raises it -- which, in concert with everything else, raises this to the level that I'm able to give this opinion, which is that the Defendant goes to church with his new lady friend, which is a recorded church service, and it's televised. Now, that, by itself, would be cause to have questions, but you would still want to look at everything else, but still that, by itself, is problematic, and raises his level of risk. But in concern with everything else you have this pervasive pattern of contradictory behaviors, not just a failure to be precautionary, not just a failure to have skill, but contradictory behaviors that pervade the entire series of events, from start to finish, and it's not just a -- it's an absence of skill, absence of precaution, absence of foresight, so the criminal thinking isn't there, the foresight

isn't there, the M.O. is very poor, and it's based on these -- I don't know how to say it correctly, I suppose these T.V. behaviors that aren't real, T.V. imaginings, imaginings from television, the idea that what you see on T.V. is real. For example, a reasonable person, I hope, would not believe that if you fired a shotgun at somebody they would fly through the air, but maybe there are people out there that believe that. This is that kind of thinking, that kind of belief, so it's a real problem. And that is the -- those are the primary reasons that I have come to my final conclusion.

Q. And that final conclusion, just one last time.

A. Is that the M.O. behavior in these cases exposed the offender to a high risk of both identification and apprehension, this pervasively contradictory M.O., that will provide for him to be both identified and apprehended by law enforcement.

Q. Okay.

MS. WILLIAMS: One moment please.

Your Honor, that's all the questions I have of this witness.

Please answer any questions the Solicitor may have.

THE COURT: Cross-examination.

MR. HUMPHRIES: Thank you, Judge.

CROSS-EXAMINATION BY MR. HUMPHRIES:

Q. Good afternoon, Mr. Turvey.

A. Good afternoon. It's good to see you again.
Q. Good to see you.
Victimology. How important is Victimology, and how helpful can that be in crime scene analysis and reconstruction?
A. I think I mentioned that it's an integral part of crime scene analysis, so you really can't do one without doing the other. Well, you can't do crime scene analysis without considering the victimology as we looked at in this case. You have to consider where the danger is coming from in the life of the victim, what harm they might befall, what risks they are in of being the victim of whatever type of violent crime that we are examining, so I would say it's critical, crucial.
Q. In regard to Henry Turner ---
A. Yes sir.
Q. ---Are you aware of the relationship that was fostered by Defendant Stanko with Henry Turner?
A. I believe so.
Q. That was a relationship that was, quite frankly, built on complete fraud.
A. That is -- that is a fact.
Q. Yes.
A. Yes sir.
Q. Defendant Stanko sort of co-opted into Henry Turner, this elderly gentleman, filled his head with all sorts of big

projects and important investigating, and had him do absolutely meaningless tasks in an effort to include him in this very important investigation, I think associated with a local lawyer, Harry Pavilack. Are you aware of that?

A. I am not aware of that specifically. I can tell you what I am aware of, but I'm not aware of that specific -- and I'm not sure that I would even characterize it that way, but I'm sure the facts we would agree on.

Q. Okay. Suffice it to say, he did foster a -- a relationship with Henry Turner?

A. He went out of his way to foster a relationship, yes, indeed.

Q. And in fact, in fostering that relationship he busied Henry Turner so much that it served to separate him from those that he would usually or normally associate with. Were you aware of that?

A. I was not aware of that, but that does not surprise me, but I was not aware of that specific fact.

Q. And you are aware that Henry Turner was an elderly gentleman and lived alone.

A. Yes, I am, that he did he a girlfriend that visited frequently, yes.

Q. He did, but that girlfriend, of course, was in Charlotte.

A. Yes.

Q. Right. So that's important to your analysis.
A. I would say so, yes. We want to establish those relationships, and specifically the relationships that were suffering. I guess I could have stood to learn a little bit more of that, but it wasn't relevant to the analysis that I was doing, so ---
Q. And you have already mentioned to the jury that one of the things that you consider was that -- and we have phone records to bear it out -- at 3:22 in the morning of the 8th Defendant Stanko calls Henry Turner and tells him that his father has died.
A. Right. Yes. That's what I -- I believe I -- I didn't testify to the time, but I know the event. Yes.
Q. Yes sir. And Henry Turner says, come on over, I'll help console you, and he does.
A. Yes, he does. He seems to be a very sympathetical individual.
Q. Now, were you aware, and perhaps you weren't, that just earlier that Defendant Stanko had contacted Henry Turner and told him that he needed to get an advance of a Thousand Dollars ---
MS. WILLIAMS: Your ---
A. I wasn't aware of an amount, but I believe I was -- I know I was aware of the fact that he was looking for money.
Q. Yes sir.

A. He was look -- he was looking for money -- looking for get-out-of-town money or something like that.
Q. Something like that.
A. Something like that.
Q. And that Henry Turner secured that money for him.
A. I wasn't aware of that. I'm not aware of facts to that nature so ---

MS. WILLIAMS: Your Honor, may we approach?

THE COURT: Absolutely.

(BENCH CONFERENCE TAKES PLACE OFF THE RECORD.)

THE COURT: All right, Solicitor, move along.

MR. HUMPHRIES: Thank you, Your Honor.

Q. Let's -- let's talk a little bit about some of these indicators.
A. Certainly.
Q. Would you agree with me that they are -- that your inferences from those indicators are subject to being not the only inferences that you could derive from those indicators?
A. I would. I would love to hear what another criminologist things about it. I can't see any other possible inferences. I think you can take them a little further, but within the confines of what we are doing today I think there's -- there's not a lot of room for this opinion about whether or not there's a pervasive pattern of contradictory acts by -- as they are defined.

Q. Sure.
A. I would love to hear -- if there is another opinion I would love to hear it.
Q. Well, let's talk about just a few of them. We have established that Defendant, Stanko, knows very well the Defendant -- that the victim in this case was elderly and lived alone.
A. Yes, we have.
Q. That, in and of itself, would make him a readily accessible victim of opportunity.
A. For -- for -- for what?
Q. For being taken advantage of.
A. Oh, I see -- I see where you are going. Yes.
Q. There is no question that this black Mazda pick-up is a less conspicuous vehicle than a Mustang convertible.
A. I don't think there is a question.
Q. You mentioned that it was important to -- it was a contradictory -- I forget your term.
A. A contradictory act.
Q. Yes sir. That the victim was able to leave to go get breakfast.
A. Yes. If there was a plan to kill the victim then that would seem inappropriate, so that cuts against the plan, but it also introduces an unknown element, because you don't know what they are going to do when they are not in your presence,

and you don't know who they are going to talk to, you don't know if they are going to bring somebody back, so it becomes a problem.

Q. Right. It did, however, provide the physical opportunity for Defendant Stanko to retrieve the weapon and prepare to kill Henry Turner, did it not?

A. It would have, yes, if that were the plan, but I don't know when the weapon was retrieved and under what circumstances.

Q. Certainly. But it would provide that physical opportunity.

A. Yes. In the same line that him leaving and going back to the -- to shave would provide that opportunity, depending on where the firearm was kept.

Q. Exactly. Like if it was in his room that might have made it more difficult.

A. Right. Right.

Q. Now, there was a mention, of course, that the credit cards were left.

A. Right. I believe there was a PayPal One, and then there was an A.T.M. card, and a number of other things, and also identifications that would have been useful if you were going to try to, I don't know, steal someone's identity, per se.

Q. Sure. I mean, obviously it would have been somewhat

difficult for a man of Defendant Stanko's age the co-op into Henry Turner's identify, I mean, phys -- in terms of physicality?

A. Right. Physicalilty, yes.

Q. Sure. And it's also true that credit cards -- because we know from the movies -- credit cards can be tracked.

A. They can, but not immediately, so ---

Q. Well, and -- and I get you there, but we are talking about -- because obviously it appears many of these things were learned from, or adopted from what we see on T.V. and movies. Clearly it's the ---

A. Some of them yes, some of them no. I think I have identified the ones that I think so.

Q. Sure. And clearly, from the movies you are picking up on the credit cards right away, I mean, if you are fugitive you are not going to use credit cards, you would use cash.

A. Well, I don't know if I can agree with you. I can only tell you based on my experience with similar types of -- with people who rob other people, and they take all manner of portables, any portable thing they can use and get rid of it real fast. In fact there's a real cottage industry right now with people taking credit card information and using them just within the twenty-four hour period that they can, and buying as much as they can, so I don't know that I can agree with you on that.

Q. No question. But now that wasn't really my question.
A. Oh, I'm sorry.
Q. My question was that, if we are learning from T.V. the first part of the rule is, you stop using your credit cards and you use cash.
A. Oh, I see. I think the mistake we are making here is we are trying to apply sort of this rational level of thought. It's not a -- there's only -- T.V. learning isn't the only learning that's going on here. There are just certain things that have been learned from television that have been applied in this crime ---
Q. I understand, but that ---
A. ---Not the whole thing.
Q. I understand, but that's exactly what I'm talking about.
A. Oh, okay. Oh, you used it as a hypothetical, okay. Is that what you are saying?
Q. Somewhat.
A. Okay.
Q. Now, he -- he went to the bank, and of course everyone knows -- I'm with you -- that those A.T.M.s have cameras.
A. Not just the A.T.M. but the building itself would have it's own security system, so even -- need not even having to approach the parking lot and whatever you would be wary of that, just because it's a bank. It's the place where the

security is.
Q. Right. But not only do banks have cameras and security systems, they've got the money?
A. Yes, they do.
Q. Now, there's certainly no evidence that would indicate that Defendant Stanko would have known that after he called Henry and said I want to come over, my dad died. By the way, do you know if his dad is dead?
A. I'm assuming not. I didn't investigate because I just assumed it was not true.
Q. There is no way -- there is nothing to prove that Defendant Stanko knew that Henry Turner was going to call his girlfriend in Charlotte and say, hey, darling, Henry -- I mean, Stephen is over here, his daddy is dead. There was no way for him to fairly anticipate that based on the evidence.
A. No, there isn't, but we have the event that it happened, and because it happened we know that he is -- knowing that he's talking on the phone, we have him knowing that he's going to reach for a phone, I mean, these things -- if it had happened and he didn't want it to happen he could have certainly stopped it, is all I'm saying, and he didn't try to stop it.
Q. Well, no, he didn't try to stop the phone call. He didn't ultimately kill Henry Turner.
A. That's right, but we are not talking about just the

homicide, we are talking about the events leading up to it and how contradictory that was, so to even to allow him the phone call, to even allow him to leave, that it didn't participate the homicidal event, again, these -- to stop it from happening these would be contradictory acts to his apprehension.

Q. Sure. Sure. Now, no question, based on your analysis of the crime scene, that there was no prior physical altercation between the two.

A. Right.

Q. None.

A. Not that I'm aware of.

Q. Okay. Let's -- let's talk about this pillow. You have conceded -- and it's -- you know, it's -- I think we are all in agreement that you sure have seen it on the movies ---

A. You sure have.

Q. ---Where a gunshot has been muffled by a pillow, and I'm with you, it don't work, but we see it on the movies. Now, doesn't it give Defendant Stanko just a bit too much credit to assume that he knew that the pillow wouldn't muffle the shot?

A. I don't think so, no.

Q. You don't?

A. No, I don't.

Q. You know -- I mean, do you know if Defendant Stanko is familiar with firearms?

A. No, but again, it's the analogy I made about the person flying through the air. There are certain things that it's -- if you are not able to determine them just by looking at them then you are at a different level of intelligence, a different level of creative thinking, a different level of imagination, and that level would be much lower.

Q. All right. But of course you understand he's highly intelligent.

A. That's what the tests say.

Q. Yes, they do. But let's assume ---

A. Which is, again, why I would give him the benefit of the doubt, to think that he would not make that mistake.

Q. Sure. But now let's assume that he was under the assumption that the pillow would muffle the shot.

A. I don't think the word assumption is the right word. The word I would like to use I don't think I can use. Assumption, I think, is the wrong word.

Q. Let's say he thought it would muffle the shot.

A. Okay.

Q. Let's just say that.

A. Okay.

Q. All right. Cause apparently you and I are going to disagree on that particular point. That clearly -- when that shot went off it's a loud bang.

A. No question. And especially in that enclosed area. It

would have been very loud.
Q. Sure. Okay. Now, then why do we make so much about the second shot?
A. Why do we make so much about the second shot?
Q. Because here's what we are talking about.
A. Oh, this -- was that a question for me or ---
Q. Yes. Yes. Why are we making so much about the second shot not being muffled, is my point?
A. Because the second shot brings the attention back. In Alaska we have this thing about guns. You know, you fire a gun it's a dinner bell. You are going to bring the bears. And you don't fire it again if you don't have to because then they will find you. All right. That's -- this is how it is. The first shot draws attention, the second shot tells them where it is.
Q. And of course we ain't in Alaska.
A. No, but it's -- that's the concept.
Q. Okay. But after he's fired the first shot, and it was loud, and according to your analysis of the crime scene Henry Turner turns around.
A. Yes.
Q. And I'm with you. You think that might have surprised Defendant Stanko after taking that first shot, that Henry Turner -- I mean, he's shooting him through the heart. You think that might have surprised Defendant Stanko that he would

be able to turn around and face him after having been shot that way?

A. Well, I don't think, first of all, that Stan -- Mr. Stanko would have known where he shot him, but the shot itself -- to recover from the shot itself -- I mean, that he shot him in the heart -- you can't know just by looking at somebody whether or not you've shot them in the heart, but that he shot him and that he turned around, I would concede might have been a bit of a surprise, yes.

Q. Okay. Well, you know where the shot entered the body.

A. I do, but Mr. Stanko would not have had the forensic pathologist there at the scene to perform the autopsy to show him where the path went through, so he wouldn't know that he hit him in the heart. All he knows is he hit him in the upper body, through the back.

Q. Clearly though the gun in the pillow was in close contact to the victim.

A. Oh yes.

Q. So their proximity was close.

A. Yes, it was. But again, we can't assume that he knows what he -- what organs it passed through. We -- you wouldn't be able to tell. Even if you thought you knew you probably don't.

Q. I think it's fair to assume though that he -- he would have assumed that that would have been a fatal shot.

A. I don't know.
Q. Okay.
A. I don't know what his knowledge of anatomy is, or his -- but I'm not -- I'm assuming he's not doing it to make him feel better, he's doing it to kill him, so yes.
Q. That's right.
A. He may be hoping it's a fatal shot, I guess is a better way of putting it.
Q. Now, he kept the gun. That was significant to you, that he kept the gun. That would be contrary.
A. Yes. Absolutely a contrary act.
Q. Unless, of course, he had some future purpose for the gun.
A. Yes, and no, because if he had some future purpose for the gun you don't want to keep it in the vehicle that's going to be looked for that's associated with the crime. It's not just the one thing, again, by itself. It's in the context of everything else, with the bloody suitcase, in the car, in with the I.D.. All these things together, they give it the more meaning.
Q. Okay. Well ---
A. The greater meaning, rather.
Q. Well, let me ask you this. What good would a firearm do to Defendant Stanko if it was not in close proximity to Defendant Stanko?

A. Well, he wasn't always in the vehicle. He was out attending church. He was in the residence of Ms. Dana Putnam. I mean, there's all these different activities he was doing. He was at the bars. So what good, indeed, what good indeed.

Q. Of course now we know that's where it was found.

A. Yes.

Q. We don't know where he had it prior to that time. That's fair to say?

A. We have no evidence that he carried it in with him anywhere else. I would be ---

Q. And we don't have any evidence to the contrary about that, do we?

A. That's right. Right. So I would be -- I wouldn't want to make the assumption either way.

MS. WILLIAMS: Your Honor, I'm -- may we approach?

THE COURT: Yes Ma'am.

(BENCH CONFERENCE TAKES PLACE OFF THE RECORD.)

Q. Based on your viewing of the evidence, you clearly had the photographs from the Georgia Crime Scene investigator where the weapon was recovered?

A. That's correct.

Q. You were clearly aware that the gun was fully loaded at that time.

A. It certainly was, with the .38 ammunition, I believe, as I testified previously.

Q. This may be just a touch colloquial for your analysis, but couldn't it just be, honestly, that Defendant Stanko was just so arrogant that he really didn't care what he left behind?

A. I wouldn't use the word arrogant. I would think perhaps grandiose to the point of delusional, is a better way of putting it. That's a better way. I mean, you are saying arrogant, but to me, no.

Q. Okay. You are not -- you are not a psychiatrist or a psychologist?

A. No. I'm not using a psychological or psychiatric term.

Q. Oh, I thought delusional was, okay.

A. No. It's not a diagnosis or a -- it's a regular term.

Q. You will concede that much of his behavior, whether it was smart or otherwise, was goal oriented.

A. That's a really good question. Was it goal oriented. I think a lot of it was, yes. A lot of it was goal oriented, and again, lacking real foresight, and lacking real insight, and lacking a lot of planning. I think it was goal oriented, but I also think it was reactionary. It wasn't him sitting down drawing up a plan, thinking hard and deliberating about the consequences, and how to evade detection. It was him reacting to sets of circumstances as he was confronted by them, and not thinking about the full spectrum of consequences for the behaviors. It reflects really two-dimensional flat

thinking about what's going on.

Q. And you ever seen that movie *Catch Me if You Can*?

A. It's always going back to the movies, isn't it?

Q. Isn't it.

A. Yes, I have. It's the one with Leonardo DiCaprio, I believe.

Q. Where he basically hides in plain sight?

A. Yes.

Q. In this case -- and I'm not suggesting that Mr. Stanko patterned his evasion on that movie, but in this case it's not -- there is another inference to derive from the fact that he went in very highly populated areas, is there not?

A. Such as?

Q. Such as, he's hiding in plain sight.

A. No, I don't think so. I don't believe -- he's not taking on the guise of another person. It's not like the -- in *Catch Me if You Can* I believe he wears a uniform of a pilot, so it's not just that he's hiding in plain sight as himself, he's got a uniform on, he's got a hat, he's got people around him that they looking for that uniform, and looking for that hat, and are not expecting a fraud. A bar is a place where everyone can gather. A bar is a place where you are going to see all the spectrum of different people at different ages and different -- people enjoy drinking, and enjoy socializing, so no, I don't think it's the same thing.

Q. Sure, but Defendant Stanko did take on the guise of being a high roller.

A. In word, yes, and in action, yes, but not in uniform or what-have-you, just the -- again, the grandiose stories.

MR. HUMPHRIES: Thank you. I have no further questions.

A. Okay.

THE COURT: Re-direct.

MS. WILLIAMS: Your Honor, we don't have any further questions of this defendant -- I mean, this witness.

THE COURT: Yes Ma'am. Do you want -- would you like to excuse Mr. Turvey or --

MS. WILLIAMS: We would ask that he be released from his Subpoena.

THE COURT: Any objection?

MR. HUMPHRIES: No objection, Your Honor.

THE COURT: All right. Mr. Turvey, you are released from your Subpoena. You may go back to your regular activities, sir.

A. Thank you, Your Honor. May I take time to collect my things?

THE COURT: Yes sir. What we are going to do -- if you will just hold on one second and want to just sit there.

Ladies and gentlemen, it's a perfect time for a break. Why don't you go back to your jury room and we will be with

you shortly, please.

Just leave your note pads and your pens there, please.

(THE FOLLOWING TAKES PLACE OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: And I want to note one thing for the record, with whatever limitation the Court put on the witness's testimony in this matter, he was allowed, in his cross-examination, without objection, to give certain characterizations that -- to the effect that you can't apply rational thinking to this act, the Defendant engaged in a different level of thinking, it was grandiose to the point of delusional, and engaged in two-dimensional flat thinking.

Thank you very much.

MR. HUMPHRIES: Your Honor, just for scheduling purposes, the next thing we are going to take up is the motion in limine, I assume, regarding the -- I assume that's their next -- I don't know who their next witness is, but I mean, at some point we've got to take it up.

THE COURT: We will. Why don't -- we will take a short break and I'll cover that with you. All right. Great.

MR. HUMPHRIES: Thank you, Your Honor.

THE COURT: Thank you, sir.

MR. HUMPHRIES: Thank you, Your Honor.

(THE FOLLOWING TAKES PLACE AFTER A BREAK, AND OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: All right. The next witness is going to be Thomas Sachy, is that correct, Dr. Thomas Sachy?

MR. DIGGS: Your Honor, it's incamera. It's not going to be in front of the jury.

THE COURT: All right.

MR. DIGGS: I mean, the Court indicated earlier you wanted to go through this, and I mean, it's not where we plan to call him with the jury.

THE COURT: Oh, you don't intend to call him now?

MR. DIGGS: No sir. He is here so that if you want to -- no, I mean, we can go ahead. I'm happy to go ahead with the jury in the room.

THE COURT: Okay.

MR. DIGGS: We have that witness here. It's Dr. Albiniak.

THE COURT: Okay. Well, ---

MR. HEMBREE: Your Honor, the difficulty with that is, Dr. Albiniak, is going -- this is the beginning of entering testimony about the Defendant's alleged insanity, and we have not reached the threshold question as to whether or not they will be able to offer an insanity defense that will meet the legal standard in South Carolina.

THE COURT: Okay. Well, I mean, you've got -- you've got two issues, because you have the -- as I understand it they are potentially presenting insanity or guilty but

mentally ill and they have two standards.

MR. DIGGS: Right.

THE COURT: Now the -- obviously the insanity, so we are all clear -- I'm sure we all are anyway -- that the -- at the time of the crime the Defendant had a mental disease or defect which made him unable to distinguish moral or legal right from wrong, or to recognize the crime as morally or legally wrong.

And guilty but mentally ill is, a defendant was able to distinguish moral or legal right from wrong, or to recognize his act as being morally or legally wrong, but because of a mental disease or defect the defendant lacked sufficient capacity to conform his conduct to the requirements of Law, so the testimony could be related to either one of those, so, you know, if -- if they come forward on either standard then certainly the Court is going to allow them to testify, because then that would formulate a basis for the jury, if they wanted to, to arrive at that type of verdict. So if they -- their testimony has a foundation in either standard then they can testify.

MR. HEMBREE: Yes sir. I understand and agree.

THE COURT: All right. Very good.

MR. DIGGS: And Your Honor -- I'm sorry.

THE COURT: Go ahead.

MR. DIGGS: We would call Bernard Albiniak.

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MR. DIGGS: Okay. Well, I'll ask them to leave.

THE COURT: All right. Very good.

All right, Madame Clerk, go ahead.

THOMAS SACHY, M.D., being first duly sworn, testifies as follows:

THE COURT: All right, Mr. Diggs.

MR. DIGGS: Thank you, Your Honor.

In the presence of the jury, Your Honor, we will go through a -- an expert qualification. The State has been kind enough at this point to consent that he is -- well, agree that he is ---

THE COURT: For purposes of this portion I think we are all in agreement we will just skip ---

MR. DIGGS: He's an expert in Psychiatry.

THE COURT: That's right. Skip through that.

DIRECT-EXAMINATION BY MR. DIGGS:

Q. Now Dr. Sachy, you are employed in the field of Psychiatry, are you not?

A. Yes.

Q. And tell us what you do in that regard and where?

A. I am in private practice in Gray, Georgia, which is north of Macon. My practice is called Georgia Pain and Behavioral Medicine. I do Psychiatry, Neuropsychiatry, pain management, a little bit of Neurology, little bit of Primary Care now, so ---

Q. Okay. Now in the course of your practice did you become involved in the Stephen Stanko case?
A. Yes.
Q. Can you tell us what you've done in that regard, what you did in order to become involved with Mr. Stanko.
A. Several years ago a performed a psychiatric ---
Q. And pull that microphone up there, Doctor, so that -- yes, there you go.
THE COURT: Or just talk right into it, one of the two.
A. Several years ago a performed a psychiatric evaluation on Mr. Stanko. I did a neurological exam on him as well. I also arranged for an M.R.I. to be performed of his brain. I arranged for his M.R.I. data to be analyzed by Dr. Ruben Gur at the University of Pennsylvania, and I arranged for a P.E.T. scan to be done of his brain, which was analyzed by Joseph Wu at the University of California Irvine.
Q. Okay. And did ultimately you get the results of those tests?
A. Yes.
Q. All right. And did you have them available, along with other evidence, to make an opinion or diagnosis in this case?
A. Yes.
Q. And go ahead and, if you can, explain a little more to us about what you had available to you in the formation of an opinion or diagnosis.

A. I also had access back then to psychiatric and medical records, medical records from his childhood, psychiatric records from various incarcerations and psychiatric interventions through the years, in the nineties, here in South Carolina.

I also had the Report of Dr. Crawford to review. I had the reports of Dr. Gur and Wu to review, and ---

Q. Okay. And you mentioned that you did meet and evaluate Mr. Stanko?

A. Yes.

Q. Where did that take place?

A. At the jail, I think, in the other County, or was it this County? I can't remember.

Q. Okay. But you did meet with him personally at wherever he was confined at the time?

A. Yes.

Q. And what do you do when you interview and do that kind of evaluation?

A. You sit down with him, you get a psychiatric history. You try to elicit from them any psychiatric symptoms and history they may have. You get a neurological history, try to find out about if they had any damage or illness to their brain. You perform a neurological examination to see if they have any outward signs of neurological disfunction, then you get a general history.

Q. Now based on the tests that you did, did you see any such signs of a neurological -- you said disfunction?
A. I did. There were two signs of -- called neurological soft signs. They are very mild signs consistent with brain dysfunction ---
Q. Okay.
A. ---But they not as gross and, let's say, a stroke, however, he had signs of mirroring, which is a sign of central nervous system dysfunction, and he also had posturing, which is a neurological soft sign consistent with that.

Also in his interview it was -- he demonstrated some concrete thinking, or an inability to properly abstract. As well he showed some of the typical signs of anti-social personality disorder or psychopathy.
Q. Okay. Now in the practice of medicine is an evaluation of sanity -- insanity something that's ordinarily done? Is that something that doctors do, or is that more a legal inquiry?
A. It's more legal. We don't -- I mean, we hear the word insanity, but it's not a diagnosis that we put on a piece of paper.
Q. Okay. So you were kind of brought into that arena by the demands of the judiciary and the legal system ---
A. Yes.
Q. ---That might make use of those concepts in it's forum.

A. Yes.
Q. Okay. Now in -- were you provided with the legal definition of insanity in the State of South Carolina as it has been define by our State statutes?
A. I was.
Q. All right. And let me ask you -- do you have it written there before you in some -- in some format?
A. I do, and it's on page seventeen of my Report.
Q. All right. Let's go there, page seventeen. All right, if you would, read for us what you were given as the legal definition of insanity in this State.
A. It is an affirmative defense to a prosecution for a crime that, at the time of the commission of the act constituting the offense, the defendant, as a result of mental disease or defect, lacked the capacity to distinguish moral or legal right from moral or legal wrong, or to recognize the particular act charged as morally or legally wrong.
Q. Okay. Now, with that definition at -- in your possession, were you able to make, or apply that definition to Mr. Stanko's case, and render an opinion as to whether or not Mr. Stanko meets this definition of insanity?
A. Yes.
Q. Okay. And what is that opinion?
A. Well, he's certain moral -- at the time of the crimes he was morally insane, and you could argue that he was also

legally -- he didn't understand moral right from wrong, and he didn't understand legal right from wrong, as that would not enter -- or be processed by a psychopathy brain at the time of these events.

Q. Okay. And so can you just give us a general overview of how it is that you reached that conclusion?

A. Based on the interview, the review of the records, the neurological evaluation, the brain-imaging evaluation, and the fact that he has received diagnoses of anti-social personality disorder, i.e., psychopathy before he meets all the criteria for it, and the -- the limitations or impairments that anti-socials or psychopaths have, one of the major ones they have is an appreciation for the wrongfulness, or the moral wrongfulness and legal wrongfulness of their actions at the time.

Q. Okay. Now, I want to ask you -- well, we can probably leave that.

MR. DIGGS: Your Honor, I think that probably is going to suit the needs for this particular time, so I will ---

THE COURT: Solicitor.

MR. DIGGS: Thank you.

A. Thank you.

CROSS-EXAMINATION BY MR. HEMBREE:

Q. Dr. Sachy, I'm -- help me out on this moral insanity versus legal insanity. What do you -- how do you draw that

distinction?
A. Well, there are two different words, moral and legal, so they are distinct.
Q. I understand that, but what do they mean to you? What distinction do you draw from those two phrases that you used?
A. Moral insanity. Morals is something -- something -- a moral -- whether something is morally understood. It's not a definition. It's an appreciation of moral behavior or conduct. It's something we appreciate. It's not something we sit down and think about. And at the time -- in a high conflict situation at the time of an alleged crime like these I would submit that legal appreciation of wrongfulness is also not considered by the brain at a time -- in the short period of time in a high emotionally conflict situation, that it's not appreciated at the time.
Q. Is it your -- essentially your testimony that he -- for a variety of reasons, Stephen Stanko has poor executive functions in the frontal lobes?
A. He has poor executive functions which have not all been tested, but from his history, and from the available records and his previous diagnoses, one of the most important executive functions that are impaired, or lacking, is, in high conflict situations, his ability to appreciate the wrongfulness of his acts.
Q. In high conflict situations?

A. Correct.
Q. And that he has impulsive or aggressive behavior that does not -- is not constant, it only -- it typically -- it typ -- let me phrase it, then you can answer. But it typically manifests itself when he is challenged in a high conflict and emotionally charged situation?
A. It would always present, but it would manifest itself more in those situations.
Q. In other words he has this -- the functioning is the functioning, but it doesn't manifest itself, there are no negative consequences from it except in these types of situations?
A. I -- it's more complicated than that. That's the impulsive aggression part, but the other parts of this diagnosis -- diagnosis, such as conning, manipulation, lack of empathy, there all the time, and they rise to a level of, you know, diagnosis and disability.
Q. And would it be your testimony that anyone, anyone that is a con man, dishonest, liar, that is diagnosed with an anti-social personality disorder is legally insane?
A. If enough scientific study is done on them and brain imaging is done, and all the pieces fit together, yes, they would be.
Q. Well, I mean, I'm asking -- I'm not asking that. I'm not asking about all the other stuff. I'm asking about --

he's -- you've got a Defendant that is a con man and a liar, and he has -- he is diagnosed with an anti-social personality disorder -- he's got a personality disorder ---

A. And he's diagnosed.

Q. He's diagnosed with a personality disorder ---

A. Yes.

Q. ---Then you would say that he's legally insane ---

A. Yes.

Q. ---Under South Carolina's definition ---

A. Correct.

Q. ---And would not be held accountable for his actions?

A. I guess he -- no, he wouldn't be. He ---

Q. Now, let's talk about ---

A. Doesn't mean he's not -- you know, that society doesn't need protection, but it's -- if that's the definition of what happens to someone with a medical illness, a mental illness, then that's what it is.

Q. And anti-social personality disorder is a condition where you basically can't follow -- you don't follow the rules, you don't get along with people, other people, and don't follow the constructs and the rules of society.

A. You are correct, to a biological cause.

Q. Well, it wouldn't matter. I mean, if the diagnosis is there the diagnosis is there.

A. Correct. And no one would make a medical diagnosis

without understanding that it has a biological cause behind it.

Q. Well, diagnoses are made constantly in the field of Psychiatry without a medical cause, without a -- I say medical cause, maybe I'm thinking of a -- you know, a lesion on the brain. Oftentimes people have anti-social pers -- they are diagnosed with anti-social personality disorder and they don't have brain defects revealed by a P.E.T. scan or an M.R.I..

A. I disagree with you.

Q. It would be your testimony that every -- in every case, in every case of anti-social personality disorder a P.E.T. scan would reveal that?

A. I believe that if everyone with anti-social personality disorder met the diagnosis, was afforded the opportunity for complex brain-imaging to be done, we would find these abnormalities. And in fact, if I might just add, in all the brain-imaging studies that have ever been done a hundred percent on psychopaths, a hundred percent of them have found lesions in the frontal lobe in psychopaths.

Q. Dr. Sachy, it's not your testimony that Stephen Stanko can't control himself, is it?

A. Yes. There are times when he can't control himself. Yes.

Q. As a matter of fact -- as a matter of fact, he controls himself, in a sense of violent acts, very well, doesn't he,

based on his history now, just looking at his history, which you have reviewed?

A. I don't know if I could say that. I mean, I'm not controlling a violent act in myself right now. I don't have the urge to jump up and throw my water at you. I'm just not even thinking about it. It depends on the situation, and you just can't generalize like that.

Q. Well, I mean, I'm asking you, is he -- based on your -- based on your review of his criminal history, his prison records, his medical history, all the work -- the interviews with him, he does not have a significant history of numerous, numerous, many, many times over, violent offenses or acts, does he?

A. No, they are not numerous, but they are significant. They are murderous, they are dangerous, they are bizarre. They are beyond the realm of normal, like bar fights, you know, it's way above that level.

Q. All right. So he's not -- that's what I'm saying, that's my whole point, that he's able to control his violent tendencies, or his violent outbursts, or his aggressive behavior all the time, except for very few occasions in his life.

A. I disagree. He is not controlling them right now. He's just sitting in the room. He's not -- we have to put him to the test. For instance, he is not controlling how his

P.E.T. scan will look when we looked at a picture of his P.E.T. scan. It's not way in his control at all.

Q. He's not -- he's not jumping up throwing his water at me either.

A. Why don't you provoke him, I mean, you know, get in a room by yourself with him, provoke him, turn the heat up, the psychological heat, put him in a position where he has to choose -- hang on one second -- between him or you. I suspect you might be in danger if you did.

Q. And he's been in prison, right?

A. Correct.

Q. Violent, highly emotional.

A. He's been violent.

Q. High pressure. I mean, that's what prison is like, wouldn't you agree?

A. Well, it depends. For some people prison is a comforting place, you know, three hots and a cot, you know. As I mentioned to you before, years ago the studies have shown that psychopaths do very well in prison. They -- you know, Ted Bundy didn't attack anyone, or John Wayne Gacey didn't attack anyone. In fact -- I forget the name of the guy in Chicago -- he was attacked and killed by someone. They -- in a highly contained environment psychopaths are maintained. It's when they are, again, put in positions of high emotional conflict, high stress where they have to choose personal,

moral dilemmas. They have to, you know, compute through those, that's when they are disabled.

