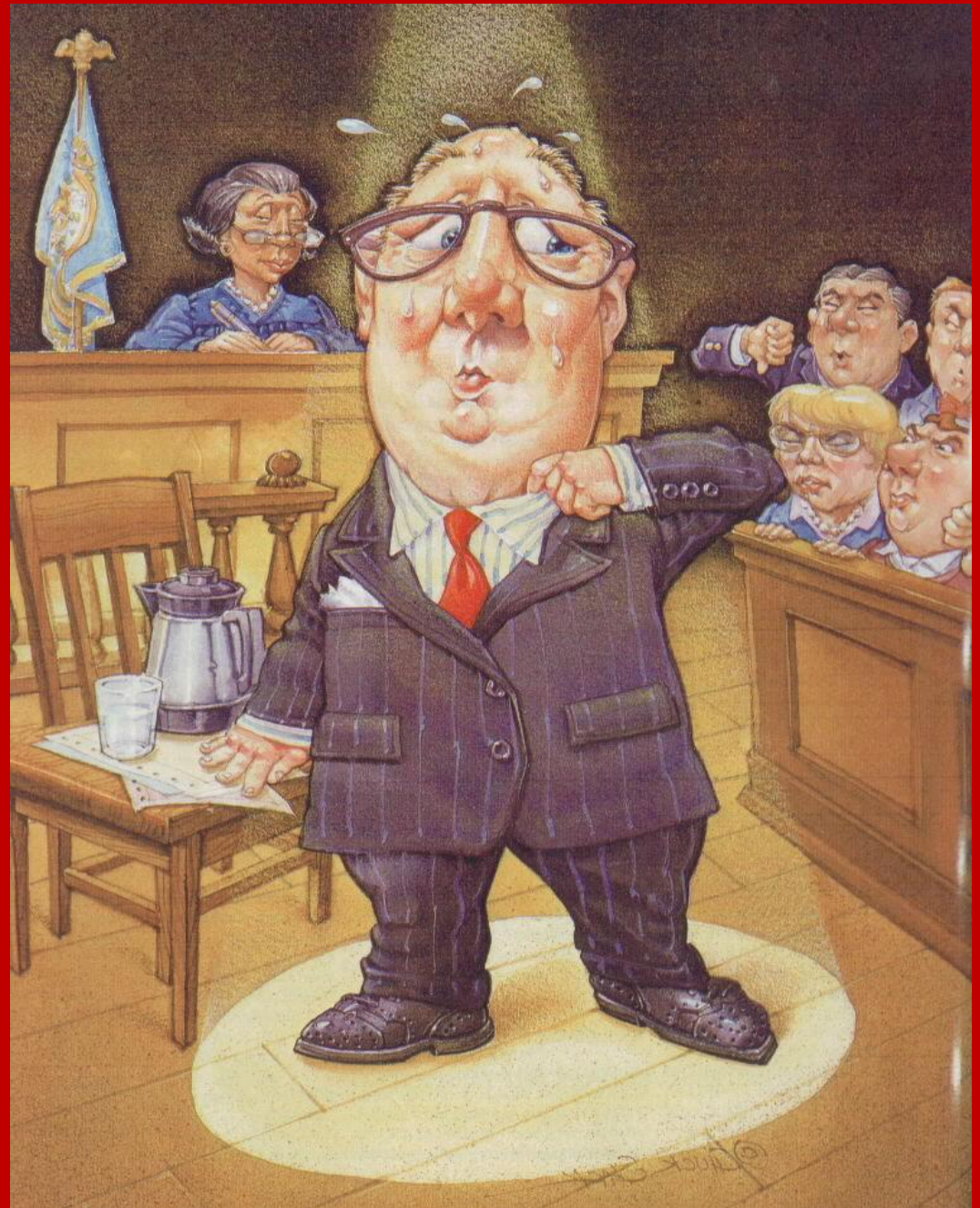


# Preparing Your MV Crash Case for Trial



# Cross Examining the Defense Expert



But before you start your cross  
examination...

***In your direct examination your expert has to educate the jury:***



***In your direct examination your expert has to educate the jury:  
the facts/theory of your case***

***In your direct examination your expert has to educate the jury:  
the facts/theory of your case  
knowledge the jurors will need  
to reject the defense theory***

# Example:

You anticipate that the defense expert has misused an accelerometer to get a lower drag factor value.



# AN EXPERT IS LIKE A LION IN A CAGE:

---

Poke the lion with  
a stick, but don't  
go into the cage...

**unless you have a big gun!**





Have a

**PLAN**

and know how you will finish!

Keep it

**SIMPLE**

so the jury will understand,  
and remember.

IF THE CROSS GETS TOO  
 TECHNICAL, YOU'RE PLAYING  
 THE EXPERT'S GAME

Handwritten mathematical equations on a chalkboard:

- $\psi = \cos(\alpha + \omega t) = \Phi \cos(\dots)$
- $\Phi = \sum \psi_i + \dots$
- $\int x(t) dt = \frac{x(t)}{dt} = (\omega)^n$
- $\alpha = \frac{1}{v^2} \frac{\partial^2 u}{\partial t^2} + \frac{\partial^2 u}{\partial x^2} + \dots$
- $v = \sqrt{\left(\frac{g\lambda}{2\pi} + \frac{2\pi\gamma}{\rho\lambda}\right) \tan \dots}$
- $\int_{-\infty}^{\infty} (\alpha(k) e^{i(kx - \omega t)} + \dots) dx$
- $\Phi \cos(\dots)$
- $E = mc^2$



“In cross examination, as in fishing, nothing is more ungainly than a fisherman pulled into the water by the fish.”

Louis Nizer

Before you think about attacking  
the defense expert, consider what  
*concessions* you can get.

Is the defense expert

***HONEST***



do your homework and find out  
an honest expert will make concessions  
you can plan the concessions before trial  
each ask for a concession has to be  
**concise and well-crafted**  
even if the expert refuses to give the  
concession, you win!

Here's an example...

Expert tactic:

The defense expert tries to dazzle the prosecutor with a lot of math.

# People of NY v. Charnetski

Weeden Wetmore, DA, Chemung County, NY  
( car turns left strikes oncoming motorcycle )

“John, I need help to attack a defense expert’s report; we can’t understand all his math.”

$$\begin{aligned}
 x_r(x_{r,final}) &= -0.0122(18.60) - 0.1300(16.18) - 0.3737(14.13) - 0.5230(12.08) \\
 &= -0.2269 - 2.103 - 5.280 - 6.318 \\
 &= -13.93 \text{ ft.}
 \end{aligned}$$

The additional distance to front end is  $b \sin(\phi_4) = 9.17(0.5230) = 4.80$  ft. Thus

$$x_{front}(x_{r,final}) = x_r(x_{r,final}) - b \sin(\phi_4) = -13.93 - 4.80 \text{ ft.}$$

A key assumption in this calculation is that travel in last steering angle of 7.24 degrees occurred for a full 1/2 second past the center-line and the car front axle center would be 13.93-5.75 = 8.18 ft. beyond the centerline. This is clearly incorrect since it puts the rear of the car more than 8 feet beyond the center line and the front more than 2 feet beyond the shoulder white line. Thus including one full time step of 1/2 second is too much and thus, the impact likely occurred much less than 1/2 second after the last time step. This is important because the change in transverse distance is largest with the last time step. If we take only 40% of the last time step or 0.2 seconds in all the calculations, then we get

$$\begin{aligned}
 \phi(x_{r,final}) &= \frac{1}{9.17} [0.112 + 1.084 + 2.317 + (0.4)1.543] \\
 &= 0.0122 + 0.1182 + 0.2527 + 0.0673 \\
 &= 0.4504 \text{ radians} \\
 &= 25.8 \text{ degrees}
 \end{aligned}$$

Likewise

$$\begin{aligned}
 x_r(x_{r,final}) &= -0.0122(18.60) - 0.1300(16.18) - 0.3737(14.13) - (0.40)0.4353(12.08) \\
 &= -0.2269 - 2.103 - 5.280 - 2.104 \\
 &= -9.71 \text{ ft.}
 \end{aligned}$$

