

## Pull Push Steering IS the best and safest way.

For more than 21 years I have sat back, kept silent, and have not bothered to comment on Sir John Whitmore's views on steering. Now however, I have come to the conclusion that it is time to speak out and redress the balance on steering methods.

I have become increasingly concerned that drivers and ADIs may have been unsettled of late about their steering technique. Some may have adopted hand over hand steering rather than continue with the trusted pull-push method. This in my view would be a very dangerous step to take, given all the evidence I am about to present to you.

My advice to all drivers and DSA Approved Driving Instructors is under no circumstances venture away from pull-push steering no matter how compelling the argument may seem to be. Pull-push is the safest and best way to turn a motor vehicle steering wheel.

My view is based upon my vast, wide ranging experience in the field of driver training covering some 40 years and a million plus instructional miles on the public highway.

### The Evidence

Putting my opinion aside for one moment, I want to deal with proven and undeniable facts. I will provide the evidence and refer you to websites were you can research for yourself the facts, enabling you to form your own opinion.

I will set out the facts on two fronts: -

- (a) Air bag Deployment Injuries and
- (b) Accurate Smooth Safe Steering.

## Air bag Deployment.

Sir John says that in an emergency a driver will always cross their hands because it is the quickest way to steer. That is not true! Drivers who use pull push will continue to use their natural steering technique and have no need to change in an emergency. I will come back to that later but the evidence I have uncovered found that many air bag injuries occurred in non emergency situations at speeds as low as 5 MPH.

On many of the latest motor cars, mine included, the air bag will deploy even when the vehicle is stationary, such as side impact or another driver reversing into the front of the vehicle.

Air bag injuries to which I refer can be serious hand and arm injuries. This includes fractured wrists, fingers, thumbs, arms and elbows some have been compound fractures. In some cases resulting in amputation. It will be seen that the evidence points to drivers using hand over hand steering or incorrect steering grip.

One example was an American lady who had her thumb almost torn off as a result of her air bag deploying as she was manoeuvring at 5 MPH. Having misjudged her turn into her driveway, her car fender (bumper) hit a wooden post; the air bag deployed injuring her thumb.

## American Research and Case History

In the United States of America air bags have been in use far longer than in the UK. It is there that most of the research has been conducted and much evidence has been gathered by The National Highway Traffic Safety Administration (NHTSA). It is from US websites that I found disturbing evidence, some very surprising. Please have a look at the following sites.

[www.nhtsa.gov/cars/rules/rulings/deactnpr.n21.html](http://www.nhtsa.gov/cars/rules/rulings/deactnpr.n21.html)

Also the following sites. Remember to underscore the spaces.

[www.airbagonoff.com/new\\_page\\_17.htm](http://www.airbagonoff.com/new_page_17.htm)

[www.airbagonoff.com/dr\\_smock's\\_research.htm](http://www.airbagonoff.com/dr_smock's_research.htm)

There is a great deal of evidence on websites involving low speed air bag deployment where in our terms the driver has not been steering correctly. The details are extensive and will take much time to digest.

### Air Bag Module Cover

So, how have these injuries come about and can they be avoided?

The answer is quite simply 'Yes, they can be avoided by the driver steering correctly'. Correctly means pull-push or shuffle steering as the Americans call it. It appears most American drivers, other than police drivers, cross their hands when steering. Problems arise when a driver has their hands or arms over the Airbag Module Cover, situated in the centre of the steering wheel, when the airbag deploys. The driver's hands and arms are thrust upwards by the force of the air bag and impact into the driver's approaching face, and can cause dreadful injuries. These injuries are exacerbated the wearing of a watch, ring or bracelet tearing into the driver's face. When the air bag deploys, it deploys at around 210 MPH with a force of around 1200lbs. UK and European air bags deploy with less pressure.

### Correct Grip and Steering Action

If the driver is holding the steering wheel correctly and not crossing hands (hand over hand steering), the air bag will deploy safely between the driver's arms causing none of the injuries as described previously. If ever there was a case for not crossing hands or steering hand over hand, then this must be it.

