

NNJR “Trackside Classroom”

Smoothness

August 1-2, 2022



Vic Elford: “You will notice that professional drivers often act extremely quickly, but they are rarely in a hurry. Turning from a straight must be a smooth flowing transition into and then out of the corner.”

Disclaimer

The techniques shown here have been compiled from experienced sources believed to be reliable and to represent the best current opinions on driving on track. But they are advisory only. Driving at speed at Lime Rock, or any other track, requires skill, judgment and experience. These techniques assume the reader has high performance driving knowledge and applies them as applicable to their level of driving experience.

High-performance driving can be very dangerous, carries inherent risks and may result in injury or death. NNJR and PCA make no warranty, guarantee or representations as to the absolute correctness or sufficiency of any representation contained herein. Nor can it be assumed that all acceptable safety measures are contained herein or that other or additional measures may not be required under particular or exceptional conditions or circumstances.

NNJR Smoothness: What is It?



- Objective: keep the car balanced
 - i.e. No more weight transfer than needed
 - Just enough input

"Race car drivers are minimalist. They put the least amount of input in."

- Johnny O'Connell

- Deliberate and Precise use of the controls
 - Steering, gas, shifting
- Never upset the car

*"When I look fast, I'm not smooth and I am going slowly.
And when I look slow, I am smooth and going fast."*

- Alain Prost





Smooth is fast because...
a balanced car has more traction.

SPEED SECRETS

www.SpeedSecrets.com

Ross Bentley

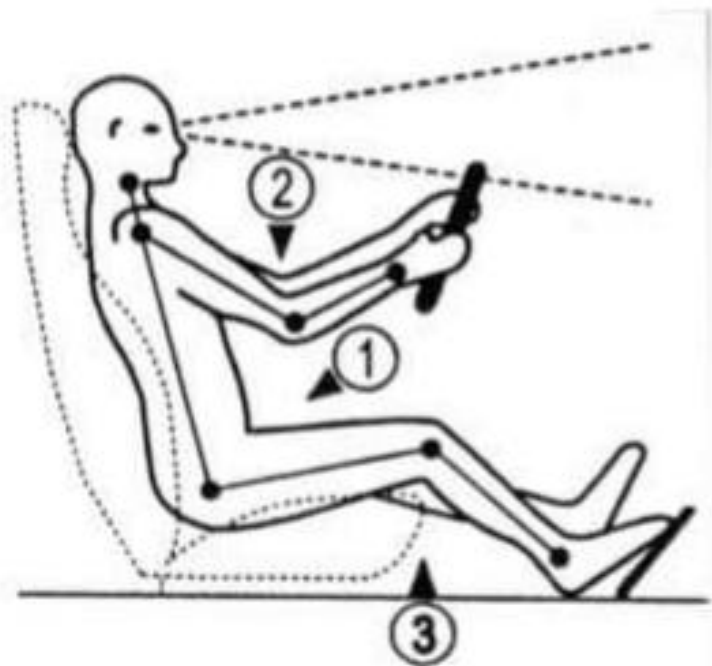




- Comfortable in the car
 - Seating position
 - Mirrors
- Basic track knowledge
 - Reference points
 - Rhythm



Preparing to drive on the track:



Proper seating position

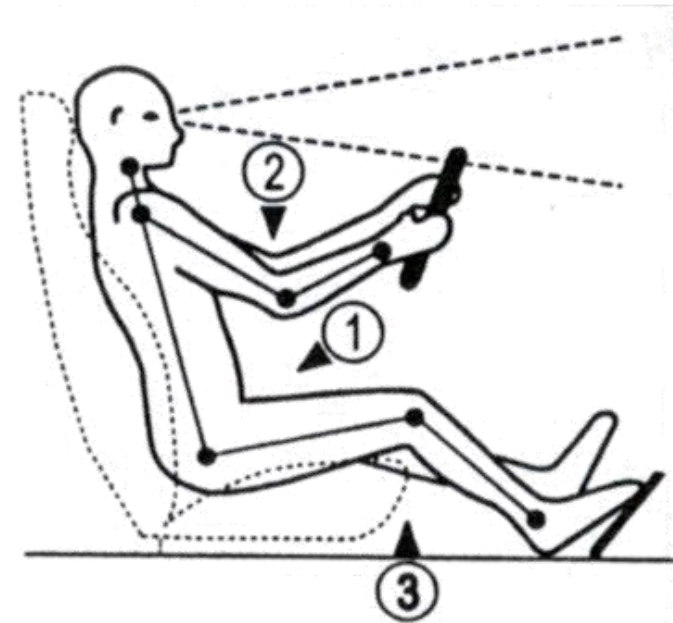


Proper hand placement

NNJR Comfortable in the Car?