The additional lateral distance to the front end is  $b \sin(\phi_4) = 9.17(0.435) = 3.99$  ft. Thus

$$x_{front}(x_{r,final}) = x_r(x_{r,final}) - b \sin(\phi_4) = -9.71 - 3.99 \text{ ft.}$$

Assuming a beginning point of 5.75 ft. from the centerline then we have

$$\Delta x_r(x_{r,final}) = -13.70 + 5.75 = -7.95 \text{ ft.}$$

This agrees well with the NYSP Investigator motorcycle impact location of 7.73 ft. to the right of the center-line, but is still a foot too far since the impact point was more than a foot left of the license plate center. Thus the last time increment is likely closer to 0.15 seconds

after 6 pages of math...

$$x_r(s_{r,final}) = -0.0122(18.60) - 0.1300(16.18) - 0.3737(14.13) - 0.5230(12.08)$$

$$= -0.2269 - 2.103 - 5.280 - 6.318$$

$$= -13.93 \text{ ft.}$$

The additional distance to front end is  $b \sin(\phi_4) = 9.17(0.5230) = 4.80 \text{ ft.}$  Thus

$$x_{front}(s_{r,final}) = x_r(s_{r,final}) - b \sin(\phi_4) = -13.93 - 4.80 \text{ ft.}$$

$$= -18.73 \text{ ft.}$$

A key assumption in this calculation is that travel in last steering angle of 7.24 degrees for a full 1/2 second before impact. By this assumption the center of the rear axle 5.75 = 8.18 ft. past the center-line and the car front axle center would be 12.98 ft centerline. This is clearly incorrect since it puts the rear of the car more than center line and the front more than 2 feet beyond the shoulder white line. This time step of 1/2 second is too much and thus, the impact likely occurred much after the last reading. This is important because the change in transverse direction the last time step. If we take only 40% of the last time step or 0.2 seconds then we get

$$\phi(s_{r,final}) = \frac{1}{9.17} [0.112 + 1.084 + 2.317 + (0.4)1.543]$$

$$= 0.0122 + 0.1182 + 0.2527 + 0.0673$$

$$= 0.4504 \text{ radians}$$

$$= 25.8 \text{ degrees}$$

Likewise

$$x_r(s_{r,final}) = -0.0122(18.60) - 0.1300(16.18) - 0.3737(14.13) - (0.40)0.5230(12.08)$$

$$= -0.2269 - 2.103 - 5.280 - 2.104$$

$$= -9.71 \text{ ft.}$$

The additional lateral distance to the front end is  $b \sin(\phi_4) = 9.17 \sin(25.8^\circ) = 3.95 \text{ ft.}$

Assuming a beginning point of 5.75 ft. from centerline then we have

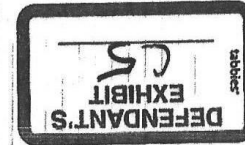
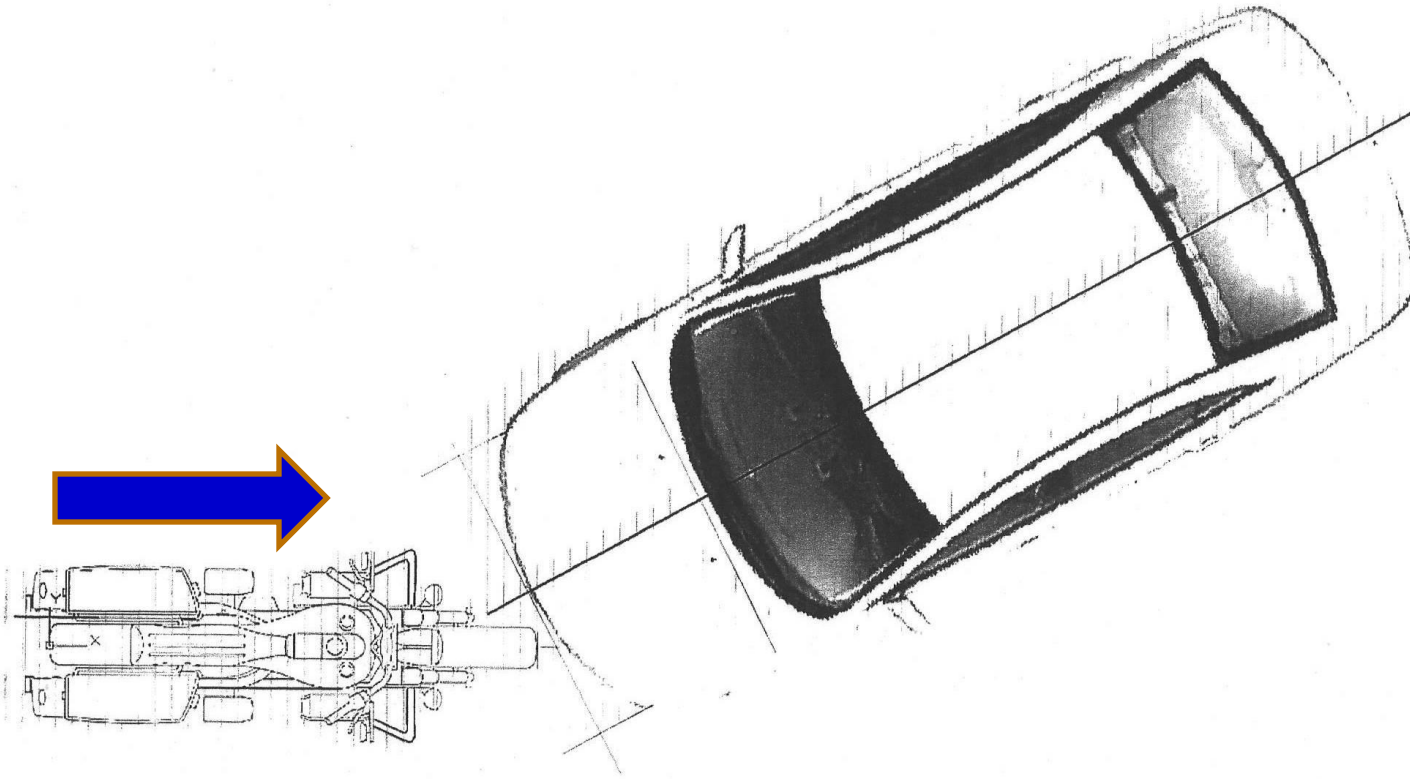
$$x_{front}(s_{r,final}) = x_r(s_{r,final}) - b \sin(\phi_4) = -9.71 - 3.95$$

$$= -13.70 \text{ ft.}$$

This agrees well with the NYSIP Investigator motorcycle impact location of 7.73 ft. to the right of the center-line, but is still a foot too far since the impact point was more than a foot left of the license plate center. Thus the last time increment is likely closer to 0.15 seconds