## Quarter to three, not ten to two!

The American driving experts are advising drivers to hold the steering wheel lower at quarter to 3 so that the arms are well away from the airbag module cover in the event of its deployment. They recommend steering action by sliding the hands up and down each side of the steering wheel, each hand mirroring the other, neither hand passing the 12 or 6 o'clock positions. In other words they advocate pull-push or shuffle steering, not hand over hand. This equally applies to slow speed manoeuvres, such as parking, for reasons made all too clear by the lady and her thumb. I personally do not like the expression 'shuffle steering' as it conjures thoughts of small bites of hand movement and lots of shuffling. That of course is not the case.

A very interesting site, it is a **must** look at.

[www.emsresponder.com/article/article.jsp?id=4390](http://www.emsresponder.com/article/article.jsp?id=4390)

'Driver Airbag Hand Injuries; 10 and 2 is Not the Rule'. Here, you will find sound advice about steering grip and shuffle steering.

Looking back to your driver's education, you will be posed the following questions: -

- Did the instructor teach you to hold the steering wheel at the 10 and 2 o'clock positions?
- Were you taught to use hand over hand steering?
- Do you steer your vehicle with one hand on top of the wheel?

I believe the questions are thought provoking.

Hypothetically, if a driver had been taught hand over hand steering or an incorrect steering hold, would this make the instructor culpable in the event of that driver sustaining a serious injury following air bag deployment?

I am certain, given the American culture for suing, this would be the case. I just wonder - could that ever happen here in the UK?

### To Conclude Airbag Injuries

In their report on airbag injuries the NHTSA state and I quote. 'Passengers and drivers are safer with an airbag than without. Never the less, the current number of deaths and serious injuries attributed to air bag deployment in low speed crashes is disturbing. A large number of arm injuries have been attributed to air bag deployment, both in low and high speed crashes'. You will find that report on the NHTSA site.

It is my opinion that steering hand position and crossing arms over the Air Bag Module Cover are the cause of the vast majority, if not all, of the arm and hand injuries during airbag deployment in the United States. There is no doubt many such incidents occur here in the UK.

Back to Sir John's comment that in an emergency a driver will cross their hands to steer quickly. That may be true of the reactionary driver driving with their eyes on 'dipped' rather than 'main beam'. They suffer with the 'suddenly syndrome' when many things become urgent and they may very well find they have to steer quickly.

The secret of good driving is driving with a high visual horizon, incorporating good vision scans positioning correctly and thereby adjusting road speed so a situation, even a hint of one, does not develop into a full blown emergency. These are the fundamentals upon which Roadcraft was conceived.

Now we must realise how dangerous it is to cross hands on the steering wheel, above all in the event of an emergency. You do not need to cross your hands to steer quickly. Pull-push will always deal with given emergencies and has the added

advantage of being able to easily reverse the steering direction without getting the arms tangled up.

### My Experience

I taught hundreds of learner drivers between 1964 and 1972 and whilst serving as a police sergeant, class 1 staff instructor, at the Metropolitan Police Motor Driving School Hendon I taught 999 driving, LGV, PCV, skid pan and high performance advanced pursuit driving. In 1991 I became a DSA PCV/LGV Delegated Driving Examiner and as an ADI I have never held a grade lower than 6.

I feel my experience of training to the very highest level on the public highway is far more relevant experience to judge steering method than Sir John's experience on a race track.

### A Million Plus Instructional Miles

During my twenty two years at Hendon I travelled over a **million** instructional miles, all over the country, by day and night, in all weather conditions. Driving and instructing in a selection of motor cars from V8 Rovers to the BMW M3. Under an Act of Parliament I have driven and trained at speeds of more than twice the National Speed Limit. The public road environment is far more hazardous than driving around a track where marshals are employed track side to wave yellow flags in the event of impending danger.

Yet during that time I never had a collision, never caused one, never left the road, never had a lock up or even activated the ABS. I repeat; a million miles of safe, collision free driving, much of it, well above the National Speed Limit. I owe that achievement to Roadcraft and pull-push method of steering.

### DSA – Roadcraft

The DSA driving technique is not that dissimilar to Roadcraft driving at speeds up to 70 MPH. Unless there is a commentary being given, and then the wording would give it away. A DSA Examiner would find it very difficult to recognise DSA or Roadcraft driving.