- How much have you driven your track car lately?
- Check it out
 - Does seat fit perfectly?
 - Vision constraints with helmet and HANS?
 - Mirror adjustments
 - How does steering feel? Brakes?
 - How does it sound? Feel?



NNJR Want to be Sure?



- For 10 minutes or so, sit in your stationary car with helmet, etc. on.
- What might be negatively impacting
 - The amount of quality visual information you take in?
 - What you feel?
 - What you hear?



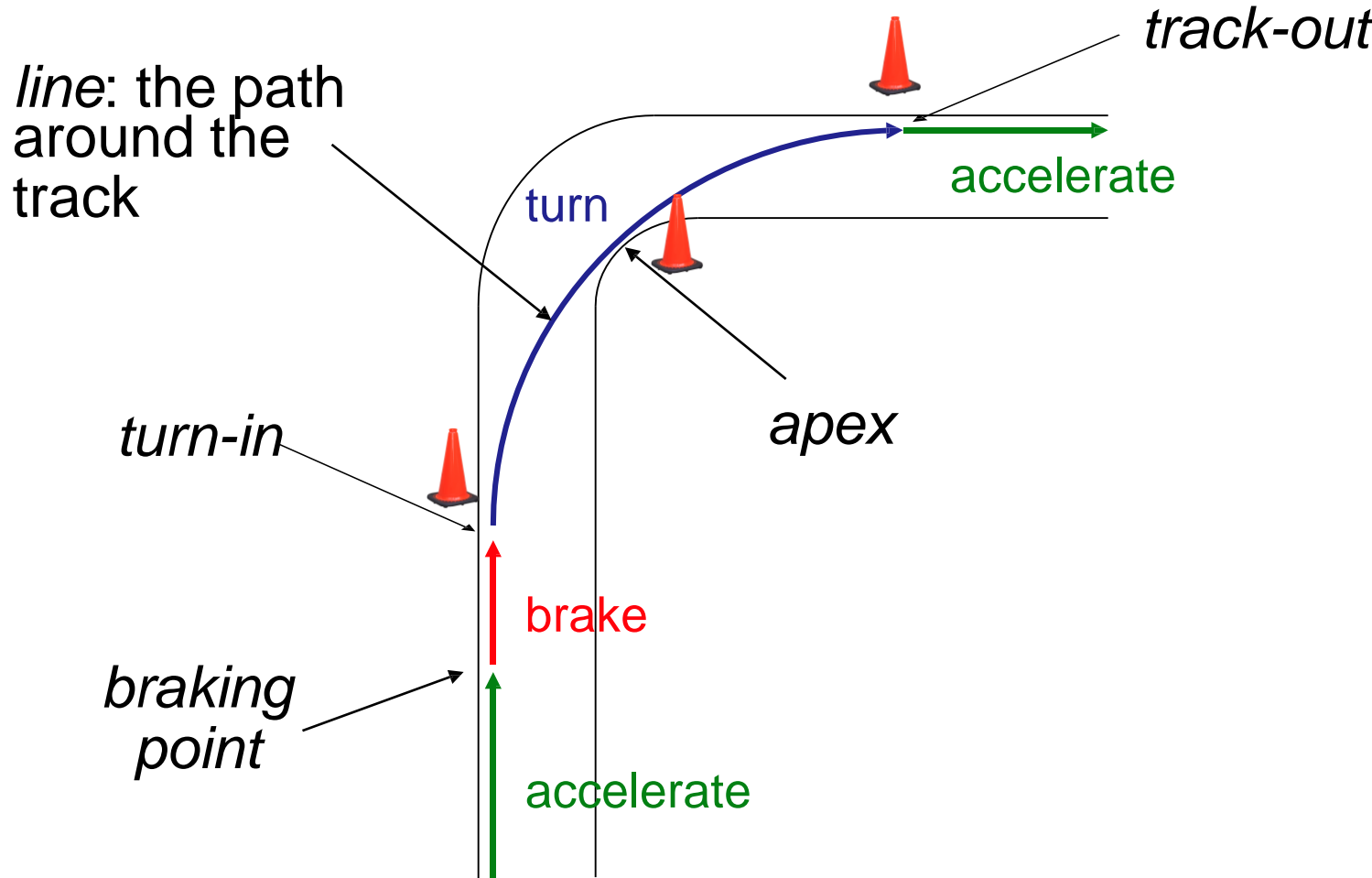
**Credit: Ross Bentley Speed Secrets 189*