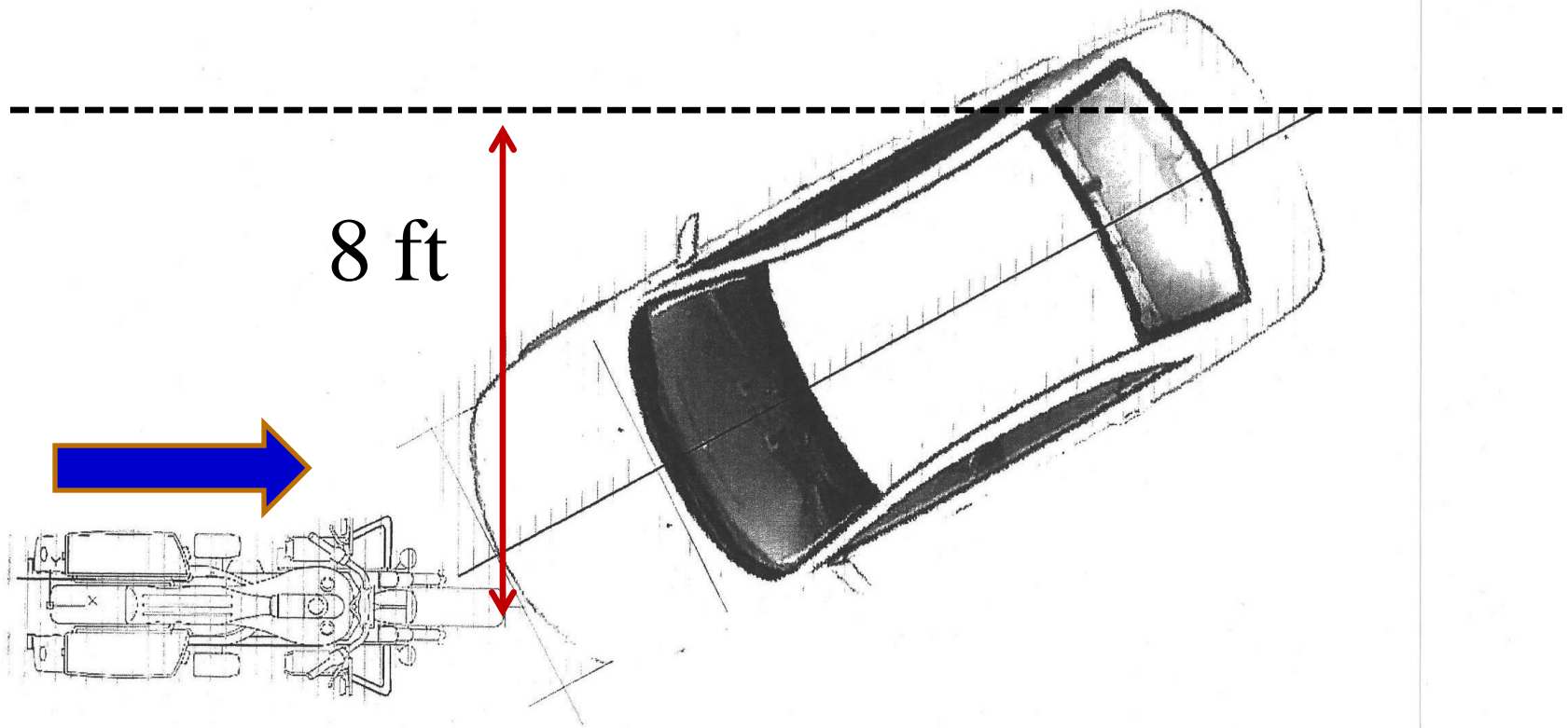
“NYSIP have the POI a foot too far over the center line...”