Q. His prior criminal history, with the exception of the attack -- I'm talking prior to these crimes -- with the exception of the attack on Elizabeth Buckner, in review of his prior criminal history he has no crimes of violence in his -- on his prior criminal history, does he?

A. I don't think so.

Q. And in reviewing his school records he has absolutely no history of violent acts during his school years.

A. Not by his school records that I can remember.

Q. And in his eight plus years that he was in the Department of Corrections he has virtually no reports of violence or violent acts while in prison, does he?

A. Correct. I believe that's correct.

Q. So my question to you, Doctor, is, he can control his violent -- these violent tendencies most of the time.

A. See I -- I disagree with you. I don't believe he's controlling them. I don't believe a person could go for years controlling anything without it breaking through. If I asked you to stop eating chocolate today for the next four years -- I don't know, maybe you don't like chocolate, but if you did I suspect you might violate my rule eventually. That level of control is just, you know, unheard of. If someone -- it's like weight loss. Eventually people lose weight and then

eventually they lose control and they start eating. He's not having to control himself in the same way as during these episodes. It's not -- it's apples and oranges.

Q. And the only time we see, at least in his criminal history, these violent outbursts, attack on Elizabeth Buckner, attack on Laura and [redacted] two notable -- and of course, the murder we are here for today -- let's talk about those two. Those are the two -- they are excessive, they are notable, but for those two events he's been able to somehow manage to con -- at least not manifest these violent tendencies, they don't come out, thus they are controlled somehow.

A. Well, or they don't manifest, is a better word. That is true, however, he's still a psychopath, and psychopaths don't do violence twenty-four seven. That's not part of the diagnoses, or for anti-social. It says that they have, in essence, a predilection for it, they have a much lower threshold for it. That's exactly the science. That's -- I agree with that.

Q. And Doctor, you are not -- there's really no -- there's not a specific diagnosis of a psychopath. I mean, I understand the term -- I think I understand the term you are using but the D.S.M.4, it talks about anti-social personality disorder. That's sort of -- you are sort of extrapolating that out ---

A. I'm glad you asked that, because as I drove out here I brought my D.S.M.4, which I didn't have last time, and I reviewed it very closely, and in it, when it talks about anti-social personality disorder it says, some clinicians may choose to use the word psychopathy, as it was used before. And you were -- went to great pains to say how important this book was -- and in some ways I agree with you -- and it says that right in the book.

Q. Okay. Fair enough. I appreciate that.

THE COURT: Anything else, Solicitor?

MR. HEMBREE: No, Your Honor.

THE COURT: All right. Very good.

Mr. Diggs.

REDIRECT-EXAMINATION BY MR. DIGGS:

Q. Just very briefly. Doctor ---

THE COURT: Honestly, I didn't mean for you --- for redirect questions. I just said, did you have a motion at this point in time?

MR. DIGGS: No.

Your Honor, we would ask you to conclude that there is a prima-facia showing of insanity at this time, we should be permitted to introduce evidence of that defense during the course of the trial, and it remains a jury question as to whether or not Mr. Stanko was insane at the time this particular act was committed.

THE COURT: Based upon the testimony of the witness, Dr. Sachy, then assuming he would carry forward with that and reviewed it very closely, and in it, when it talks about anti-social personality disorder it says, some clinicians may choose to use the word psychopathy, as it was used before. And you were -- went to great pains to say how important this book was -- and in some ways I agree with you -- and it says that right in the book.

Q. Okay. Fair enough. I appreciate that.

THE COURT: Anything else, Solicitor?

MR. HEMBREE: No, Your Honor.

THE COURT: All right. Very good.

Mr. Diggs.

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THE COURT: Based upon the testimony of the witness, Dr. Sachy, then assuming he would carry forward with that and so indicate, I would -- do not have any problem with you pursuing the defense of insanity.

MR. DIGGS: Thank you, Your Honor.

THE COURT: All right.

All right, Mr. Diggs, are you ready to go forward?

MR. DIGGS: Yes sir.

THE COURT: Ask the jury to come in.

MR. HUMPHRIES: One matter, very briefly, Your Honor, if you don't mind -- and I've been -- I've just been shown some diagram that they intend to introduce, I assume through the next witness. Honestly, if there is anything else they've got, which by right they ought to give us, instead of throwing it at us right before -- I know what it is, you know, but just give it to us. That's all we are asking.

THE COURT: All right. Mr. Diggs, do you know of anything else, any other demonstrative aids of any kind, any reports, anything?

MS. WILLIAMS: I have an actual brain -- a skull ---

MR. DIGGS: We have a little rubber brain.

MS. WILLIAMS: ---But it's just for demonstrative, just like when they have in court that body that they pull out that they sometimes use on -- I forgot what they call his name, Jimmy, or JoJo, or whatever, I mean, but it's not to be

admitted in. It's simply a visual.

MR. HUMPHRIES: Well, they asked to admit that, so I'm -- that's what I'm saying.

MR. DIGGS: Well, I mean, I don't need to admit it. It's just ---

THE COURT: All right. So you are going to be using that as a demonstrative aid?

MR. DIGGS: Yes.

THE COURT: All right. I'll -- that sounds fine then.

MR. HUMPHRIES: Well -- and let me say this, Your Honor. If they do, and they display it to the jury, there needs to be some record of it, because it needs to be in the record.

THE COURT: Well, it can be put for identification, and then be part of the record.

MR. HUMPHRIES: Yes. My point is only if they've got anything else we really would like to know it.

THE COURT: I appreciate that.

MR. DIGGS: Your Honor -- and I understand what he's saying, and I really do not believe there's anything else.

THE COURT: All right. Very good.

MS. WILLIAMS: I have my skull and my brain. I mean, it's in my office. I was given this morning. Well, it was actually a funny of a thing, but it's a little -- it's little. I'll bring it.

MR. DIGGS: And you know what, Dr. Albiniak may not even want to use this.

THE COURT: All right. Very good.

Ask the jury to come in, please.

(THE FOLLOWING TAKES PLACE WITHIN THE PRESENCE OF THE JURY.)

THE COURT: All right, Mr. Diggs.

MR. DIGGS: Your Honor, we would call Dr. Bernard Albiniak.

THE COURT: All right. Please come around to be sworn, sir.

BERNARD ALBINIAK, being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MR. DIGGS:

MR. DIGGS: May it please the Court.

THE COURT: Yes sir.

Q. Dr. Albiniak, how are you this afternoon?

A. Pretty good.

Q. Okay. That's good. Let me ask you -- start off by asking you where you are currently employed and in what capacity?

A. I'm a Professor of Psychology at the Coastal Carolina University.

Q. Okay. And how long have you been so employed?

A. I'm in my thirty-third year.

Q. All right. And do you have any specialties within Psychology?
A. In graduate school I specialized in Physiological and Developmental Psychology.
Q. Okay. And in terms -- what do we mean by Physiological Psychology?
A. Physiological Psych is a field of study within Psychology in which we relate brain function and brain structure to human behavior.
Q. Okay. In terms of -- would that deal with things like how the brain is structured and how it works?
A. Correct.
Q. Various area ---
A. Correct.
Q. ---Healing with other areas. What do you do -- how do you use that specialty in your employment, or in your profession?
A. Primarily teaching, but I do some animal research also.
Q. All right. Have you ever taught any classes or anything of that nature, or written articles or anything relating to Physiological Psychology?
A. I teach physiological -- I'm teaching in the Spring. I've taught it four or five times in the last ten years.
Q. Okay. And have you ever been qualified as an expert in the State of South Carolina or the ---

A. Yes sir.

Q. ---Or the Courts in that area?

A. Yes, I have.

MR. DIGGS: All right. And Your Honor, we would offer Dr. Albiniak as -- Albiniak, as an expert in the field of Physiological Psychology.

THE COURT: Do you wish to question the witness?

MR. HUMPHRIES: Very briefly.

CROSS-EXAMINATION MR. HUMPHRIES:

Q. Doctor, how many times, and in what course have you been qualified as an expert in that particular field?

A. I -- as I recall, at least twice, maybe three times. Last time was in the previous Stanko case, one time in Beaufort, South Carolina.

MR. HUMPHRIES: Thank you. I don't have any further questions.

I don't have any objection to his being qualified.

THE COURT: Very good. And the field again, Mr. Diggs.

MR. DIGGS: Physiological Psychology.

THE COURT: All right. Very good. He's qualified to give his opinion.

BY MR. DIGGS CONTINUED:

Q. Now, Doctor, basically what I want to do this afternoon is talk to you about general things, not specifically this Defendant, but I want you to -- I want to discuss with you and

ask you some questions about the brain and how it is structured, and basically how it works, and if you have any knowledge about studies or reports, things of that nature that have been done -- you know, that backs up your opinions or your understandings, if you could tell us about those as well.

A. Okay.

Q. Would it help you if we had a little diagram of the brain ---

A. Yes.

Q. ---To talk about these things.

A. That would be helpful.

Q. All right. Let me show you what we've got for just this afternoon. Have you ever seen anything like this?

A. Yes.

Q. All right. Would it help if I brought that little stand over here and put this on there?

A. Yes, I think the closer to the jury the better.

Q. Okay. Now, can you see that?

A. Not well. Yes.

Q. All right. If you need to I'm sure His Honor would allow you to come down and point ---

A. Okay.

Q. ---Direct our attention to what it is you are talking about.

All right, now, when we talk about the brain and how it

works, how information is processed, tell us basically how that occurs, what's going on in the brain at any given moment.

A. That's a large area of discussion.

Q. Yes.

A. To simplify it, the brain -- the portion of the brain you can see if we open the person's skull, is called the cortex. All of that pink matter with the folds in it is called the cortex. That's all you can see from the surface. You have to open the brain up to see other parts. So the cortex of the brain, particularly these lobes, called the frontal lobes, in front of your forehead, are the pro -- the main portion of the brain that makes us a human being. The front part of the brain is used to make decisions, to act rationally, and to inhibit impulses that would otherwise occur.

Q. Can you come down and show us what you are talking about in any of these drawings or ---

THE COURT: If you are going to do that then move that board all the way up to the rail then, right in front of the microphone. Get right close to it, and right next to that box. That's a microphone.

A. This is the cortex of the brain -- and again, that's all you can see in the human brain unless you cut it in half like this picture here. This large area of the brain is called the cortex. There are four lobes to the cortex. This

is the occipital. That's where visual information is interpreted by the brain. This is the temporal lobe where auditory information, things you hear. This is the parietal lobe which interprets skin sensitivity, like itching and scratching, and these are the frontal lobes. These are the biggest lobes in the brain. From this point here, called the central fizzier forward, is the frontal lobes, and half of it, it's most extreme portion, is called the pre-frontal cortex. That's the portion we are most interested in. That's the portion that distinguishes us from apes and orangutans and elephants and so on. They don't have the capacity to control their impulses such as you and I do. As a matter of fact, a young child has very little development in the front -- pre-frontal lobes. That's why children can't control their impulses. They can't control them.

Q. Is that why they do -- a lot of times they do what we would think of as stupid things, talking about juveniles, teenagers, they do stupid things.

A. Same thing.

Q. Adults tend not to be so. Is that because of the development of the frontal lobe?

A. These frontal lobes are the last part of the brain to develop. Until you are about twenty-five years old these frontal lobes are not fully developed, so a person doesn't become an adult biologically, or physiologically until those

frontal lobes are fully developed. Unfortunately -- I should mention this, the cells -- we call them neurons -- in the brain are in the cortex, a lot of them are in the cortex. That's a real unfortunate design because if a person gets a blow to the head, like a boxer, then you are going to damage cells in the cortex, and when those cells are damaged they don't repair. The brain is not like your finger, when you cut it it can repair. The brain has very minimal capacity to compare -- repair, so if you damage any of the cortical neurons that's going to be a permanent -- relatively permanent injury, with incapacitation in many cases. So if the frontal lobes become damaged that will cause this individual probably not to be able to control their impulses, as well as they otherwise would be able to.

Let me explain a little bit more about that. If you look underneath the brain, right here -- this is the brain cut in half now -- this is the limbic system, this area right here. the limbic system is where emotions are experienced, so when you get angry, or upset, or happy, or euphoric that's the limbic system function -- those are limbic system functions. Those are very ancient. We've had these for millions of years. So the limbic system has to be controlled in some way, and this -- that's one of the jobs of the frontal lobe. When a person gets angry, an adult person gets angry you feel that anger, but the frontal lobes tend to inhibit that anger, not

allow you to act it out, otherwise we would be hurting each other all the time. Animals don't have that capacity, or limited capacity, so animals do get violent frequently when they are provoked, which is normal for animals. It's not normal for an adult human to allow that to happen because we -- when we learn social rules about not hitting other people, of instance, the frontal lobe comes to adopt those principles and it inhibits the activity of the limbic system.

Q. It makes me think of maybe two little children about two years of age, or you know, and how one might hit the other one and ---

A. They will strike back.

Q. And I know this sounds simple and basic, but is that because of the lack of ---

A. Exactly.

Q. ---Frontal lobe development?

A. Walk into any kindergarten call and you will see kids smack each other, and that's normal behavior for a five year old.

Q. Now, that child might know that it's wrong to do it in some situations ---

A. Yes.

Q. ---But in other situations the child acts out on that and hits, and beats up another child.

A. Right.

Q. Let me ask you this. Now you mentioned earlier in your testimony that this frontal lobe area might not fully develop until maybe mid-twenties.

A. Mid-twenties.

Q. If someone has a problem in that frontal lobe area, physiologically, would you be surprised if didn't manifest itself until that time in life? You get what I'm saying?

A. I'm not sure.

Q. When the frontal lobe should be developing ---

A. Right.

Q. ---And should be where -- providing you with the ability to engage in analytical thinking, complex thought, would you be surprised that it didn't manifest -- your inability to do that didn't manifest prior to that in life? You see what I'm saying?

A. I would be somewhat surprised, but it's not -- not improbable completely. The thing that I remember about these frontal lobes is they -- you have to have a provocation to activate -- the main structure in the limbic system, by the way, is the amygdala. That's the structure that -- if you look at it on a P.E.T. scan when a person gets angry the amygdala lights up essentially. That means the person is experiencing anger. Now those impulses go to the frontal lobe from the amygdala, and the frontal lobe can either override them, if it can, then there will be no aggressive behavior.

There will still be anger, but not aggressive behavior. But if the frontal lobes are inefficient, or have damage, then they can't override the amygdala, and you get an acting out of aggression, and that happens in children, it happens in adolescence, and an adult with impaired function in that frontal lobe, it can happen in those individuals.

Q. All right. Now, are you familiar with what's alleged in this case ---

A. Yes.

Q. ---In Mr. Stanko's case. When we talk about a shooting, a homicide, taking of a life, can you put that into context with what you are talking about now in terms of brain structure and function?

A. I think to do that fairly you would have to remember -- or I would have to tell you about this. There are two forms of aggression that are recognized in Psychology. One is what we call premeditated predatory aggression. That's planned. You lay out a plan, you follow it out. It might take several hours, or a while to set up that plan. That's predatory aggression. That's not a function of the frontal lobes. That's planned, non-emotional.

The other form of aggression is impulsive aggression triggered by some stimulus immediately, and the person acts on it. That kind of aggression is hard to control with frontal lobes that are damages, the impulsive kind of aggression.

Q. Now, when you were talking about the impulse and aggression, what at the types of impulses -- and you said they come from the limbic system?

A. Limbic system.

Q. What types of emotions or impulses are generated in the limbic system?

A. The limbic system generates the full gamut of the emotions, good and bad, positive and negative, so extreme euphoria, limbic system, extreme anger, extreme fear, any form of emotion, positive or negative, starts in the limbic system, flows to the frontal lobes, and the frontal lobes either suppress that or fail to suppress that.

Q. All right. What's the stimulus for the generating of the limbic system impulse or stimulus? You understand my question?

A. Yes. That will be -- and here is where it gets a little complex. If a person with limbic -- or excuse me -- frontal lobe impairment, let's say, perceives a threat -- all it takes is perception, not a real threat, just the perception of threat, then you trigger the limbic system quickly, within hundredths of a second, is triggered first, so the limbic system always triggers first, then the frontal lobes may or may not be able to suppress that urge. Now if they can't suppress the urge then the behavior gets acted upon.

Q. All right. So, again, point to the limbic system for

the jury, please sir.

A. It's this one.

Q. All right. Now, you are saying through any one of our senses ---

A. Any one of the senses.

Q. ---This area of the brain perceives a threat. Now, is that evaluated here in the limbic system?

A. No. The limbic system does no evaluation. It's a primitive center. It's a very primitive center. All animals have limbic systems, or the vast majority do. All humans have limbic systems, but what the animal lacks is the ability to control that limbic system to any great extent, so the limbic system doesn't do any evaluation, other than to perceive a threatening stimulus. It's up to the frontal lobes to suppress that.

Q. Okay. So then what happens when this -- and we all have this -- what's this called?

A. Limbic system.

Q. I know, but in the middle.

A. Oh, the amygdala.

Q. Okay. The amygdala. We all have the amygdala in the center of the brain.

A. Right.

Q. And it's job is to do what?

A. Perceive threat or danger, primarily.

Q. All right. And it doesn't evaluate, it just like sets off an alarm.

A. It sets -- it's a bell. It goes off.

Q. All right. And then in terms of the function of the brain what happens?

A. Then those impulses from the amygdala -- by the way, there are a lot of connections between the frontal lobes and the limbic system. They talk to each other essentially. The limbic system is always triggered first. Now, it's sub-conscious, almost, but then you experience the anger. That's the cortex acknowledging that it's occurred, but now the choice is either to suppress the behavior of aggression, or to allow it to proceed. And even in a healthy adult it can reach that level. If the limbic system is extremely aroused, then the frontal lobes, even in the normal person, can't handle that load, and you will see aggressive behavior as a result.

Q. All right, now, what happens in a situation where someone has damage to this area of the brain here?

A. All right. If there's damage, particularly to the orbital frontal, this area right here, that's the part of the frontal lobe that really has the inhibitory mechanisms, so if you damage the orbital frontal area you do not -- you eliminate inhibitory capacity. That means any time you stimulate the amygdala significantly you will get an aggressive display, under the appropriate circumstances.

There has to be a provocation of some kind, auditory, or visual, or whatever, sent to the system, but then it's going to all converge on the amygdala. Once the amygdala is stimulated you have the potential for aggressive behavior. If you can't inhibit it, with damage to the frontal lobes, then you have aggressive behavior.

Q. Now, how often during the day would an individuals be confronted with, you know, a potential alarm going off and the amygdala spreading out to the limbic system?

A. It varies from person to person, and varies a lot, but some people it happens fifteen, twenty times a day, and most of us suppress that urge. Road rage is a perfect example of circumstances where sometimes we act -- most of the time we don't, we just get mad, we don't do anything physical. Some people go to the extent that they get out of their car and they sock the other person in the face. That's where the limbic system has overridden the frontal lobes. Even in that, quote, normal person, the frontal lobes can't completely suppress the limbic system.

Q. Now, what if -- what else is associated with this frontal lobe area?

A. Well, there are many other functions. There's decision making ---

Q. Tell us what those -- that particular area of the brain does, in addition to regulating the limbic system.

A. All right. In addition to the regulations function of the frontal lobes, planning, as an adult would plan, to understand the consequences of your behavior, the future consequence, making decisions that balance your emotions with what you know is socially appropriate, etcetera, etcetera, so the frontal lobes have a variety of functions, but they all circulate around controlling emotional behavior, which is, again, a low center in the brain.

The brain evolved this way, by the way, bottom up. This is the last part of the brain to evolve. That's what distinguishes us from animals, this frontal lobe structure.

Q. Now, have you ever been involved -- you can return to the seat.

Have you ever been involved, or looked at any studies that involved individuals with brain damage and injuries in the frontal lobe are of the brain?

A. Yes, I have.

Q. Tell us about those.

A. The studies I read most recently were done by a Doctor Emil Coccaro of University of Chicago. He has been doing research in this area for about twenty years. He's one of many, and his studies have looked at impulsively aggressive felons, and the functions of their frontal lobes and the amygdala, and he finds in many of those cases the felons have less frontal lobe activity than is normal, and that's

partially why they act aggressively, and he's published probably now around thirty articles on this issue.

Q. Now, in the -- what -- do we know where in the brain the process takes place that distinguishes right from wrong?

A. That's partially a frontal lobe function too, the orbital frontal lobe function.

Q. Explain that to us. How do we know that?

A. That -- the orbital frontal lobe is, again, part of the brain that distinguishes moral right from moral wrong, and we learn that over time. We learn that. By the time you are twenty-five or thirty you know clearly what's morally right, morally wrong, but if you damage that frontal lobe that function can be, at least diminished, or destroyed, depending upon how much tissue is destroyed.

Q. All right. And would that -- let me ask you this. Where is the empathy in the brain?

A. I'm not sure scientist know exactly, but it's probably, again, a frontal lobe function, more than likely, because apathy is not an animal instinct like it is in humans.

MR. HUMPHRIES: Your Honor, I'm going to have to object to that. That doesn't meet the basis of an expert opinion, more than likely.

THE COURT: Sustained.

MR. HUMPHRIES: Thank you, Your Honor.

Q. Are you aware ---

THE COURT: Just a second. Since the Court sustained that objection the jury will disregard the last statement by the witness.

You may proceed.

Q. But in the determination of right and wrong, is there scientific evidence that shows that takes place in an analysis occurring in the frontal lobes?

A. There is reasonable evidence that that's where that decision is made. That's the decision-making part of the brain, the frontal lobe.

Q. And is there scientific consensus with respect to that?

A. Reasonably so. It's not as well established as the suppression of emotional behavior, but there is reasonable evidence for that.

Q. All right. Again, I asked you a little bit about this before, but what would happen if we had an individual experiences that limbic system impulse, something that triggers that impulse from -- generated in the base of the brain, and it goes out into the frontal lobe area for analysis. Is that your testimony?

A. Yes. Correct.

Q. All right. Now what happens if there is an inability in that area of the brain to properly analyze that emotion?

A. Well, then you get a full-blown expression of that emotion without any inhibition at all. That could be

euphoria, that could be anger, that could be happiness. It wouldn't matter. It doesn't matter what the emotion is, the brain has lost it's ability to inhibit that emotion, so you get full-blown expression of that emotion.

Q. Now, in -- how do we know -- or is science able -- in your field are you able to determine when an area of -- when that area of the brain in functioning properly, and when it is not? Are there any technologies available that would help you or medical science make those determinations?

A. The greatest tool that's been around now for about twenty years are the brain-scanning techniques. They are wonderful techniques.

Q. Tell us about those, if you would.

A. Well, when I was in graduate school we had no brain-scanning techniques. We had the -- as awful as it may sound we had to damage parts of a rat's brain, or an animal's brain, to see what effects that would have on the animal. Now scientists can look inside the brain while it functions without damaging the brain, with P.E.T. scans and spec scans, and F.M.R.I. scans. They can look at the functioning brain and determine what parts of the brain are working, what parts of the brain are not working. It's caused huge advances in Neuroscience in the last fifteen years or so.

Q. And are you familiar with whether or not any such scanning technologies have been used in Mr. Stanko's case?

A. Yes.

Q. Tell us what you know about that. What has -- what have you had access to, if anything, regarding Mr. Stanko?

A. I've seen two, I guess, pieces of evidence regarding his particular brain. Dr. Ruben Gur did some brain structural studies using scanning techniques. Structural studies just look at whether there's any physical deficits in the brain, like missing tissue, or damaged tissue. So Dr. Gur has done those kind of studies.

MR. HUMPHRIES: Pardon me. I'm sorry. I'm going to have to object if Dr. Albiniak is going to testify about the reading and interpretation of the M.R. images or P.E.T. scans. That's beyond his area of expertise and I would object.

MR. DIGGS: Well, Your Honor, he has -- in response, Dr. Albiniak teaches classes at the University ---

THE COURT: All right. All right. Let's not do this. Ladies and gentlemen, go to your jury room, please.

(THE FOLLOWING TAKES PLACE OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: Now, none of those studies are in evidence, so for the witness to talk about them, they are not in evidence. If he relied upon them he might be able to say he relied upon them, but for him to talk about what is contained in them, or what they say, they are not in evidence.

MR. DIGGS: How about if we do it this way? I'm going

to ask him for an expert opinion as to whether or not there are any anomalies in the structure of Mr. Stanko's brain, and he could render an opinion on that, and I can ask him what does he base that opinion on.

THE COURT: Solicitor.

MR. HUMPHRIES: Your Honor, my -- my objection is that there are medical doctors whose job it is to take these images and interpret them. Dr. Albiniak, who is very qualified in the area in which he's testifying, is not qualified, by experience or training, to give an interpretation of those images. If they were we would send them to social -- to physiological psychologists for reading. It's beyond his area of expertise, and they have witnesses who will testify to these things.

THE COURT: All right. How can he testify about that? I'm ---

MR. DIGGS: Well, in his review of the material ---

THE COURT: What would allow him to do so?

MR. DIGGS: Yes. In material that he's reviewed in this case. And what we had intended to use him for is one of the things he has already done, give just an overview of the brain structure, and how the function applies -- I mean, how that brain function occurs, that we are specifically going to focus on in this case, in this defense, and then get a little bit of opinion evidence from him regarding Mr. Stanko's

particular situation, and I expected to elicit from him that he was of the opinion that we had a structural anomaly in Mr. Stanko's brain.

THE COURT: He's not -- he's not a medical doctor.

MR. DIGGS: No, but he's a Physiological Psychologist, and he bases the structure -- understand what I mean by structure, Your Honor, it's just, you know, in terms of, like that brain -- I think that I would be able to elicit from him he's familiar with studies that establish what a normal size, based on a data base of brain sizes would be, and how Mr. Stanko's brain fits as against the normal -- the data base of what ---

THE COURT: You will have to explore that with him because he hasn't talked about that yet.

MR. DIGGS: Okay.

THE COURT: You will have to explore that first, before you go into it. I don't know what he's going to say, so we will ---

MR. DIGGS: Okay.

THE COURT: ---We will see what ---

MR. DIGGS: You mean in the presence of the jury?

THE COURT: I mean -- yes, I mean, before he could even begin to give the opinion he would have to talk about that.

MR. DIGGS: What I had planned to do was get the opinion, and then have him explain it in that regard, but I

would be happy to go through that first then ask ---

THE COURT: I think you need to go through the background first.

MR. DIGGS: Okay. I understand.

MS. WILLIAMS: Your Honor, I'm sorry. May we take two minutes of a short break. The Defendant needs to go in the back, just for maybe three minutes.

THE COURT: All right. Two minutes. Thank you.

(THE FOLLOWING TAKES PLACE AFTER A BREAK AND OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: Ask the jury to come in, please.

(THE FOLLOWING TAKES PLACE WITHIN THE PRESENCE OF THE JURY.)

THE COURT: All right, Mr. Diggs, you may continue, sir.

MR. DIGGS: Thank you, Your Honor. May it please the Court.

BY MR. DIGGS CONTINUED:

Q. Dr. Albiniak, are you aware of any studies that have been done in the field of Psychology, or that you have used in your -- performance of your responsibilities in your position that deal with the structure of the brain, and -- in terms of volume and mass, and that kind of thing?

A. Yes.

Q. Tell us what -- what you know about that, and how it is

that you've come to be aware of it.

A. Well, again, the most recent research, the last fifteen or twenty years, has focused on scanning technology. There are two types of brain scans, basically. Some scans looked at the structure of the brain, like C.A.T.. C.A.T. scans are structural. They don't show any activity at all. Then there are other scans that show activity of neurons, and then those -- those scans colors indicate how active the neurons are. If the colors are red or yellow that means those neurons are really active. If the colors are green or blue that means those neurons are much less active. So in a living brain you can scan the brain for twenty minutes while a person performs some function and you can see how those centers change as they do different -- perform different tasks, so again, there's two types of scans fundamental. There are structural scans, like C.A.T. and P.E.T., and then there are functional scans like F.M.R.I., and S.P.E.C., and some other scans.

Q. And F.M.R. ---

A. F.M.R.I. is a activity scan.

Q. Okay. Now, are you familiar with any studies that have attempted to compile a data base in terms of how a -- what we would consider to be a normal brain, how it would be structured?

A. Dr. Gedd, G.e.d.d. ---

Q. Okay.

A. ---N.I.M.H., has done for the last ten years, scans of children's brains. He's followed them for the last, I think fifteen years now ---

Q. Uh huh **(indicating positive)**

A. ---From infancy, the child, to the adolescence. He was one of the first physicians to indicate that the adolescent brain is not fully developed anatomically until they are about twenty-five years old, so he's done repeated scans of the structure of the brain to watch it evolve over a fifteen or twenty year period of time.

Q. And are there -- are you aware of any studies that compile information to show us what a normal brain should be -- should look like in terms of it's structure?

A. Oh, there are just hundreds of those studies. There's hundreds and hundreds of those studies. Since the scanning technology became available in the last, again, fifteen years, there have just been hundreds and hundreds of studies on normal brains and on pathological brains, so we know ---

Q. Now what do you mean by pathological brains?

A. Brains that have been damaged by blows to the head, or infections, or prenatal damage, etcetera, etcetera. There are a lot of those studies.

Q. Could there be a pathological brain that you just referred to for which we don't have any direct cause, in terms of understanding why it's pathological?

A. Oh yes. I mean, if a brain appears on scanning to be pathological, I mean, there's clearly damage to, let's say the occipital lobes, that does not tell you how that damage occurred. It could have occurred due to infection, to a blow to the head, excessive drug use, street drug use can cause damage to the brain, so that does not indicate how that damage occurred at all.

Q. All right. Now, are there studies done, to your knowledge, that compare a specific brain in terms of it's structure to what would be considered to be a data base of normal brain structure?

A. Yes. There are numerous of those studies. What they would generally do in that case is scan a number of, quote, normal brains, or non-pathological brains. That would be the data base. You've got thirty, or forty, or fifty, quote, normal brains, intact brains.

Q. Okay.

A. Then you can use that data base to compare some other prospective brain to see if it fits the general pattern of that brain. If it's pathological it will not. It will show some deficits in that brain compared to the data base.

Q. Is thirty or forty, of fifty enough in terms of establishing data base of normal?

A. Statistically, yes.

Q. Okay. If someone were critical of the data base as

being too small, what would your response in that situation be?

A. Well, I do teach statistics at the University, both basic and intermediate, and one of the rules in Statistics is, you have to have an adequate sample to perform good analyses, and usually in Statistics that would -- a limit is usually about thirty, you have an adequate sample, of any kind of object, so if you have thirty or more, and they've been randomly obtained -- that's a critical factor ---

Q. Okay.

A. ---Then that sample is pretty adequate for analysis purposes.

Q. In other words, if you wanted to look at thirty apples, and you get a data base of thirty apples ---

A. As long as they are randomly obtained.

Q. ---And then compare a specific apple as against that data base.

A. Exactly.

Q. And that would be sufficient to compare it in terms of nationwide, or you know, of all of the apples that might exist in the Country?

A. Yes.

Q. All right. Now, was any scanning done in Mr. Stanko's case, to your knowledge, that ---

A. To my knowledge, yes.

Q. Okay. With respect to -- okay, and again, what were those two scanning procedures?
A. One scanning procedure was structural, to see if there were any structural deficits in the brain. The other scanning procedure was functional, if there were any areas of the brain that didn't function to a normal level.
Q. Okay. And I want to focus right now on the structure, and when I say structure, exactly what -- what am I talking about, or what should I be intending ---
A. Structure simply means if the brain -- for instance, the brain of a long-term alcoholic will be shrunken some ten to fifteen percent, the whole brain will shrink some ten to fifteen percent. That can easily be detected on a C.A.T. scan or a structural scan. What you are looking for is either loss of tissue or increased fluid in the brain, so if you have increased fluid in the brain that means there is tissue missing or you wouldn't have excess fluid, so you are either looking for the evidence of tissue damage or fluid accumulation. Either of those would indicate the structure is not normal.
Q. Okay, now in Mr. Stanko's case was a comparative analysis done that compared Mr. Stanko's structural image against a data base of ---
A. Yes.
Q. ---Sufficient size to establish normalcy, in terms of

structure?
A. Dr. Ruben Gur of the University of Pennsylvania School of Medicine did a -- has a data base of forty-one, I think it is, normal brains, which he uses for comparison purposes.
Q. All right. And did you use -- did he do an evaluation or a comparative analysis with respect to Mr. Stanko?
A. Yes. He compared Mr. Stanko's brain to that data base.
Q. All right. And let me ask you this, as an expert in the field of Physiological Psychology do you have an opinion as to whether or not there are any aberrations in the structure of Mr. Stanko's brain?
A. There were several. I don't have the information right in front of me. There were several specific areas of the brain that had either excess fluid or decreased tissue volume.
Q. All right, now did you use -- or what did you use in order to reach that conclusion you just stated?
A. I used the report that Dr. Gur sent to the Defense team.
Q. All right. And did that include a graph?
A. Yes, it did.
Q. All right. Would it help you if you saw a picture of that graph?
A. It would help.
Q. All right. Let me -- let me show you what's been marked as Defense Exhibit 31 for identification, and see if

you can identify it.

A. Yes. That's Dr. Gur's graph.

Q. All right.

MR. DIGGS: Your Honor, we would like to offer this into evidence.

THE COURT: Objection?

MR. HUMPHRIES: No objection, Your Honor.

THE COURT: All right. So that's Defense 1?

MR. DIGGS: Yes sir.

THE COURT: All right. Defense's 1 is in evidence without objection.

The Court Reporter tells me it's 31.

MR. DIGGS: We do have it marked 31. If it would be easier we will leave it at 31.

THE COURT: All right. So it was pre-marked as Defendant's 31, so it's in evidence without objection.

(DR. GUR'S M.R.I. GRAPH ENTERED INTO EVIDENCE AS DEFENDANT'S EXHIBIT NUMBER 31.)