NNJR The Basics of Track Driving



- Use reference points to drive a consistent line



Slide by Chuck Tucker from community.hagerty.com, used under

NNJR Basics of Track Driving



Use an ABC rhythm

- **Accelerate** on the straights
- **Brake** while going straight, before the corner
- **Corner (Turn)** relax the brakes and turn
- **Accelerate**
- **Brake**
- **Turn** → some corners: just use less gas (**lift**)
- **Accelerate**
- **Brake**
- **Turn**
- . . .

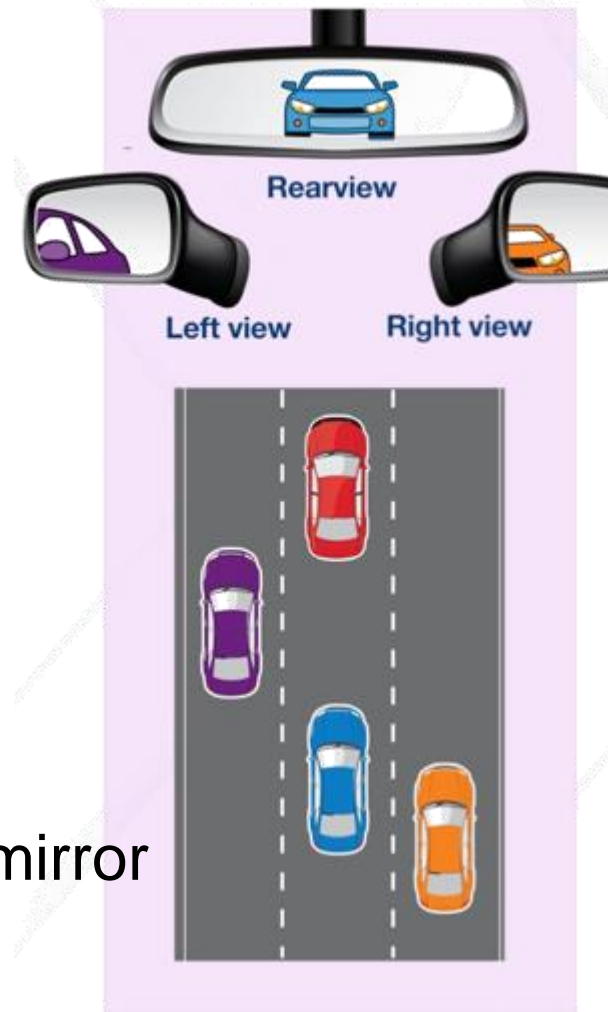
Slide by Chuck Tucker from community.hagerty.com, used under



- Start in correct seating position!

MIRRORS

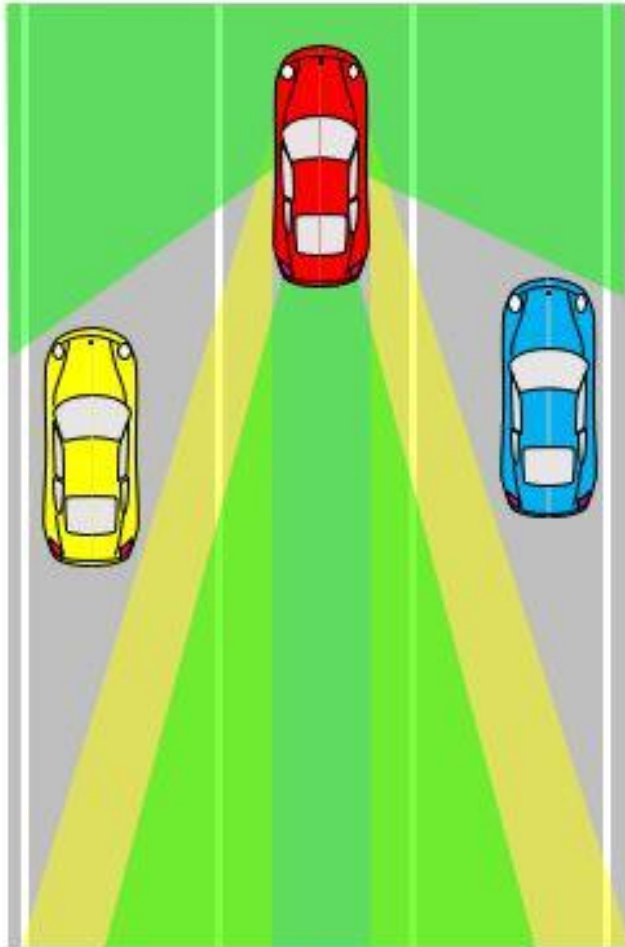
- **Rearview Mirror**
 - Adjust to see entire rear window
- **Left Mirror**
 - Rest head against driver's window
 - Adjust to barely see left rear fender
- **Right Mirror**
 - Lean right so head is under rearview mirror
 - Adjust to barely see right rear fender