# Defense expert's exhibit:



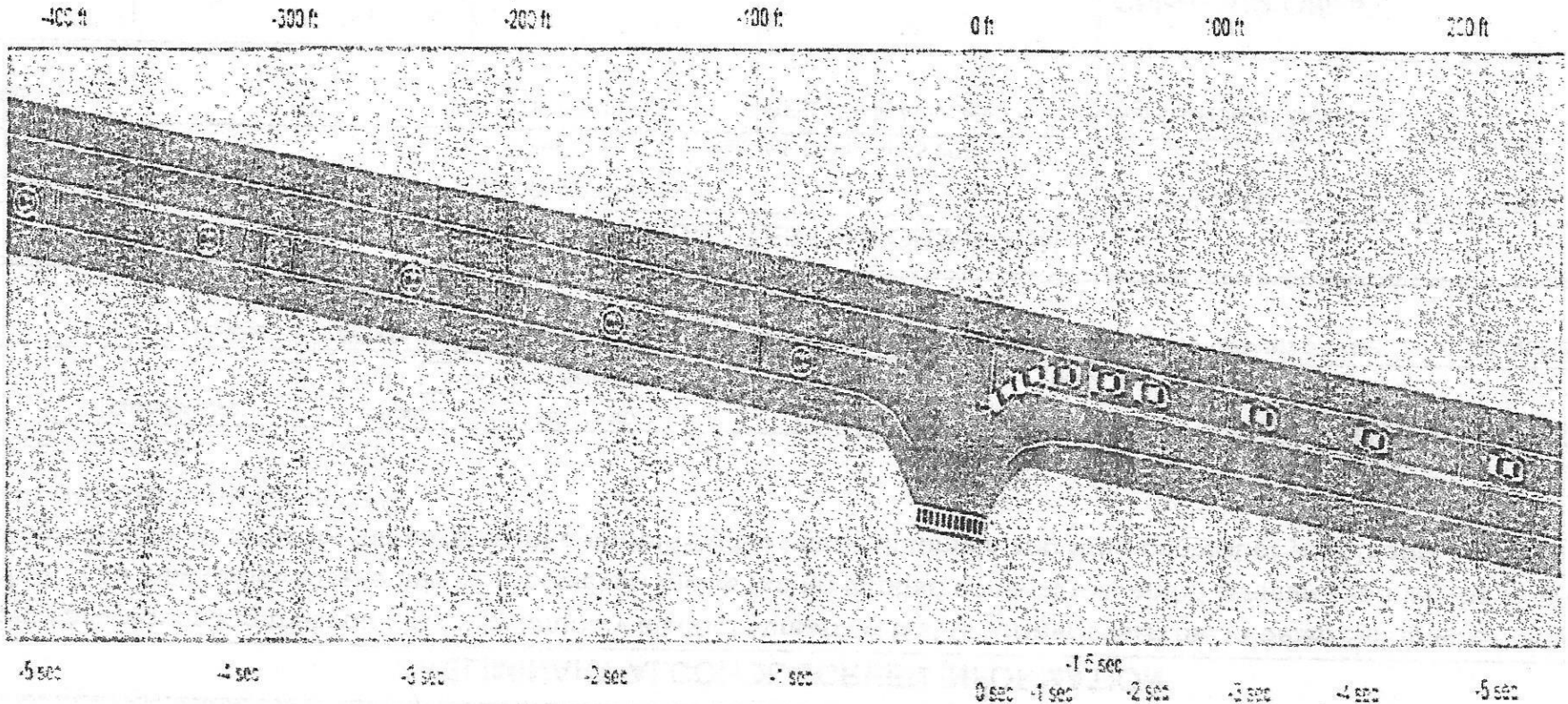


# Defense expert's drawing:



# Defense expert's drawing:

EXHIBIT  
C14

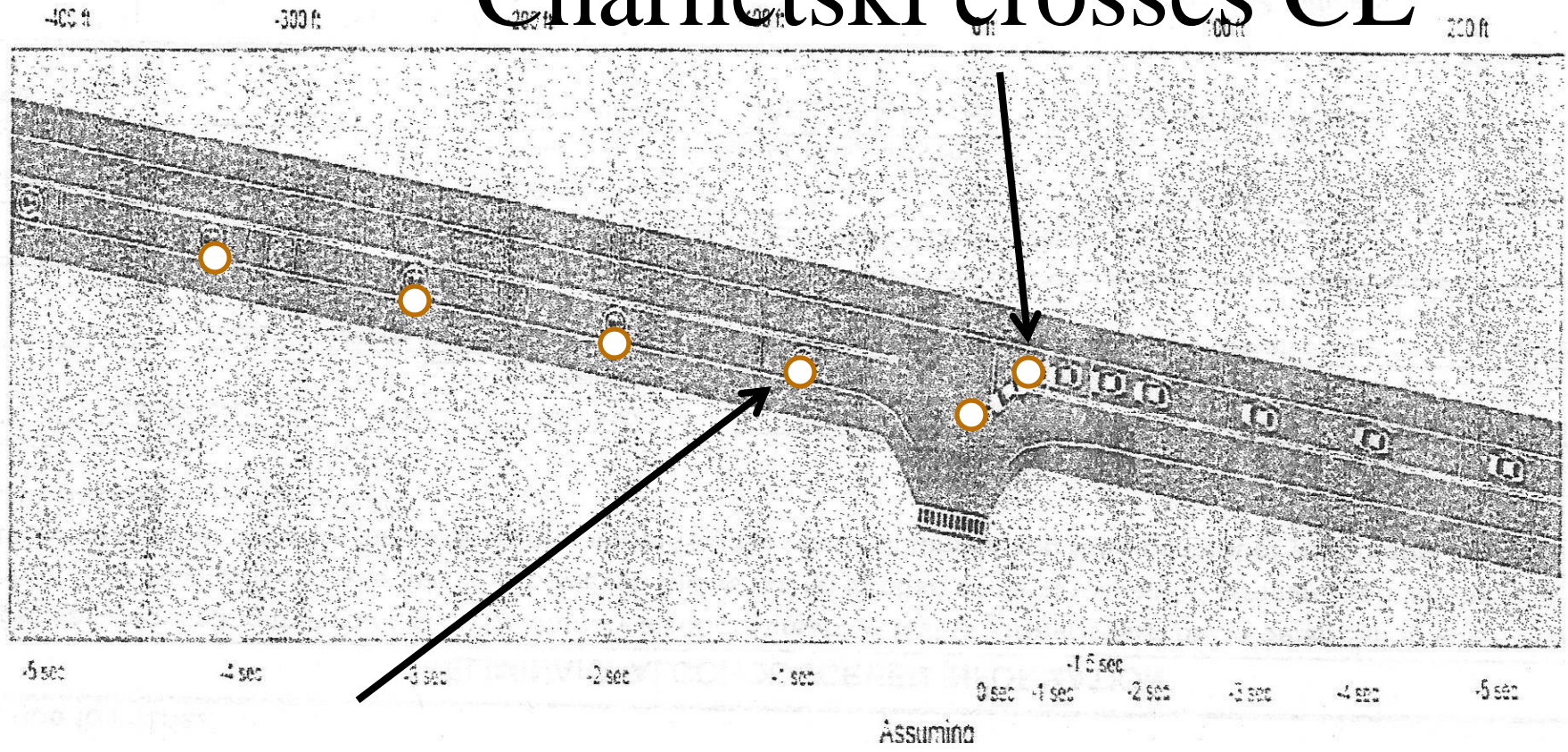


Assuming

Time (sec.)	Separation distance (feet)	Time (sec.)	Separation distance (feet)
-5	627		



# Charnetski crosses CL



# MC when Charnetski crosses CL

Q. “How far away was the approaching motorcycle when the defendant crossed into the oncoming lane?”

R. “Less than 100 ft.”

## Concession by defense expert:

Q. “Was it prudent for the defendant to make the left turn?”

R. “No.”

The prosecutor minimized the expert's opinion, and got a verdict in a few hours.



Expert tactic:

The defense tries to distract the jury  
from the issue of negligence.

Army Sgt, Cruz struck a German citizen  
riding a motorized scooter

Sgt. Cruz fled the scene

Sgt Cruz went to another bar, and continued  
drinking

He hid his car in another officer's garage and  
covered it with a tarp

Army MP found his car a month later

# U.S. Army v. Cruz

The defense expert used a well-designed Power Point to show the German police investigation was incomplete...

but during cross examination the  
defense expert got angry!



$$S = \sqrt{30} \text{ f d}$$

## Email from a student:

---

“My cross examination worked just the way you said it had in the Army case. I got the defense expert to admit that none of his direct testimony would change my expert’s opinion. Thank you, and I’ll be in the front row next time you train with us.”



**I**



**CONCESSIONS**

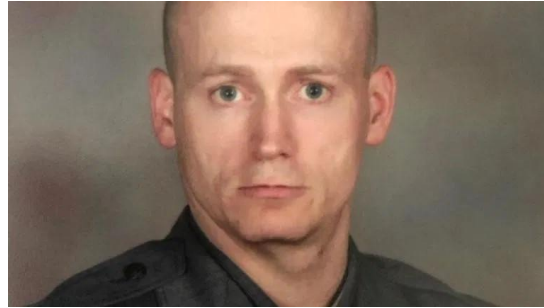
Expert tactic:

The defense expert makes assumptions  
instead of evidence.

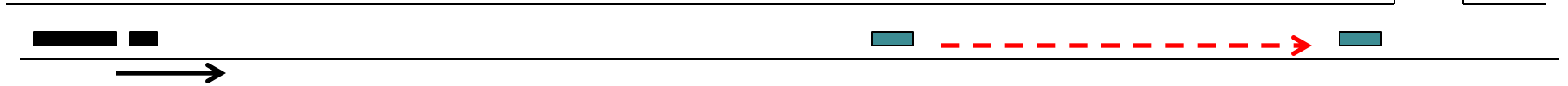
An expert's *assumption* in one part of the analysis may cause a problem somewhere else...

and create an opportunity for the prosecutor's cross examination.

# People of NY v. Aaron Munise

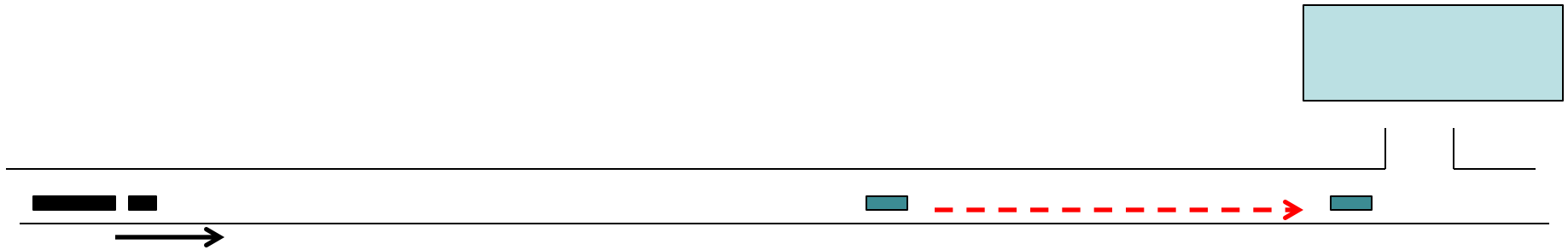


NYSP Sgt. Jeremy VanNostrand killed



# People of NY v. Munise

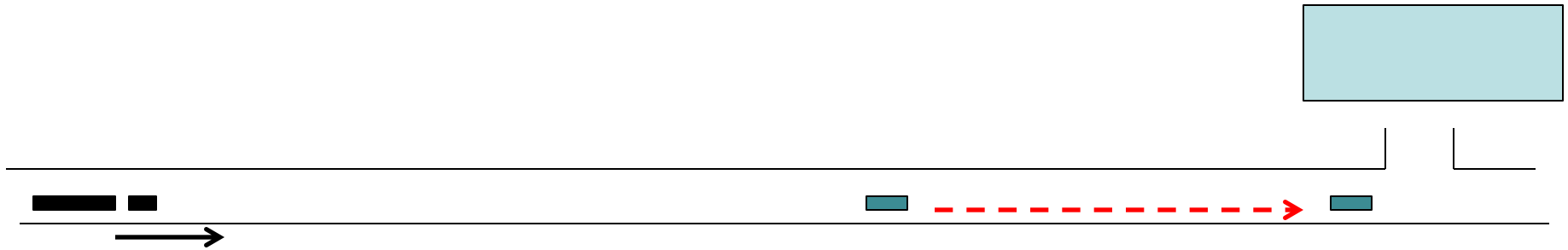
NYSP Sgt. Jeremy VanNostrand killed



State: Driver distracted by cell phone conversation..