Q. All right. Let me get the little tripod again.

MR. DIGGS: And Your Honor, with your permission I'm going to get Mr. -- or Doctor Albiniak back down.

THE COURT: Now, I was going to say, take it right in front of that box. I want to -- move it over in front of the box.

MR. DIGGS: All right.

THE COURT: No. Move it that way in front of the box, right there. Okay. And then have the Doctor stand right next to the box. There we go. Good deal. Go ahead.

Q. Now, Dr. Albiniak, we are talking about brain structure.

A. Right.

Q. And what are we looking at here with a -- this graph?

A. This line represents the forty-one normal brains, and this is the expected range. You would find some differences brain to brain to brain. No two brains are exactly alike. Brains differ in size, in different areas, differ slightly, so this is what we would call the tolerable limit, from what we call one standard deviation unit above to one standard deviation unit below. Anything outside of that range, from minus one to plus one, up here and down here, would be considered at least statistically rare. For instance, this point here -- this is the left frontal lobe, which is this side, left of the patient -- this frontal lobe is low in tissue, meaning there is some tissue missing, compared to forty-one brains.

Q. Let me ask you, what we are saying there in terms of the low volume of tissue?

A. Volume of tissue.

Q. Does that mean simply the brain matter is not there?

A. Well, some of the brain matter is missing for whatever

cause.
Q. All right. And how much -- can we tell how much is missing in that brain?
A. You can't tell how much from this diagram, but you can say this. Statistically, to be two standard deviations below normal, that would be about two percent of a hundred brains, for instance, so it's fairly rare.
Q. All right. We are talking about possibly two percent of the population.
A. Would have brain tissue at that level.
Q. Now that is all the time, he's at that level all the time?
A. Yes. This is structural. It's not function.
Q. And it's not depending on his thought process, what he's thinking about ---
A. No.
Q. ---What he's doing ---
A. No.
Q. I mean, that's just -- if you could open up his brain that's how big it would be, or how small?
A. Exactly.
Q. Now, what else can we see from that graph?
A. The only other thing I notice that's of importance is the medial area. Medial means in the middle of the brain, not out here on the edges. The medial area of his brain is

extremely low. It's our four standard deviation units, which is way below one-tenth of one percent, so that is a much bigger difference than this, meaning there is tissue missing, again, for whatever reason, in the mid-line of his brain.

The only other difference is the ventricular fluid level is high in the entire brain. Remember, when there is tissue missing in the brain fluid fills those spaces. Your brain is filled with cerebral spinal fluid that flows through the brain all the time, and if it's that high in a portion of the brain that means there's tissue. That's further confirmation there's tissue missing. You don't have fluid in the brain, at that level, unless there is tissue missing.

Q. Is there any way you can look and tell us what functions would be occurring in Mr. Stanko's brain in those areas that are missing material?

A. Well, the main problem, again, is again the frontal lobe. If the frontal lobe is missing tissue that would at least suggest that there is some loss of function in the frontal lobes, and primarily impulse control, decision-making, those important functions, and that's not repairable. You can't repair damaged brain tissue. It's simply lost, and that's lost forever.

Now that won't always manifest itself. It's not that the person always functions like this, but if there's a provocation this individual is more likely to act out than you

or I would be.

Q. Okay. Now, you can return.

Now, are you aware of any other scanning that was done on Mr. Stanko?

A. Dr. Joseph Wu did some F.M.R.I. scanning, which is functional, not structural.

Q. Okay. Were there any P.E.T. scans done?

A. Yes. The P.E.T. scan, or the F.M.R. scan was done by Dr. Wu, or it was done at M.U.S.C. at his direction.

Q. All right. And that was with respect to what aspect of the brain?

A. That, again, would scan how and what -- the way I understand the scanning procedure is, the patient is put under a task of some kind that requires frontal lobe function ---

Q. Okay.

A. ---Some kind of a task. He is performing the task as his brain is scanned, and this goes on for fifteen or twenty or thirty minutes, and they can watch the brain as it works essentially.

Q. Now, are you familiar with how brain scans or P.E.T. scans are normally done when used for the purpose of discovering tumors, or things of that nature?

A. I have a basic knowledge.

Q. All right. You are not an expert in that ---

A. Not an expert at all.

Q. All right. How about with respect to the use of software?
A. Not an expert at all, not even close.
Q. All right. Now, in the area of the P.E.T. scan information that you have -- were you -- well, let me ask you this. Were you provided P.E.T. scan data analysis with respect to performance ---
A. Yes, I saw -- or I had ---
Q. ---In Mr. Stanko's situation?
A. ---Access to a C.D.. Right.
Q. And what -- do you have an opinion based on that particular ---

MR. HUMPHRIES: I would have to object to that, Your Honor.

THE COURT: You need to lay the foundation.

Q. Well, have you -- in Physiological Psychology, do you undertake a study of brain function?
A. Oh, yes, extensively.
Q. And what areas of the brain function, and at what level of capacity?
A. Well, we use a lot of still photos of P.E.T. scans. We don't have C.D.s., but our textbook is filled with still pictures of brain function, and you can read the colors, the green and the red, and the blue and so on, and so when a person is violently angry you can see red in the amygdala, and

so on.

Q. Well, are there data bases, studies, to your knowledge, that have been done at a compiled data basis of brain function ---

A. Yes.

Q. ---With respect to what we would consider to be a normal brain?

A. Yes. You always have to have a comparison.

Q. All right. And was a comparative analysis done, to your knowledge, with respect to a normal brain function data base ---

A. Yes.

Q. ---In Mr. Stanko's brain function?

A. Mr. Stanko's brain was -- frontal lobe, especially, less functional in terms of -- I think they used glucose metabolism in that case. The neurons that are really active are taking up lots of glucose. That's the fuel that the neurons use, and when you scan the brain and you see color blue, that means those neurons are not taking up glucose, they don't need it cause they are not working very hard. The red colors means that those neurons are taking up glucose and utilizing it.

Q. Did you form an opinion, based on your review of the evidence, in Mr. Stanko's case, that comparative analysis that was done ---

A. Yes.
Q. ---As to whether there is any anomalous function in Mr. Stanko's brain?
A. Yes.
Q. And what is that?
A. Well, the frontal lobes were, especially the left frontal lobe, was, we call it hypofunctional, meaning it's utilizing a lot less glucose, or a lot less blood flow than other parts of the brain.
Q. All right. And what would that translate into, if anything, with respect to an individual's conduct?
A. Well, if the frontal lobes are not functioning as they should then that opens the door for deficits in planning, moral reasoning, particularly impulse control. All those functions would be somewhat deficient, maybe markedly deficient in some cases.
Q. All right. Are you -- can you relate that statement, that last statement you just gave us, to any studies that would tend to support the statement that you just made?
A. Oh, there are numerous studies that have been done, again, over the last ten years, in, for instance, convicted murderers, who are in prison for murder.

When Dr. Adrian Reign, University of Southern California, scanned murderers' brains he found that those individuals have hypofunctionality of the frontal lobes. They

had been convicted of killing individuals, and their brain function was markedly lower than one would expect it to be.

Q. Okay. Now, with respect to Mr. Stanko then, in terms -- and when I say function, what do I mean when I talk about brain function?

A. Well, the electrical activity of neurons in a specific part of the brain.

Q. Okay. Would it be fair to call it brain activity?

A. Brain activity would be analogous.

Q. And is that what happens when you are engaged in a thought process or an analytical situation?

A. Right.

Q. And so let's assume that Mr. Stanko has an impulse coming out of limbic system that consists of anger or fear, or something of that nature, of the kind that you have outlined for us, and it's transmitted up to that area of the frontal lobe, can you give us an expert opinion about how it's -- what's likely to occur in that situation?

A. Well, it doesn't matter who it is, there is going to be less capability of the frontal lobes to inhibit that impulse. There is going to be less capability, how much less may be arguable, but clearly less capacity.

Q. All right now, would it be fair to say -- we said that there is no complex analysis, analytical analysis that occurs in the limbic system, that takes place in the frontal lobe ---

A. Correct.
Q. ---Of the brain. Now, if there is less activity there is there -- what does that mean in terms of decision-making?
A. Well, all those functions will be impaired. If the frontal lobes are not functioning adequately there is going to be impairment in all those functions, planning, understanding the consequences of your behavior, all will be impaired to some degree.
Q. All right. Bear with me for just a second. I lost my train of thought.

When -- all right. Bear with me.

Beg the Court's indulgence.

THE COURT: Yes sir.

Q. Just -- almost through, Dr. Albiniak. If -- are you familiar with any history of brain injury or anything of that sort with respect to Mr. Stanko? Did you have information of that nature to rely upon in terms of reaching your opinions or did you use anything like that in reaching your opinions?
A. In the materials I received I have two ---

MR. HUMPHRIES: Your Honor, I'm going to have to object. I don't know what opinion -- I fear that the information he intends to elicit is going to go to opinion that he's not qualified to make.

THE COURT: Well, let's -- first, why don't we identify, without describing what it is that he's looking at.

Q. He -- the opinions that ---

THE COURT: No, no, no. What I want you to do is have him identify what it is that he's looking at without describing it.

Q. Without telling us what it was, what information were you given? Now -- and understand, Dr. Albiniak, that we have asked you for two opinions here. One was with respect to any aberrations in the brain structure ---

A. Correct.

Q. ---And whether there were any aberrations in the brain structure ---

A. Correct.

Q. ---And whether there were any aberrations in his brain function ---

A. Correct.

Q. ---And you have rendered opinions that there were aberrations in both of those areas ---

A. Correct.

Q. ---Function and structure.

A. Correct.

Q. And what I'm asking you now is if you relied upon any information beyond the scanning technologies that you discussed?

A. I'm not sure what I can say, but there were two incidents in his life.

Q. All right. And did you take those into account in reaching your opinions?

A. Yes, I did.

MR. DIGGS: And I think, Your Honor, I would ask him what they were, and just ---

THE COURT: Is there any objection?

MR. HUMPHRIES: No, Your Honor.

THE COURT: You might go ahead.

MR. DIGGS: Thank you.

Q. You can answer the question.

A. Mr. Stanko was born in Guantanamo Bay, Cuba, and the records that I saw, at least, suggested the there was a complicated pregnancy, the physicians attending at the time were concerned about possible reduced oxygen supply to his brain during the birthing process, and feared for his survival, the way I read the record.

The second incident occurred when he was about sixteen years old. He got hit in the head with a beer bottle, the rear of the head, and the bad part about that is, the brain floats in the skull. It's not solid. It floats in your skull. If you get hit in the rear of the head it drives the brain forward, and it hits this frontal bone, and that would mean the damage won't necessarily be at the rear -- the skull will be -- but the damage will be on the frontal lobes of the brain, when it drives forward, and he lost consciousness

during that episode, which is never a good thing.

MR. DIGGS: All right. Thank you. I appreciate your time, and I would ask you to answer any questions the Solicitor may have.

THE COURT: Cross-examination.

MR. HUMPHRIES: Thank you, Your Honor.

Good afternoon, Dr. Albiniak.

A. Hey.

CROSS-EXAMINATION BY MR. HUMPHRIES:

Q. Let's go just -- and I have very few questions, which I'm sure pleases many.

Let's talk about birth records. Without any kind of specificity you would agree that medical doctors would be more qualified to read those birth records more accurately than you.

A. Sure.

Q. And regarding the beer bottle incident, the source of that information was self-reported by the Defendant himself. Do you not know the source of that ---

A. Well, I -- there was one other individual that I was told would testify in this case, probably, that he was there when it happened. That's all I can say about that individual, but it was self-reported, you are correct.

Q. Yes. Now, you indicated -- and I know that you will correct me if -- if I misunderstand, but you indicated that a

stimulus, of some sort, is required in order to have some reaction in the limbic system.

A. Correct.

Q. And I think you also qualified it as a provocation in order to generate an aggressive response in the limbic system. Is that correct?

A. Correct. Yes. A threatening or aggressive type, yes.

Q. Right. Sure. Sure. Now, what I would like you to do then is to identify for me the provocation for or this stimulus which would stimulate an aggressive response in the limbic system, from these set of facts. Okay.

I'm going to give you the facts.

A. Okay.

Q. Okay. All right. Taking Defendant Stanko into one's home and comforting him, going and buying him breakfast, shaving in front of your sink. Do find a stimulus within those facts?

A. Not within those facts, no.

Q. No. In fact, that kind of stimulus -- I think what you indicated was that the limbic system is not just responsible for aggressive reactions, but it could bring on euphoria, happiness?

A. Sure. Exactly.

Q. Actually euphoria or happiness would be the more likely response from some of those stimuli, wouldn't you agree?

A. Probably.
Q. And I understand what you've said about your -- and you had the benefit of other people's interpretations, that is, other Defense expert's interpretations of the M.R. ---
A. Sure.
Q. ---And the C.A.T. scan?
A. Of course.
Q. Okay. But if the M.R.I. and the P.E.T. scan were determined to be normal, okay ---
A. Uh huh **(indicating positive)**
Q. Then there would have to be some other reason for the aggressive action other than a brain defect, would you agree?
A. Probably so. Probably so.
Q. And finally, these studies on convicted murderers who had the loss of function in the frontal lobe, they are all in jail?
A. Of course. Yes.

MR. HUMPHRIES: Thank you.

THE COURT: Any redirect?

REDIRECT-EXAMINATION BY MR. DIGGS:

Q. Just very briefly. Of course there could be stimuli in that hypothetical that the Solicitor gave you that he omitted from the hypothetical.
A. Could be.
Q. Could be.

A. Uh huh **(indicating positive)**
Q. And we don't know at this point in time what they may be.
A. Correct.
Q. And I believe your testimony was they could be perceived threats ---
A. Correct.
Q. ---Not necessarily real ones?
A. Correct.
Q. And a perceived threat would be sufficient to trigger --

MR. HUMPHRIES: Your Honor, I have -- I have -- I object to the leading nature of the questions.

THE COURT: Mr. Diggs, please don't supply your answers in the questions. Thank you. Rephrase your questions.

Q. Okay. Perception, what role would that play in the stimulus, if any?
A. Perception is total ---
Q. Okay.
A. ---Real threats, perceived threats. The limbic system makes no distinction. It's the perceptual nature of the threat which emanates from cortical systems in the brain.
Q. All right, now in this case with respect to Mr. Turner and all of the acts of kindness that he might have exhibited to Mr. Stanko, would they necessarily be connected with a

perception, or a perceived stimulus?

MR. HUMPHRIES: I object to the leading nature of the question.

THE COURT: I'm going to allow it.

MR. DIGGS: Thank you, Your Honor.

A. It -- all of it -- everything would depend on how Mr. Stanko perceived any of those actions, and none of us will know that, ever.

Q. Okay. Could it -- would Mr. Turner necessarily be involved in the stimulus, or could it have an independent origin?

A. Either way. Could have been himself, or something on the radio. It could have been all kind of things.

Q. All right. Could have been something on the radio or television?

A. Certainly.

Q. Do you know if Mr. Turner had a television?

A. I do not.

MR. DIGGS: Okay. That's all I have.

Thank you very much.

THE COURT: Anything else, Solicitor?

MR. HUMPHRIES: Just very briefly on that point.

RECROSS-EXAMINATION BY MR. HUMPHRIES:

Q. Is it your testimony that a stimulus, other than provided by Henry Turner, could have resulted in this

Defendant shooting him in the back?

A. Unlikely, but it's possible.

MR. HUMPHRIES: Thank you.

THE COURT: Do you wish the witness to be excused?

MR. DIGGS: Yes.

THE COURT: Any objection?

MR. HUMPHRIES: No. Thank you, Your Honor.

THE COURT: All right, sir, you are released from your Subpoena and you are excused and go back to regular duty, sir.

A. Thank you.

THE COURT: All right. Your next witness, please.

MR. DIGGS: Your Honor, we would call Bryan Wilson.

THE COURT: All right.

BRYAN WILSON, being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MS. WILLIAMS:

Q. And Mr. Wilson, can you tell us where you currently live?

A. Goose Creek, South Carolina.

Q. And what is it that you do for a living?

A. I'm a retail manager for Bed, Bath and Beyond.

Q. And where did you grow up?

A. Hannahan, Goose Creek area.

Q. And do you know the Defendant in this case, Stephen Stanko?

A. I do.
Q. Can you tell us when you first met Mr. Stanko?
A. We first met, I think, in the seventh grade at Sedfield Intermediate -- or Sedfield Middle, I'm sorry.
Q. And can you tell us about -- did you have a relationship with him from the seventh grade forward?
A. We did, as far as being friends and hanging out, as far as playing baseball together and things like that.
Q. Did you graduate from Goose Creek?
A. I did, 1986.
Q. And so you and Steve were in the same class. Is that --
A. Same class.
Q. Okay. And you said y'all played baseball together. Did you participate in any other school activities together?
A. We played on the J.V. football team, I think our sophomore year.
Q. Okay. So I believe you -- and you characterize your friendship -- your relationship as you guys were friends. Is that right?
A. That's correct.
Q. All right. Tell me, if you could -- would you describe him in high school for me, to the best of your recollection?
A. When I think about Steve ---
MR. HUMPHRIES: Your Honor, may we approach?

MR. HEMBREE: We might need to approach on this.

THE COURT: Yes. Y'all come around here, please.

(BENCH CONFERENCE TAKES PLACE OFF THE RECORD.)

Q. Mr. Wilson, let me ask you this question. Let me ask you if you know about any occasion where Mr. Stanko was injured at some point, if at all, during high school?

A. I do, as far as a situation in our senior year in high school.

Q. Can you tell me about that?

A. Basically we went to a -- I think it was a high school softball game up in Columbia, came back to meet the girls after the game and so forth, in front of the gym. We waited for the girls to come out. One of the girls was dating an older guy, older than us, a couple of years old. Needless to say, I think she got in the car with him, ended up being as far as where he was beating her, or hitting her, or something like that, so we tried to get the girl out. As we were doing that one of our friends, Travis, grabbed the girl, the guy hit him, a scuffle broke out into a fight, we grabbed Travis, or I grabbed Travis into Steve, so Steve told me to take him off, and what I remember is the fact the guy came out -- a guy was coming out of the car, the guy who we actually got in a fight with, spilling beer bottles, and hit Steve in the back of the head.

Q. And he was hit in the head with what did you say? I'm

sorry.
A. A full beer bottle.
Q. A beer bottle. And then once he was hit in the back of the head what, if anything else, do you recall about that?
A. Other than the incident. We grabbed Steve, put him in my car, me and two other young ladies, as far as -- and tried to take him to Minirev -- I think it's a clinic right there, and so forth, where we lived. We couldn't go there because they said they couldn't take him, or they were closed at the time, I don't remember. We took him to the Naval Hospital because he had -- he was bleeding and everything else in the back.
Q. He was bleeding at that point?
A. He was.
Q. Do you recall if he was acting in any particular way, one way or the other?
A. Other than at first he told us to go to Minirev, I think because that's where he's from, and so grew up in the area, and other than talking a little bit of gibberish, I don't know exactly what it was, just kind of out of it a little bit sort of. He wasn't like okay. He was not right so -- as far as that aspect.
Q. Is it fair to say you guys were concerned enough you took him to the hospital?
A. Yes, I mean, he was ---

Q. Do you have any recollection of how -- well, tell me, once you got him to the hospital do you know what -- if anything, what happened?

A. We took him to the hospital, left him there. I think his parents were on the way up there. That's all at this point -- I think it had to be a Thursday or a Friday night. I don't remember.

Q. Do you have any recollection at all if he stayed in the hospital, and if he did, how long?

A. I don't. I sure don't.

Q. Do you think he -- do you know if he was back in school on Monday?

A. He was back at school on Monday, as far as I can remember.

MS. WILLIAMS: One moment, please.

That's all the questions that I have. If you would, please answer any questions the Solicitor may have.

THE COURT: Cross-examination.

MR. HEMBREE: Thank you. Thank you, Your Honor.

CROSS-EXAMINATION BY MR. HEMBREE:

Q. You indicated that Mr. Stanko got hit with the beer bottle.

A. Yes sir.

Q. Y'all put him in your car. He was -- he was conscious but kind of goofy?

A. You could say that.
Q. Yes. I mean, when I say goofy, just ---
A. Yes. It wasn't like me and you as in, I got hit. He was kind of like out of it, a little goofy, yes.
Q. Goofy.
A. Uh huh **(indicating positive)**
Q. He was bleeding?
A. Correct.
Q. Some blood. That concerned you.
A. Correct.
Q. And now he told you where to take him?
A. At first. I mean, as far as, I guess -- we were trying to get him in the car. We kind of helped him into the car, or picked him up, whatever it was, I don't remember. It was me and another young lady. She held his head. I remember she's sitting in the back holding his head, to keep him from bleeding all over my car, but ---
Q. Yes. I've got you. But he told you -- I mean, he had the presence of mind at least to say, take me to ---
A. At first, yes.
Q. ---Such and such place, and then that didn't work out.
A. And we ended up going to the Naval Hospital because he was a military -- I know his dad was.
Q. Right. And did he start acting not so goofy pretty quickly?

A. Again, hard to remember. I remember talking -- he was kind of like talking in different -- just kind of off the wall stuff, I guess, not what was happening, this situation at the time.

Q. I've got you. And you dropped him off at the hospital and that was ---

A. We took him into the emergency room. We stayed there for a little bit and then we left.

Q. And he was back at school on Monday?

A. Yes.

MR. HEMBREE: Fair enough. Thank you, sir.

THE COURT: Do you wish the witness to be excused?

MR. DIGGS: Yes, Your Honor.

THE COURT: All right. Any objection?

MR. HEMBREE: No objection, Your Honor.

THE COURT: All right, sir, you are released from your Subpoena. You may go back to your regular duties.

A. Thank you.

THE COURT: Next witness, please.

MR. DIGGS: Your Honor, we would call Dr. James Thrasher.

THE COURT: All right.

MR. DIGGS: Your Honor, we are going to try to use this. I don't know exactly how to operate it, so if you could bear with me for just a few seconds until I get it set up.

THE COURT: Dr. Thrasher, come around and be sworn, sir, right up here next to the Clerk. Come around. Right up here next to the Clerk.

A. Yes sir.

JAMES W. THRASHER, M.D., , being first duly sworn, testifies as follows:

MR. DIGGS: Your Honor, I wonder if we could take a brief recess until we figure out how to operate this ---

THE COURT: I'll give you five minutes.

MR. DIGGS: All right.

THE COURT: Ladies and gentlemen, if you will go to the jury room for five minutes, please. Thank you.

(THE FOLLOWING TAKES PLACE AFTER A BREAK AND WITHIN THE PRESENCE OF THE JURY.)

DIRECT-EXAMINATION BY MR. DIGGS:

Q. Dr. Thrasher, how are you this afternoon?

A. I'm well.

Q. Okay. Let me ask you, could you give us the benefit of your education and training, please sir?

A. I went to undergraduate school at Old Dominion University in Norfolk, Virginia, and I graduated in '60 -- I'm sorry -- 1958, with a Bachelor of Science Degree. I went from there to medical school at the Medical College of Virginia in Richmond, Virginia, and graduated there in '64. From there I went to the Navy Hospital in Charleston, South Carolina, where

I completed a one-year rotating internship in 1966. From there I went to the Navy Hospital in Philadelphia, Pennsylvania where I completed a three-year general adult Psychiatry residency training, and from there I went to the University of Pennsylvania for a one-year Psychiatric Fellowship training in Forensic Psychiatry, '72 to '73, and then I went to the Navy JAG school in Newport, Rhode Island in 1973, and I attended law school -- completed law school at Temple University in Philadelphia, Pennsylvania in 1975.

Q. All right. And in the course -- can you tell us what you do now?

A. I'm a Senior Staff Psychiatrist at the Waccamaw Center for Mental Health in Conway, South Carolina.

Q. All right. And how long have you been practicing Psychiatry?

A. I've been in practice some forty-three years now.

Q. And as a psychiatrist?

A. Well, that includes all my training since graduating from medical school ---

Q. Okay.

A. ---So no, part of that was a student -- a student as a resident or intern, as well as a law student, so ---

Q. All right. And were you ever stationed down at Guantanamo Bay?

A. I served in Guantanamo Bay many years ago, prior to my

going to undergraduate school at William and Mary, which is -- it's really Old Dominion now, and I was in the Navy, and I was an enlisted man, and serving aboard aircraft carriers, and in the aviation arm of the Navy I was a combater crewman flying off of aircraft carriers in the back seat.

Q. Okay. Did you ever work at the hospital there in Guantanamo?

A. I never worked at that hospital, no.

Q. Were you -- did you do any work that was associated with it at all?

A. No, not directly.

Q. All right. Let me ask you this, you are licensed in the State of South Carolina as a psychiatrist?

A. I'm licensed in the State of South Carolina as a physician.

Q. As a physician?

A. Yes.

Q. And how do you get to the point under -- is there some State regulation with respect to the practice of Psychiatry?

A. Well, yes. It's expected that you would be Board Certified in Psychiatry, having -- to become a psychiatrist you have to complete four years of medical school, and then take a proper residency training program, and then you can take an examination for Board Certification under American Board of Psychiatry in Neurology in order to practice as a

psychiatrist, which I did all that.

Q. Okay.

MR. DIGGS: Your Honor, we would offer Dr. Thrasher as an expert in the field of Psychiatry.

MR. HEMBREE: We have no objection to Dr. Thrasher testifying as a psychiatrist.

THE COURT: He's qualified to give his opinion as a psychiatrist.

Q. Dr. Thrasher, can you tell us if -- what is the Field of Psychiatry, and what does a psychiatrist do?

A. Well, we examine individuals for the presence of mental illness and treat it.

Q. Do you look at the causes of mental disease or illness?

A. Certainly, yes.

Q. And do you ever look at structure and function in terms of brain?

A. Yes.

Q. And have you looked at any medical information on Stephen Stanko with respect to structure and function, and -- of his brain?

A. I have.

Q. And let me ask you this, does Stephen Stanko have diminished or lowered function of his brain in the frontal lobe areas?

A. Yes, he -- yes, the studies indicate that.

Q. And is it a -- is there -- could there be a causation between diminished function in the frontal lobe and a mental illness?

A. Well, yes, there could be, but it's a complicated question.

Q. All right.

A. Yes.

Q. But to make it simple for me it could -- that's possible?

A. That's possible.

Q. And could a -- oxygen depravation be a cause of ---

MR. HEMBREE: I'm going to have to object, Your Honor, to the leading nature of the question.

Q. What could be -- what could contribute to a frontal lobe functional anomaly?

A. There could be multiple causes.

Q. Could you let us know? Could you identify some of them?

A. Well, proba -- let's -- one the causes could be genetic problems.

Q. Okay.

A. Another one could be vascular problems, the circulation to that area of the brain has been cut off, or diminished, or compromised in some way. Another could be a brain tumor, another could be trauma of whatever sort, could be a blunt

non-penetrating injury, or it could be a penetrating injury of the head, so there's a list of things that could contribute to that sort of thing happening.

Q. All right, now, in considering whether there is frontal lobe deficit in terms of structure with Mr. Stanko, is that a professional expert opinion?

A. I would think so.

Q. Okay. Did you use any medical history or medical records in assisting you with that particular -- in rendering that particular opinion?

A. There were a good number of those records that were presented that I went over some time ago, yes.

Q. All right. Did you have a chance to review any records that were generated at his birth?

A. Yes. There was a -- there was a hospital record of Mr. Stanko's birth that was part and parcel of that package of information.

Q. All right. And did you have an opportunity to review those records?

A. Yes.

Q. And would you -- based on your review of the records, did he have -- was it a normal birth delivery and was he -- is that a normal birth process?

A. It appeared to be essentially normal. His gestation ended with a precipitous delivery. His mother -- I think it

was his -- I'm sorry -- I think it was his mother's fourth or fifth child, and the second stage of delivery was five minutes. That's rather fast from a delivery.

She had -- the record showed that she had colo-cystitis, so it was a -- categorizable as a complicated delivery situation, a complicated pregnancy. That's as far as she is concerned.

Q. All right. Were there any concerns noted in the medical records with respect to Mr. Stanko's condition at that time when he was a newborn infant?

A. Yes.

Q. What were they?

A. He was noted to be cyanotic, which means he was somewhat blue, and he was noted to be pale, and he was noted to have deficient reflexes, but that's a complicated factor too because one of the -- two of the reflexes were recorded in the chart. One was a swimmer's reflex where, if you rub the musculature along the baby's spine, on one said, they will curve to that side, and you do it on the other, they will curve the other way, as you alternate sides. And another one is called the moro. That's a short name for moroendemerons, which is a reflex that infants have normally. Now, the normal swimmer's reflex is to bend to one side or the other. If it's absent it's not normal. With the moroendemerons reflexes it's normal to have it. It's manifests by the child reflexly

grabbing for support. When you hold it in your hands and lower the child suddenly they will -- their arms will splay out and it's like they are trying to grab on to hold on. That's a normal -- if they don't have it -- not having it is what's abnormal.

Q. And was anything extraordinary or remarkable noted with respect to Mr. Stanko of as an infant in that regard, in the moro ---

A. Yes. He did.

Q. ---Endemeron reflex?

A. It was a weak or deficient -- it was weak, deficient or absent, I don't recall exactly which, but it was not normal.

Q. And do you know of any medical cause that could contribute to that?

A. Well, when humans don't have those kind of reactions it indicates that there is something neurological amiss at some level.

Q. When we say neurologically what are we talking about?

A. The brain -- at the central nervous system, meaning the brain and the spinal cord and it's connections throughout the body.

Q. All right. And how, again, does this relate to Mr. Stanko?

A. I'm sorry.

Q. To this Defendant. How does that relate to this

Defendant?
A. Well, if he didn't have the moro response it means there's something gone wrong, and if he didn't have the swimmer's response something -- I'm sorry -- yes, if he didn't have the moro response something has gone wrong, and if he didn't have the swimmer's response on those reflexes there's something that's gone wrong in the central nervous system.
Q. And again for me -- and I might not have been paying attention, but what is the swimmer's response?
A. Well, it's done by rubbing the child's musculature along the spine, alongside the spine, on either side, and the child will reflexly bend in that direction, both sides, one side then the other.
Q. All right. Let me ask you -- all right, Dr. Thrasher, is this a copy of the medical record that you reviewed in order to, in part, reach the opinion that you testified to just a few minutes prior?
A. I didn't go through that whole stack, but it appears to be.
Q. All right. It includes at least -- part of this stack includes the birth records that you were just referring to?
A. Yes.
MR. DIGGS: Your Honor ---
A. Go ahead.
Q. I'm sorry. I cut you off.

A. I said yes.

Q. Okay.

MR. DIGGS: Your Honor, we would introduce this as Defendant's Number 22.

THE COURT: Any objection?

MR. HEMBREE: Without objection, Your Honor.

THE COURT: All right. Defendant's 22, without objection.

(MEDICAL RECORDS ADMITTED INTO EVIDENCE AS DEFENDANT'S EXHIBIT NUMBER 22.)

MR. DIGGS: And Your Honor, we are going to display this on the scene, so with your permission we are going to ask that the lights be dimmed a little.

THE COURT: Why don't you display it first before we dim the lights and let's see if we can't do it without doing that because that causes a whole host of problems.

MR. DIGGS: All right.

Q. Okay, Dr. Thrasher, do you see what we are looking at there?

A. I do.

MR. DIGGS: And Your Honor, could I make sure that everybody can see. Is the podium in the way?

Q. All right. Now Dr. Thrasher, you can see the screen -- and I've given you a hard copy there that if you can -- if it's easier for you to see that then feel free to use that.

A. Some of the -- some of the typed-in areas I can read from here, but the categories, you know, on the form, are too small for me to read from here.

Q. Yes. Okay. So you can use that hard copy that you have there ---

A. All right.

Q. ---In front of you.

What are we looking at on this page?

A. This is a statement about his birth, his father, his category is a newborn ---

Q. Okay.

A. ---And it is Baby Boy Stanko.

Q. All right. Let's go into the next page and what do we have there?

A. This is a Diagnostic Summary on the Clinical Record. The top area gives the date, the date of -- the date of admission, the date of discharge, the number of days hospitalized, and the next major category is Clinical Diagnoses, then the Operations category under that, Therapeutic Procedures and Pathological Diagnoses.

Q. All right. Let's go up to the Clinical Diagnoses area. Can you read that writing?

A. The script?

Q. Yes, what's been written in there ---

A. Yes, it says --

Q. ---The hand entry.
A. ---Term birth living child.
Q. Okay. And how about number two?
A. Hyperbilirubinemia.
Q. What does that mean?
A. Hyperbilirubinemia.
Q. Okay. And what does that mean?
A. That means that the child has an elevated bilirubin level in the bloodstream, and bilirubin is a break-down product of hemoglobin, and it's usually processed out by the liver, under ordinary circumstances.
Q. Okay. And this next -- is that jaundice?
A. It says -- yes, jaundice, is the result of having too much bilirubin in your system that turns the skin yellow and the amount of bilirubin in the system determines the intensity of the yellow. It can be quite dramatic, or very minimal. The next word is physiologic, and the next word is exaggerated.
Q. Do you have any idea what is meant by that notation?
A. It looks as if it was considered to be a physiologic, which would mean a normal processing of bilirubin, the normal processing system that was not quite efficient enough, and then therefore the color and probably the bilirubin, the serum is elevated, meaning it's -- that's in the exaggerated condition.

Q. What could be a cause for that?
A. Well, there are multiple causes. One could be incompatibility between the R.H. factor in the mother and the child, which is sometimes a very major cause. Part of that -- part of it is normal physiologic -- it just happens at birth. If the child bled a whole lot and -- not external to the body, but out into the body and blood was absorbed by the body that could cause it. There are multiple causes.
Q. All right. Might it have an effect on the child?
A. Yes, indeed.
Q. What?
A. Well, it can be so severe as to cause very serious brain damage, at it's worse, and ordinarily if a child has that they can be put under ultra-violet light and that, itself, will clear it up, if it's just a minor case of it.
Q. Okay. And when was this notation made in terms of Stephen Stanko's life? How old would he have been? Can you tell?
A. Well, he was discharged after five days. This being a summary, I would assume that that would be the statement of his condition five days after his birth.
Q. All right. Well, this clinical record -- it says date of admission, January 13th of 1968.
A. Yes.
Q. See that?