NNJR Proper Mirror Adjustment



Common



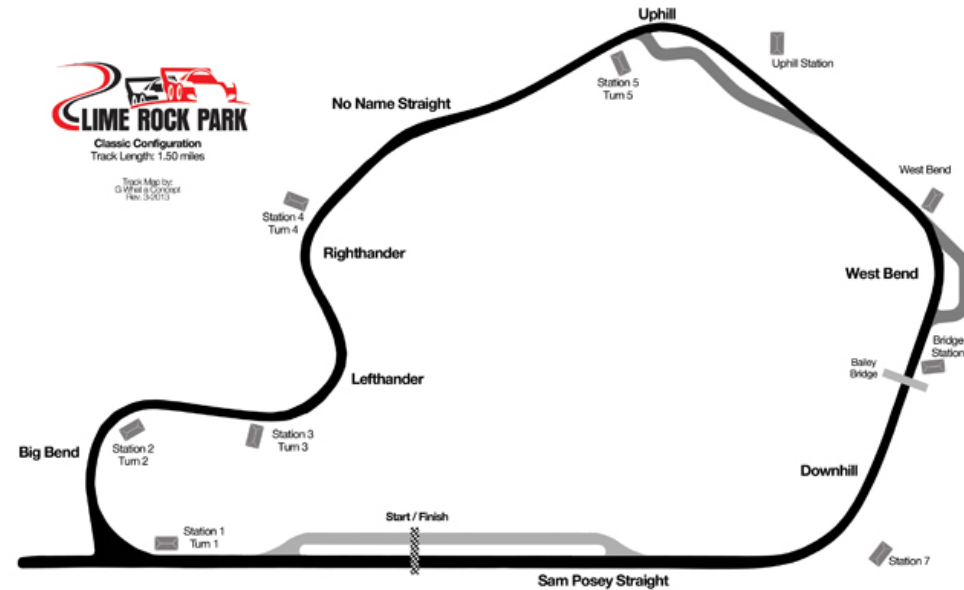
G. Plazer, "The Geometry of Automotive Rearview Mirrors—Why Blind Zones Exist and Strategies to Overcome Them," SAE Tech. Paper 950601 (1995).



NNJR Smoothness



- What is it?
- Why do we care?
- Pre-requisites
- How to improve?



NNJR Smoothness: How to Improve?



- Classic Advice
 - Controls are not “on/off”
 - No jerky or sudden movement
 - Wind, unwind steering
 - Turn progressively and once: “take a set”
 - An egg between foot and gas pedal
 - “Squeeze” the gas, “roll on”
 - Practice smooth gear shifts (3 motions)
 - Braking
 - Move foot smoothly (heel on floor)
 - Smooth but hard initial pressure
 - Gentle Brake Release
 - Practice every day in street driving



NNJR Smoothness: How to Improve?



1. Vision
2. Awareness
3. Practice
4. Never rush



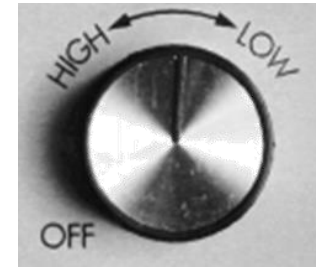
- The first step to being smooth
- How far ahead are you looking?
 - Look through and around each corner
 - Look at exactly where you want to go
 - 20 seconds ahead!