# People of NY v. Munise

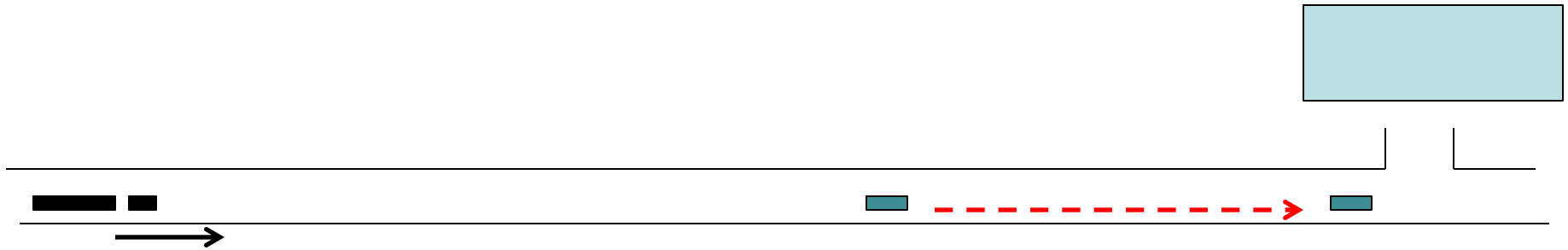
NYSP Sgt. Jeremy VanNostrand killed



Defense: Automatic alert system  
in truck malfunctioned.

# People of NY v. Munise

NYSP Sgt. Jeremy VanNostrand killed

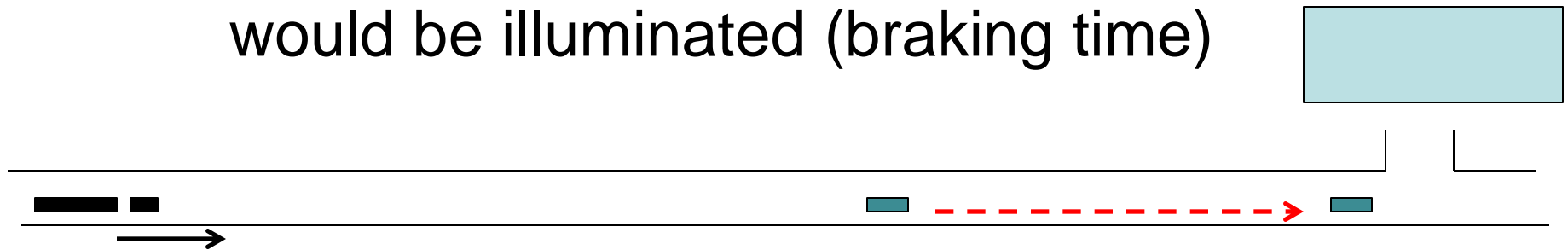


At what rate was the Trooper's vehicle slowing?

Δ expert assumes a slowing rate for the victim's car

Δ expert assumes the victim's vehicle speed

Let's calculate how long the brake lights would be illuminated (braking time)



State asks Δ expert for a concession:

“Based on the numbers in your own report the time the defendant had to start an evasive action was ***at least 13 seconds, correct?***”



Combined speeds:

$$S = \sqrt{48.9^2 + 18.4^2 + 40^2}$$

**(crush underestimated and  
post-impact energy not included)**

$S = 65.8$  mph      in a posted 35 mph

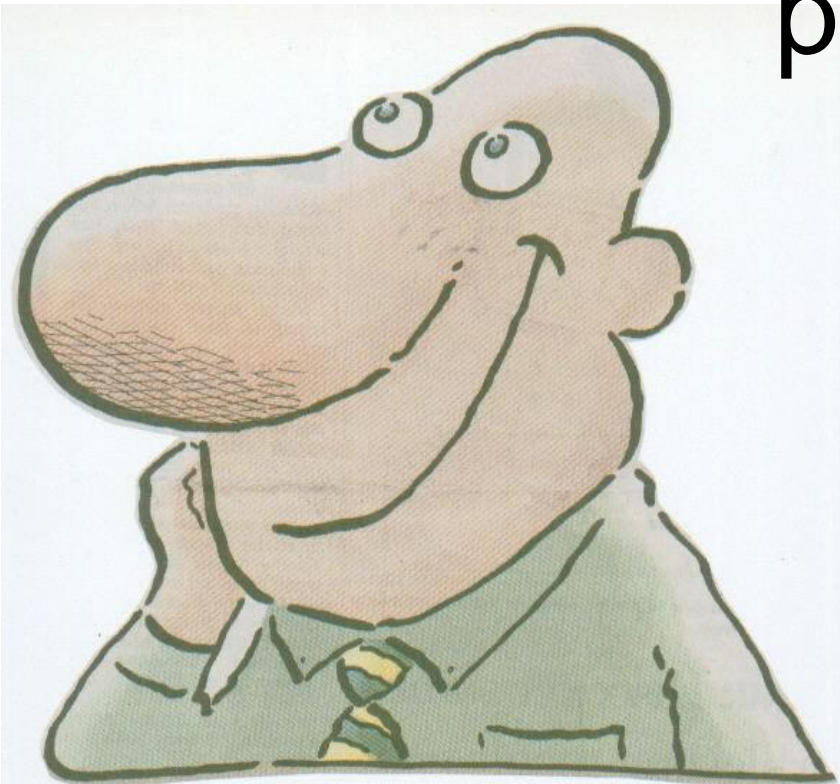
# The concept of VISUALIZATION

Rudolph Arnheim, Visual Thinking, 1967

The mind operates cognitively by translating words into pictures, and then retrieves information as pictures for the purpose of reasoning and decision-making.

The jurors must visualize words of the testimony and transform them into a picture in their minds.

***INSIGHT*** : If the jurors don't all have the same picture, there's a potential problem!



Police witness testifies:

“I measured the tire marks with a Rolatape.”

What picture do the jurors have ?

“I measured the tire marks with a Rolatape.”



Rolatape ???



# From a deposition transcript: (Andy Rich email)

A He was pretty much either running the wheel or interact with the driv

the roll of tape

Q What does that term mean running the wheel?

A When we take measurements, the roll of tape.



**MAKE SURE ALL THE JURORS HAVE THE SAME PICTURE - USE AN EXHIBIT**

Develop a portfolio of potential exhibits.