A. Yes.
Q. And would this diagnosis have been entered at that time or the discharge date, or somewhere in between?
A. This form is ordinarily filled out as a summary of all that's gone ahead, so I would say it was filled out on or near the 18th.
Q. Okay. Going down through a couple of pages, Dr. Thrasher, and I'm going to go to the Clinical Record where we have a start date of 1/14/68, and we have the Clinical Record there, and the Doctor's Orders for that day. Now this would have been one day after the birth. Is that correct?
A. Yes.
Q. What do we have in the Doctor's Orders at that time with respect to this -- the baby boy?
A. Number one reads, keep baby on (D) slash (W) feedings until formula is specifically ordered.
Q. (D) slash, what does that mean?
A. (D) slash (W) means Dextrose and water. It's an intravenous feeding.
And number two says, keep baby near window of nursery. I don't know what the next one -- justification ---
Q. Would that be partition?
A. It could be partition, yes, nursery partition to facilitate close observation, underlined.
Q. Now why would they want to have close observation?

A. Well, the baby's got deficient reflexes, giving some concern about it's survivability, and it has this icterus, which hopefully would be physiologic and clear up spontaneously.

Q. All right. Continue on reading and ---

A. And the next -- well, the next sentence is, "If Carmen is out of nursery put bassinet next to the window so that the baby can be watched." Don't remain outside for a prolonged time.

Q. All right, now, why would that notation been made, or that order be entered in the record?

A. Well, that makes it pretty clear that the physician wanted that child observed closely.

Q. Okay. And it would certainly -- would it be fair to say -- is this normal?

A. Under the circumstances I would say it's indicated.

Q. Okay. It's indicated. And again, it's indicated for what reason?

A. Well, because of the concern for the welfare of the child.

Q. Now, let's continue on down to order number three. Can you make that out, that writing?

A. Yes. It says, "Have suction bulb available in mother's bedside table in case baby vomits after feedings."

Q. Is that normal? I mean, do babies vomit after feeding

when they are newborns, so that you would put that in an order?

A. My babies vomited all over me.

Q. Okay.

A. The ---

Q. Is that a standard entry?

A. Well, not necessarily. If there is some central nervous system deficit in this particular child they would make an entry like this to be on the cautious side, so that if the child did vomit because of central nervous system problems it may not be able to swallow properly, or keep it out of it's lungs, so they take the precaution of having it at the bedside in case the baby vomits.

Q. All right. Is this order consistent with the neurological confirm that you discussed -- of the type discussed previously?

A. Yes.

Q. All right. How about the last entry there? Can you make that out?

A. Yes. Number four says, "Call me at home if still vomiting by this evening."

Q. Okay. And what's being said there?

A. Well, the physician wants to be notified personally if the baby keeps on vomiting.

Q. Okay. All right. What are we looking at here? Can

you see this on the screen?
A. Hang on a minute. Yes, I have it.
Q. All right. What are we looking at here?
A. Well, this is the clinical record of the newborn child.
Q. Okay.
A. And the mother's name is at the top, and the father's name, and the -- E.D.C., estimated date of confinement, etcetera, and gravid of five means she been pregnant five times, para-four means she's delivered four babies, she has had no still births, no abortions, and she has four living children.
Q. All right. And it confirms for us that we are looking at this Defendant's birth records here?
A. Yes. It says that she has acute colo-cystitis during pregnancy.
Q. All right. Is there any reason that would be ---
A. Yes, because she could have -- colo-cystitis is quite a -- severe cystitis is quite a disabling situation. It could cause high fevers, it could cause rupture of the gallbladder, which could be a deadly serious circumstance, so that puts it in the category of a complicated pregnancy.
Q. Okay.
A. The complications of delivery are listed as none, the anesthesia is listed a Pentothal, I think, or Pentane. Analgesia means the pills that she was given was Seconal as a

sedative, Demerol as a analgesic, a pain reliever, and Phenergan is a -- it's like an antihistamine. That enhances the effect of the Demerol so you can use a lower dose of Demerol.

Q. All right. And tell me again what it was on this page that you mentioned that made this appear to be a complication in the pregnancy.

A. It looks like acute colo-cystitis it would be.

Q. Under the prenatal course ---

A. Prenatal course would be the five lines down, yes.

Q. And again, what is that?

A. That's an inflammation of the gallbladder.

Q. And would it -- could it have an effect on the baby, or is that something that just pretty much pertains to the mother's health?

A. I think it pretty much pertains to the mother's health, unless she was having an acute attack during this period of time, but that would have been noted as well.

Q. Okay. All right, let's go to the next page, or down. What are we looking at on this chart?

A. That grid display is the physician's statement of the physical examination of the baby.

Q. All right, now, is this something that's done in -- routinely with babies, or is this a form that is pretty unique to the military, or to the Navy?

A. Well, I'm not sure that it's used in this format in non-military facilities.
Q. Okay.
A. It's used very far and wide in military facilities, in my experience.
Q. Now you were the commanding officer in a Naval Hospital in Charleston?
A. Yes, I was.
Q. And you are familiar with the birth records ---
A. Yes.
Q. ---I mean, having been in that capacity?
A. Yes.
Q. All right. Let's look -- and tell us what we see on this chart, Dr. Thrasher, and what is of significance here.
A. Starting in the upper left-hand corner the description begins with "General appearance", and there's "WD" comma "Term" ---
Q. Okay.
A. That means that his general appearance is well-developed, and I think that's term, right there, I think it is ---
Q. All right.
A. ---Which means that he -- it was at a -- it was not a premature birth ---
Q. Okay.

A. ---And the face he means how the face looks. It isn't deformed, birth weight is not there, temperature is not there, character of cry is not there, measurements are not there.

Q. All right. Let me ask you this. When we look at this chart, or this grid, basically we see two types of entries. We see an end, what appears to be an end, and a zero, or an (O). Can you explain to us what those injuries mean, what that stands for?

A. Well, I take that to mean (N) is normal, and (O) means abnormal.

Q. All right. And ---

A. Or observed, perhaps.

Q. All right. Let's look at the first one that we see there, cyanosis. What does that mean?

A. That means the skin coloring of the baby, lips and fingernail beds and things like that, are bluish.

Q. And what is a cause for that?

A. Low oxygen levels in the bloodstream.

Q. Okay. And do we know what could cause the oxygen levels to be low?

A. Well, hypoxia, or low oxygen levels can be caused by a number of things, dysfunctional lungs, premature lungs. In an infant, blockage of the lungs, airway system, blockage of the lungs, vascular system, not breathing properly. You know, the child has a normal system but is not breathing properly for

central nervous system reasons. There's a good number of things that it could indicate.

Q. All right. And let's go over to paralysis. Is that -- am I reading that right?

A. Where are you?

Q. Where she -- about in the middle, on the bottom line. We have a zero there, or an (O).

A. Yes.

Q. You see that?

A. Yes.

Q. What's indicated there? What are they telling us there?

A. I believe that there is a question of paralysis because of the baby's lack of reflexes.

Q. All right. Now, does that have -- does that relate back to what you were talking about earlier with the moro reflex and the swimmer's ---

A. As I put this together, yes.

Q. Okay. Paralysis results from what? Explain that to me, if you will.

A. Well, central nervous system injury, or disfunction or non-function of it, and it could be caused by peripheral nerve injury too. If you interrupt the nerve serving a part of the body, the arm or a leg, it's paralyzed. It won't work properly. But there could be central causes for that in the

brain as well.
Q. Okay. And central causes in the brain, what are we looking at there? What could be the cause for that?
A. Well, if it is central paralysis it means that there has been some brain damage in the motor strip area in the brain itself.
Q. Okay now, where is that?
A. In the temporal lobe.
Q. All right. Anything -- any correlation or relation between the frontal lobe anomaly that you've opined about with Mr. Stanko now and this entry in his birth record regarding the paralysis?
A. Well, they could all be part and parcel. They could all be part of a whole picture at the time.
Q. Okay. Let's go back over to pallor ---
A. Yes.
Q. ---Here.
A. Yes.
Q. And again, what are we talking about there?
A. Pale skin.
Q. All right. And next to it, on the right -- to the right of that, icterus -- am I pronouncing that correctly?
A. Icterus, i.c.t.e.r.u.s..
Q. Okay. What do we mean by that?
A. That's the yellow coloration associated with hyper-

bilirubinemia or ---
Q. I'm sorry.
A. Hyper-bilirubinemia, it's the elevated bilirubin in the bloodstream.
Q. All right. And again, remind me of the possible cause for that.
A. Could be.
Q. And what could be? What are we talking about there? What would be the reason for that?
A. Well, this form says the baby has icterus.
Q. Okay. And that's indicative of?
A. It's because of the hyper-bilirubinemia that was detected.
Q. Okay. And again, going back, the cause for that might be what?
A. Well, as we went over that before ---
Q. Yes.
A. ---It could be excessive internal bleeding. It could be from -- head trauma from birth. It could be from anoxia.
Q. Which is lack of ---
A. Oxygen.
Q. ---Oxygen.
A. Yes.
Q. All right. Now, let's go down to the abnormal findings on physical examination. Can you read those?

A. It says the baby has had excessive mucous, and has been vomiting intermittently.
Q. Now, excessive mucous, why does that present a problem, if it does, to a newborn infant?
A. Airway problems.
Q. All right. Clogged up?
A. Yes.
Q. And might that have a relation to the color problem, the blueness that you ---
A. Well, ordinarily saliva and mucous are swallowed, but if the central nervous system isn't operating properly it could be impaired, so that's what I think they are -- this physician has been talking about here, or referring to.
Q. All right. Continue on reading that.
A. "Forceful vomiting of clear fluid and mucous during exam."
Q. And explain to us what he's describing there.
A. Well, he's noted that the baby is vomiting rather vigorously while he's examining the child.
Q. With respect to an infant of this age, what are the causes for that?
A. Well, that -- we went over those, the various things that can cause that, again, difficulty swallowing, brain injury.
Q. And what is the possible and potential impact on the

infant?
A. Well, number one, the child could not be getting adequate nutrients, except earlier it said they were using intravenous fluids, and number two, it looks like the baby is probably irritable, and vomiting as a result of it's irritability. It doesn't say that, but it wouldn't be unusual, illogical -- or illogical to find that. So the physician has made an observation. He noted forceful vomiting of clear fluids while he is examining the child.
Q. With the excessive mucous?
A. Yes.
Q. Let's see. What are we looking at on the next page?
A. Next page?
Q. Yes.
A. Uh huh **(indicating positive)** Well, the top section is the condition at discharge.
Q. Yes sir.
A. 1/17/68, clinically doing well, bilirubin 19.1 milligrams percent total, then one eighteen sixty-eight just below that. It says, bilirubin down to seventeen point eight milligrams percent today, no abnormalities on physical exam except for resolving jaundice, or icterus that the child had. And the next line says, "Will get a repeat bilirubin in the outpatient clinic tomorrow."
Q. All right. Now, do you -- when you were reviewing the

records was there any additional entry in the record that you felt was of interest to the issue that we have discussed this afternoon, that being a reduction in the brain function in that frontal lobe area?

A. I don't think so.

Q. All right.

MR. DIGGS: Beg the Court's indulgence here for just a second.

Q. Let me go back, Dr. Thrasher. There was an entry there. I didn't have you finish reading it, but there is -- I want you to finish reading this line. You see where we are -- our cursor is located on the page, right here, "feeding tube forced". I that what that says?

A. Yes, I have it here.

Q. Yes. Let me have you read that and comment on that entry, please sir.

A. "Feeding tube passed into the stomach without difficulty, and three C.C.s. of fluid removed, after which stomach was lavaged.

Q. All right. Explain that to me.

A. Well, they put a feeding tube down the stomach to make sure that it wasn't full, and obstructing disability to swallow because of the fullness, because there are things down the line that can do that in the -- starting in the -- beyond the stomach in the small intestine at the pylorus, as a matter

of fact, and they are trying to ascertain, I take it, that the stomach wasn't overly full. They took out three c.c.s of fluid, which isn't much, and then they washed out the stomach.

MR. DIGGS: Dr. Thrasher, I appreciate it. I don't think I have anything else to ask you at this particular time, and I would ask you to answer any questions the Solicitor may have.

A. Very well.

THE COURT: Cross-examination.

MR. HEMBREE: Thank you, Your Honor.

CROSS-EXAMINATION BY MR. HEMBREE:

Q. Good evening, Dr. Thrasher.

It's been a long time since you've delivered any babies, or done any O.B.G.Y.N. work, isn't that fair to say?

A. That's true.

Q. You've been a practicing psychiatrist for many years here in Horry County.

A. Sixteen years so far.

Q. And as a matter of fact, you were called upon to do an examination of the Defendant in this case, Stephen Stanko.

A. Yes.

Q. Referring to your -- to your examination of him, when you examined him did he understand the charges in the case? He understood what he was facing?

A. Yes.

Q. He understood his rights and ---
A. Yes.
Q. ---The process. He understood what the lawyers did, the Judge did, jury did, the whole process that he was facing?
A. Yes.
Q. No question he was competent?
A. I didn't question his competency.
Q. Well, I mean, those are the issues that you would look for to determine competency, true?
A. Yes.
Q. And was there any question in your mind as to his competency?
A. I didn't question his competency.
Q. I'm asking your opinion.
A. Well, I thought I was answering you. I did not find him incompetent.
Q. Did you talk with him about his upbringing, get a social history on him?
A. Yes.
Q. Found that he was -- his parents got on well.
A. He what?
Q. That his parents got along well?
A. Yes.
Q. No violence in his home?
A. None.

Q. Felt loved as a child?
A. Yes.
Q. Did well in school?
A. Yes.
Q. Had pets but never abused them?
A. Yes.
Q. That's kind of in -- if you -- you find people that are psychopaths often abuse pets, don't you?
A. On occasion you do.
Q. Not a bed-wetter?
A. No.
Q. No attraction to fire?
A. No.
Q. Played sports, football, volleyball, baseball, true?
A. Well, yes. I don't remember those in specific, but yes.
Q. Normal upbringing, kind of normal high school things?
A. It was a very benign history, yes.
Q. Dated?
A. Yes.
Q. Got along well with the school staff?
A. Yes.
Q. Graduated from high school in '86?
A. Yes.
Q. When you interviewed him he presented himself as polite

A. Yes.

Q. ---Friendly ---

A. Yes.

Q. ---Cooperative ---

A. Yes.

Q. ---Spoke in a clear voice, at a normal rate ---

A. Yes.

Q. ---Didn't use odd or peculiar speech in any way?

A. No.

Q. Thought processes were intact?

A. They were.

Q. His thought content did not reveal any delusional thinking?

A. No.

Q. There is no evidence of pseudo-perceptions?

A. No.

Q. His mood was neutral?

A. Yes.

Q. He's not suicidal?

A. No.

Q. He's affect was full range, and in keeping with express thoughts, mood and ideas?

A. Yes.

Q. He was fully oriented?

A. Yes.
Q. His memory was intact?
A. Yes.
Q. Attention, focus and concentration were adequate?
A. Yes.
Q. His abstracting ability was intact?
A. Yes.
Q. His judgment was intact?
A. Yes.
Q. Attitude and outlook were hopeful?
A. Yes.
Q. And intelligence was found to be above average?
A. Yes.
Q. You found that he had a -- you diagnosed him with an anti-social personality disorder.
A. I did.
Q. And is it fair to say that an anti-social personality disorder really is -- to put it in layman's terms, it's someone who has difficulty getting along with others, following the constricts of society, and the rules of society?
A. Yes.
Q. Doctor, I'm going to ask you about this -- I'm going to ask you about this report about Stephen Stanko's childhood. You've got a copy of it with you.
A. No, I don't.

Q. And where did that get off to?
A. I don't know.
THE COURT: Are you talking about the medical report?
MR. HEMBREE: The medical report.
THE COURT: The one you were just testifying from.
A. Oh, this one, oh yeah.
Q. Yes sir.
A. Yes. This is his birth record, infancy.
Q. Birth -- right. Defendant's 22. I'm sorry. I didn't note the -- the report entered in evidence as Defendant's 22. You've got that in front of you.
A. Right here.
Q. Okay. I want to take you to the first page, the Clinical Record Diagnostic Summary. It begins at the top with term birth living child.
A. Yes.
Q. You have that in front of you?
A. Yes.
Q. And this, as you indicated, would have been prepared upon the baby's discharge.
A. Yes.
Q. And it indicates that -- term of birth, living child, and that he had jaundice.
A. Yes.
Q. It doesn't appear to be -- it's not severe enough to

keep him in the hospital because he was discharged.
A. True.
Q. But he was jaundiced.
A. Yes.
Q. Would you say -- is it fair to say that jaundice is a fairly common condition in newborn infants?
A. Yes.
Q. Now let's look at -- a couple of lines down where it says, "Therapeutic procedures and other factors of clinical interest". What is noted there?
A. That's a figure used to indicate nothing.
Q. Okay. Oh yeah, the little symbol there it says -- it's like a zero.
A. Means nothing. Yes.
Q. Okay. And it means nothing -- so what does that indicate to you?
A. That there were no therapeutic procedures or other factors of clinical interest.
Q. All right. How about Pathological Diagnoses?
A. Again, nothing.
Q. Nothing. What would be an example of a pathological diagnoses?
A. Brain hemorrhage.
Q. Okay. But that was negative also.
A. There was nothing there.

Q. Right. There's -- I mean, there's nothing noted there so it was negative. There was no -- the doctor clearly had no concern about any pathological diagnoses indicated.
A. The doctor entered nothing.
Q. And he put a symbol down ---
A. Yes.
Q. ---That means negative?
A. Negative.
Q. Yes.
A. Correct.
Q. All right. Let me take you to the Clinical Record, Doctor's Orders, with the date at the upper right-hand corner of 1/14/68.
A. Yes.
Q. And it indicates -- the only indication of any problem in this -- in these one, two, three, four items that are listed by the doctor under January 14th, the only problem that's noted is that the baby has vomited, or has been vomiting. Is that fair to say?
A. Well, there are other indicators. Dextrose and water was ordered until the formula is ordered, so that people didn't get ahead of themselves with giving the baby formula, and they wanted to keep it near the window so they could watch it, and they wanted to have a suction bulb available at the mother's bedside table in case the baby got in trouble there,

and the physician wanted to be called at home.
Q. If the baby continued to vomit?
A. Yes.
Q. And my question, Doctor, is, isn't the only problem n noted that the baby was vomiting?
A. That's the only clinical statement about the baby's -- about -- the concern about the baby other than other things that are implied.
Q. Well, it says to keep an eye on the baby, but if the baby was vomiting there might be concern to want to keep an eye on the baby to make sure the baby didn't choke, or have any kind of a problem like that. Wouldn't that be fair to say?
A. Certainly.
Q. Yes. And they -- as a matter of fact they say, keep a suction bulb next to the mother's bed in case, obviously so -- I mean, it's obviously -- seems obvious to me -- tell me if you agree -- that if the baby got sick while he was with his mother she could -- you know, if he choked she would be able to assist him.
A. She could, or anybody could, who was helping her.
Q. Sure. Right. Right. It would be handy, something there handy.
A. Sure.
Q. All right. Now, on the 15th there is no designation of

any problem at all, is there?
A. No, no problem was listed.
Q. And on the 18th the baby was discharged.
A. Discharged.
Q. Let me talk to you about this Clinical Record of a newborn, and at the top of this page, Doctor, it says Joan Rhoda Stanko, just to give you -- just so you can orient yourself to that -- and this is the one that has the grid on it, the page that has the grid on it.
A. Yes.
Q. I want to take you to "Mother's health prior to pregnancy". This is in the upper portion. "Mother's health prior to pregnancy". What does that say to you, in the upper -- second line, in the middle.
A. Oh. Good.
Q. Right. Said the mother's health prior to pregnancy was good. Correct?
A. That's what it says.
Q. Okay. Abnormalities of previous pregnancies.
A. None listed.
Q. So it puts a zero for negative, correct?
A. There's a zero there, yes.
Q. Uh huh **(indicating positive)** Has a -- underneath that it has a place that says, "Past transfusion history", and it says zero.

A. Yes.
Q. Vitamin K, it says zero, correct?
A. Correct.
Q. Which means negative to you, does it not?
A. Yes.
Q. Okay. Now let's drop down to where it says, "Infant's condition at birth". Do you see that?
A. Where are you?
Q. In the upper section, three lines from the bottom of the upper section.
A. Yes.
Q. "Infant's condition at birth". What does that say, Doctor?
A. Apgar 10.
Q. Apgar 10. What does that mean to you, Doctor?
A. It's a good score.
Q. That's a good score. That's a great score, isn't it?
A. Top.
Q. That's as good as it gets. "Character of the cry".
A. Listed as good.
Q. Good. Let's drop down to the grid that has all the -- we saw it up here on the -- on the board, on the screen, in the section that says, breathing (N), head (N), throat (N) abdomen (N), spine (N), and so on, correct?
A. Yes.

VOLUME FIVE OF EIGHT

STATE OF SOUTH CAROLINA
In The Supreme Court

APPEAL FROM HORRY COUNTY
Steven H. John, Circuit Court Judge

THE STATE,

RESPONDENT,

V.

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**** DEFENDANT'S EXIBITS 2-19 (NORMAL BRAIN/STANKO BRAIN) HAVE BEEN TRANSPORTED TO THIS COURT****

Q. And (N) to you means normal?
A. Yes.
Q. Now, your prior testimony was that you interpreted zero to mean a problem, or does that mean negative?
A. That means a problem.
Q. Now, let's look at these in context. Everything where there is an (N), meaning normal, would be like the ears, the heart, the genitals, the reflexes, the moro function, normal.
A. Yes.
Q. Joints normal. Everything is normal, but when it comes to paralysis you wouldn't describe paralysis as normal. Paralysis is a condition. It would either be positive or negative, would it not?
A. Well, it's either there or it's not.
Q. Correct. Right. If it was there would we put a plus sign?
A. Would I?
Q. That would be one way to designate it, would it not?
A. It would be another way to do it, yes.
Q. That would be a way to do it, or you could put a zero if it was negative.
A. Right.
Q. Much the same way the zero was used on this same form, a few lines above, to indicate negative.
A. I suppose you could interpret it that way, if you ---

Q. Certainly. I mean, whoever filled this form out used zero up here to describe negative, but it's your interpretation that they described -- that these conditions down here -- that they used zero to describe a positive. Is that what you are telling this jury?

A. No. They put an "O" there for cyanosis, and an "O" for pallor, icterus and paralysis.

Q. Let me ask you this, Doctor. Let's just say that the person that used zero to describe negative in the upper part of this form used zero to describe negative in the lower part of the form, just hypothetically, what would that mean to you? If it said cyanosis, and zero meant negative, what would that mean to you?

A. It would mean there was absolutely nothing wrong.

Q. Right. And if -- paralysis would be what? Nothing wrong.

A. Well, if you interpret it that way it would mean there is no paralysis.

Q. Right. And pallor, zero, icterus, zero, murmurs, zero. So if you interpret it that way that means there are no problems, correct?

A. In that line of interpretation, yes.

Q. All right. Now, let me draw your attention to the line right above this grid. It says, "Initial physical examination".

A. Uh huh **(indicating positive)**
Q. And if you will take a look the last sentence -- you see those instructions there, "to be completed within twenty-four hours of birth". You see those?
A. Yes.
Q. And the last sentence of that paragraph says what?
A. "Use progress sheet for abnormalities, description and elaboration".
Q. All right. "Use progress sheet for abnormalities, description and elaboration". Doctor, please refer to the progress sheets that indicate a problem with cyanosis, paralysis, pallor, icterus, or murmurs.
A. Which ones, pallor, icterus, which ones?
Q. Those are the items that are indicated with a zero.
A. With an "O", yes.
Q. The ones that you have testified to this jury that, in your opinion, mean that they were positive, that there was a problem, and the instructions on the sheet saying, if there is a problem use a progress sheet to elaborate, to further describe.
A. Yes. Yes.
Q. I want you to -- you have the full report. I want you to pull the progress sheet that indicates any one of these problems. Take your time.
A. Well, all I have are the nursing notes, and the order

sheet. If you have a progress note sheet somewhere ---
Q. No sir, I don't. There are no progress notes indicating any of these problems in the report I have.
A. Yes. There is nothing called a progress note here.
Q. So wouldn't it -- Doctor, wouldn't it indicate to you that these were not problems that existed, that these were negative findings because there were no progress sheets filled out on any of these problems that could have been potentially very serious?
A. Unless there is a progress note that's missing from here, yes.
Q. And you have no reason to believe there are any progress notes missing, do you, Doctor?
A. Well, you mentioned you -- to look on the progress note sheet, and I don't find one here.
Q. And I don't believe there are any there, Doctor. That's what I'm saying.
A. Very well.
Q. Okay. Now, they did find a problem with the baby, excessive mucous and vomiting, clear fluid. They drew some fluid out of the baby's tummy, and that was the extent -- appears the extend of the treatment for the vomiting. Is that fair to say?
A. They did those things, yes.
Q. I want to take you to the sheet -- the next page of

this that, at the top of the page says "Condition on Discharge", in small print, and it has a date of 1/17/68.

A. Just a minute.

Q. If you can find that for me.

A. Is that the one that begins with "Diagnostic Summary"?

Q. No sir. It has at the top -- it says "Condition on Discharge", and it's a very small -- it's in very small print. Let me show you the page.

A. Here you go.

Q. Let's take a look at the bottom of that page, and it says 1/15, 6:00 P.M.. Do you see that?

A. Yes.

Q. What does it say about the baby at this point?

A. Looks better now, with spontaneous movements, all -- all fairly good. No vomiting today except for minimal regurgitation.

Q. Okay.

A. Will start formula.

Q. All right. So whatever -- the vomiting appears to have subsided and now they are moving the baby on to regular -- it's regular diet.

A. Yes.

Q. Very good. And then on the 16th what does it tell us?

A. Moderate jaundice.

Q. Okay.

A. Taking P.D.s without difficulty, no vomiting, bilirubin drawn, neurological okay.
Q. Neurological okay. That's good news, isn't it, Doctor?
A. Sure is.
Q. Sure is. But it -- that's the first time that the jaundice appeared, was a couple of days after birth. Is that fair to say?
A. Apparently.
Q. Uh huh. And then let's see, on the 17th, tell us what that says.
A. At the top?
Q. Yes sir.
A. "Clinically doing well, bilirubin one -- sorry -- bilirubin 19.1 milligrams percent total.
Q. That's a little bit high, isn't it?
A. Just a bit.
Q. Just a tiny -- yes, but a little bit. Now let's look at the 18th, and tell me what that says?
A. The first line is "Bilirubin down to 17.8 milligrams percent today. No abnormalities on physical examination except resolving jaundice. Will get a repeat bilirubin in the outpatient client tomorrow."
Q. All right. So based on those records is it fair to say that the baby vomited a little bit, it game them some concern, the vomiting subsided within about a day, the day after that

the baby developed a very mild case of jaundice, bilirubin was up just slightly, a mild case of jaundice. The day he was released the bilirubin was dropping into a more normal level, and they were going to do a follow-up just to check on the bilirubin, so he's slightly jaundiced when he was released?

A. Yes.

Q. And no other -- no other conditions whatsoever were noted?

A. No.

MR. HEMBREE: Thank, Dr. Thrasher.

THE COURT: Redirect.

MR. DIGGS: Just a couple of questions.

REDIRECT-EXAMINATION BY MR. DIGGS:

Q. With respect to the entry of different codes we are talking about entries that were made by two different physicians, correct? If you will look in those records.

A. Yes, apparently, yes.

Q. All right. So when the Solicitor points to the -- one code, and then another code, he's talking about entries that were made by two different people.

A. Well, I don't know that as a fact.

Q. You can look at the ---

A. I don't know who signed what.

Q. All right. But the records are in evidence and we can look at that later if we choose to, correct?

A. Yes.
Q. All right. But there is no question that this baby was being monitored closely, the doctor -- correct? Do you agree?
A. Yes.
Q. ---To closely monitor. Call me at home, the doctor said, in the event that you feel the need. Is that normal?
A. Call me at home if the vomiting continues.
Q. Yes. Is that normal?
A. Under the circumstances I would say yes.
Q. Oh yes, but how normal are these circumstances?
A. Well, any time a child is vomiting and it's of concern it's -- that would be appropriate for a physician to request that he be called if it continues.
Q. And so that demonstrates there was a problem, potentially, in this physician's mind.
A. Yes, it does.
Q. All right. And no doubt he had a poor moro reflex.
A. It was stated that.
Q. It was stated. And again, what does that mean?
A. It's an abnormal reflex finding.
Q. With relation to what? Meaning what?
A. Means the -- it's an indicator that there may be something wrong in the central nervous system.
Q. There you go. All right. And the central nervous system is also referred to as what?

A. The brain and the spinal cord.

MR. DIGGS: All right. Thank you very much, Doctor.

THE COURT: Anything else, Solicitor?

MR. HEMBREE: Just one question, Your Honor.

RECROSS-EXAMINATION BY MR. HEMBREE:

Q. Dr. Thrasher, the -- there was a follow-up though check -- there was a follow-up check on the moro reflexes, and the doctor reported that the reflexes were fairly good.

A. Yes.

MR. HEMBREE: Thank you, Doctor.

THE COURT: Do you wish the witness to be excused?

MR. DIGGS: Yes sir.

THE COURT: Any objection?

MR. HEMBREE: No objection, Your Honor.

THE COURT: All right, sir, you are released from your Subpoena. You may go back to your regular duties.

A. Thank you.

MR. DIGGS: Your Honor, could we approach for a second?

THE COURT: Sure.

(BENCH CONFERENCE TAKES PLACE OFF THE RECORD.)

THE COURT: All right, ladies and gentlemen of the jury, we are going to recess for the evening.

Leave your pens and pad in your seats. As -- we will follow the procedure as we did yesterday. The agents will have you here by 8:30, and hopefully we will start right at

nine o'lcock.

Thank you very much.

(THE FOLLOWING TAKES PLACE OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: All right, counsel, I'll see you tomorrow morning. We will start at nine o'clock. Thank you.

MR. HUMPHRIES: Thank you, Judge.

(THE FOLLOWING TAKES PLACE ON THE NEXT DAY, NOVEMBER 15, 2009, OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: Is the State ready to proceed?

MR. HEMBREE: Yes, Your Honor.

THE COURT: Defense?

MS. WILLIAMS: Yes sir, we are, except I ---

THE COURT: Gentlemen, can you find Mr. Diggs, please.

MS. WILLIAMS: Your Honor, while we are looking for Mr. Diggs there's a matter of making sure we've got the record protected.

Mr. Humphries and I discussed yesterday the slide show that Brent Turvey presented.

THE COURT: Yes Ma'am.

MS. WILLIAMS: I have that on a diskette, and I've printed a hard copy for the record. I need to move that into evidence as ---

THE COURT: Any objection to that?

MR. HUMPHRIES: No sir, Your Honor.

THE COURT: All right. Get the Court Reporter to mark it, please.

(HARD COPY OF BRENT TURVEY'S POWERPOINT PRESENTATION ADMITTED INTO EVIDENCE AS DEFENDANT'S EXHIBIT NUMBER 38.)

(D.V.D. OF BRENT TURVEY'S POWERPOINT PRESENTATION ADMITTED INTO EVIDENCE AS DEFENDANT'S EXHIBIT NUMBER 39.)

MS. WILLIAMS: Thank you, Your Honor.

THE COURT: All right. Now, is it your intention that the disk and the hard copy go back to the jury?

MR. HUMPHRIES: It's in evidence. I mean ---

THE COURT: All right. Okay.

MR. HUMPHRIES: And Your Honor, they have -- I believe their first witness, Dr. Gur, has a PowerPoint presentation which I saw this morning.

THE COURT: Okay.

MR. HUMPHRIES: I don't have any objection to it, but they will -- obviously they will have to -- need to supplement the record in that regard too. I don't think they are prepared to do that right now, but before the end of the case.

THE COURT: All right. Very good.

All right. So those are exhibits -- Defendant's 38 and 39 are in evidence without objection.

Ask the jury to come in, please.

(THE FOLLOWING TAKES PLACE WITHIN THE PRESENCE OF THE JURY.)

THE COURT: All right, Mr. Diggs, your next witness, please, or Ms. Williams.

MS. WILLIAMS: Thank you, Your Honor. The Defense calls Dr. Ruben Gur to the stand.

THE COURT: All right.

All right, sir. Please come around to be sworn.

RUBEN GUR, , being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MS. WILLIAMS:

Q. Dr. Gur, will you tell us where you are currently employed?

A. I'm currently employed at the University of Pennsylvania in Philadelphia.

Q. And can you tell us, please, what is your position there, and what is it that you do that.

A. I'm a professor with tenure at the medical school. My primary appointment is in Psychiatry. I have secondary appointments in Neurology and in Radiology, and I also work at the Philadelphia V.A. Hospital in the Behavioral Services section. I direct the Brain Behavior laboratory at the University of Pennsylvania, and head the Center for Neuroimaging in Psychiatry.

Q. Okay. Dr. Gur, can you please give us the benefit of your formal education?

A. Yes. I received my Bachelors Degree in Psychology and

Philosophy at the Hebrew University of Jerusalem in Israel, received my Masters and Ph.D. in Clinical Psychology at Michigan State University in East Lansing, Michigan, and did Post-doctoral Fellowships at Stanford University at Stanford, California, and at the University of Pennsylvania. Then that's where I stayed since 19 -- I got my Ph.D. in 1973, my Post-doctoral training was '74 through '76, and I was assistant professor -- I'm sorry -- Post-doctoral training '73 through '76. My Assistant Professorship started at Penn in 1974, and that's -- and I was promoted and received tenure over the years.