### Pull Push – Accurate & Very Safe.

During all my instructional life I have never found pull-push steering wanting in any way whatsoever, both on the public highway or on the skid pan. Sir John has said pull-push is potentially dangerous. Given the working environment that the emergency workers in particular endure, there is no evidence to suggest this to be the case.

### Hair Raising Moments

My steering experiences during 22 years of employment at Hendon are opposed to Sir John's view. I admit I did have a number of hair raising experiences travelling at high speed on slippery roads but only when a student deviated from the pull-push method. This often unsettled the balance of the car causing the student to stiffen, grip the wheel tighter and make the situation worse. I found pull-push to be far more accurate and a smoother action than hand over hand steering. It is often said 'if it looks right, it is right. Pull-push looks right. Hand over hand looks very awkward and clumsy.

### Sir John's Opportunity

In 1989-93 I was a member of the Home Office Working Party investigating driving techniques for possible changes to and entry into Roadcraft. We opened ourselves up to change and invited all driving experts to have their input.

To give an example: Mr K Bamford, a Physics School Master from a Yorkshire Grammar School wrote in and told us there

was no such thing as centrifugal force acting upon a car in a bend. We bowed to his better knowledge and changed Roadcraft. We invited Sir John Whitmore to Hendon to discuss his views on steering. We gave him the opportunity to convince us hand over hand was better than pull-push. We were open to suggestion, looking to make positive change where necessary, particularly if Sir John's theories were proven correct.

I spent the day with Sir John along with Mr Colin Urqhart the Chief Civilian Instructor at the time. We spent most of the morning discussing Roadcraft and steering. We then gave Sir John the opportunity to demonstrate his steering technique on the skid pan. All I am prepared to say is Sir John was unable to display his preferred method of steering to any advantage. The skid pan instructor using pull-push had far better control than Sir John. At the start of the day we were open to suggestion, by its end we were left unimpressed, in no way convinced, that hand over hand steering was better or the equal of pull-push. Sir John stated he had no issues with Roadcraft, other than those around steering concepts. His demonstration had only served us to differ.

#### Police Steering in the United States.

In 1986 I visited the Los Angeles Police Driver Training Facility, then situated at Pomona to compare police driver training methods. There, I met Sergeant William Smith Jr. Bill told me that due to a high number of police collisions, attributed to hand over hand steering The LAPD had, in 1971, implemented a change of steering method to what he called shuffle steering. It soon became apparent to me that shuffle steering was their name for our pull-push. This change of steering had reduced the number collisions significantly and as a result shuffle steering was implemented throughout California, including The Sheriffs Dept, Highway Patrol and State Troopers.

Bill has now retired from the LAPD and he now works for a company who train police officers in pursuit driving on a simulator. Bill writes pursuit scenarios and also travels throughout the whole of the U.S. training police drivers. I decided a few days ago to contact Bill to ask him what was happening now in the US with regards to pull-push or shuffle steering. Here is his reply.

'Hi Chris, LAPD was teaching shuffle steering when I took over the Unit in 1971. All academies in California (38+) teach shuffle steering. In my travels throughout the USA I find all police departments indicate they teach a shuffle or pull push as you call it. It is almost nationwide. We now realise how dangerous it is to cross hands on the steering wheel, even in an emergency'.

Bill also said he would be quite happy to travel to the UK to discuss steering with Sir John, at Sir John's expense of course.

### Conclusion

I believe I have proven the case for pull-push steering even without consideration to the air bag problem. I also believe there is overwhelming evidence from the US that at low speeds and even in non urgent situations, air bag deployment when the arms are over the Airbag Module Cover can have serious or even fatal consequences. I think the case for pull-push is even stronger than previously, but I am not surprised by that.

I additionally feel, given all this undeniable evidence, ADIs MUST always teach pull push steering, and never allow a pupil to steer hand over hand under any circumstances.

Consideration must also be given to implementing a change from 10-2 to a quarter to three (dependent upon the specific car's steering wheel configuration), thus preventing arms being positioned over the Air Bag Module Cover.

Under Health and Safety, an ADI can then never be accused of teaching unsafe steering practices and resulting injuries will be minimal if not wholly prevented.

Chris Gilbert.

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