Cellebrite



# People of NY v. GRAY

**August 4, 2001**

**9 P.M.**

**Corner of 46<sup>th</sup> St. & 3<sup>rd</sup> Ave., Brooklyn**



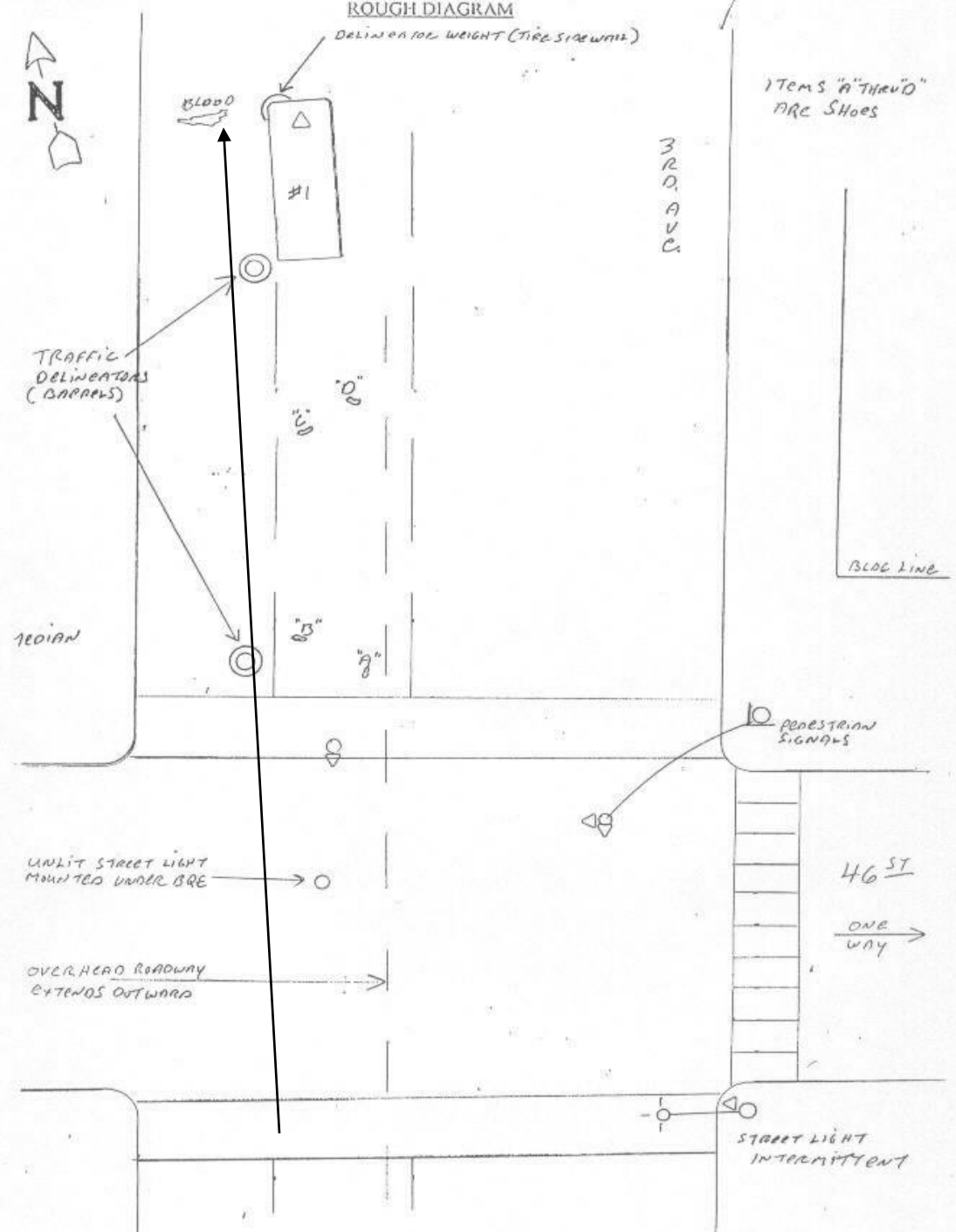


POLICE

Gateway Center

NYPD  
POLICE

ROUGH DIAGRAM



DELINATOR WEIGHT (TIRE SIDEWALL)

BLOOD

#1

TRAFFIC DELINEATORS (BARRELS)

MEDIAN

3RD AVE.

ITEMS "A" THROUGH "D" ARE SHOES

BLOOD LINE

PENESTRIAN SIGNALS

UNLIT STREET LIGHT MOUNTED UNDER BQE

OVERHEAD ROADWAY EXTENDS OUTWARD

46 ST

ONE WAY

STREET LIGHT INTERMITTENT



# Speed from throw distance:

---

Appel 55.0 mph

Searle 54.2 mph

Sterbatchoff 49.2 mph

Wood 53.8 mph

Bratten 51.3 mph

Limpert 54.2 mph

Speed from braking distance  
(defendant's statement) 52.4 mph

## **Results:**

**minimal cross examination**

**no cross about speed opinion**

**defense expert did not testify**

***CONVICTION***

# **LESS MATH LIMITS CROSS EXAMINATION**

( A defense attorney told me that after he cross examined me in Salt Lake City, UT )

Discuss your case  
with someone who  
doesn't know about  
MV cases

# Preparing Your Witness for Trial



Tell your witness the  
importance of making  
concessions

Asking for a concession makes  
your witness feel like they are  
helping the defendant, because ...

***THEY ARE!***



Tell your witness how a  
concession will sound.

The defense attorney selects facts  
that you must affirm.

He/she asks you to agree

If you don't, the question will be  
repeated until you do.

In the meantime you will be  
hurting your credibility.

In the end, you will concede,  
or destroy your credibility.

Making concessions  
makes you credible, so...

**smile and concede.**

The pre-trial meeting:

Tell your witness  
about the defense  
attorney

You are like a scout in sports,  
reporting to your team what to  
expect from the defense atty.

What should your witness know  
about the defense attorney?

- Does the def atty have experience with this type of case?
- Does the def atty understand the technical nature of the testimony?
- Does the def atty have a favorite tactic?
- Does the def atty like to ask hypotheticals?
- What will the def atty do to win?

WHICH ONE OF THESE IS  
THE DEFENSE ATTORNEY?





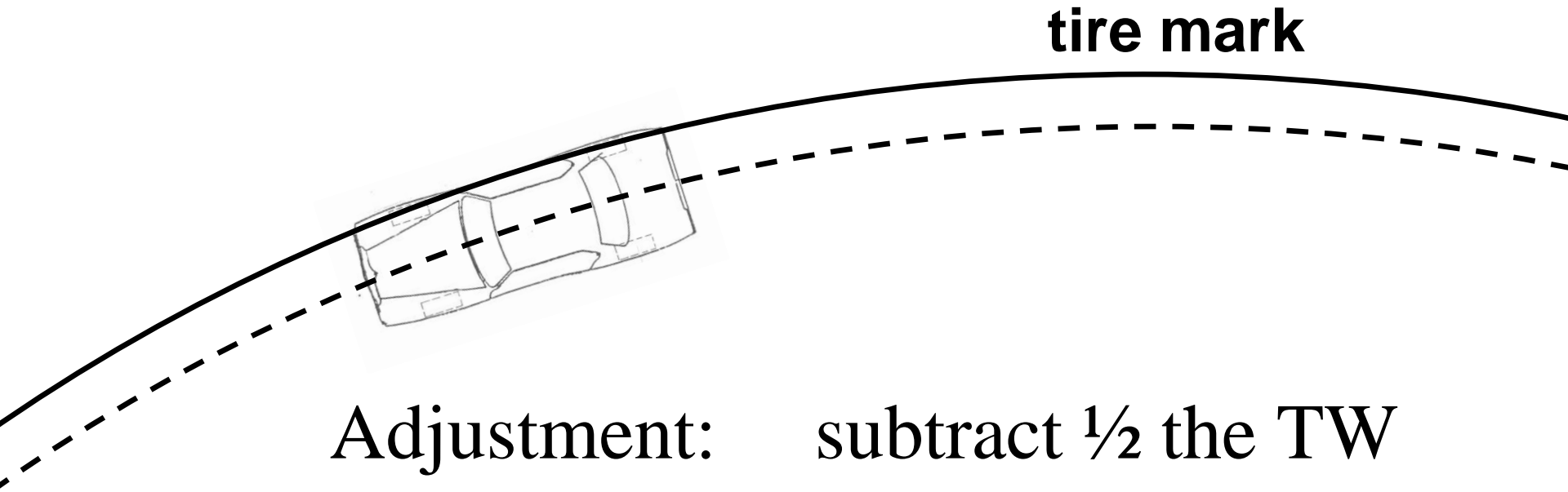
The pre-trial meeting:

**Tell your witness  
about any pre-trial  
rulings.**

The pre-trial meeting:

Tell the prosecutor about  
any problems with the case.

The witness *did not* adjust the yaw radius calculation for the center of mass of the vehicle.



**tire mark**

Adjustment: subtract  $\frac{1}{2}$  the TW  
from the radius

$$\mathbf{R}_{\text{CM}} = \mathbf{R}_{\text{tire mark}} - \mathbf{TW}/2$$

**It changes the speed by less than 1 mph**

The pre-trial meeting:

Discuss and select the trial exhibits with your expert witness' help.

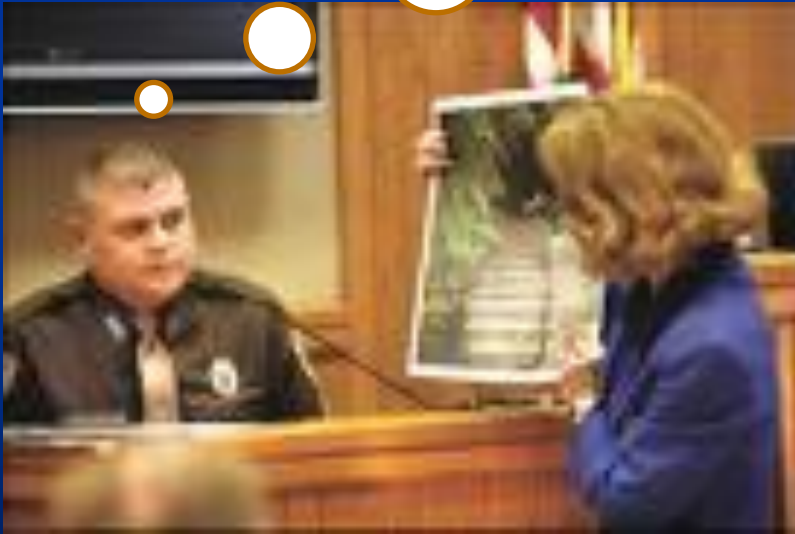
What do you see  
in this photograph?