Q. Can you please tell us if you are a member of any professional associations, professional affiliations?

A. Yes. I am a member with a Fellow Status at the American Psychological Association, in the International Neuropsychological Society, in the American College of Neuropsychopharmacology -- it's a mouthful of a name, but that's how the college is called, and I am a Fellow -- I have a Fellow status in that college, and in the American Association for Psychological Science, where I also have a fellow status.

Q. Dr. Gur, can you please tell us if you've had any articles published, any written materials, things of that nature, and while you are doing that will you explain to us if they were peer-reviewed or refereed, or non-refereed, and in

that context?

A. Yes. It's an important distinction. A peer-reviewed or a refereed manuscript has been reviewed by peers, as the name implies, and was published in a peer-reviewed journal, and what it means is that when you submit an article it is sent out to experts in the field and they read it and tear it to shreds and send their comments back, and you will have to respond to those concerns and comments and re-do the analysis, if necessary, but by the time it comes out there is some credibility to it that it has been read by experts and considered worthy of publication in that it advances knowledge in the field. This is the criterion that is being used by the University to decide about hiring and promotion. I now believe I have a bit over three hundred articles in peer-reviewed journals.

Q. Okay. Let me ask you, do you -- I think you mentioned research. Can you tell us about if you participate in research, and what kind, and give us the benefit of that information, please.

A. Yes. Research is what I do most of my time. I was fortunate to be at a place in time where neuroimaging really was born and developed, and within that effort I was part of a team that developed both the P.E.T. imaging, M.R.I., the variety of methods for being able to look at the brain while an individual is still alive. We used to have to wait until

someone died before we could open up the skull and look at the brain.

And this research is expensive, the procedures are expensive, so you have to get grants in order to do that work, and the grants also work similarly through the peer-review system. You have an idea for a project. You have to explain the idea, how it relates to what work that was done, in what way it is novel, and then you explain in detail how you are going to do the research, and how much money you need in order to do it, and these applications go to the National Institute of Health. The National Institute of Health has panels of experts from around the Country and the world who will review all those grant applications and decide whether they are solid science enough to be funded, and then they give a priority, and then N.I.H. goes through it's coffers and sees how many of those that were approved can be funded, and usually it's something about ten percent of those grants that get approved actually get funded.

Q. So only ten percent of the ones that submit for funding usually actually get the money. Is that what you are saying?

A. Well, it's actually worse. About a third of the grants that get submitted get approved, probably even less than that, and out of those that get approved there is only enough money to fund anywhere -- right now as we sit here it's about ten percent of those that get approved get actually funded. Our

work has been funded continuously since 1975.

Q. And how much, typically, do you have in grant money, normally?

A. Well, this year is a bit unusual. We got a large grant from N.I.H.. It is called an Grand Opportunity Grant, and it's part of the stimulus package, so we got -- together with Children's Hospital we got Twenty Million Dollars to spend in the next two years doing a landmark study.

Our usual budget is about Three Million to Three and a Half Million Dollars a year.

Q. And this landmark study -- you said normally it's about Three to Three and a Half Million a year, but this year is the unique year. Is that right?

A. Well, this year, yes. It's now another -- for our unit it's another Five Million.

Q. And this landmark study that you are going to be participating in is -- would -- can you tell us about that?

A. Yes. We have -- the Children's Hospital has a big genetics -- genomics unit that has been taking blood -- some extra blood from all the children who come to the hospital for genomic analysis, and they are -- they, based on that, have collected about forty thousand samples of genetic material, and they have been discovering new genes almost every week related to all sorts of diseases such as asthma, heart disease, but there is not much they discovered about behavior

because that information is not in the medical record, and our project is to go and interview ten thousand children in the next two years, in their homes, or if it's impossible they can come to the University, and collect data on their behavior and their development. It doesn't say in the medical record whether the child is shy or aggressive, or has difficulties with attention or with memory, so we will collect that information and administer to them computerized neuropsychological battery that will scan the different functions that can be related to regional brain function, and that way we will have information that will allow us to link the genetic material to information about how the brain works.

Q. Okay. So you are -- okay, which leads me to my next question. Have you -- I mean, I -- have you -- can you tell us about your evaluations, if any, that you've performed in M.R.I. -- with the M.R.I. processing, if that is part of your research.

A. Yes. Analyzing M.R.I. is a very major part of our research. In this goal -- grant, we are going to bring in a thousand of those children. Out of the ten thousand we will bring in a thousand for M.R.I.. It will be a very extensive M.R.I. that will include both structural and functional M.R.I., and over the years we were among the first to present methods for quantitative analysis of the M.R.I.. That work was done in the late eighties, early nineties. Now it's

become wide-spread, and we use those methods routinely, both in research and in our clinical work. It become -- became especially relevant recently with veterans returning from Iraq and Afghanistan who have head injuries that -- that are not easily documented by traditional procedures, so they have this problem where they suffered the head injury and they get an M.R.I. and the M.R.I. comes back normal, and so there is nothing that can be done, but with the quantitative methods we can document where the abnormality is that is not seen by a neuroradiologist, and thereby design methods for intervention, to teach them how to overcome the abnormalities that are produced by loss of brain tissue due to the head injuries.

Q. Dr. Gur, as part of your research -- I don't mean to be repetitive, but I think -- have -- as part of what you've done have you participated in any type of studies that develop the relationship, based on what you saw in an M.R.I., connected to behavior?

A. This is the bulk of our work, linking what we see with M.R.I. to behavior that can be measured with procedures such as neuropsychological testing, or functional M.R.I. where you obtain information on how the brain responds to different tasks and situations.

Q. Is it -- what -- the common name -- you say an M.R.I. plus a functioning M.R.I.. What is the com -- are there two different tests?

A. They use the same scanner, the same device, but the procedure is very different. The structural M.R.I. gets information about the anatomy of the brain, the structure of the brain.

With functional M.R.I. we get information about changes that occur when blood flow comes into the brain, so the procedure is quite different. I think maybe it will help understand that better if I can explain a little bit about how the brain works.

Q. Absolutely, and I will get -- come to that.

MS. WILLIAMS: Your Honor, at this point we would submit Dr. Gur as an expert in Neuropsychology and Neuroimaging.

THE COURT: Do you wish to question the witness?

MR. HUMPHRIES: I don't, Judge. Thank you.

THE COURT: He is qualified to give his opinion.

MS. WILLIAMS: Thank you.

Q. Well then, Dr. Gur, I'm going to ask you if you can do that. Can you please tell -- well, can you do exactly that, give us an idea of the principles that you've been studying about how the brain works?

A. Yes. If you can open the lid of my laptop, and take the lid off the projector you should be able to see -- you may have to count to five.

So what you see on the top, where it says neuron, is a

cartoon of ---

Q. I'm sorry, Dr. Gur, if I may, I -- if this would ---

A. Oh, that will be great.

Q. The little yellow button is the red pointer.

A. So the brain consists of neurons. Neurons are the cells that are in the brain, and this is a cartoon of a neuron, and it's a cartoon in the sense that there is no neuron in the brain that looks like that, but all neurons have all these parts in them.

So what's important to know about a neuron, it has cell body that's the -- that's what you see here, and what is different in a neuron compared to any other -- any other cell in your body, is that it has a lot of these little protrusions on the side, and these protrusions are called dendrites. These protrusions are important because they allow -- they increase the surface of the nerve cells and allow a lot of chemicals that are surrounding the nerve cells to get attached to them. Now these chemicals that surround the cell are called neurotransmitters, and when enough of them get attached to the skin, to the outside of the cell body, they change the electrical polarity between what is outside the cell and what is inside the cell, and that produces a short. At some point the electrical polarity builds up and produces a short that produces an electrical signal that travels down the membrane, or the skin of the cell, and shoots down a long fiber that is

called an axon, that you see here. When it shoots down that axon it comes to the axon terminals and here it releases new chemicals, and those new chemicals travel -- and now if here you have another neuron they will travel and attach themselves to the new neuron and produce another short, another electrical signal, and that's how neurons communicate with each other inside the brain.

Now eventually they will reach a muscle, and if this -- these chemicals get attached to the muscle the muscle will contract, so basically this is how the brain controls behavior. It will generate electrical im -- pulses that will travel, eventually getting to a muscle, and when they get to the muscle the muscle will contract.

Now, depending on which muscle they get to, and how the muscle contracts, will determine whether you are moving your arm up or down, or sideways, or whatever you do, or if you speak the mouth muscles will be activated, but this is, in principle, the way the brain works. It has billions of those neurons that communicate with each other.

Now here I have a view of the brain, and it's a side view of the brain, and you can see the major brain regions. The main regions of the brain are the frontal lobe here, the temporal lobe in green, the parietal lobe here in blue, and the occipital lob here in violet, and down here you see this stem coming up -- it's called the brain stem -- and back here

you see a structure called the cerebellum, and that is the part that controls fine movement.

Now the way the brain works is that information is coming to the brain constantly, both from outside and from inside. When it comes from outside it can be visual information. Visual information is transmit -- all the sensory information that comes in meets at the structure called the thalamus, so visual information goes there from the eyes, the auditory information, the sound, comes from the ears, sensation comes from the skin, smell from the nose, and that -- all this is external information. They go, in very raw form, and then they get transmitted by the thalamus to the different parts of the brain that handle them.

So visual information goes straight to the back of the brain, the occipital cortex, and the first job of the occipital cortex really is to reverse what we see, because the way our -- the lens of our eyes are structured, actually everything we see comes to the brain upside down, so the brain has to reverse it, make it right side up, and then it -- the occipital part of the brain only processes very raw stuff. It can see lines, it can see light and dark, it can see movement, but it has no concept of what it sees. It just -- as it moves information forward four lines will form a square, emotion will form like a vision of the hand moving as opposed to something else, and so as it moves forward to the parietal

lobe that information gets more abstracted, and by the time it reaches the parietal lobe we get the concept of a door or a window, or a hand moving.

Parietal lobe and superior temporal area, which is where the auditory information comes, processes the auditory information in exactly the same way. It doesn't immediately understand works or emotional expression, it only -- it only hears pitch, voice, it makes a dif -- it distinguishes, is this a human voice, or is this a dog, or is this a bird chirping, or is this the -- my car engine, so it begins to differentiate that, and puts it together in the parietal lob with the visual information that comes in. So this is how the brain works. The raw stuff gets processed first in the -- what is called the primary sensory areas, primary visual area, primary auditory area, and then it moves forward and becomes articulated into concepts, into words, into images, into pictures that have meaning.

Now, the border between the frontal and the parietal area -- let's -- here, here, it's -- I see it. Yes. In this border here there is the so-called sensory motor strip, and that was discovered during brain surgery of people with seizure disorders who had to have their brain operated on. If you put an electrical signal in one spot there on the right, the left hand will go up. If you put next to it -- spot next to it the left hand will go down. If you move further the

finger will move, so you can actually have the whole human being represented in this strip that goes right on the side of your head. One region in it will make your eye close up and down. Another region there would get you to start talking. Another region, if you stipulate, will stop you, even if you are in the middle of the sentence, you will stop talking. So this is the sensory motor strip, and when you ask the patient -- because these patients can be fully awake throughout the surgery -- the brain itself does not have any pain receptors, so once you get through the skin of the -- of your head there is no pain. You can open up the brain and the brain won't feel pain, so in these surgeries the patient can stay alive -- I'm sorry -- hopefully -- can stay awake under local anesthesia, so you ask them, why did you move your arm up and they will say, because I felt like it. The brain has a need to conceive of itself as being in control of your actions.

Another illusion that we have is really that we only have one brain. If you push the button again, or if you give me your skull that you have there I can explain that. If -- just put ---

MS. WILLIAMS: Your Honor, may I approach him?

A. Yes.

So this is a model of a skull and the brain inside. It's ---

MS. WILLIAMS: I'm sorry. Your Honor, could Dr. Gur come down and come in front of this microphone?

THE COURT: Just as long as he stands right in front of the microphone.

MS. WILLIAMS: If you will come, Dr. Gur, down here, it might be easier for the jury to see the brain.

This is the microphone. This is just where we have to stay.

A. So this is the -- a skull, and I opened it and took out the brain, in this case made of plastic. What -- another illusion is that we only have one brain, or one mind. As a matter of fact we have two brains that are like totally separate from each other. There are no nerves that are present in both sides of the brain, so each one is a fully-contained unit, and the way those two parts communicate is through this structure here in the middle that is called the corpus callosum, c.a.l.l.o.s.u.m.. The corpus callosum is fibers, is only fibers, it has no cells in it, only those long fibers, the axons.

Now, one thing I need to point out is, you see the red blotches on the axon. These blotches are, in reality, white, not red, because they are made of fat. What happens is that when you are born there is almost no fat in your brain. The fat is needed because it surrounds these axons and prevents the electrical signal from just dissipating, in the same way

that the electrical company puts rubber around electrical wire, otherwise the electricity will just go everywhere. The brain doesn't have rubber, the brain uses fat, and that fat is called Myelin, M.y.e.l.i.n.. When you are born you have almost no fat in the brain. That's why a baby, you can tickle the left foot and they will throw both arms. They cannot really direct where they want the action to go. And as -- and the first place where the myelin develops, where the axons become layered with this fat, is in the sensory motor area, and as the sensory motor area becomes what we called myelinated, being layered with fat, the kid can eventually move only one arm, and start grasping things, and as we know, eventually gets their act together and sits up and begins to move around. And that's totally dependent on how much of that fat gets layered on the axons.

So these axons also communicate between the two sides of the brain, and they give us the illusion that we have one mind when, in fact, each side of the brain processes information differently. If we look at it here, this is the right hemisphere, this is the left hemisphere. If you get damage in this region here, around the third frontal convolution of the left hemisphere you will stop talking, you will have deficits in being -- in expressing yourself. It is called aphasia, a.p.h.a.s.i.a.. And people with damage in this area have very difficult time communicating, their speech is slurred, slow,

their vocabulary drops, the ability to come up with words to describe what -- the grammar goes -- is shattered, they have a very difficult time speaking.

Now if the same lesion is in the -- is further back ---

Q. Lesion means?

A. Lesion means that there is damage, like when you make a stroke in that area, or if you had a gunshot wound in this area, or anything that damages that area.

If the damage is further back these people talk fine, in fact, they talk too much, but they don't understand. They have deficits in understanding language, so you may ask them about one thing and they will blurt out a whole story about something unrelated to your question. So damage in the front produces deficit in speech expression, more in the back the deficit is in comprehension. But you can have the same damage on the right side, your speech will be fine, so speech is mostly on the left hemisphere.

The right hemisphere controls more spacial processing. If you try to imagine how a house will look like if you look -- entered from the back, or how an object would look like if you have to rotate it in three dimensions, or what is the angle that you should use in the pool table in order to get the ball in. This is not with words. This is done with pictures, and that's done in the right hemisphere. People with damage in the right hemisphere will get lost on the way

to the bathroom. They can't read maps. They lose direction. Also, is important for face recognition. People with right hemisphere damage will have deficits in recognizing faces. They may have a dear relative coming to visit them and they won't recognize them by the face, only after they start talking they may recognize them by the voice, but not by the face.

It also -- the right hemisphere also puts the emotional tone on your language, so people with right hemisphere damage -- one of the first cases -- there's well-known case, was a teacher whose complaint was that she lost control of her class, all of a sudden the kids started behaving strange, and it turns out she had the damage exactly in the front, in the third frontal convolution of the right hemisphere. Her speech was fine, but she couldn't put emotional intonation into it, so imagine a teacher saying to the kids, please be quiet now, you know, there is no emotional intonation in it. So the emotional intonation on your voice, what is called prosody, comes from the right hemisphere. So those hemispheres are very, very different.

Now, the other thing you can notice here is that in the middle it's empty, right here, right in the middle of the brain. It looks empty. Well, it's not empty in reality. In reality it is full of fluid. Your brain actually floats in fluid. That fluid is called cerebral spinal fluid, and it

runs from your brain -- your whole brain is in it, your whole spinal cord contains that fluid, so all your nerves are surrounded by fluid, and that fluid provides nourishment in addition to the blood. Most of the nourishment of the nerves comes from the blood, but some of it also comes from that fluid, but very importantly for the brain, it also cushions the brain, otherwise you can get brain damage every time you sneeze. Your brain actually floats in that fluid, and if you can look at the skull you can see that the back of the head, right here, is very nice and smooth. It's very smooth, the bone. You can actually feel how smooth it is. But the front of the head has a lot of nasty bones. They are called the orbital areas, right above the eyes here, and above the nose, so -- and the brain sits right on top of this, the front of the brain, sits right on top of these areas, so every time if you sneeze and your brain went up and down it would hit those bony areas, but the fluid prevents that from happening, so your brain just maybe floats up and down.

Unfortunately, if you have a head injury like in a car accident, or being hit with a club, or one of those things, then two things happen. One is that the head (sic) falls on those bones and can get crushed, especially in the frontal area, which is right over these bones, and the second thing is that the brain gets twisted if the injury is -- unless the injury is straight head on. If the injury is a bit on the

side, which is usually what happens, then in addition to the blow the brain gets twisted. Now, what happens when the brain gets twisted, you may have heard about a torque, when you try to move something around the closer you are to the center of what you are trying to move the stronger the force. That's why we don't open the door by holding the pivot and moving the pivot like this. It will be impossible. Even the strongest man in this room would not be able to open the normal door just holding the pivot. That's why we have a door handle. It gives us a bigger distance, you can use a lot less force and open the door.

Now what happens in the brain is the reverse of that. You can imagine how much force there is in the center of the pivot when you move the door handle, so in the brain the whole brain is like the handle and the center of the brain is like the pivot, so when the brain twists most of the force of the twist comes in the mid-line of the brain, which has several very important structures, and what happens when it twists is that the nerve cells sheer, they stretch, and when they stretch they get damaged. After it they try to get back and repair themselves, and some of them do, but a lot of them don't, and when a brain cell doesn't fire it dies. So a brain cell needs to continue to fire or otherwise it will die, and when brain cell dies it's place is taken up by fluid. So one way we can know that regions in the middle of the brain were

destroyed is we can see that there is a lot of fluid in the center of the brain.

Q. Dr. Gur, I hate to interrupt you but let me ask you this. Is there any way for us to know if -- how or if that damage happened? I mean, you know, if we don't know for sure, I mean, do we have any way to test that?

A. Well, the only way to find out is with doing an atomic study of the brain, like M.R.I., and measure the volume of the different parts of the brain, and importantly, measure the volume of the fluid, and to see how normal it is relative to healthy brains.

Q. Let me ask you this. Can you explain to us -- you were talking about as a child, and I would say -- I'm going to call it the fatty cover on the thing because I would say the word wrong -- but the fat covers our neurons as we develop. Can you explain that a little bit more to us, because you said when we are born we have no fat in the brain, virtually.

A. Right.

Q. And kind of what that means as we develop.

A. Okay. The first -- as I mentioned, the first part of the brain that gets that fat is the part that controls movement. Then it spreads to the parts that control speech, and by age about one and a half that part will be -- will be connected. Basically the layering of the fat on the fibers means that they can communicate more easily, the electrical

pulses work faster, and don't get dissipated, and they reach their destination. Then as we continue to grow, by about age thirteen, fourteen, the entire temporal lobe that you can see here, and you can see here in the dum -- this entire temporal lobe gets myelinated and the frontal lobe begins to myelinate.

Q. So -- let me pause you for a second. So what you are saying is, because of how the fat develops that that explains why children can walk before they can talk.

A. Exactly. That's why -- because -- exactly, because that's -- the motor part gets myelinated before the language part gets myelinated.

Q. Okay. So -- and as they myelinate those things that that brain controls begins to function.

A. Begins to function closer and closer to the way adults function. So a teenager can do arithmetic as well as an adult, and sometimes better. They can do almost anything adults can do. The only part of their brain that is not myelinated yet is the frontal lobe, and that produces some of the strange behaviors that we see in adolescence. They can be very smart. They can do arithmetic great. They can fix our computers when we can't do anything about it, and then they do something that leaves us aghast, saying what were you thinking, and that's the frontal lobe. They are not onboard yet. They don't become fully onboard actually until the early twenties. They continue to myelinate until around age twenty-

two or twenty-three. So you can get adolescent behavior from college students quite often.

One thing that also happens during adolescence is that -- as I mentioned, if a brain cell doesn't fire it dies. So during adolescence you have a mass bath of neurons. The brain figures, what I haven't used for thirteen years I don't need, so there is a process called pruning where you lose a lot of brain cells between around age twelve and around age nineteen or twenty, and this is also why, if you didn't learn to play the violin before pubescence you will never become a concert violinist. You can learn later on, and you can become pretty decent, but you will never -- that part of the brain that is needed in order to be good enough to play in concerts, that part shriveled off and died. Similarly for skiing. If you didn't ski before you became a teenager you can learn how to ski later in life, but you can see the difference on the slope between those who skied since they were kids and those who picked it up later on.

Same for accents, you know, this strange accent that I have. I speak English fluently. I spoke -- I have been speaking it for years. I learned it -- I started learning it in sixth grade. Too late. I will always have an accent. Languages that I learned before that I can speak, not as well, but, you know, locals would not think that I am a foreigner. I speak with a native accent.

Q. And so the frontal lobe, I think you just said -- I want to clarify -- when -- when -- when do you antici -- when do we think the brain actually finally finishes development?
A. If you include the frontal lobe it's early twenties.
Q. Okay.
A. And the frontal lobe, as you notice, as kids grow older their prospective on the world changes. Babies are totally just concerned about themselves. As you grow older children begin to notice that there are other creatures around them, both parents and then friends, and then they start thinking about society, and that develops with myelination, and the frontal lobe all the information from your body comes through this part in the middle of the brain. It's called the brain stem. The brain stem is connected to your spinal cord. Your spinal cord feels if you are hungry, if you are thirsty, if you are warm, uncomfortable, itchy, all those things, and communicates to the brain, and that gets integrated with everything from the outside, and everything is sent to the frontal lobe, and the frontal lobe is like the chief executive. It gets all the information from the rest of the brain and decides what to do about it. So you can forget now that you are little warm, that you are uncomfortable, that you are a little worried about various things and focus on my strange accent talking to you because your frontal lobe says this is my job now, this is what I have to do, I have to shut

out everything else and listen to this guy from Philadelphia.
Q. All right. Let me ask you while you are standing there. You have cause to do some research, or do some type of testing involving Mr. Stanko. Is that correct?
A. Yes.
Q. Can you please tell us about that?
A. Yes. What I received was the results ---
THE COURT: Could the witness go back to the witness chair now?
A. I can go back to ---
MS. WILLIAMS: I'm sorry. Yes. Would that make it easier for the moment, and you will go back and then if you need your chart we will show it.
A. Okay.
So I received -- our lab received the results of a P.E.T. scan done on Mr. Stanko, and I was asked to analyze the scan in the same way that we analyze all the scans that we work on, and these are hundreds of scans, from healthy people as well as people with various brain disorders.
Q. Did you perform a functional analysis or a ---
A. Structural.
Q. ---Structural analysis?
A. The M.R.I. data we got were from a structural study, so all -- this is the first bread and butter simple procedure. It's all relative, of course, but this is the procedure that

will give you good data on the integrity, the structural integrity of the brain.

Q. And based on your review of that information did you reach any conclusions?

A. Yes.

Q. And can you please share those with us?

A. Yes. If I may explain.

Q. If you may come down and may -- do you need your chart?

A. Well, we can -- we -- we have it here, a little -- the same chart, just a little clearer.

Q. Okay.

A. Yes, if you go back for a second that shows an M.R.I., and what we do with the M.R.I., so you can see -- with the M -- the way M.R.I. works is that you put your head in a very strong magnet, so all the molecules in your brain get aligned with that big force. It's a magnet several times stronger than the pull of the magnetic -- the magnetic pull of our planet, so it's a very, very strong magnet that has to be constantly cooled with helium. So all your molecules in the brain will align themselves with that force, and then you pass force that is at an angle to that force, so when you do that all the molecules try to align themselves with a new force, but the new force is there for a bling, for twenty milliseconds, not enough time for you to even blink your eyes. Blinking your eyes takes a hundred milliseconds, so this is

twenty milliseconds, very brief, so when it's gone the molecules have to realign themselves with the first force, and when they do that they rattle, in the same way if you bend a pencil and you let it go it will not just go back to it's original position, it will rattle a little bit. Now that rattle is called resonance, and that's what resonance means when you says magnetic resonance imaging.

Now there is a big principle in biology that big bodies move slowly, small bodies move fast, and the smallest molecule in the brain, also happens to be the most abundant molecule, is water. So most of your brain consists of water molecules. They are very small, and they rattle to position first, so what we do is listen, we listen to the resonance, this rattling, using radio antennae basically, the same idea as listening to the radio, and the first rattling that we will hear are from water molecules, then come the proteins, and last come the big fat molecules, so depending on when you record your rattling you get an image that is composed mostly of specific types of tissue, so the brain cells themselves have water and proteins. The fat comes from -- now you know -- from those myelinated fibers, so based on recording how much signal came from each part of the brain -- and these pictures are literally painted by the computer dot by dot. You know, like if you take a photograph, you blow it up, you blow it up, eventually you will see the dots that make it, and those dots

are called pixels, and M.R.I. is a reverse process. First of all, these dots are three-dimensional. Each dot has a known length, width and depth. The depth is the thickness of the slice. We do the M.R.I. in slices. So basically what these dots are, they represent how much signal came from this cube, cube of tissue, and that -- and the M.R.I., the image, the picture, just translates those intensities into a gray scale, so if a lot came it will be white, if little came it will be dark, and this is how you actually get that image of the brain. It's painted dot by dot by the computer, given the numbers that come from that region.

Q. And Dr. Gur, may I ask you, so basically an M.R.I. is a still image, in effect, I mean, it's a point in time?

A. Exactly. And it shows here, now to me, at that point in time, and what we do is, we go back to the numbers and we ask the computer, give us -- I mean, because these pixels are three-dimensional they are called voxel, v.o.x.e.l., and so we ask the computer to tell us, what are the numbers from each voxel that fall within what we get from gray matter. Gray matter are the cells themselves, and the surrounding dendrites, how much comes from white matter, and now you know white matter are the myelinated fiber -- they are called white matter because they are made of fat and they are white, and how much comes from the fluid in which the brain flows, the cerebral spinal fluid, and these are the three what we call

compartments in the brain, and we can -- now, because we know exactly the size of each voxel we can calculate from that what is the volume of gray matter, white matter, and cerebral spinal fluid in the brain, and this is what you see in the right most image. This is what the computer comes back with. Each voxel tells us, this is gray matter, white matter or fluid. It used to take overnight to get this. Now it takes literally a couple of minutes for the computer to do that. But this is what our -- this is called Quantitative Volumetric Analyses, and this is how you can find out, really, how much tissue is missing in the brain, and this is important -- you can see on the next slide, I believe.

Yes. Then we have -- we used to have to do it by hand, to divide each brain of every individual into the different parts. Now, with the help of some very smart geeks in the -- in the Computer Science Department we can do that in an automated fashion, so the method that Chen and Davatzikos have developed -- D.a.v.a.t.z.i.k.o.s. -- it takes a brain that we use as a template, a normal brain, and for ever new brain that comes in it warps the template into the new brain. The template has been studied extensively. We know each voxel in that template, which region it comes from, and what it is, is it gray matter, white matter, or fluid.

Now when you warp the template into a particular brain we record, for every voxel, how much we had to stretch it or

to squeeze it in order to fit, and when we are done we can know exactly how different our brain is from the template, and we do that for every healthy person who comes through, and that's how we know what is normal, what is normal and how much variation you have around normal.

All the brains have the same parts, but no two brains are exactly the same. Very much like faces, each one here in this room has a nose, ears, mouth, eyes, and yet no two people could be mixed up with each other. We each have our distinguished features with just really only seven elements. There is so much variability. The brain has more elements, and so there is more potential for variability, but yet all those parts are there, so in principle you can warp my brain into the brain of any one of you, and vice-versa, and we can record the difference, and that difference -- and this method now takes a new brain and finds out all the regions in that brain and tells us whether the volume is normal or abnormal relative to a healthy person.

Q. Okay.

A. Now the next slide explains why this is important. So you imagine a person who had the head injury, the brain hit the front, got twisted, and then tissue died. If you do a regular M.R.I. your chances of seeing any abnormality are slim, and it's not because you haven't seen a lot of M.R.I.s even. Top expert neuroradiologists would not be able to see

it unless all the cells died in one spot.

Q. I was going to say, can you give us an example of that, like a ---

A. Well, I mean, is the same as -- you may have heard that it was discovered that the Black Forest in Germany is ill, is dying. It's a huge forest. You can walk in it, you won't notice anything. You take a satellite photograph you won't notice anything, but when they took satellite photographs over the years, and they superimposed one on the other, they saw that some very diffused, sporadic areas the trees are shrinking, trees are dying. They are just not all dying in one spot, and that's why it's so hard to see even if you walk in the forest, they are dying sporadically, and so you need quantitative analysis in order to discover that.

In the same way, if you have a stroke and one artery was blocked that supplies one area, and so all the cells in that area died, it will be easy to see that if you just look at the picture coming from the M.R.I., but if you had the head injury and cells died sporadically -- this is what we simulated here in this slide on the left -- you can see a slice of M.R.I. optimized to detect cell loss.

Then we took thirty percent of the voxels from that area that you can see circled in red. A third of the tissue we took out, but we took it out randomly, and you can stare on both of those, and you can have an expert radiologist stare in

both of those until the cows come home, you won't notice a difference, it's invisible. But if you did a quantitative analysis you will be able to see, of course, that a third of the voxels are missing.

Q. And Dr. Gur, did you perform a quantitative analysis of the information that was provided to you on Mr. Stanko?

A. Yes. What we did, we took the numbers that we got from the M.R.I. and performed exactly this quantitative analysis that I illustrated here. Yes. And the results are shown on the next slide. No, up.

Q. Sorry.

A. Okay. Yes, that ---

Q. The next slide.

A. Right, next slide.

So what you can see here, each dot on this slide, and -- is represented by an arrow, and if the arrow points left it means that it was taken from the left hemisphere, and if the arrow points right it was taken from the right hemisphere.

What we did is, we took each of these regions and compared them to a sample of healthy people that came to our lab to be studied as volunteers for bio-medical research, and they were carefully screened psychiatrically and neurologically. They are all healthy.

Now, what we do is, we calculate what is called a "Z" score. A "Z" score means you take the volume of Mr. Stanko,

you subtract it from the average volume of a healthy person, and you divide it by the standard deviation of healthy people. Standard deviation is roughly the average differences from the mean of your sample. So if I measured the height of everybody in this courtroom I will get an average, say five seven, or five nine. It doesn't describe any individual here. A lot of people are above that, lot of people below that. I need another number to tell me how wide the distribution is, so I will take each observation, each height from each one of you, subtract it from the average, and that will give me the difference from the average. Now, because some of you would be below and some of you will be above, I square that difference, and then I divide it by how many people there are here, and then I take the square root of that, because you remember I had to square it, and that gives me -- on average, it can be, say two, which will mean that two-thirds of you, or sixty-eight percent of you will be between five -- if -- suppose the average, say, is five eight, and I find that the standard deviation is two, it would mean that sixty-eight percent of you will be between five six and six. And it means also that ninety-nine percent of you will be within two standard deviations from that average, so ninety-nine percent of you will be between five four and six two, okay, so that's the purpose of standard deviation. And we do the same with the brain, and we get a number that tells us how many standard

deviations away from normal someone is, and in general, as a rule, if a brain region is more than one standard deviation below normal we call it clinically significant. It's something we have to look at. If it's more than two standard deviations different from normal then we call it highly significant, pathological. This is -- this shouldn't happen. This means that that brain is damaged.

Now here in this graph you see that overall Mr. Stanko has a big brain, definitely a normal brain. Zero is average, and some of the brain regions in his case are above average in volume, but there is one lobe, the frontal lobe, on the left, that is more than two standard deviation lower in volume than normal.

Q. Dr. Gur, may I -- can I get you to show me, on our brain, where that area is?

MS. WILLIAMS: May I approach.

A. The frontal lobe is this entire area right -- this part of the brain, right here, and as you recall, it's the part that sits right on top of the orbital bones.

Q. Please continue.

A. Now, the reason, I believe, that there was -- that it could be some head injury that produces that is because we see that for the occipital lobe and the medial gray matter the abnormality is even worse, and is in the other hemisphere. It's not in the left, it's on the right. So something like

ventricles. So all these regions here are tissue, are brain tissue. This -- the ventricles is fluid, not tissue. So unlike the brain tissue that is down in volume, the fluid in the middle of the brain, in the ventricles, is almost two and a half standard deviation larger than normal, and what that tells us is that the structure in the middle of the brain, what we call the limbic system, which are right in the middle of the brain, those structures lost tissue, and that's why all -- that's why we have more fluid. For all the cells that died in that area their place was taken up by fluid, and that's why the ventricles are so abnormally large.

This kind of large ventricles you see in disorders such as schizophrenia. This is one of the main signs of schizophrenia, and that's considered a neural development or disorder, something you were born with that most likely is genetic. Well, we know part of it is genetic and part of it is something that happens usually during the second trimester of pregnancy that causes those medial structure not to develop, and that's why we see large volume. It can happen later in life if you have head injury that affected those structures in the middle. They die and the place is taken up by fluid.

Q. Let me ask you something while you -- because you just mentioned schizophrenia. We've heard the terms anti-social and psychopathy. Can you tell us the different between those?

A. Yes. They are quite different. They don't exclude each other. You can have, you know, more than one disorder. There are very few disordered that if you have one you can't have another.

Psychopathy is -- disorder is a diagnosable disorder that involves a history of growing up with an anti-social attitude, and you develop into someone who has very little regard for others, has limited ability to understand other people's feelings, tends to treat people like instruments, would not take the need into consideration. They can be very charming interpersonally, but really have no feeling behind their external demeanor.