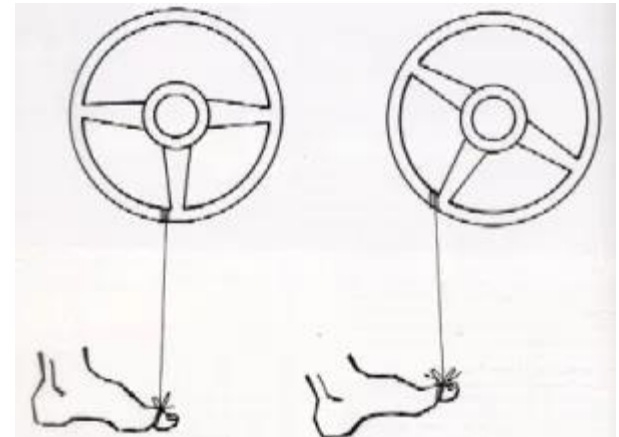
NNJR 2. Awareness



- Controls are “rheostat” not on/off
 - Steering
 - Gas
 - Brakes



- “String Theory”: Gas and Steering connected by a string



NNJR 2. Awareness: Try This



- Focus on (amount of) Pressure
 - Amount on gas pedal: 1-5 or 1-10
 - Amount on brake: 1-10
 - Amount (push plus pull) on steering: 1-5 or 1-10
- Sensitize feet and hands: exactly how much pressure?
 - Improves precision and smoothness
 - Requires being relaxed: tense muscles prevent feedback
- Goes beyond “what” to “how” (how much)



Adapted from Speed Secrets Weekly 314



NNJR 2. Awareness



- How smooth are you now? *
 - Pick one aspect
 - Rate from 1 (terrible) to 10 (perfect)
 - Write it down in your notebook
- Consider
 - Turn in (slow, fast, progressive?)
 - Brake application
 - Gas application
 - Upshifts
 - Downshifts
 - Brake release

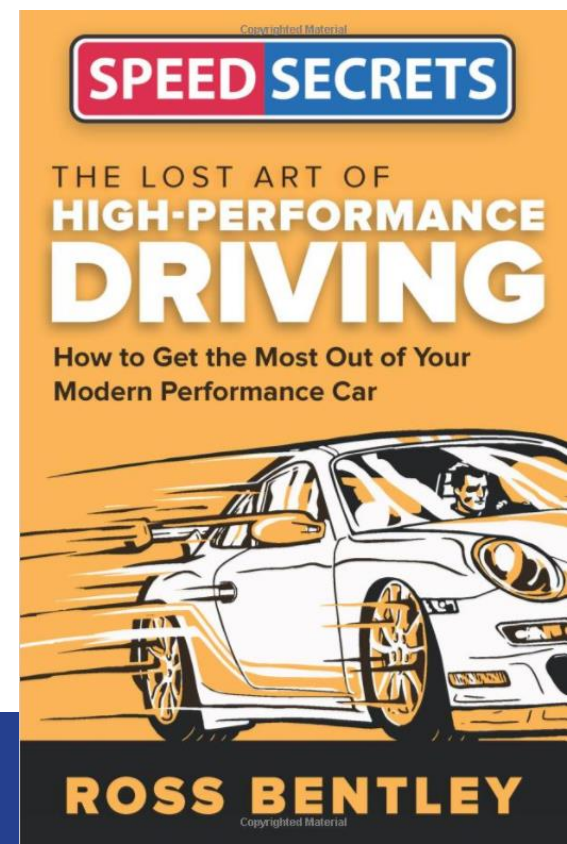
**Credit: Ross Bentley Speed Secrets 196*



NNJR 3. Practice



- Pick one aspect (one control) and focus on refining it
- Use your street driving for reinforcement
 - Lots more time on street than track
 - Will make you a better street driver!
 - Ross Bentley's book
 - Lots of practical advice



NNJR 4. Never Rush



- Never rush or force controls
 - Upsets car balance
 - Harder on the car
 - May result in an error: e.g. missed shift
 - Accuracy, precision more important than speed
- Smooth use of controls is consistent with rapid use of controls
 - After LOTS of practice!
- Remember: less (use of a control) is more



NNJR Watch Downshift, Steering



- Ideas to try
 - Lighten steering wheel grip
 - 4 on a 1-10 scale
 - Look further ahead
 - Release the brakes slower
 - Focus on End of Braking (EOB)
 - How is your physical fitness?
 - Vary seating position slightly: does it help?
 - Write down what worked, didn't work



Source: Ross Bentley, Speed Secrets Weekly #314



- Smooth is fast
- Don't skip the prerequisites
- Classic advice works
- Think about pressure (e.g. 1-10)
 - Especially in brake release
- Never rush
- Relax and be sensitive to feedback

“It is not always possible to be the best, but it is always possible to improve your performance – gentle, smooth and progressive.”

--Sir Jackie Stewart