I don't have a clue what she wants me to talk about?



I wish we had  
previewed the exhibits  
together!





# Photo of Damage



# Better Photo of Damage?



**Trial Exhibit?**











00:22'8

The pre-trial meeting:

Tell your witness their rights if they are examined with a document.



The witness has the right to see  
any document being used to  
cross examine,

***BEFORE*** answering a question  
*about the document!*

The pre-trial meeting:

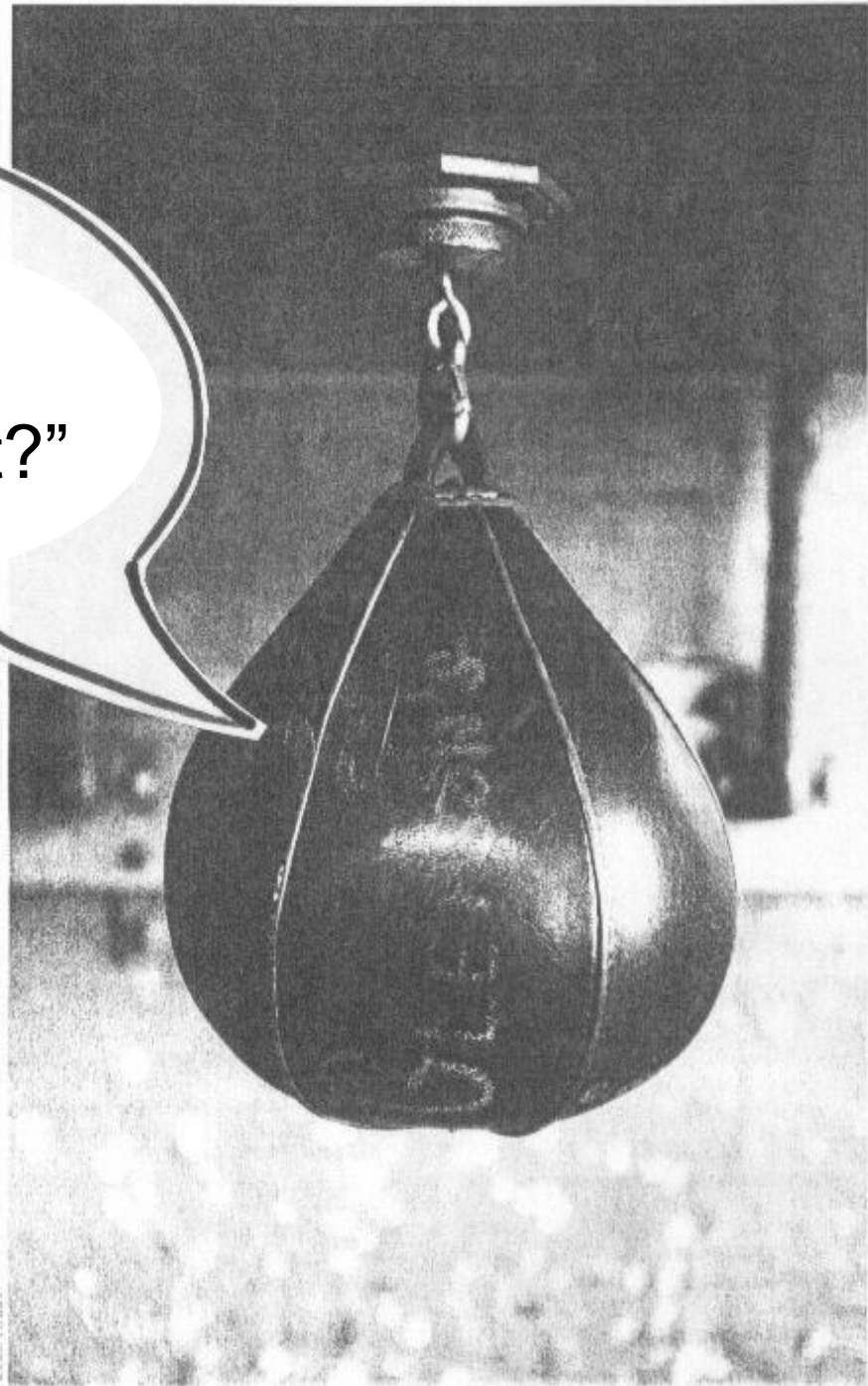
Tell your witness  
what to do when  
there is an objection



When there is an objection...

***STOP TALKING!***

“Why doesn’t the  
prosecutor object?”



- There may not be a legal reason to object
- The witness may be “winning”
- The defense attorney is being a jerk!
- The jury is getting upset with the defense attorney

A credibility-builder  
for your witness...

CHECK FOR  
***RECALLS***  
ON ALL VEHICLES !

[www.nhtsa.gov/recalls](http://www.nhtsa.gov/recalls)

1999 Pontiac Grand Am goes off the road, Charlotte, NC, 2015:

## Recall #98V320000

Steering wheel can come loose from steering shaft, causing loss of steering control.

A SURPRISE:

TWO WEEKS BEFORE TRIAL

**SUMMARY:**

CERTAIN FEDERAL-MOGUL REPLACEMENT WHEEL

HUB ASS

CARQUE

515059, A

and/or wheel separation

AND DECEMBER 20, 2007, SOLD FOR

MEDIUM DUTY TRUCKS. THE INBOARD

USED TO MAINTAIN HUB BEARING

LOOSEN RESULTING IN AN ABS LIGHT INDICATION,

NOISE, AND/OR WHEEL SEPARATION.

**CONSEQUENCE:**

WHEEL SEPARATION CAN RESULT IN A VEHICLE CRASH.



Check to see if  
a recall has been repaired

To see if a recall has been repaired  
for vehicle years > 2000

[vinrcl.safercar.gov/vin/](http://vinrcl.safercar.gov/vin/)