Schizophrenia is quite different. The main signs ---

Q. No. I'm sorry. The different -- anti-social versus psychopathy.

A. So anti-social -- anti-social versus psychopathy. Okay. Anti-social is a feature, psychopathy is -- anti-social personality disorder is not a disease. It's a personality defect. It's not considered an actual illness. It's part of your make-up, and some people have that anti-social attitude. When it comes in combination with other features you can qualify for a diagnosis of psychopathy.

Q. Let me ask you, based on your results that you found on the M.R.I. that you analyzed of Mr. Stanko can you tell us what that means, if all, with regard to what you would

anticipate of behavior?

A. Well, the damage in the frontal lobe is the most worrisome, and in combination with damage in the medial gray matter it produces a brain that can malfunction in a very serious way. The frontal lobes are the chief executive. They integrate all the information and decide what you do. If I had to use one word to describe the function of the frontal lobe that word would be context. It puts your action in -- it makes you act relevant to the context. Right now you are all sitting quietly because you are jurors in a courtroom, and this is the right behavior for a juror in the courtroom. If you started jumping up and down you will get strange looks, and you may even get punished for that, so you know not to do that, and that's your frontal lobe that tells you not to do that, even if you feel an urge all of a sudden to commence to stand up and scream. So the frontal lobe are what put your action in context. They are your chief executive.

And you know, drugs that affect the frontal lobe will show it right away. Alcohol, for example, numbs the frontal lobe, puts it almost to sleep, so you may still be smart in a lot of other parts of your brain but you will do some crazy stuff. You will do stuff that -- out of context. You may laugh. You may tell off-color jokes, you make do things that when you are sober again you will say to yourself, who was I, what was I, how -- how could I behave that way, and that's

because your frontal lobe are being numbed. Most drug abuse affect the frontal lobe. So the medial gray matter is a very important structure in that context because it contains two important structures. One is called the amygdala, a.m.y.g.d.a.l.a., and the other is called the hippocampus, h.i.p.p.o. c.a.m.p.u.s.. These are very primitive structures.

Q. I'm sorry. Would it assist you to come down and be in front to show them that?

A. Yes. I can show it to you.

They are small, they are primitive. So, as you see, this is a brain stem coming from the spinal cord. That part, up to here, we share with words, so words have all that part, and the spinal cord. They can wiggle. They know when they are hungry. They know how to drink. They know how to move left, right, so -- and they know if they are hot or cold, so this is the part of the brain we share with -- with words.

Now, this part here we already share with crocodiles, crocodiles. Evolution doesn't throw anything away. It takes the brain of the worm, puts on top of it the brain of the reptile, puts on top of that the brain of a mammal, puts on top of that the brain of a primate, and on top of that our brain, which is this layer up here that is more unique to humans.

So the amygdala ---

Q. That layer -- the last layer you just described which

was ---

A. Right. Right here, the outer part of the brain.

The amygdala and hippocampus are small structures here that we share with crocodiles, literally. They look exactly the same in a crocodile as we do in us. And they -- they don't understand language, really. They don't speak. There are -- you can think of them as being a crocodile inside you. Those parts ask very simple questions. The hippocampus asks, have I seen that before, have I experienced this before, constantly, all the time. That's the one question they ask, what I just heard, which I've just saw, did this happen before. And in order to do that it keeps comparing what you hear or what you see with the template of your memories. If it doesn't find it there then it says it's new, and it sends a signal to the brain, here is something new, should I remember it, or is it not important enough. Okay. So that's what the hippocampus does. If you scoop out the hippocampus, for example, to prevent uncontrollable seizures, in some cases, these people remember everything that happened to them before the surgery, but nothing of what happened to them after the surgery. One of them who recently died -- it was written up in the New York Times, his initials were H.M. -- he described it, every minute is like I am waking from a dream. His wife will visit him every day and every time she came -- like after twenty years he will say, gee, you got old, because he

remembered her the way she was before he had the surgery. So if you take out the hippocampus then that question is not being asked, so you can't learn anything new.

Next we -- is the amygdala, another tiny structure, and the amygdala asks another question. The amygdala asks, is this a threat. That's the one question it keeps asking, am I being threatened, is there something that can happen to me. And if there is a threat it sends an alarm.

Q. Can the amygdala -- I'm sorry to interrupt, but can the amygdala distinguish between -- I mean, does it process? Is it a perceived threat, a real threat? Does it know?

A. Amygdala will react to the perceived threat, regardless of whether it's -- whether it's real or not, that's the job of the frontal lobe. Fortunately the amygdala is intimately connected to the frontal lobe. Most of the fibers from the amygdala go to a region called orbital frontal, which is right here at the bottom of the frontal lobe, and that orbital frontal decides what to do with that alarm signal. So you may be in a cocktail party and somebody gives you a nasty comment, the amygdala doesn't understand -- it just understands somebody is threatening me, and he shouts, kill the bastard, and it goes, unfortunately, to the orbital frontal lobe that says -- tells you, now wait a minute, this is a party, there are people around, maybe I -- instead of attacking that person physically I'll just say something nasty back. So that's what

the orbital frontal lobe does. So the amygdala and the orbital frontal lobe are constantly communicating. The amygdala can see danger everywhere, and the orbital frontal tells you -- like you may be in a movie, you see a snake in the movie. The amygdala doesn't understand movies, it thinks still that you are in the savannah, a hunter and gatherer, because that's where our brains were put together. We are doing wonderful things now, play computers, fly planes, but really our brains were put together when we were hunters and gatherers in the savannah, and this is what our brains can do. So when you see a snake in a movie your amygdala shrieks, there is a snake, and it's the orbital frontal that tells you, no, no, you are safe, you are in a seat, it's a movie, nothing is going to happen, that snake is not going to bike you, so it's the orbital frontal part that will differentiate a perceived threat of the snake in the movie from a real threat of a snake down on the ground when you are walking out in the swamp. So the amygdala does not distinguish those situation, it just issues an alarm.

MS. WILLIAMS: Would you like to return.

Q. Okay. Now, can you tell me if, based on your results, if you find any connection between what you found in Mr. Stanko's brain and what you just described with us regarding the amygdala and the frontal lobe?

A. Well, in this brain we see reduced volume in the entire

limbic system, which includes amygdala and hippocampus, and at the same time we see a reduced volume in the frontal lobe, so if the amygdala sends -- damaging the amygdala causes what is known as the Kluver-Bucy, K.l.u.v.e.r. hyphen B.u.c.y., after the people who described it first. Actually it was first described in animals, in mice. Mice, if you take out the amygdala, become very placid. They don't interact. They just move about supper cool. They don't do anything. They don't show any emotion, and then all of a sudden they may go into a rage attack, and they will attack all the other mice around them, and then they go back to being placid. And the same thing happens to people who have damage in the -- in the medial gray matter area, in the amygdala. They behave super cool. They don't respond emotionally, and then for some unknown reason they can explode and attack, and that's especially the case if there is also frontal lobe damage because people who don't have -- who only have amygdala damage, no frontal lobe damage, their frontal lobe serves as a break, and keeps telling them, no, you don't do that, stop, you may feel like that, but don't act on it.

Q. Dr. Gur, can you explain to me why it is, if you have small amygdala and a small frontal lobe you wouldn't always be acting out, for lack of a better term?

A. Well, what happens in people who have small amygdala is that it's less active by and large. It just -- more dormant.

But if it gets triggered then the whole structure -- what -- every time a nerve cell fires it educes firing in the neighbors firing in the neighbors, and the amygdala has very large cells in it, so if there's a small number of them it's much more easy for all of them to get active together, and that's why the amygdala is the source of seizures. Most seizures in epilepsy come from amygdala hippocampus area for that reason. And you can have very complex behavior in seizures. It's not what you think that you always would see on the -- the seizure most people think about is somebody writhing on the floor, moving back and forth, is only one type of seizures. Seizures can be starting to run without reason. Some seizures can be complicated as looking for something. I had one patient who kept looking for something, and then whenever he would see a woman he would say -- smile and say, hi babe. That was part of his seizures. He would come out of it not remembering anything of what happened, and that was right temporal lobe focus that was acting.

So, the behaviorals can be -- can be quite complex.

Q. Let me ask you this for a second. Do you know if, in the brain, where we can test intelligence?

A. Intelligence is a concept that came before really we understood how the brain works. It was developed in order to predict school performance, was developed in the turn of the previous century by a French psychologist, Benet, whose job

was to try to decide who should go to regular school and who should go to special education. And so he put together measures that predicted school performance. And if we look at it now from an angle of understanding brain and behavior it mostly looks at superior, temporal and parietal area, and to some extent superior frontal area.

Q. Which is where?

A. Which is really -- it looks at those -- those aspects of behavior that are most uniquely human. It looks at the cortex. It looks at the outside layer, and really doesn't have good measures either of emotional intelligence, and now we have the whole new genre of tests for looking at emotional intelligence. You can be intellectually very smart. You can do great arithmetic, but you are a total dud when it comes to trying to strike a conversation with somebody, and I think we all knew those -- those people. So emotional intelligence it doesn't cover. It doesn't cover impulse control. It doesn't cover the ability to modulate -- to modulate your emotions, to modulate your impulses.

Q. Can you show me physically on this little brain where Mr. Stanko's results were that you found?

A. Yes. These are the left -- this is the left hemisphere. This area is where we find missing tissue, this whole orbital frontal area. It doesn't affect the superior frontal, it doesn't affect the outer layers of the temporal

lobe, so his memory is okay. It affects inside the amygdala and hippocampus, the structures in the middle of the brain, and it affects the -- especially on the left, it affects the frontal lobe, and you have some damage in the right occipital which would produce some visual abnormalities, visual deficits, and visual processing that basically would have no effect on intelligence.

Q. Okay. Let me ask you this. Do you -- are you familiar with the term hypergraphia, excessive ---

A. Hypergraphia?

Q. Yes sir. Sorry. It's compulsive writing.

A. Yes. That's one of -- one feature that has been associated by Gershwin and others with temporal lobe disorder. People with some form of temporal lobe disorder like seizure disorders tend to write excessively. They will write volumes, and sometimes won't be able to control how much they write. It's one of the -- one of the signs of seizure disorders that were very helpful before we could do imaging and establish the presence of a seizure disorder more precisely.

Q. Okay. Let me ask you this. As part of your analysis in this, and with what you do with behavior, would you -- can you tell me where, if it's any, is formed in the brain?

A. Yes. There have been quite a bit of work on empathy. We did some of it but a lot of it was done by a Professor Baron Cohen from Oxford. The -- that's a frontal lobe

function, so empathy is being able to know what another person is feeling, so it's -- children have very limited capacity to imagine how somebody else will feel. You all may have experienced the -- kids will come -- you give them a ride in your car and somebody says, I want to sit next to Johnny, I don't want to sit next to Bill, and they may blurt it out right in front of Bill and not thinking that Bill's feelings can be hurt, so it just doesn't occur to them to put themselves in somebody else's shoes. And part of what happens with frontal lobe myelination is, we get the ability to put ourselves in somebody else's shoes and know from their expression or their reaction to what we do how we must have made them feel, or how they must be feeling at the moment.

Q. Is part of what you do, look at people's ability to distinguish moral right from moral wrong?

A. Okay. That -- that -- that is a fairly recent set of studies. A lot of them were carried out by Dr. Gold from Princeton, but they are now -- they have now been, I would imagine, close to thirty or forty studies on that where you do functional M.R.I. rather than structural M.R.I.. You can look at the activity of the brain, so if you remember our brain in a magnet, and we pass one current to get a good picture of the anatomy, with functional M.R.I. we don't care about how good the picture is, but we want to acquire it fast. So you acquire a picture of the whole brain in two seconds. Those

pictures are crappy, but you get a lot of them, and then you ask people to do something while you acquire those images. So you get a picture of the whole brain every two seconds, so for twenty seconds you ask the person to move the finger of the right hand like that, and then stop -- I'm sorry.

MR. HUMPHRIES: Your Honor, I'm going to have to object at this time if this Psychologist is going to render an opinion regarding this Defendant's status as to his understanding moral wrong and moral and legal right. He is not qualified.

THE COURT: Are you going to be asking him that question?

MS. WILLIAMS: No sir. I am not going to be that about this ---

THE COURT: Well, let's move along then.

A. Well, I'm almost done, so ---

THE COURT: Sir. Thank you. Move along with your next question, please.

Q. Well, let me ask you this. So you are describing -- and that functional test that you are talking -- I think that's what is commonly called a P.E.T. scan.

A. Right. No, that's functional M.R.I., or F.M.R.I..

Q. Okay.

A. With those studies you can look at the changes that occur when blood flows in a particular part of the brain in

order to allow it to function. Every time a brain cell fires it is exhausted, it needs energy, and it gets it's energy by burning sugar, or glucose, using oxygen, and it gets that from the blood that comes through the brain, so when a brain region begins to work you can see an influx of blood into that region, and blood gives a stronger signal on the M.R., so in our case when we ask them for twenty seconds to move the right hand, and then twenty seconds not do anything, and then another twenty seconds move the right hand, twenty seconds not do anything, when we average all the images that we took when they were moving their finger, and we subtract from them all the images we took when they were not, we will see the finger area in the sensory motor part of the brain -- well, if the right hand it will be on the left -- the left brain controls the right side of the body -- you will see it show a hand signal, and that will tell us that that part is working.

So using exactly the same principle they had people make moral decisions in the scanner. They were presented with moral dilemmas and had to decide what they would do. Like you were in a party, you were looking at the vase, the vase dropped, you broke it, nobody saw, you could quickly put it together and you know, move on, wasn't me, or are you going to say, oops, I'm sorry, you know. So those kinds of decisions involve the frontal lobe, very clear, it's the frontal lobe that gets really revved up for those kinds of decisions.

Q. And Dr. Gur, are you familiar with some studies done by Phineas Gage?

A. Well, the -- Phineas Gage was a gentleman who lived in the Nineteen -- toward the end of the Nineteenth Century, and he was a railroad worker, an upright citizen, married, with children, a churchgoer, just a normal guy, and then unfortunately a spoke from the rail went right through his eye into his brain, and pierced his brain. Miraculously he didn't die from it. He was -- he survived, and he, for all appearances, went back to normal, but then something else happened. He started gambling, philandering, got into bar brawls, and really ended up in skidrow. He just could not control his impulses any more because of that frontal lobe damage. The study -- what happened was that his skull was reconstructed with M.R.I. by a husband/wife team, Ahana and John Demazio -- I am having a senior moment -- the Demazios, and they published it in Science, in one of the major -- the major journal, to illustrate how the frontal lobe -- it's a classical case study of how frontal lobe damage can make someone who was a totally normal person deteriorate in that particular capacity of being able to take the long-term consequences of his action into account to control his impulses, and to behave like -- in accordance with the social norms.

Q. Okay. And there is no doubt -- just one moment. If we

can put this back together.

Based on your studies that Mr. Stanko, with what you found has ---

A. Toli Demazio. I'm sorry.

Q. ---Has two types of problems, correct?

A. Yes.

Q. And they are, again?

A. The frontal lobe problem, and the medial gray matter, limbic system, problem.

Q. And will you show us on that half of, and tell us exactly what it is?

A. Okay. This is the right hemisphere. In the right hemisphere he has damage in the medial gray matter structure, right here. They include hippocampus and amygdala. This is the left hemisphere.

Q. I'm sorry. May I get you to come -- and I want to make sure the jury can see exactly what you are doing, please.

A. Well, here is -- we have the left hemisphere and in the left hemisphere ---

Q. Put it back together.

A. So, this is the right hemisphere, and in the right hemisphere the main problem is inside, both in the occipital area, the visual cortex, and in the medial gray matter area.

Q. And with regard to that problem, what percentage of the population, based on your studies, would have that type of

problem?

A. The -- the damage in the medial gray matter, and especially at four standard deviation below normal, we don't see it in normal people. It just doesn't happen. We see it in -- to that extent it's almost like you have to have temporal lobe epilepsy, and some form of temporal lobe epilepsy won't even have that much tissue loss.

Q. So it's extreme?

A. It's extreme.

Q. Okay. And the second type of damage -- or your -- defect or your term.

A. That's in the frontal lobe, this region here, on the left, and that -- that is still less than one percent, or maybe about a quarter of a percent of healthy people may have those kinds of values.

But mind you, these are -- these people would have lower values in other regions too, so it's unusual to have just this -- these regions showing the low volume when the rest of the brain is normal volume.

MS. WILLIAMS: I believe that is all the questions I have of Dr. Gur.

Please answer any ---

THE COURT: I'm sorry. Ladies and gentlemen, we are going to take a break. Go to your jury room for a while and just leave your pads and pens. Thank you.

(THE FOLLOWING TAKES PLACE OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: All right. We'll take a short break for about five, ten minutes, and Ms. Williams, on the break if you can collect your demonstrative aid, please.

Thank you.

(THE FOLLOWING TAKES PLACE AFTER A BREAK, AND WITHIN THE PRESENCE OF THE JURY.)

THE COURT: All right, Solicitor.

MR. HUMPHRIES: Thank you, Your Honor.

THE COURT: Yes sir.

CROSS-EXAMINATION BY MR. HUMPHRIES:

Q. I was interested in your testimony regarding that sort of synergy between the frontal lobe and the amygdala, and in this case you've indicated to this jury that there were -- there was some tissue loss, is it fair to say, in the frontal lobe and the amygdala of Defendant, Stanko?

A. Yes.

Q. Okay. And I think you testified that in the amygdala, with this tissue loss, he would be less active ---

A. Yes.

Q. ---But that when it -- well, when it was reacted the reaction would be stronger.

A. Yes.

Q. You -- I think you have been talking about a kind of

acting out. In terms of the behavioral context you talked in terms of a rage attack.

A. That's one of the ways it can happen.

Q. Now, -- and because of the tissue loss in the frontal lobe, or the executive function, or the context, as you described it, there would be -- well, there wouldn't be a filter, or an adequate filter.

A. Yes.

Q. Is that fair to say?

A. I think you can call it filter or breaks.

Q. Or breaks.

A. Yes.

Q. The frontal lobe is primarily concerned with some higher level function. Is that fair to say?

A. Yes.

Q. Planning would be something that would occur in the frontal lobe?

A. Yes. I mean, the frontal lobe is a big chunk of real estate. It has different parts that do different things, so in general, the superior frontal lobe is more related to intellectual planning, more -- more related to sensory, motor integration and planning. The lower part of the frontal lobe relates more to emotional aspects of planning. And of course, there is the dorsal lateral prefrontal that doesn't do much in terms of planning, but it's like the -- a scratch pad that

keeps refreshing. It basically is the part of your brain that tells you, what have I just done, what am I doing right now, and what am I about to do a split second from now, and it keeps changing.

Q. Now, a rage attack, that would be diametrically opposed to, say an attack that were -- that was planned, that took advantage of natural opportunities, which would make it less confrontational, wouldn't you say?

A. I'm not sure I understand your question.

Q. I can be more specific. I apologize, Doctor.

If -- if an attack took advantage of -- well, first of all let's say this. If it was unprovoked by the -- the target of the attack, some other stimulus provoked the rage attack, and that attack took advantage of time to seek out a weapon, and to perpetrate the attack when the target was not a direct threat, that is, when his back was turned, and took steps to -- in this case there has been testimony he took steps to muffle the gunshot wounds. That -- that's not consistent with a rage attack, is it?

A. Well, that indicates that some of the frontal lobe is still intact, probably the superior part of the frontal lobe.

Q. If there -- there -- if -- that indicates some level of control, and some level of a filter or break, does it not?

A. Well, yes. I mean Mr. Phineas Gage, from the example that we talked about, his philandering, his gambling, and so

on, they all required planning and, in fact, even hiding. We see that with Parkinsonian patients, for example. Parkinson's disease also affects the frontal lobe, and these old -- most -- usually older people who were, all their lives, model citizens, begin to take the bus to Atlantic City and -- or to some casino and lose all their money gambling, and yet there is a lot of planning there, not just to go there and get the ticket, and get the chips and all that, but to hide it from the family. It takes a while till they are being discovered. So even though it is clearly a sign of deteriorating frontal lobe function it does still include the ability to plan.

Q. Sure. Now that's a far cry from shooting somebody in the back though, is it not, or maybe that's not your testimony. Maybe it's not a far cry.

A. Well, it's -- of course they don't usually go and -- people with -- elderly people with Parkinson's disease don't show an increased propensity to attack people, so a lot of what happens has to do with a bunch of other factors, age, circumstances, social history, all these shape our behavior as well.

Q. I agree with you. Now, you did testify about seizure activity, and how that somehow is situated in the amygdala or the limbic system. There has been no -- correct me if I'm wrong. There has been no indications of seizure activity as it relates to Defendant Stanko.

A. I'm not familiar with any information on that.
Q. That was just in -- that was just in general, just the scope ---
A. Yes.
Q. ---Describing it to the jury.
A. Yes. Yes. Yes, absolutely.
Q. I just wanted to make sure we hadn't hear that. And finally, in -- I assume -- well, let me ask you, without assuming. Is it your opinion that a statistical analysis is appropriate and effective in diagnosing in individuals?
A. Yes, of course.
Q. And in this case -- we've got your chart here. You -- we've had it up on the screen. Your sample group is forty-one, I believe.
A. Yes.
Q. And to that group of forty-one you compare, not just Defendant Stanko's brain, or the imaging of his brain, but various other -- many other images of other brains.
A. Yes.
Q. And in fact, in numerous capital cases you have performed that function for defense?
A. I wouldn't say numerous, but ---
Q. How many?
A. Maybe twenty or so.
Q. Okay. We are not going to fuss about whether twenty is

numerous.

It is fair to say, however, though, that experts, qualified experts in this field disagree as to the efficacy or appropriateness of the size of your sample group. Is that fair to say?

A. I don't think so. Our -- we published that sample in a leading, very careful peer-reviewed journal and nobody, to my knowledge, has raised any problems with it in terms of it's adequacies. It's large relative to what most people use.

Q. And what -- I mean, it's not your testimony today -- experts have not testified in contradiction to your results n other capital cases as it specifically relates to your sample group of forty-one?

A. Well, I thought you were talking about any peer-reviewed objections to our sample. No. Yes, of course. When I testified -- and usually there is an expert who tries to rebut it.

Q. It's statistics?

A. I don't think it's statistics. I don't remember anybody ---

Q. I don't want you to -- don't misunderstand my question.

A. Okay.

Q. The basis of your analysis is statistics.

A. Yes.

MR. HUMPHRIES: I don't have any further questions.

Thank you, Doctor.

THE COURT: Any redirect?

MS. WILLIAMS: Briefly, Your Honor.

REDIRECT-EXAMINATION BY MS. WILLIAMS:

Q. Dr. Gur, where do you mainly derive your income from? Is it testifying, or something else?

A. Oh no. I have -- I derive my income from my salary as a Professor at the University of Pennsylvania.

Q. And have you ever actually testified in a court ---

A. Yes.

Q. ---As an expert. Can you give us an approximate number of times?

A. Number of times?

Q. Yes sir.

A. I think about twenty. I don't have -- I can look at the exact count.

Q. Okay. The Solicitor was asking you about pre-planning versus an attack, okay, and a proposed attack with a decreased amygdala. If I understood you right you said, in the results in this Defendant Stanko's brain has -- it has increased fluid inside the brain ---

A. Yes.

Q. ---Which would be where the amygdala is located.

A. Yes.

Q. And he also has a decreased physical matter of the

brain, which is where processing ---

MR. HUMPHRIES: Your Honor, I'm going to object as to whether or not this is in response to the State's cross.

MS. WILLIAMS: Your Honor, I will get there. Let me go ahead and do it.

THE COURT: Well, all right. You are going a long way to get there though.

MS. WILLIAMS: I'm sorry.

Q. Based on your results, with the results that you found in Defendant Stanko's brain, do you think the -- is it consistent to say, or can you say that you think that it would be natural that he would pre-plan things, or be very active?

A. It's a difficult question to answer. The reduced volume in the amygdala will increase his vulnerability to react to perceived threat. The frontal lobe reduction will reduce his ability to control it, but there are -- most of the damage is in the inferior orbital frontal part, so the more intellectual part of planning is still intact.

Q. Okay. And with the perceived threat, the frontal lobe being more damaged, would that -- does that mean that it can't do as good a job to determine whether perceived threat is or is not?

A. Yes. It would ---

Q. If it's real or if it's not. That's what I mean to say.

A. Yes. If the frontal lobe is damaged it will diminish it's ability to distinguish real from perceived threat that is really not real.

MS. WILLIAMS: One moment, please. One moment, Your Honor. I'm sorry.

Could I have this marked as -- for identification only, please.

(HANDWRITTEN NOTES ON YELLOW PAPER MARKED DEFENDANT'S EXHIBIT NUMBER 40, FOR IDENTIFICATION ONLY.)

THE COURT: Show it to the State, please Ma'am.

MR. HUMPHRIES: From whom -- you can't just -- you can't show it ---

THE COURT: Gentlemen.

MR. HUMPHRIES: May we approach, Your Honor?

THE COURT: Yes.

(BENCH CONFERENCE TAKES PLACE OFF THE RECORD.)

THE COURT: Ladies and gentlemen, you go to the jury room, please.

(THE FOLLOWING TAKES PLACE OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: Ma'am, when was the document produced?

MS. WILLIAMS: During the trial.

THE COURT: And who produced it?

MS. WILLIAMS: Defendant Stanko.

THE COURT: And you have not given it to the State to

review?

MR. DIGGS: Your Honor, could I respond to that?

THE COURT: My question is, you have not given it to the State to review yet, have you?

MS. WILLIAMS: No sir.

THE COURT: Very good. What -- do you have any objection, Solicitor?

MR. HUMPHRIES: Yes, Your Honor. We have an objection.

THE COURT: What might that be?

MR. HUMPHRIES: It has not been produced in discovery. We have not had an opportunity to review it, certainly, before it's presented to this witness and testified to. At the very least we should have an opportunity to review it in full, and have a copy of it.

THE COURT: And then you would like -- and then I'm assuming you would like the opportunity to question the author about what is contained therein, and what it means?

MR. HUMPHRIES: Your Honor, we don't have any -- there is absolutely no basis to establish what that document is, other than counsel's representation to this witness. It's without foundation, and I -- and yes, Your Honor, it's ---

THE COURT: So obviously you would like to question the author who produced the document before it is shown to this particular witness to explore what it is and what is contained therein?

MR. HUMPHRIES: Yes sir, Your Honor.

THE COURT: All right.

MR. DIGGS: Your Honor, it's something that I suggested Ms. Williams do, but at this point I don't think it -- the perceived benefit from the Defense's perspective, I don't think it's going to be worth the difficulties, and so we withdraw that, and we would ask the Court to just move on, and I withdraw any effort to examine the witness, Dr. Gur, about this particular document.

THE COURT: All right. Do you have any further questions of this witness, Ma'am?

MS. WILLIAMS: I think I was done. I need just to make sure. No sir.

THE COURT: Are you going to have any questions that you are going to ask ---

MR. HUMPHRIES: I have one.

THE COURT: All right. Very good. Ask the jury to come in, please.

The document has been withdrawn.

(HANDWRITTEN NOTES ON YELLOW PAPER PREVIOUSLY MARKED DEFENDANT'S EXHIBIT NUMBER 40 FOR IDENTIFICATION NOW WITHDRAWN FROM THE RECORD.)

MS. WILLIAMS: Your Honor ---

THE COURT: Yes Ma'am.

MS. WILLIAMS: ---When they come back in do you want me

to say, Your Honor, I don't -- I will ---

THE COURT: No Ma'am. I will -- I will ask you. No Ma'am, I will. Thank you, Ma'am. Thank you.

(THE FOLLOWING TAKES PLACE WITHIN THE PRESENCE OF THE JURY.)

THE COURT: All right, Ms. Williams, any further questions, Ma'am?

MS. WILLIAMS: No sir, no further questions from the Defense.

THE COURT: Anything from the State?

MR. HUMPHRIES: One question, Your Honor.

THE COURT: Yes sir.

RECROSS-EXAMINATION BY MR. HUMPHRIES:

Q. Dr. Gur, you have testified that you've been qualified to testify as an expert in excess of twenty case. Is that correct?

A. Yes.

Q. Do you recall the case of **United States versus Lisa Montgomery**?

A. Yes.

Q. Was your opinion rejected as a matter of law by that Judge in that case?

A. There was a pre-hearing where -- it had nothing to do with the M.R.I.. I had to do with the P.E.T., which I al -- we also did for that, and the prosecution asked for the raw

data of a study that we did in -- that we published more than fifteen years ago, which required to thaw old computers to get the raw data out, and we were not able to do it by the deadline that the Court set, and so the Court ruled that I could not present my testimony.

MR. HUMPHRIES: Thank you.

THE COURT: Anything else, Ma'am?

MS. WILLIAMS: No sir. We would ask that Dr. Gur be released from his Subpoena, so that he could return to Philadelphia.

THE COURT: Any reason for -- the witness cannot be excused? Solicitor?

MR. HUMPHRIES: No sir.

THE COURT: All right. Very good.

All right, Doctor, you are released from your Subpoena. You may go back to your regular duties, sir.

THE COURT: All right. Who is your next witness?

MR. DIGGS: Your Honor, Dr. Marc Einhorn.

MARC P. EINHORN, being first duly sworn, testifies as follows:

THE COURT: All right, Mr. Diggs.

MR. DIGGS: Thank you. And may it please the Court.

DIRECT-EXAMINATION BY MR. DIGGS:

Q. Dr. Einhorn, would you tell us where you currently reside, please sir?

A. Roswell, Georgia.
Q. Okay. And what kind of work do you do?
A. Primarily Neuropsychology.
Q. All right. Would you give us the benefit of your educational background, please sir?
A. A Bachelors Degree of the University of Florida, Masters in Clinical Psychology from Loyola University Maryland, and Doctorate from Nova Southeastern University in Ft. Lauderdale.
Q. Okay. And what have you done by way of work, and employment, and career subsequent to your graduation or completion of your Masters and/or Doctorate?
A. It's been primarily Neuropsychology. Of course there have been other things along the way, including things directly or indirectly related to Neuropsychology, and also Forensic Psychology.
Q. All right. What is Neuropsychology?
A. It's a hybrid of Psychology and Neurology. It's ---
Q. Kind of explain that. Break that down for me, if you would.
A. Yes. It's the study of the relationship of behavior to brain function.
Q. All right. And is that something you study in -- I mean, what do you do in your practice?
A. The kinds of cases I see would be victims of accidents,

chiefly this is people that go through the windshield, or in other ways injure their brains often -- or primarily the frontal -- front part of their brains. This would be victims of stroke, people with Alzheimer's disease, people with other forms of dementia. My job is to scrutinize the localization and the severity of these disorders.

Q. And how do you go about doing that?

A. It's done in a systematic approach which includes the systematic challenging of the various areas of the brain.

Q. Okay. In terms of practical, lay approach, how -- explain for me what that means, how you would do it.

A. There are various tests that we use to write information that we know is connected to certain brain areas. The test results, whether positive, negative, or somewhere in between, then tell us the level of function for a particular brain area. For example, the front -- the front is one brain area that we have certain tests for. There are certain tests for the side of the brain where memory is. There are tests for the side of the brain where another form of memory is, the part of the brain where vision is, in the back there are other tests for.

Q. All right. Do you have occasion -- I assume that when patients -- do you call them patients ---

A. Yes.

Q. ---To you -- and they are seeking some kind of

professional assistance with a diagnosis, I assume.
A. Yes.
Q. They are seeking. Do you investigate or inquire into all kinds of brain injuries, or all kinds of trauma, or is it localized to one particular area of the brain?
A. Over the years I think it would be fair to say that I've looked at most types of trauma, in all areas of the brain.
Q. Okay. And has any percentage of that focused on frontal lobe areas?
A. Yes.
Q. Now, if someone comes to you, or they are referred to you, and it's determined -- or you are asked to look into a possible frontal lobe injury or deficit, or defect, how do you go about making that determination with respect to that area?
A. There are tests that we use that we know are -- they clearly involve the frontal lobes, or a test that we use that, in secondary form involve the frontal lobes, for example, some forms of memory involve the frontal lobes.
MR. HEMBREE: Your Honor, these questions seem to be more appropriate after the witness has been qualified. I don't believe he has been qualified yet, and I would object --
-
MR. DIGGS: Yes. You know ---
MR. HEMBREE: ---To this line of questioning until Dr.

Einhorn is qualified.

THE COURT: All right. Very good.

MR. DIGGS: Well at -- at this point we would offer Dr. Einhorn as an expert in Clinical Psychology.

THE COURT: All right. In the field of Clinical Psychology. Do you wish to ---

MR. DIGGS: Clinical and Neuro.

THE COURT: I'm sorry.

MR. DIGGS: Clinical and Neuropsychology.

THE COURT: Clinical and Neuropsychology.

MR. DIGGS: Yes sir.

THE COURT: All right. Do you wish to question the witness?

MR. HEMBREE: Just a few, Your Honor.

THE COURT: Very good.

CROSS-EXAMINATION BY MR. HEMBREE:

Q. Dr. Einhorn, have you -- have you testified in other criminal cases?

A. Yes.

Q. On how many occasions?

A. Well, I don't track criminal as opposed to civil, but it's -- in criminal cases probably in the range of about fifty or seventy-five.

Q. And on how many occasions have you testified in criminal murder trials?

A. I have worked both sides of the fence. I don't track the percentages, I mean, the last prosecution case I did was for the Attorney General in Georgia.
Q. How long ago was that?
A. I think it was in 2004. I did three of those.
Q. All right. Have you worked for the prosecution since 2004, on any case?
A. I don't think so.
Q. Do you -- can you tell this jury roughly -- and I know it's -- and I'm not going throw any specific number, just your best estimate of how many -- how many criminal cases have you testified in since 2004?
A. Criminal since '04?
Q. Best guess.
A. I don't know that there has been any.
Q. Oh, you haven't testified in any criminal cases since '04?
A. Not criminal. It's been primarily civil since then.
Q. All right. Are you licensed in South Carolina?
A. No.
Q. You are licensed in Georgia?
A. Yes.
MR. HEMBREE: Your Honor, we don't have any objections to Dr. Einhorn's qualifications as a Clinical Psychologist or Neuropsychologist.