CHECK FOR

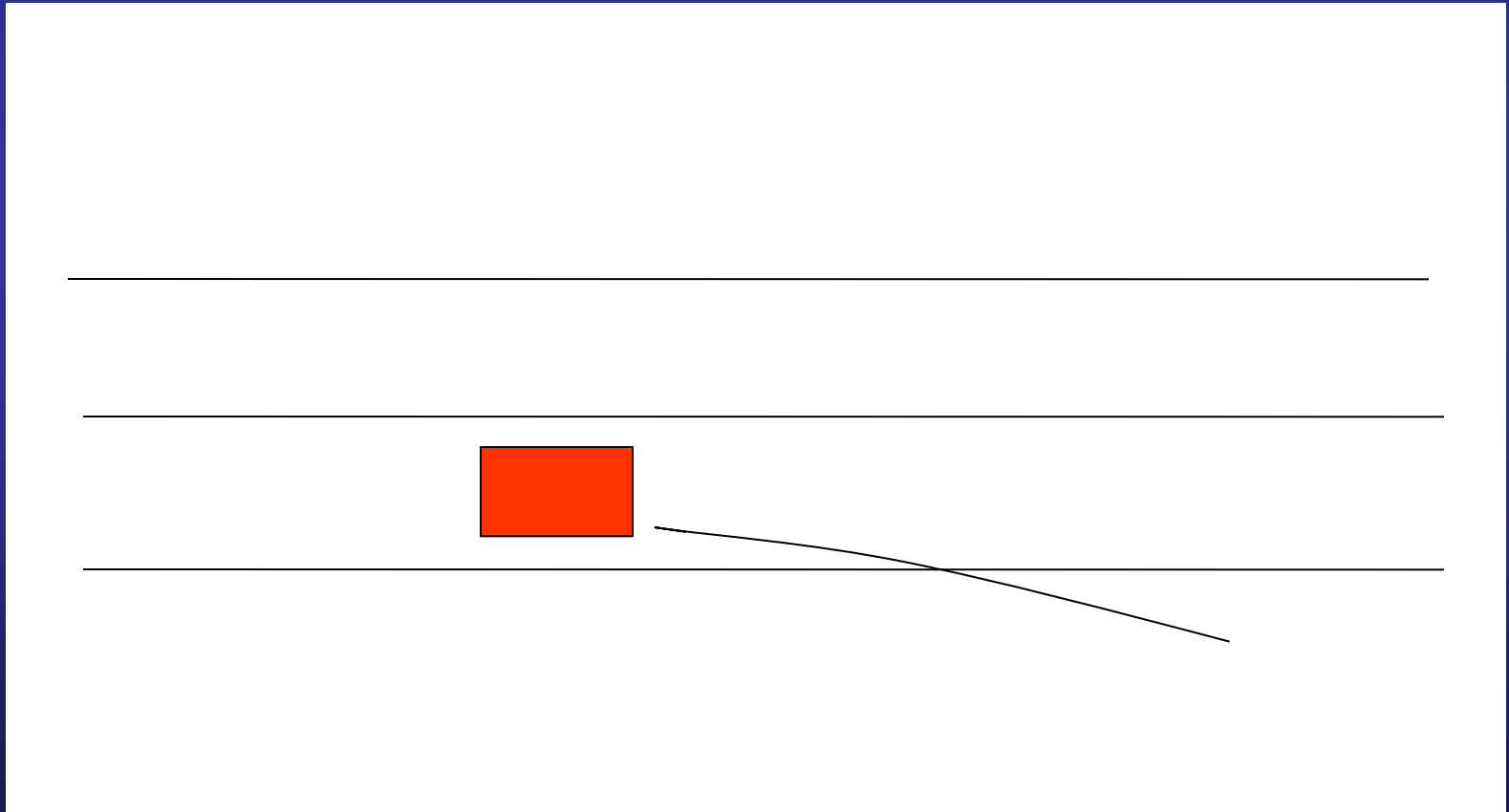
***MANUFACTURER'S  
COMMUNICATIONS***

[www.nhtsa.gov/recalls](http://www.nhtsa.gov/recalls)

CHECK FOR  
***COMPLAINTS***

[www.nhtsa.gov/recalls](http://www.nhtsa.gov/recalls)

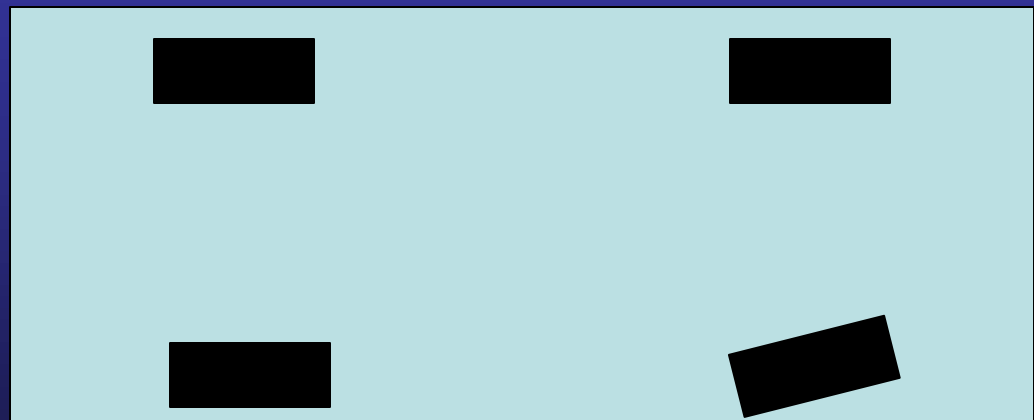
VEHICLE SUDDENLY STEERS TO  
RIGHT, COLLIDES WITH GUARDRAIL.







RF WHEEL  
TOED IN



# NHTSA complaint file:

- 1,000+ complaints filed by owners of this vehicle (as of Nov, 2019)
- More than 70 include language like:  
“when driving, right front wheel completely turned in”



# NHTSA complaint file:

- 1,000+ complaints filed by owners of this vehicle
- More than 70 include language like:
  - ”when driving, right front wheel completely turned in”
  - “subframe assembly on right front had rotted away, control arm assembly had separated from subframe”

# NHTSA complaint file:

- 1,000+ complaints filed by owners of this vehicle
- More than 70 include language like:
  - ”when driving, right front wheel completely turned in”
  - “subframe assembly on right front had rotted away, control arm assembly had separated from subframe”
  - “right front tire was sideways, my mechanic said subframe had corroded”

**Everybody likes  
a good story**



The pre-trial meeting:

Help your witness to  
use “plain speak”.

Greg Ariza, Nebraska prosecutor:

“If my officer talks like that at trial, the jurors won’t understand anything he’s saying.”

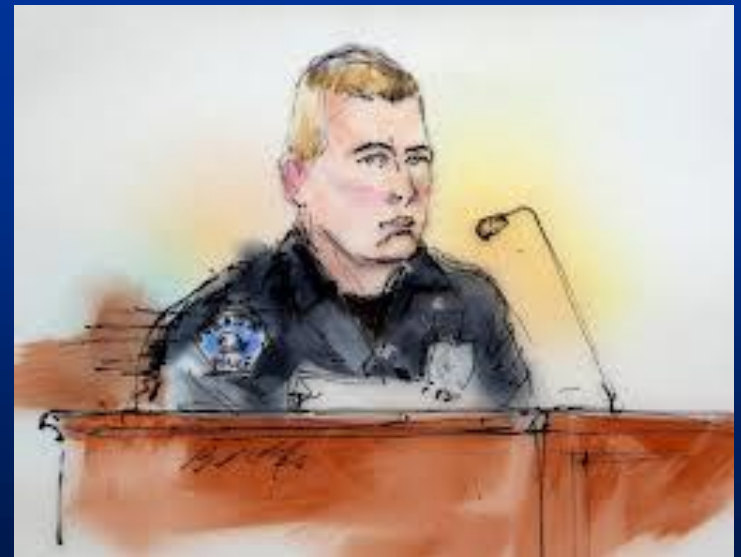
Why is it so difficult to explain things in “*plain speak*”?

Officers talk like their instructors talked.

The instructor trained them  
how to do it!



The jury just wants to know  
what it is *about!*





# TESTIFYING IS ABOUT TELLING A STORY,



NOT **INSTRUCTING**



The pre-trial meeting:

Qualifying your expert is  
very important.

Why is this the best  
witness who could be  
testifying today?

Avoid asking your witness to  
“Tell the jury about yourself.”

Be sure the jury knows how  
specialized your witness is.

What training have you received?

I had an eighty-hour course in collision reconstruction.

When did you have that training ?

I had the training in May of 2007.

What training have you received?

I had an eighty-hour course in collision reconstruction.

How many people were in that class?

There were 30 from all over the state.

How many officers from your department were in that class ?

Just me.

How many officers from your department have had this training  
at a different time ?

Two others.

And how many officers are there in your department ?

65.



What training have you received?

I had an eighty-hour course in collision reconstruction.

How many people were in that class?

There were 30 from all over the state.

How many officers from your department were in that class ?

Just me.

How many officers from your department have had this training at a different time ?

Two others.

And how many officers are there in your department ?

65.

When did you have that training ?

I had the training in May of 2007.

<http://www.legalsciences.com>

**Podcasts & Radio** (on right of the home page)

Working with Your Crash  
Reconstructionist, Part 1, 2

**Preparing Your  
MV Crash Case  
for Trial**

John Kwasnoski  
Prof. Emeritus of Forensic Physics  
Western New England University  
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