THE COURT: Very good.

MR. DIGGS: Thank you.

THE COURT: He's qualified to give his opinion.

MR. DIGGS: Thank you, Your Honor.

DIRECT-EXAMINATION BY MR. DIGGS CONTINUED:

Q. And Dr. Einhorn, if someone came in and -- or they were referred to you with a question concerning brain injury in the frontal lobe area tell us what you would do in order to begin to evaluate that case and what you would do to undertake efforts to -- to do what you are hired to do.

A. The first thing I would want to know would be the specific questions that the referral physician or other party had, I mean, they don't always want to know everything. Sometimes they just want to know focal questions. If they don't have focal questions then we do an exhaustive battery, to take a look at all function, and look at what surfaces as being impaired, and what looks to be level and normal.

And then from that we look for patterns of impairment, and then we make a diagnosis based on a battery of tests which takes a considerable amount of time. It's not like going to the doctor for an hour. It could take the better part of two days.

Q. All right. Now, what kinds of technologies, if any, are available to professionals in your area of expertise to assist you in making diagnoses?

A. Well, the technology comes from chiefly film studies.
Q. And what do you mean by ---
A. I do not do that. Others provide that.
Q. Okay. What do you mean by film studies though?
A. C.A.T. scans, M.R.I.s and sometimes P.E.T. scans.
Q. All right. And in this particular case were you ever approached to provide any psychological assistant services to assist in the Stanko case?
A. My mission was two-fold. I was asked to do, one, an exhaustive neuropsychological examination, which I did, in the jail, and two was to perform a -- or administer a test at the Medical University that was specific for stimulating the frontal lobes just before he went into the P.E.T. scan.
Q. All right. Now I know you were asked to administer this test. Do you know why it was to be administered, or how it was to be used?
A. The test had been used -- and there is literature to support the fact that this specific test stimulates the frontal lobes -- so I simply administered the same test, which is known to do what needed to be done in this case, stimulate the frontal lobes.
Q. All right. Okay. And what test was administered?
A. It is the Continuance Performance Test.
Q. Can you tell us what that is? What does it entail?
A. Well, I can't give you excruciating detail due to

ethics and test security, but I'll give you the -- I'll describe it in the broadest sense.

Q. All right.

A. And that is, it is a test that is most often used to diagnose A.D.H.D., and it is a test that throws at the participant both visual and verbal, or auditory stimuli, and the person taking the test must respond in certain ways to that stimulus, or stimuli, based upon instructions that come from the test. It's a computer-administered test. I don't do the actual administration. I just set it up, and the computer provides all of the instructions, what to do, and it is a fairly demanding test.

Q. Okay. Why is the test given?

A. The test is given because it -- well, for a couple of reasons. One, as I said a minute ago, it is done to stimulate the frontal lobes, and secondly, it is done to provide a more consistent set of information than the other way of just having a person in a resting state before he goes into the P.E.T. scan.

For example, if you are lying in a resting state you can be thinking about all kinds of things, your last vacation, your girlfriend, the argument with your wife, or stress at work. That does not insure that your brain is at rest. You can be lying there at rest, but you may not be at rest. When we use this test what it does is ensure that the brain is

doing something specific, it's engaged in a task, it's engaged in a task that is continuous, and it provides -- it provides a, what we call a base-line for knowing what the brain activity is. There is no margin of error.

Q. Okay. So the purpose -- when I say why do you give it -- the purpose of the administering of the test is to accomplish what?

A. To stimulate the frontal lobes.

Q. All right. And would -- at -- did you do that in this case, when you ---

A. Yes.

Q. You said you engaged in an exhaustive neuroexamination of the Defendant ---

A. Yes.

Q. ---And you administered this particular test. Tell us what you did in an effort to do that, where you went, how it was conducted.

A. Let me just pour some water first.

Q. Sure.

A. Mr. Stanko was taken by law enforcement to the Medical University.

Q. Okay. Where?

A. In Charleston.

Q. Okay. M.U.S.C.?

A. Yes.

Q. All right.
A. I met them there, and when I got there we were in a -- a little room, and they set up the test with -- they put an I.V. in his arm, which was the radio-tracer, and what I did, according to the procedure that had been written up in an article back in 1998, I started -- well, first I gave him a little warm-up, and then I started the Continuance Performance Test for thirty seconds before they injected -- or before they let the tracer flow, and then what I did was have him perform the Continuance Performance Test for thirty minutes, including eight minutes of warm-up, so it was a total of thirty-eight minutes.
Q. Now, what was the purpose of that? You've got this fluid going into his body ---
A. Yes.
Q. ---Through an I.V.?
A. Yes.
Q. And that is to do what? What's the purpose of that fluid?
A. That is to be able to track the brain activity.
Q. All right. That fluid goes all throughout the body and into the brain?
A. Yes.
Q. And you did that for how long?
A. Thirty-eight minutes.

Q. All right. Why thirty-eight minutes?
A. That was the length of the procedure, the test procedure.
Q. Okay. And during that thirty-eight minutes you were doing what, in a general way, and I'm not going to ask you ---
A. Just stepped aside and watched him, and there were others there watching me with him.
Q. Okay. When was actually the Continuance Performance Test itself done? At that time?
A. Yes.
Q. Okay. So when you say you watched him, what was Mr. Stanko doing?
A. He was responding to the Continuance Performance Test, and the instructions being given from that test.
Q. Okay. Was he reading a book, or was he looking at a computer, or a television screen or what?
A. I had brought my laptop. The test is on the laptop.
Q. All right.
A. The test is -- he was sitting with my laptop ---
Q. Okay.
A. ---And the instructions come from the voice in the program.
Q. All right. Now, what is the theory behind the introduction of the liquid, you know, into the body from the I.V., and to go out through the brain?

A. That it would provide a way of seeing which brain areas were being used.
Q. Okay. All right. So it would be disbursed out through the brain in accordance with the way the brain was functioning at that time?
A. Yes.
Q. All right. And how long does that material stay dispersed in that particular fashion, if you know?
A. I do not know. I'm not a P.E.T. scan expert so I don't want to speculate.
Q. Okay.
A. Others would know that.
Q. Now, after you did that was there a time, ever, when Mr. Stanko was put into a P.E.T. scan device?
A. After he finished my test that's what he did.
Q. Now, were you actually present when he was put into the P.E.T. scan machine?
A. I was not. I was not.
Q. All right. And was it necessary for you to be there at that moment?
A. No. My mission ---
Q. Oh -- Okay.
A. ---Was to administer the test, stimulate his frontal lobes, and that's what I did.
Q. Now, did you administer the test in accordance with the

proper procedure that is required for the administration of that test?

A. Yes. I followed the procedure that was -- had been first written up in that 1998 article.

Q. All right. And thereafter did you receive any results back from the test?

A. Well, it -- we get a set of results that are, you know, in the computer.

Q. All right. Now, you got -- did you receive back the results of your neuropsychological exam?

A. Yes.

Q. And that exam occurred over the matter of how many days?

A. It was the better part of two full days.

Q. All right. And when you got those results back what did you do with them?

A. What did I do with them?

Q. Yes.

A. I wrote them up and submitted them.

Q. And who did you submit them to?

A. I believe I sent them to you.

Q. All right. Could it have -- and I don't want to -- if you don't remember or ---

A. And Dr. Sachy.

Q. Okay. So you had sent them to Dr. Sachy?

A. Yes.
Q. All right. And now with respect to the Continuance Performance examination, did you receive results from that test, that P.E.T. scan?
A. I'm not sure what you are asking me.
Q. All right. Let me ask you this -- did you receive the results from, or the data, from the Continuance Performance Test?
A. Yes.
Q. And what did you do with that, if anything, that data?
A. Well, there's nothing for me to do with it. I mean, I wasn't collecting that data for a research project. The data was there. My concern was to administer the test ---
Q. Okay.
A. ---And ensure that those -- that frontal lobe area was stimulated, which I did, and then as far as the results, those results were not used for anything else.
Q. Okay. And the P.E.T. scan was then performed. Is that your testimony?
A. Yes.
Q. As far as you know?
A. Yes.
Q. And thereafter did you learn that it had been performed?
A. Yes.

Q. Okay. And do you know, if anything, what was done with the P.E.T. scan results?
A. Well, they have been scrutinized by Dr. Sachy at ---
Q. Okay. And are you aware of anyone else that might have received those results?
A. Dr. Wu, Dr. Joseph Wu.
Q. All right. Wu and Sachy. All right, now, were you ever involved in an M.R.I. that was done of Mr. Stanko?
A. I had no direct involvement with that.
MR. DIGGS: All right. Dr. Einhorn, I appreciate your time, but I think that gets to the area that I needed to discuss with you, and I appreciate it.
Answer any questions that the Solicitor may have.
THE COURT: Yes sir.
CROSS-EXAMINATION BY MR. HEMBREE:
Q. Good morning, Dr. Einhorn.
A. Hi.
Q. Dr. Einhorn, you -- you've worked with Drs. Sachy and Wu on other cases, have you not?
A. I've worked a few with -- a few others with Dr. Sachy and one other with Dr. Wu.
Q. In those cases you were called upon, essentially, to conduct the same test, and essentially the same function?
A. Yes.
Q. Let's talk a little bit about the -- the

neuropsychological testing that you did on Defendant Stanko.
A. Okay.
Q. And you indicated that that was a very thorough neuropsychological exam.
A. Yes.
Q. That it took you approximately two days to conduct that neuropsychological exam.
A. Not quite two full days, but it was lengthy.
Q. As much time as you needed, would that be fair to say --
A. Yes.
Q. ---To do a thorough testing. And let me walk through your findings with you.
A. Let me -- if I could just grab that report.
Q. Absolutely.
A. Okay.
Q. Let's talk first about the -- this overall -- the neuropsychological test results were uniformly negative. Isn't that true?
A. Yes.
Q. And when you say uniformly negative, I take that to mean that there was nothing unusual, that they were negative in the sense that that's a good thing.
A. Yes. Negative means they were clean, healthy and negative sounds negative, but it's positive.

Q. Understood.
A. Negative means good results.
Q. And isn't it true, Dr. Einhorn, that often, not always, but often when there is a brain defect there are neuropsychological problems?
A. Yes.
Q. But no neuropsychological problems detected in this Defendant?
A. Correct.
Q. Now, you administered, as part of that testing process -- I'll shift gears just a bit here -- the Continuance Performance Test, and this was provided to you by Dr. Wu?
A. No, not at all.
Q. Okay. Who provided the Continuance Performance Test to you?
A. It's my test. No one provided it to me.
Q. Your test, and where did you obtain this test?
A. I purchased it.
Q. Okay. It's -- is it F.D.A. approved?
A. Tested, not F.D.A. approved.
Q. Is it -- and I mean, is this the same test -- why did you purchase this particular test?
A. Well, I did not purchase it just for this case. That's first.
Q. Sure.

A. Secondly, it is a test that I use every now and then, for various reasons, in my office, but for this case it was used because that was the test that was used in the procedure where this research study was conducted, so to be consistent with the procedure and the research study I used the test that they used.

Q. I note you said a research study.

A. Yes.

Q. That's -- when it's a research study that's something that is not yet been generally accepted in the scientific community. Isn't that typically correct? It's sort of an early stage or a middle stage of that process, is that fair to say?

A. Yes.

Q. And that was the test -- I understand that this was the test you used because that's the one they used in the research project.

A. Uh huh **(indicating positive)**

Q. You weren't there when they did the P.E.T. scan?

A. I was not.

Q. All right. When you -- were you in the -- what sort of facility was this test administered -- the P.E.T. scan administered in? I mean, I'm sure it was a P.E.T. scan machine, but I mean, what -- was it a hospital, was it a ---

A. It was at the Medical University at Charleston.

Q. Okay. That's right. That's right. And do you know how long -- how much time elapsed from the time you completed the Continuing Performance Test until Mr. Stanko was actually put into the P.E.T. scan and the scan was taken?
A. I do not know that.
Q. Would that be significant to you in knowing -- I mean, would that be important to you, because it seems to me that if you are doing a Continuance Performance Test to stimulate the frontal lobes at some point that stimulus is going to fade. Isn't that fair to say?
A. It is, but those are questions that other experts can answer, and I'm not a P.E.T. scan expert.
Q. I've got you. I've got you. So you couldn't say -- you wouldn't be able to say that -- how much that stimulus would fade over how much time?
A. I could not say that.
Q. What questions are asked during the test?
A. The Continuance Performance Test?
Q. Yes sir.
A. An example would be this. The instruction would be, I want you to respond every time you see the number one. Respond means click the mouse. So then he would -- the subject would either hear or see various stimulus, so we've got verbal, visual, verbal, visual, going back and forth, and then every once in a while then the number one would be

slipped in, and that person at the computer needs to be able to respond to seeing that one. That's one variation.

The other would be, again, if the person is told, I want you to click the mouse when you see the number one, then various numbers, sounds and everything will be going off, including a verbal number one, and then there is the impulse to click the mouse when you hear number one, but it's verbal. It's the wrong sense modality, so you look to see if, you know, that discrimination is taking place.

Another example would be, in the test the person might be asked, I want you to click the mouse every time you see a letter show up, or hear a letter, and then they are clicking, clicking, and then suddenly they see a number, and you want to see if they continue clicking when they see a number rather than the letter. It's -- it requires you to be on your toes.

Q. And you use it for an entirely different -- well, you use it to -- I think you said you use it -- or a common use for it is to diagnose A.D.H.T..

A. Yes. It's for attention and concentration.

Q. And that's -- is that another -- I take it that's what you use it for in your practice?

A. Yes.

Q. Then -- got you. Now, Mr. Diggs asked you about some results from the P.E.T. scan. Did you receive from the Medical University of South Carolina the results of the P.E.T.

scan?
A. No, I did not.
Q. Okay. Did you -- what did you do after the P.E.T. -- after you concluded the test? Did you just pack up and head on down the road?
A. Well, no. I -- I was -- I was there with a -- with two women, one was a technician, one, I assume, was a nurse, There was the police officer and then the physician came a little bit later, and we stayed there and chatted for a few minutes. The police officer was getting a kick out of telling some law enforcement stories so I laughed with them, and I was there probably for another ten minutes, and then I left.
Q. Got you. You weren't there when Mr. Stanko had finished the test. You were gone before they brought him out, is that -- is that right?
A. What do you mean, finish the test ---
Q. I'm sorry. The P.E.T. scan. The P.E.T. scan. I apologize. Had you -- did you depart before Mr. Stanko was finished with the P.E.T. scan?
A. Yes.
Q. I'm going to take you back to your -- to your neuropsychological examination of Defendant Stanko.
A. Okay.
Q. You already indicated the neuropsychological tests were negative, which was positive, which is a good thing. You have

testified -- let's see, you did the Louria Nebraska Neuropsychological Battery.

A. Yes.

Q. And I'll just go through these motor functions -- tell me your findings when I go through these topics. Motor functions.

A. Normal.

Q. Concentration.

A. Within normal limits.

Q. Task or functions.

A. Within normal limits.

Q. Visual functions.

A. Within normal limits.

Q. Receptive speech.

A. Within normal limits.

Q. Expressive speech.

A. Within normal limits.

Q. Writing.

A. Normal.

Q. Reading.

A. Normal.

Q. Arithmetic.

A. Normal.

Q. Memory.

A. Normal.

Q. Intellectual processes?
A. Normal.
Q. Tower of London.
A. Within normal limits.
Q. Wisconsin Card-Sorting Test.
A. Normal.
Q. Trails (A).
A. Normal.
Q. Trails (B).
A. Normal.
Q. Finger-tapping.
A. Also normal.
Q. Bender-Gestalt.
A. Normal.
Q. The Rey 15 - Item Memory Test.
A. Within normal limits.
Q. Immediate recall of a story.
A. Normal.
Q. Well, actually he was above average on that, or is that

A. Yes.
Q. And then delayed recall of the story.
A. Normal.
Q. Immediate Rey ---
A. Osterith.

Q. Osterith. How did he do on that?
A. Normal.
Q. Actually he was above average. True?
A. Above average, yes.
Q. And then Delay Ray Osterith Complex figure.
A. Above average.
Q. All right. And then he had a reading standard score of one fifteen. Is that significant -- what's the significant of that score?
A. It's above average.
Q. Okay. Then you gave him an intelligence test, the Wechsler Adult Intelligence Scale, Third Revision.
A. Yes.
Q. And this is essentially an I.Q. test.
A. Yes. It's an individually administered standardized I.Q. test.
Q. And he was -- Mr. Stanko has what I.Q.?
A. In your report it says, I think, one forty-three, however, after I turned this in I found I had made an arithmetic error, and it is one -- it should be one forty.
Q. One forty. Okay. And how would you characterize an I.Q. of a hundred and forty?
A. That is three standard deviations above normal, which doesn't mean much, but it is gifted level.
Q. Gifted. When you say that it's three standard

deviations above normal but that doesn't mean very much. Tell me what that means, and why is that -- why is that? Tell me what you mean by three standard deviations. Explain that to me.

A. With each standard deviation above average the score enters a new ranking, and the -- at three -- in the third standard deviation above average, you know, we get into the gifted level.

Q. All right. But you indicated that -- I mean, it's not really significant, it's just -- it is what it is. Is that essentially what you are saying?

A. Yes.

Q. Okay. And there's a -- I guess the population, if you were to do a statistical study there's a -- there are fewer people in that three standards above deviation.

A. Yes.

Q. All right. But there are people that are in that -- that are in that standard, true?

A. Yes.

Q. Let me talk to you about the review of his system. Attention and arousal orientation.

A. All normal.

Q. Verbal functioning.

A. Normal.

Q. Visual special functioning.

A. Normal.
Q. Sensory motor functioning.
A. Normal.
Q. Memory.
A. Normal.
Q. Higher order executive functions.
A. Normal.
Q. Now were those the functions that you would expect to be controlled by the frontal lobes?
A. No, not all of those, no.
Q. Okay.
A. Those are system, and the different systems are connected to different brain systems in different parts of the brain.
Q. It's not really that simple, is it? I mean you can't just pick one spot, these things are more complicated than that, aren't they?
A. Yes. Uh huh **(indicating positive)**
Q. Personality and emotional, I think you found the thought processes and communications are clear and efficient.
A. Yes.
Q. No evidence of any psychotic distortion or thinking or perception.
A. Yes.
Q. You gave him the Minnesota Multi-phasic Personality

Inventory II.
A. Yes.
Q. And this indicated, if I understand your report correctly, that he -- it was positive indications for Anti-social Personality Disorder with a well-socialized veneer.
A. Yes.
Q. Now, isn't -- is it fair to say that an Anti-social Personality Disorder, to put it in maybe layman's terms, really means somebody that doesn't either get along with others well, or play by the rules of society very well, they don't follow those rules ---
A. Yes.
Q. ---Of a civilized society.
A. Yes.
Q. Now, with a well-socialized veneer, am I understanding that to mean that he is -- that underneath he's -- he likes to break the rules, or has difficulty playing by the rules, but on the outside he's well socialized, he can behave in a way that appears that he is ---
A. Yes.
Q. ---Is fine ---
A. Yes.
Q. ---That he's not going to break the rules, that he's not going to lie, he's not going to steal, he's not going to cheat ---

A. Yes.
Q. ---And apparently can follow the rules of a civilized society.
A. Yes.
Q. Now, is it fair to say that the anti-social personality disorder is -- really manifests itself by repeated criminal conduct and anti-social acts.
A. Is that how you make the diagnosis?
Q. Yes. Would that be -- yes, would that be -- would that be a -- a -- a ---
A. Yes.
Q. Would that sort of conduct -- would that type of conduct lead you to this diagnosis?
A. Yes.
Q. What other factors would lead you to this diagnosis?
A. Well, for one, the actuarial profile that came from the tests ---
Q. Okay.
A. ---So there would be history gathered.
Q. All right.
A. A collateral source information that I would typically get in a criminal case, not in this one, because my mission was neuropsychology, not really personality assessment, and any medical problems.
Q. But from a standpoint of conduct, when you are

assessing history, to make a determination -- I appreciate there -- a large part of this diagnosis came from the test itself ---

A. Yes.

Q. ---But when you are evaluating conduct, or past conduct as a method of reaching a diagnosis you are really looking for -- if you see a repeated pattern of criminal behavior or anti-social behavior that leads you to this diagnosis?

A. Yes.

MR. HEMBREE: Dr. Einhorn, I don't have any further questions for you. I appreciate your being here today, and may have some questions from Defense.

THE COURT: All right. Redirect.

MR. DIGGS: Your Honor, we don't have any redirect.

THE COURT: Do you wish the witness to be excused?

MR. DIGGS: Yes sir.

THE COURT: Any objection?

MR. HEMBREE: Without objection, Your Honor.

THE COURT: All right, Mr. Einhorn, you are released from your Subpoena. You may go back to your regular duties, sir.

Y'all come up and talk to me for a second, please.

(BENCH CONFERENCE TAKES PLACE OFF THE RECORD.)

THE COURT: Ladies and gentlemen, if you would go to your jury room for about five minutes, please, and we will

come back and resume.

Thank you.

(THE FOLLOWING TAKES PLACE OUTSIDE THE PRESENCE OF THE JURY.)

THE COURT: All right. We'll take a break for about five minutes. Thank you.

(THE FOLLOWING TAKES PLACE AFTER A BREAK AND WITHIN THE PRESENCE OF THE JURY.)

THE COURT: All right, Mr. Diggs, are you ready for your next witness?

MR. DIGGS: Yes sir, Your Honor. The Defense would call Dr. Joseph Wu.

THE COURT: All right, sir, if you would come around to be sworn, sir, please.

JOSEPH CHON-SANG WU, , being first duly sworn, testifies as follows:

DIRECT-EXAMINATION BY MR. DIGGS:

Q. Dr. Wu, how are you this afternoon?

A. I'm doing fine.

Q. Good. Let me ask you if you would, please sir, give us the benefit of your educational background and training.

A. I did my pre-medical education at Stanford University. I graduated from there with honors in 1978. After that I did my medical school training at the University of California Irvine. I graduated from there with honors with my M.D. in

1982. After that I did a residency in Psychiatry, which I completed with honors in 1986, also at the University of California at Irvine, College of Medicine. And then after that I did a two-year Fellowship in P.E.T. scan imaging of the brain, which I completed in 1988, also at the University of California Irvine.

Q. Well, now, after your training, can I ask you what you do now. Do you currently -- how do you use your training and expertise at this point?

A. Currently I am a Associate Professor in the Department of Psychiatry and Human Behavior. I am also the Clinical Director of the University of California Irvine Brain Imaging Center.

Q. All right. Now, what does the Brain Imaging Center do, just generally?

A. The Brain Imaging Center is involved with the use of a brain imaging technology called P.E.T. scans. P.E.T. is short for Positron Imagining Tomography scans, and it's a kind of imaging of the brain that looks at brain function as opposed to brain structure, and so we use this kind of functional brain imaging to look at a variety of neuropsychiatric patients with various disorders, such as Alzheimer's Disease, Epilepsy, Schizophrenia, traumatic brain injury, carbon monoxide poisoning, things -- Parkinson's Disease, and we look at these kinds of brains, and look at the brain functioning

for both research and clinical purposes.

Q. Now as part of your responsibilities do you have to have knowledge and understanding of how to interpret, how to administer and interpret P.E.T. scan data?

A. Yes. That's part of my responsibility. I have the responsibility to understand how to both acquire the images and interpret them, both from a clinical and research perspective, for various disorders such as brain injury, Alzheimer's Disease, Epilepsy, Schizophrenia, etcetera.

Q. All right. And what particular area of specialty are we referring to when you exercise that kind of special knowledge?

A. Well, it's -- it's a P.E.T. imaging of neuropsychiatric disorders, so that kind of my specialty, is looking at P.E.T. scans to help evaluate neuropsychiatric disorders, and neuropsychiatric disorders are disorders that can either be neurological or psychiatric, things like Parkinson's Disease or Alzheimer's are more classically neurological. Things like Schizophrenia or depression are more psychiatric, and then things like brain injury can fall in either Neurology or Psychiatry.

MR. DIGGS: All right. Your Honor, we would offer Dr. Wu as an expert in the area of P.E.T. scan imaging and diagnosis, or interpretation of results ---

And as to the exact term, Dr. Wu, would you repeat that

for me.

A. I would say a P.E.T. scan imaging of neuropsychiatric disorders.

MR. DIGGS: All right. An expert in that field, P.E.T. scan imaging and Neuropsychiatric Disorder.

THE COURT: All right. Do you wish to question the witness?

MR. HUMPHRIES: No sir.

THE COURT: All right. Very good. I'll qualify him to give his opinion in that area.

Q. All right, Dr. Wu, can you take just a couple of minutes. Did you bring some materials with you that would help explain what you do?

A. Yes. I have a PowerPoint that can help explain what is a P.E.T. scan, how it's used, what's the finding for Mr. Stanko, and what the implications are.

Q. All right. I would like -- can you come down -- can you operate it from there, or do you need to come down here to the computer?

A. I don't have a remote control to operate my laptop, so I would have to come down to operate the PowerPoint.

MR. DIGGS: Your Honor, may he do that?

THE COURT: All right. You can, sir.

MR. DIGGS: And Dr. Wu, when you come here what I would ask you to do is, maybe if you could speak into this

microphone so that the Court Reporter can hear you, this one, and then when I have questions, Your Honor, I could kind of share that microphone with him.

THE COURT: You will have to come right -- yes sir.

MR. DIGGS: Thank you.

A. Okay. So this is just a title slide of my position, and a little bit of background on some of my scientific productivity, and some of the work that I have done has been covered by various media outlets such as the Discovery Channel, Scientific American, the New York Times, and also the fact I have received over a Million Dollars worth of funding from the National Institute of Health to use P.E.T. scans to study psychiatric disorders, and this is just a little bit of background about ---

Q. Okay. Now this -- U.C.I. Brain Imaging Center, again, explain to us -- I know we are not from around there, or vice-versa. Explain to us what we are talking about there.

A. This is the center that I am the Clinical Director at, and we are one of the centers in the Country that is a leading center for the evaluation of neurological and psychiatric disorders, but P.E.T. scans we have published a number of articles, we have processed a number of grants, and so we have much more expertise in the use of P.E.T. scanning to evaluate psychiatric or neurological disorders than most centers. I would say we are one of the leading centers in the Country to

evaluate neurological and psychiatric disorders.

Q. All right. What are we being shown on this particular shot, this diagram?

A. Now on this shot here, this is basically an introduction slide that talks -- that illustrates some of the differences between functional imaging, like P.E.T. scans, versus a conventional structural imaging, like M.R.I. scans. Structural imaging like M.R.I. scan basically shows the shape of the brain, but it doesn't tell you whether the brain is turned on, turned off in different areas. So, for example, you could have a M.R.I. of a cadaver's brain, and the shape of the cadaver's brain might be perfectly normal, and it might be read a perfectly normal, even though there is obviously no functioning inside a cadavers's brain, but if you were to try to get a P.E.T. scan of a cadaver's brain, because the brain shape, even though it may be perfectly normal, has no function the P.E.T. scan would be basically a blank screen, and so we can go from the extreme of a normal M.R.I. and zero functioning in the cadaver to a -- with someone with some type of brain injury where you can see areas of the brain that are turned on or turned off.

The way P.E.T. scans work, and -- is that P.E.T. scans rely on something called a positron. P.E.T. is short for Positron Imaging Tomography. A positron is short for a

positive electron. As you may recall from basic physics, electrons normally have a negative charge. Now we can create what we call an anti-matter version of an electron, which is identical, except that it has a positive charge.

Now anti-matter doesn't normally exist in our universe, and so you have to create it, and when it does -- when it is created it doesn't last very long, because anti-matter will be attracted to matter, so a positive electron will be attracted to a negative electron. Now what happens when you combine matter and anti-matter is that you get a process called annihilation decay. Using Einstein's famous equation, "E" equals "MC" square, well, "E" equals energy, and "M" equals a mass, and it's either positron or the electron. And so when a positron and an electron combine you get a tremendous amount of energy that's created by that combination, and for those of you who are science fiction fans you may remember the show Star Trek, in which the U.S.S. Enterprise was powered by a matter, anti-matter engine. While that show is science fiction the basic physics principal that's a combination of matter and anti-matter creates tremendous energy is, in fact, a well-established and valid physics principal, and it's the physics principal that underlies P.E.T. scanning.

Q. Now, can you show us -- I was just going to say, can you show us a little bit about the imaging center where you work, and how it operates?

A. Yes. So in order to create the anti-matter version of electron, the positron, we need this device here called a cyclotron. Now a cyclotron is a twenty-two ton instrument which can take particles smaller than the atom, and can accelerate it to near speed of light velocity. Light travels at approximately a hundred and eighty-six thousand miles per second, and so we are able to use this cyclotron, and we are able to speed up particles smaller than an atom to almost a hundred and eighty-six thousand miles per second, and we are bombarding a target, and that bombardment of a target by these sub-atomic particles traveling at ninety-nine point nine nine percent or speed of light creates the anti-matter version of electron, called a positron.

Now, if you lift the hood of the cyclotron and look at the engine underneath the hood this is what you would see. You would see these two triangular magnets. Now in this schematic, the two triangular magnets alternately either attract or repel charged sub-atomic particles, so that with each revolution it goes faster and faster. It's kind of like if you have a merry-go-round, and every time the merry-go-round you slap it so that you can get the merry-go-round to go faster and faster. While this is true metaphorically speaking on a sub-atomic level the cyclotron is essentially slapping that merry-go-round faster and faster with each revolution, so that by the time the particle emerges from the cyclotron it's

traveling at ninety-nine point nine nine percent to speed of light, almost a hundred and eighty-six thousand miles per second, and you need this kind of velocity to accelerate a sub-atomic particle, that by the time it strikes your target you can create something which doesn't normally exist in our universe, the anti-matter version of electron to positron.

Once we have created that positron with a cyclotron, the positron emitter, we attach it to a sugar molecule. Now sugar is the main fuel for the brain's function, so if your brain is thinking very hard in a particular area it will burn up a lot of sugar, and if it's not burning, and if it's not functioning very well in a particular area it will burn up less sugar, and so we attach the positron emitter to the sugar molecule, and then -- and the way we attach that positron emitter that we created in the cyclotron to a sugar molecule is that we have this hot cell. Now this hot cell has a radial chemist in front of a two-inch thick leaded glass window. You need the two inches of leaded glass to shield the radial chemist from the radiation from the positron emitter, and he's using robotic manipulators to run a chemical synthetic reaction to attach the positron emitter to a sugar molecule. After he has attached the positron emitter created by the cyclotron to a sugar molecule it is then introduced into a patient through a small plastic tube called an intravenous slide.

Like here is a model who is being demonstrated -- who is

demonstrating the placement of a small plastic slide into his arm, and here the model is receiving the radial traces of the positron emitting sugar molecule being injected into his blood stream. Now, once it is injected into the patient's bloodstream you have about thirty minutes for that positron emitted sugar molecule to settle into the brain, and what we do during that thirty minutes that we do what we call a vigilance task, or C.P.T., the Continuance Performance Test, and so the Continuance Performance Test basically is a very simple computer test where you ask the subject to press a button when a specific stimuli comes on a screen, and we do this for about thirty minutes.

Now there are two basic ways of doing a P.E.T. scans. One of them is what we call a rest P.E.T. scan, and the other is to do this kind of activated P.E.T. scan using a C.P.T.. Now the -- there are pros and cons for each approaches. The pros of doing this type of scan that this type of testing, where you have the subject doing this computer testing during the P.E.T. scan results in a higher accuracy and sensitivity in detecting brain injuries than doing a rest scan, but it does require some expertise in the administration of a C.P.T. to be present during this scan.

Q. Some extra what?

A. Expertise.

Q. Okay.

A. Yes. So most community centers generally don't do this type of testing. They don't have the expertise to run a C.P.T. scan during the procedure, and this is generally done only at -- by facilities and people who have a special expertise in the use of P.E.T. scans to evaluate neurological or psychiatric disorders.

Q. Is that an accepted method of doing a P.E.T. scan, Dr. Wu, in the medical community?

A. It is an accepted method for doing P.E.T. scans by people who specialize in P.E.T. scans of neurological or psychiatric conditions, and so the average community center doesn't do this because the average community center doesn't have special expertise.

Q. All right, now, does South Carolina have such a center? Are you aware?

A. Well, South Carolina has a P.E.T. center, but the P.E.T. center does not have this kind of specialty expertise inhouse to run this type of higher sensitivity P.E.T. scan.

Q. All right. So as a matter of -- well, let me just hush. Go ahead and continue on if you would.

A. So we do this kind of computerized testing after we inject the patient with a positron emitted sugar molecule into the blood stream, and we have been doing this for about thirty minutes. It takes about thirty minutes for the sugar molecule to settle into the brain, and during this entire thirty

minutes they are doing this task. It's kind of like one of those old-fashioned Civil War photographs where you have to have someone sitting in front of a camera for like thirty minutes, very still, and then it takes a while for the negative to develop. Well, after the negative is exposed you can then take the subject to a scanner. Now this is just a little bit about the fact that the C.P.T. test has better -- has lower variability, and better test, retest reliability than the rest scan.

Q. Okay. I was going to ask you, lower variability, what does that mean, but I think you answered that.

A. Well, variability means noise, so that, for example, when a typical community P.E.T. center does a typical scan with -- once the subject is resting -- the brain is never completely at rest. If you ask ten different people to lie in a room resting you would have ten different things that people would think about, and so depending upon what you are thinking about different areas of the brain will be activated. That's why you have what we call more variability in a resting scan than we have all ten subjects being asked to focus on the same thing, which is the computerized task where they are asked to press a button. That's why you have less variability when you do this computerized test.

Now if you have a lot of variability we can also call more variability noise. It's like static, and so if you are

trying to see a difference between a brain injury scan and a normal scan, and you have more static or noise variability it's harder to detect a difference, and so you can miss a difference that's present when you have more variability or noise than if you have a better scan which has less variability, less noise, less static.

Q. All right. What are we saying here -- what are you saying here on this screen image, Smitt, et al, 1996, what is that?

A. Well, so this is a scientific peer-reviewed publication which has documented the fact that this kind of C.P.T. task is superior to a resting scan in terms of having less variability, less noise, less static.

Q. All right. Now, the latter type of scan -- and if you know this, and if you don't just say you don't know -- is typically what is used in South Carolina, or at M.U.S.C., the Medical University of South Carolina.

A. My understanding is that M.U.S.C. typically does a resting scan, which is the lower resolution, noisier, more staticie type of scan.

Q. And how do they -- are you familiar with the software at all that's used in that kind of P.E.T. scan?

A. Well, my understanding is that M.U.S.C. is using -- has used a software Hermes Brass, and it's a brain registration software, and this software has a comparison group, and the

comparison group that they use is composed of patients, or normals, who are doing rest scan, which is a noisier scan than one that has more static.

Q. All right. Would that be appropriate for use in a P.E.T. scan that was done with a Continuance Performance Test being administered?

A. No. It would be inappropriate to use the Hermes Brass software with a resting scan nomen of data base to compare a patient who has been done using an activation scan like the C.P.T.? It's like comparing apples and oranges, so you can't -- it's not something that's scientifically appropriate or valid.

Q. All right. Go ahead and continue with your PowerPoint, please sir.

A. Well, so I have also added some additional citations, scientific citations which indicate that the activation scan is superior to the resting scan in terms of greater reliability, and it's more sensitive at detecting brain abnormalities because, again, this is another scientific peer-reviewed publication which shows, if you have a group of brain injured subjects compared to normal controls, and you have them doing two scans, one scan where they are doing a resting scan, which is noisier, you can't detect a difference with a brain-injured subject compared to the normal subjects during a resting scan, but if you were to take the same brain-injured

subject, and the same normal control, and have him doing this high resolution cognitive activation scan you can see significant differences, so this is, again, a scientific peer-reviewed publication which shows that the activated scan is superior to the resting scan at detecting differences, and that you can have cases of brain injury which is missed when you are doing a resting scan, which is detected when you are doing an activation scan, so again, this is something that has been scientifically established in peer-reviewed literature.

Q. Okay. Now Mr. Stanko had a P.E.T. scan done at M.U.S.C., correct?

A. Yes.

Q. But it was done with a Continuance Performance Test accompanying it. Would that be correct?

A. Yes, that's correct.

Q. And so therefore are you -- is it your testimony that it was not the typical P.E.T. scan that would be done at M.U.S.C.?

A. That's correct. Mr. Stanko had the better type of P.E.T. scan done at M.U.S.C. because an outside expert, Dr. Einhorn, came in especially to administer the C.P.T. during the scan. This is not something at M.U.S.C. normally does. M.U.S.C. normally just does a resting scan which is fine if you are looking for things like brain tumors. If you are looking for things like brain tumors it doesn't make a

difference, but if you are looking for things like brain injury it does make a difference.

Q. Or brain function.

A. Or brain function. If you are trying to see if there's any kind of problem with neuropsychiatric disorders. So, for things like tumors, which is what the average P.E.T. center looks for, it doesn't make a difference, but if you are interested in neurological or psychiatric detection of abnormalities the C.P.T. scan is a better way to go.

Q. All right. What's next on your PowerPoint, the next point?

A. Well, so this is just some scientific citations to show that this method has been scientifically established, it has been subjected to peer-review, there are a number of articles have been published showing that the C.P.T. P.E.T. scans detect injuries, that the -- compared to normal controls.

Q. Let me ask you, you say need experience with P.E.T. scan interpretation with activation, you mean with interpreting the type of P.E.T. scan that was done on Mr. Stanko during the Continuance Performance Test.

A. Yes. So that -- so generally speaking doctors rely on their experience to be able to tell whether accurate diagnosis, so if you have a doctor who has no experience, who is looking at P.E.T. scans with a C.P.T. they are going to be less accurate at assessing what problems there are on that

scan because they just don't have the familiarity with that type of procedure ---

Q. And would you expect that of a medical doctor who read -- or an individual who read Mr. Stanko's P.E.T. scan but had not ever heard of a C.P.T., or a Continuance Performance Test?

A. Yes. So that if a doctor is unfamiliar with this type of procedure they are generally going to be less accurate at detecting abnormality, and this is true in general, I mean, just based common sense. If you have a lot of experience with a technique you are going to be better with that technique. If you have no experience with that technique you are not going to be as good, and this is just human nature.

Q. Okay. So your word activation mean -- you really mean the C.P.T., the Continuance Performance Test.

A. Yes. That's correct. So in this case what I'm talking about here is that the activation scan is the C.P.T..

Q. Okay. Go ahead. The next point.

A. And in some ways this activation scan, or C.P.T. scan is kind of like a treadmill stress test. If you have someone who has a suspected cardiac abnormality you can either get a resting E.K.G., or you can get a treadmill stress test. Now if the resting E.K.G. may or may not detect a problem with someone with cardiac problems it's not as sensitive or as accurate as a treadmill stress test, and a treadmill stress

test is much more accurate at catching people who have cardiac problems than a resting E.K.G., and so this P.E.T. scan with the C.P.T. activation is analogous to trying to look at, for a cardiac problem, with a treadmill stress test. You are going to have a greater sensitivity in accuracy at detecting brain abnormalities than you would if you were trying to detect a problem with a resting test, and again, this is something that has been shown in scientific peer-reviewed studies.

Q. Okay. Now do you believe that's a fair analogy, the --

A. Yes.

Q. ---Continuance Performance Test equating with the treadmill, and the rest -- at rest P.E.T. scan with the at rest human being and -- or an E.K.G.?

A. Yes, a resting E.K.G.. Yes sir. So just like the resting E.K.G. is not as accurate at detecting cardiac problems as a treadmill stress test a resting brain scan is not as accurate at detecting brain problems as a C.P.T. activation scan.

Q. Okay. Go ahead, go forward.

A. And so this is a example of a model who, once he has received that F.D.G., and has done that activation for thirty minutes, the C.P.T., then his head is placed in a scanner and what happens is that the sugar molecule has the positron emitters attached to it, and the positron -- and the sugar

molecules go to areas of the brain that are more active, and so more of the positron emitters that are attached to that sugar molecule will accumulate in that part of the brain, and what happens is that the positron emitter is characterized by the E-plus, the E-plus meaning positive electrons, and it will combine with the E-minus, the minus being a regular electron in the brain, and what happens, that when the E-plus, the positron, is combined with the E-minus, the electron, you have what we call the annihilation decay where the mass in the positron and electron are transformed into pure energy using Einstein's famous equation, "E" equals "MC" squared. So you have basically a matter, anti-matter energy conversion process undergoing in the brain, and the energy that's created by this process are two energy waves that come off at a hundred and eighty degree angles, so that the energy waves come off at a hundred eighty-three angles as can be seen here in the slide.

Now the way the P.E.T. scanner works is that it has special crystal detectors that are specifically tuned to detect the energy created by the matter, anti-matter energy transmission process. Now these crystal detectors -- there are thousands of them -- have what we call a coincidence circuitability into it, so that when two energy rays strike the crystal detectors that are on opposite sides of the brain, at the same time, coincidentally, the coincidence circuit says, ah hah, I have to draw a line between the two crystals

that detected simultaneously the energy rays coming off from the subject's head and it stores that line in it's computer bank. And then when another positron electron anti-matter, or matter energy transmission process occurs and it creates two more energy rays that is also picked up by the next pair of crystal detectors. What happens is that you have millions of such events that take place. You have millions of lines that the computer stores up.

Now areas of the brain that have more sugar are going to have more lines coming from that part of the brain. There will be more intersecting lines at that part of the brain than in areas of the brain that have lower amounts of sugar, and so basically what we are looking at is the intersection of all these lines created by the matter and anti-matter energy transformation process to determine what parts of the brain are consuming more sugar, or what parts of the brain are consuming less sugar.

Q. And more sugar means more activity?

A. Yes, more sugar means more activity.

Q. All right. Go ahead.

A. Now P.E.T. scans are generally accepted in the scientific community for the evaluation of brain function, and there have been literally thousands of articles that have been published using P.E.T. scans to detect brain abnormalities and conditions such as brain injury, Schizophrenia, Alzheimer's

Disease, Parkinson's Disease, etcetera, etcetera.

And so these are some of the clinical uses of brain P.E.T. scans, and these include the evaluation of things such as Epilepsy, lesions, or stoke, or memory disorders such as Alzheimer's Disease, brain tumors, neuropsychiatric assessment. And I'll just run through some examples of brain P.E.T. scan and how it's used in searching clinical disorders. And so for example -- in this example here we have an Alzheimer's Disease P.E.T. scan on the left side, and a age match normal control on the right side, and what you see at the sign -- the arrows at 5(A), that those areas are less hot color. They -- areas of high metabolism are colored hot colors like red, and areas of low metabolism are colored cool colors like blue, and it goes on a continuum, like red, yellow, green, blue. So red is hotter than yellow, and yellow is hotter than green, and green is hotter than blue. It's called a rainbow spectrum, basically. And so you can see from the colors how hot it is, how much sugar is being burned up in that area of the brain.

Q. Now Dr. Wu, can you manipulate those colors?

A. Pardon?

Q. Can you manipulate those colors in order to fudge the results?

A. Well, if you want you can dial down the scan, so if you want you can adjust -- if the area has a certain amount of

activity, saying as the brain is at fifty percent activity you can dial down the scanner so that area of the brain can be a hot color, or you can dial it up, but that level of activity will always remain the same, fifty percent, and so -- and so generally what we do with them we have certain set parameters which we use, or we adjust the color so the top or the maximum of the brain, and we say that the hottest brain area set to red, and the coolest brain area is set to blue, so you can, if you want to, monkey around with the scale to change it, but we generally don't do that in this case. We generally just set it so that the hottest area of the brain is red, and the coldest area of the brain is blue.

Q. All right. And what would happen to you and your Institution, or your client if you were to, quote, monkey around with those results?

A. Well, it would be considered unprofessional and unethical to money around with the results and try and present a false picture of the brain, and so this would not be accepted.

Q. And it wouldn't have a very positive practical effects for you and your center, would it?

A. No. I -- I -- I -- you know, our center relies on a scientific and medical integrity and professionalism, and so we strive to maintain the highest standards in terms of integrity and professionalism, so we wouldn't monkey around

and distort a scan that would compromise our reputation and standard.

Q. All right. And are we discussing a technology that is comparable to some -- something you would see in a carnival side show?

A. No. This is a well-accepted scientific and medical technology which has been the subject of thousands of scientific publications as used by a variety of doctors to help them look at problems like I'm working with neurosurgeons who are operating on epilepsy patients, I work with geriatricians who deal with Alzheimer patients with memory problems, I deal with all kinds of neurologists, neuropsychologists, and so this is something that is very useful publicly.

Q. Okay. All right, let's go to the next point. You would ---

A. So this is a ---

Q. I'm sorry. Go ahead.

A. This is a three-dimensionally rendered view of the Alzheimer's Disease brain. The view that I showed you earlier is a two-dimensional slice. Now if you want you can take all the two-dimensional slices, you can stack them up, and you can digitally create a three-dimensionally rendered view of the brain, so you can see it as if you were sort of looking at the side of a patient's brain, and in this case we are looking at

the right side of the patient's brain here, and so the area that's circled would be right in this area here, the temporal parietal area here, and you can see that on this right side view of the brain that the Alzheimer's Disease patient's brain shows decreased activity in that area compared to an age matched normal control.

Q. Could we go back to that previous slide there. I want you to address, specifically, that color scale that's contained there. What's represented by that scale?

A. Well, the color scale at the bottom indicates the relative level of sugar metabolism, so that the far end of the color scale is a red end, indicates high levels of sugar metabolism, and the opposite end, the blue end, indicates low levels of sugar metabolism.

Q. Okay. How does that translate into brain activity?

A. So the areas that are blue will be very low sugar metabs, or low brain activity, and there is a red, or a high sugar metab, there's a high brain activity, and so -- and then it goes red, yellow, green, blue, so that yellow is less active than red, but more active than green, green is less active than yellow but more active than blue. So depending upon where you are on the continuum you can see how active, or how much sugar that particular part of the brain is burning.

Q. Okay. Let's go to the next here.

A. And so this kind of scan can be helpful in helping, for

example, a gerontologist, or a neurologist who works with senior citizens who are having memory problems, you have confirm diagnosis of Alzheimer's Disease, and in fact Medicare now is paying for P.E.T. scans to help with determining whether someone's senior moments are something that is a harbinger of potential Alzheimer's Disease, or that it's something that is less serious, and it makes a big difference, because now with Alzheimer's Disease there are at least five F.D.A. approved medications that can help improve the memory of senior citizens who are starting to have the early stages of Alzheimer's Disease, and it can actually probably help to slow down the progression of the disease, so that if you have someone with Alzheimer's Disease, in the early stages, it prevents them from having to end up in a nursing home maybe by several years if you start them with the appropriate diagnosis and treatment, and so P.E.T. scans can help with that kind of early diagnosis and treatment decision-making.

Q. Okay. What do we see here?

A. And so we work sometimes with neurosurgeons, or oncologists. In some cases you have tumors of the brain, and tumors of the brain are characterized by a very hot metabolism, and tumors are very aggressive in terms of their metabolism. They grab and consume a lot of sugar because they are growing so rapidly out of control, and so on a P.E.T. scan these are considered very hot areas of the brain.

Q. That's why it shows up red there in that circle?
A. Yes. That's why it shows up red in that circle there, and this is helpful because sometimes with some forms of tumors you can treat them with something called radiation therapy, where you try to kill the tumorous cells by irradiating that area of the brain. Now sometimes you can kill every tumor cell, but if you leave just one tumor cell alive sometimes that one tumor cell can re-multiply again several months down the line, it can present as a new tumor, and so P.E.T. scans can help you determine whether or not the tumor has grown back again, and can help an oncologist decide whether or not they need to re-treat someone with say radiation therapy or some other treatment.
Q. All right. And you also are showing us now that the same technology can assist a physician in treating Parkin -- identifying and treating Parkinson's?
A. Yes. So with P.E.T. scans you can also look at a different kind of function in the brain. You can look at the concentration of dopamine, and so here, this is an example of dopamine function, and then Parkinson's Disease, like Michael J. Fox or Pope John Paul II. The both these individuals -- or Mohammed Ali -- they all have Parkinson's Disease. If you were to get their brain scan you see hardly any dopamine function in the brain compared to say a normal control.
Q. Doctor, do you have this technology available, along

with the Continuance Performance Test, that can assist in determining presence or absence of frontal lobe defect or injury?

A. Yes. And so P.E.T. scans can be used to look at frontal lobe abnormalities, including whether or not the frontal lobe function is defective.

Q. All right. I don't want to go -- how much more of your presentation ---

A. Oh, let's see. I've got Epilepsy, and then head injury.

Q. All right. Let's look at that closed head injury. What are we looking at here?

A. Well, so a closed head injury -- there are some cases of head trauma, or head injury, you can have a perfectly normal C.A.T. scan or M.R.I. scan but the sugar metabolism in that part of the brain is defective. It's functioning at a very low level compared to say, a normal control, and so this is a way of detecting brain injury that might be undetectable where to most radiologist they do things like M.R.I. or C.T. scans.

Q. All right. Right here -- what are we looking at here, at 1(A), as compared to 1(B)?

A. Well, this is the part of the brain called the frontal lobe, and so what we are seeing at the area of 1(A) is that we are seeing decreased sugar activity in the frontal lobe of

this closed-head injury example compared to say a normal control's frontal lobe.

Q. All right. And does it take special expertise to read that and detect that?

A. If it's really obvious anyone can see it, but if it's more subtle then, again, experience helps, and so the more experience you have the better you are at picking up things that aren't super-obvious.

Q. Okay. Continue on. Let's see what else you have there.

A. Well, so these are just a -- talk a little bit about traumatic brain injury ---

Q. Okay.

A. ---And as to that P.E.T. scans are more sensitive at detecting injuries, and some of the patterns seen here, and then also in some forms of psychiatric disorders, like Schizophrenia, some forms of Schizophrenia have abnormalities in their brain functions. They show a decrease in the frontal lobe, and you can see that it was green compared to the red, that Schizophrenic brains show deceased frontal lobe activities as well, and this is also seen in some forms of bipolar or mental, or manic-depressive disorders. And then these are just some of the scientific articles behind this.

Q. Okay. Showing that it has been peer-reviewed?

A. Yes. Right.

Q. All right. Does that basically conclude the presentation of the PowerPoint?
A. I ---
Q. Well, let's go back there. What are we looking at here?
A. Well, this is an example of someone who was in a motor vehicle accident and they had normal M.R.I. and normal C.A.T. scan, but they had a significant decrease of activity in the base of the frontal lobe, called the orbital frontal lobe of the brain, compared to say a normal control subject.
Q. And that's what I'm pointing at with the laser?
A. Yes. So that area that's blue. This is someone who suffered a closed-head trauma in a motor vehicle accident.
Q. Again, how do you know that this is reliable? You've got this one individual here versus the normal control. Again, what if they are thinking about different things, or if somebody is at rest and -- how do you know that? How do you know it's going to be a reliable comparison?
A. Well, again, there's multiple peer-reviewed articles which show that this is a -- especially when you are using the C.P.T. technique -- there's a highly reliable technique. This is something that has been scientifically established in multiple peer-reviewed articles.
Q. Okay. So this person on the left is undergoing a Continuance Performance Test ---

A. Yes.
Q. ---Just as were the people in the normal control?
A. Yes, that's correct.
Q. All right. And that's how you get this reliable comparison?
A. Yes. You get a more accurate more reliable detection of brain abnormalities.
Q. All right, now, if you were at risk -- if this person on the left was at rest, and the normal control was a control group at rest, would you expect to see any difference between the two scans?
A. It would be more difficult to detect a difference because of the fact that there is more static or noise in the resting condition, so both the patient as well as the control subject, if they are both at rest, would have more static noise variability and it will be harder to detect a difference.
Q. Okay. Let's see what else you have? Yes, what does this mean, Correlation Report?
A. Well, Correlation Report means that one has to look at a patient's history and other testing, yes, other kinds of imaging testing, other things, to try to come up with a -- a big picture view of the patient.
Q. All right. And what else do we have?
A. It's the -- oh, just that these are issues about the

fact that P.E.T. scans have been accepted in multiple jurisdictions over time.

Q. All right. Now, you have -- let me ask you this, you've put up on the screen Stanko P.E.T. images.

A. Yes.

Q. Tell us specifically, what do we have here, how did you get them, and explain to us what they are, and we will go from there.

A. Okay. So these are Stanko's P.E.T. images, and I also have a three-dimensionally rendered view of Stanko's brain compared to that of a normal control.

Q. Okay. And is that something that you used in reaching any kind of expert opinion with respect to Mr. Stanko?

A. Yes.

Q. Yes. Do you have that with you so that we can look at it?

A. Yes. I can show that now if you would like or I can --

-

Q. Yes. Can we do that?

A. Sure.

Q. How long would it take you to ---

A. It would take me a minute or two to get it set up.

Q. All right. If we -- we have it on a disk. Would that be faster?

A. No, I don't think it would be faster.

Q. Okay. Go ahead.
A. Okay.
Q. Play that for us if you would, please sir.
MR. DIGGS: And Your Honor, we would like to introduce Defendant's Exhibit 23 at this time. It is the -- it's a hard copy of the images that we are going to view.
THE COURT: Any objection?
MR. HUMPHRIES: No, Your Honor. Thank you.
THE COURT: Defendant's 23 is in evidence, without objection.
(P.E.T. SCAN VIDEO ADMITTED INTO EVIDENCE AS DEFENDANT'S EXHIBIT NUMBER 23.)
Q. All right. Can we go back, start this over?
A. Sure.
Q. All the way back to the beginning.
A. Yes.
Q. And what I would like you to do, once -- Dr. Wu, is just play this, and then I may have you look at some individual points within the video.
A. Yes.
Q. Okay. Play that for us, please sir.
A. Do you want me to comment on it, or just play it?
Q. Well, you could go ahead and comment at this point. That would be actually a good idea.
A. Okay. So what we are seeing here is a three-

dimensionally rendered view of Mr. Stanko's brain on the left-hand side, revolving, compared to that of a normal control average on the right-hand side, and we are looking at it from different angles here, and we can see that there are some differences between Stephen Stanko's brain and that of a normal control, and more -- I'll pause it here, but basically the differences that we are seeing here is that we are seeing that there is a decrease in the base of the frontal lobe area, right where the arrow is. You will see that where the arrow is, that's at the floor of his frontal lobe, and this floor -- and you can see it on both sides -- is on the -- both right and left sides -- and we will actually tilt the brain up to let you see better -- is less active compared to the rest of his brain. You see that the rest of his brain above the floor or the frontal lobe looks fairly similar to that of the normal control, so it's really just one area of the brain, which is the floor, or base of the frontal lobe which is specifically abnormal, and you can see it on both the left hemisphere and the right hemisphere view.

And so what we will do now is, we will lift the brain up here in just a minute and you can see the floor better -- and it only takes just a few seconds for the video to get to that spot there, but -- okay, here we go.

Q. Okay. Stop that. Comment on that, if you would.

A. So what we have done here is that we have this so that

the brain is facing forward. Now what we've done is, we've tilted the brain back like this, so that you are looking at the floor of the frontal lobe of the brain.

Q. Dr. Wu, we have a head, model, down there in the lower left.

A. Yes.

Q. Is that -- what is that showing us?

A. The head, or floor there, is showing the orientation of the scan so that you can kind of see what orientation the scan is at this point in time. You can see that the head is tilted back, so that we can better see the floor of the frontal lobe of the brain. And what we are seeing here, that we are seeing where the arrows that there is a significant decrease in activity in the floor or base of his frontal lobe compared to that of a normal control average, so that you are seeing that there is more blue, and if you will in the color scale bar here you will see that there is more blue compared to the yellow-red in the floor of the normal control average, and this is the primary lesion or injury that Mr. Stanko's brain shows, the floor of the frontal lobe defect or injury.

Q. Okay. What kind of role does that area of the brain play in one's decision making or conduct?

A. Well this part of the frontal lobe is a very important part of the frontal lobe which involves things such as impulse control and judgment. There's a very famous case in Neurology

called the Phineas Gage case, and the Phineas Gage case is the case in which a railroad worker was tamping explosives down and the tamping inadvertently set off the explosive prematurely, sending the tamping rod through the orbital frontal lobe of his brain, and although he survived he showed a marked change in his personality, someone who had been an upright citizen became foul-mouthed, aggressive, irresponsible individual, and this is one of the first cases that helped scientists and doctors realize that different parts of brain seem to control functions such as responsibility, impulse control, judgment, maturity, irritability ---

Q. Judgment. How about empathy?

A. And empathy as well, so all these ---

Q. That area?

A. Yes. These are all functions that the frontal lobe seems to play an especially important role in compared to other parts of the brain.

Q. In making judgments about right versus wrong ---

A. Yes, that's ---

Q. ---Moral -- moral assessments.

A. Yes.

Q. Does that occur at this area of the brain?

A. This is a key part of the circuitry of the brain for helping people to properly make moral choices.

Q. All right. So if the brain is in the blue area ---

A. Yes.
Q. ---Where there is less or no activity ---
A. Yes.
Q. ---Then there would be no -- am I right in assessing this? There would be no ability to determine the rightness or correctness ---

MR. HUMPHRIES: I'm going to object to the leading nature of the question, Your Honor.

THE COURT: Mr. Diggs, again ---

MR. DIGGS: Yes sir.

THE COURT: ---You are supplying the answers in your questions.

Q. Well, what effect would that have on one's ability to make that decision?
A. Well, if there were a lesion in this area this area of brain ---
Q. And a lesion meaning ---
A. It's an injury, an abnormally low function.
Q. Okay.
A. This abnormally low function or abnormality or injury would significantly compromise and impair an individual's ability to exercise judgment, impulse control, control of aggression, so that it's kind of like having a car with -- it's kind of like -- I'm sure you've heard the story of these Toyotos where the car will suddenly accelerate out of control,

and then crash, and I think there was a case in California of a Lexus where the Lexus suddenly accelerated out of control and a C.H.P. officer, California Highway Patrol officer, his wife and their two kids were in the car, and he was calling 911 saying that the car was accelerating out of control, he couldn't stop it, and the car ended up crashing, killing all four of the occupants, and this has happened several -- a number of times, and so it's kind of like driving a car, like one of these cars where the chip is defective, and then it goes -- and then it goes haywire, and then you have an out-of-control brain, the way this Lexus went out of control and ended up killing the C.H.P., the California Highway Patrol officer and his family.

Q. All right, now, the ability to make judgments, to exercise analytical judgment capabilities, could that be done in some other area of the brain right now that is, on Mr. Stanko, for example, that's showing up red?

A. Well, the other parts of the brain which are intact are areas that are -- involve other types of things, like problem solving, that doesn't involve moral judgment or aggressive impulse controls. These are areas of the brain that are involved with what we call working memory or other things, so that the rest of his brain actually looks pretty good. It's just that this one key area of the brain seems to be significantly compromised.

active, or an area that is not active in Mr. Stanko's brain?
A. Well, the ability to regulate aggressive impulse, like shooting, would be an area of the brain that is significantly controlled by the or -- base of the frontal lobe, the orbital frontal lobe.
Q. All right. But the ability to hit the target might be controlled by that same area, or some other area?
A. The ability to spatially localize a target would not involve the frontal lobe. It would involve areas of the brain like parietal areas, spatial localization.
Q. And that area of Mr. Stanko's brain is working fairly normally?
A. It's working fine. Yes. Uh huh **(indicating positive)**
Q. Okay. If you could, go ahead and re-start -- or continue on with that video.
A. Okay. So let's see -- the video is progressing. It's just frozen there for a few seconds to allow time to talk about it, so now we will show the front of the brain and the back of the brain, and the back of his brain looks relatively normal. It's really more the front floor of the brain that is abnormal here.

And here you can see both the front view at the top row, and the back view at the bottom row, and as you can see it's the floor which you can't see as well from a straight head-on view, which is the area that is most abnormal.

Now, what we do here is that we will reslicebrate it through three different angles, what we call axial slicing, and so axial slicing involves taking a slice that goes from top of the head to the bottom of the head, and then we will rotate our views and we are going from the left side of the brain to the right side, and then we will go from the front to the back.

And so what we are seeing here is that toward the higher parts of his brain, the top half of his brain, it looks very similar to that of a normal control, and so at the top of his brain it looks fairly intact and normal, and so this is still the top half of his brain. And it's only if we get down toward the very base of the brain here.

Now here we are getting down toward the bottom third of the brain, and here we are trying to see this difference in the frontal lobe areas near the base of the brain, near the floor or the frontal lobe of the brain.

And here is near the bottom of the brain that we see the defect, or the abnormality, or the lesion, which is that there is much less activity in this part of the brain, so again, the top two-thirds of his brain looks perfectly fine. It's really this bottom part of the frontal lobe which is especially defective.

Q. Can you stop that? Can you back up just a couple of seconds?

A. Oh sure. Can you advance it -- stop. All right. Can you comment on that?

A. Yes.

Q. What do we see happening there?

A. So what we are seeing happening here is that this is toward the floor of the frontal lobe area of the brain, and the floor of the frontal lobe of the brain shows that Ms. Stanko has a lesion in this part of the brain, so it shows much less activity than that of an age matched normal control subject doing a C.P.T. task.

Q. Dr. Wu, let me ask you this, in the normal control we see heavy red in the center, and then we've got red areas on each side of that center red, and we see almost no red in Mr. Stanko.

A. That's correct.

Q. So what does that indicate?

A. Well, this indicates that he has abnormally low function in that part of the orbital frontal lobe of his brain.

Q. So -- but he has no red at all in his ---

A. Yes. Right, so ---

Q. ---Anywhere in the entire brain.

A. That's correct. It's abnormally low in that entire area of the brain.

Q. Okay. Outside of the frontal lobe.

A. No. This is all part of the base of the frontal lobe here.

Q. Okay. All right. Continue on.

A. And then we will switch views here in just a second. Now this is a sagittal slicing, so with the first slicing we were going from the top to bottom. It's called axial slicing. Then we rotate our plain of view, so that instead of looking from top to bottom we are going from the left ear to the right ear and vice-versa. It's called sagittal slicing. It would also be the same as a profile view, a side profile view.

And so here we are going actually from the right side of his brain, and you can see from the model underneath where we are in the orientation of the sagittal slicing.

And again, here we are seeing that toward the floor of the brain we see less red compared to the top two-thirds of his brain.

And again, we are seeing less red -- do you have that laser -- could I ---

Okay. So we are seeing less red in this area of the brain here compared the here, and we are seeing that the top part is relatively intact. And we are seeing a relatively low activity in the frontal lobe area of the brain here. Higher up we are seeing that there is more activity there.

And then the last view will be a facial profile view, from the face to the back of the head, and so that will be

called a coronal view. And so here, again, you can see that the top two-thirds of his brain show function here that's really this base -- this bottom part here, which is less active. Then again, we see that the top part is showing activity, but the bottom part is showing less activity. Now this is not a result of what we call a change in the windowing. Windowing is ---

Q. What do you mean -- yes, explain that, please sir.

A. Okay. Windowing is a technical term -- you used to say that if you wanted to monkey around with the color scale you could deliberately dial down the color scale, but if you dial down the color scale it wouldn't affect just the bottom third of the brain, it would affect the entire brain, so the entire brain will be dialed down, and so if you want to dial down the entire brain you could make the entire brain yellow or green, but what we are seeing here, that it's selective, so it's not a result of what we call windowing. This is because the top part of the brain is relatively intact. It really the bottom third of the brain which is selectively reduced.

And again, you can see it's really the bottom third of the brain which is selectively reduced here, and that the top part of the brain is relatively intact.

And so that concludes the video of showing the plains.

Q. All right. Can you -- do you have any ---

A. Oh then I can go back to the PowerPoint. Yes, okay, so

let me go back to the PowerPoint here.

So this is -- yes ---

Q. Go ahead and let's -- all right, I want you to address this. Now we've looked at what -- the data you have on Mr. Stanko appears to be -- how does that translate into a practical sense? What does that mean with respect to him, his conduct, ability to make decisions, those kinds of activities?

A. Well, the frontal lobe of the brain is an important area scientifically in terms of it's ability to regulate the functions such as aggression, and there have been a number of good review papers and scientific journals which have documented the fact that the frontal lobe is an important part of the brain. It's kind of like having brakes of a car -- if you -- so that if -- or having a properly functioning accelerator chip in a Lexus or a Toyota, it helps to regular the proper function and speed of -- of impulses, but if you have a faulty, like a regulator chip or faulty brake in a car you can have a car that can suddenly accelerate out of control or fail to brake properly.

Q. Let me ask you, where does the ability to understand the difference between right and wrong take place in the brain?

A. The frontal lobe is probably the most important part of the brain for the ability to be able to detect the difference between moral right and moral wrong.

Q. And what would we characterize an individual as -- how would you describe an individual -- and I'm not looking for a legal opinion here, or a legal, you know, a diagnosis, I'm -- just -- general characteristics I'm trying to elicit here. What do we know about, or what could we expect from an individual who experiences or has that kind of frontal lobe deficit?

A. Well, in an individual with kind of deficit is going to have a significant impairment.

Q. Okay. And with respect to the ability to understand right from wrong.

A. It would have a significant impairment in their ability to be able to accurately judge and behave and appoint to right and wrong precepts. They would have a significant failure of that ability.

Q. Okay. Would they have the -- okay, a failure of that ability?

A. Yes. Again, they would have significant difficulty.

Q. All right. Could I get you to -- anything else we want to go to here, Dr. Wu?

A. Well, let's see here. These are just other studies that I have talked about, how the frontal lobe is involved with things like regulation of aggression, so for example, there's a famous Vietnam head injury study where a large series of Vietnam Vets who were studied with brain injuries,

and only the Vets who had frontal lobe injuries were the ones who were more aggressive and impulsive. The ones who had the same size injury in other parts of the brain did not have disportionate amount of aggression, and the study shows that anywhere from two to six times more violent with frontal lobe injury as compared to say, an injury in other parts of the brain.

And this is also true with stroke patients. Stroke patients who end up having a frontal lobe lesion are much more likely to be irritable, violent or aggressive than stoke patients that have a similar size lesions in other parts of the brain, and this is something that's been documented in other P.E.T. studies that have shown people with -- on P.E.T. scans who have difficulty with regulating aggression, and of committing murders, have problems with their frontal lobe of the brain.

And let's see -- and other studies showing, for example, adolescents who have problems with aggression also showing problems with their frontal lobe of the brain, and other studies. So that, again, there's a number of scientific studies have been published which have shown that people with impairments and the ability to regulate violent behavior, the ability to regulate impulsivity and aggression have lesions or abnormalities on imaging studies in the frontal lobe areas of the brain, indicating that the frontal lobe of the brain is a

key component, or the circuitry for regulating violence and aggression.

Q. All right. Let me ask you to take the stand, the witness stand again, and I want you to look at what has been marked as a defense exhibit. Defense Exhibit 31. Have you seen this diagram before?

A. Yes, I have.

Q. And can you tell us what this diagram tells you about Mr. Stanko, against the backdrop of what you've already shown us on the P.E.T. scan. First of all, tell us what this is, Dr. Wu, if you can.

A. This is a graph that shows the differences in the volume, or size of different lobes of the brain in Mr. Stanko, on both the left side of his brain and the right side of his brain compared to that of a normal control group, and this is -- and the first line, or the first set of dots shows a difference in the frontal lobe, and specifically the -- let's see, can I point to the graph?

Q. Yes sir. In fact, would it help you to come down here?

A. Yes. It will be easier if I could point.

Q. You will need, if you would ---

THE COURT: If you would then, I want you to go right up to the rail in front of the microphone.

MR. DIGGS: And Your Honor, let me run over there and get the tripod.