An Associate's Guide

Revised v2020.06

This guide has been produced mainly for the benefit of Associate Members of Bristol Advanced Motorists and IAM RoadSmart but it can equally be an invaluable document for Observers. It is a compilation addressing the main problems which Associates have when preparing for the IAM RoadSmart Advanced Driver Test and has been compiled from the copious notes of guidance which the author has given to his Associates and Observers in the course of over 3500 hours of observing plus other training environments.

It has proven to be a valuable source of information about advanced driving but it is only a guide and therefore it cannot be used as defence in mitigation for driving offences (a request I have received on a small number of occasions). However, it does contain the nitty-gritty hands-on practical techniques not explained in sufficient detail in either the IAM RoadSmart Course Logbook or Roadcraft. It also includes useful phrases and sayings which, added together, form an important and integral part of the mnemonics used in practical advanced driving and commentary - latterly 'spoken thoughts'.

As a working document it is continually being updated with additions and amendments. If you have any questions about the advanced driving techniques contained in this document the author shall be very pleased to hear them and you can do this by clicking here.

Please feel free to copy or use this document if you feel it might assist.

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Accelerator Sense

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Have you noticed that drivers in lane 3 of motorways are continuously accelerating and then braking? It's usually because they fail to leave a sufficient 2 second gap to be able to employ 'accelerator sense'. Every show of their brake lights indicates a lack of this skilful control.

Often questionably referred to as 'acceleration' sense (we all know what acceleration means!), accelerator sense is the term we use to describe '…adjusting the speed of your vehicle to suit varying road and traffic conditions by accurate use of the accelerator so that the brakes are used less or not at all.' Accelerator sense requires that you have chosen the right position and gear for the particular hazard and that you use the accelerator pedal progressively both when going on the gas (squeeze) and coming off (ease).

This means that for exceptionally smooth control the accelerator pedal is used in the same way as you would with the first and third phases of braking (see *Feel-Firm-Feather*) i.e., feel in and feather off.

It is worth noting here that the skill of a driver can often be evidenced by the frequency of their braking i.e., the more a driver needs to use brakes to control speed, the less skilful they are at controlling their vehicle. Note how often you encounter a driver in front who is constantly applying brakes when following traffic - they are simply too close, often driving inside their natural reaction time.

This style of driving can often indicate that the driver is in the wrong gear (usually too high) for the particular situation, or has not left that vital two second gap and is therefore unable to control the speed of their vehicle without using brakes.

Drivers will often impulsively use the brake pedal when they want to slow down but an excellent skill to develop would be to analyse the information gained from *limit point analysis* and use it to make a direct cerebral connection to the accelerator pedal; adjusting the vehicle speed to suit varying road, traffic and weather conditions by accurate use of the accelerator pedal alone. This doesn't mean advanced drivers never use brakes to slow down - of course they do, but as with everything 'advanced' your actions should be the result of a well processed plan and that means using the system of car control.

Loss of speed is always greater when you decelerate in a low gear (and this applies equally to automatic gearboxes) so accelerator sense encourages you to be in the correct gear! When it town at 30mph that might be 3rd gear - or even 2nd. If you drive an automatic you will need to practice using both the automatic and manual functions of your gearbox so that you are thoroughly familiar with its capabilities.

By applying accelerator sense you will drive in the right position on the road, at the right speed and in the correct gear and in doing so you will have reduced brake pad and disc wear, your control of the vehicle will have improved immeasurably, the drive will be smoother and you will have managed the dynamics of the vehicle more efficiently.

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Accelerator Sense on Hills with Speed Limits…

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Using Accelerator sense to get down to a lower speed limit on the flat is one thing but on hills (both inclines and declines) it requires a slightly different approach.

Uphill/Incline

- When applying accelerator sense uphill you can maintain your current speed until slightly later than you would on the flat because you will use the incline to slow your inertia. However you will need to change down to a lower gear just above the speed limit so that by the time you have engaged the new lower gear, the incline will have brushed off the excess speed. Hills have differing gradients so only practice gets this technique right!

Downhill/Decline

- It is not always possible to apply accelerator sense downhill because gravity often wins the tussle but being in the correct gear will assist greatly and the general rule here is; *'descend a hill in the gear you would usually select to ascend it'*. However, if you do need to brush off more speed as you approach a lower speed limit (for instance, you may have selected 3rd gear but know you will need 2nd gear for a new 30mph limit) consider braking down to around 27-28mph before getting the 2nd gear because by the time you have engaged the new gear gravity will have brought you back up to 30mph.

If there is no one in proximity ahead of you, or approaching you, consider giving information to a following driver by using your main beam to highlight an approaching speed limit sign. The reflection thrown back from the sign will be on the same plane as the following driver so their attention will automatically be drawn to it and they will usually figure out why you are slowing. Beware though! This technique works in most lights, including dull daylight, but it's not very useful in very bright sun light…

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Accelerator Sense v Acceleration Sense

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Those familiar with Roadcraft and other advanced driving publications will know that the term 'Acceleration Sense' is used widely when referring to throttle control. 'Acceleration sense' can only be used when referring to a sense of quickening, hastening, hurrying, rushing or speeding up. It cannot be used in any other driving context.

Throughout this Associate's Guide I prefer to use the more correct 'Accelerator Sense' – the accelerator being the device, usually a foot pedal, which controls the fuel and air delivery to an engine and therefore the speed of a vehicle. It is Accelerator Sense which I prefer my team of Observers to use when guiding Associates towards their advanced driver test.

The term 'acceleration' in the context of ***"the ability to vary vehicle speed in response to changing road and traffic conditions by the accurate use of the accelerator"*** *(Roadcraft p64)* is erroneous and brings some degree of confusion, especially with Associates who have enough to confuse them already, whereas the 'Accelerator' is the thing to which we are all actually referring, i.e., *"… accurate use of the accelerator"*, not *'… accurate use of acceleration'*. Two entirely different things.

How could this solecism have occurred? Well, probably in the same way that Ordinance Survey some 20 years ago erroneously moved my small sheep farm, along with its postcode, a few hundred metres down the lane (just when satellite mapping was in its infancy) and every satnav provider looking for a base reference copied and followed suit. Now, for every satnav in the world we're still 'down the lane' today although I have at last managed to convince Google to put us back where the farm's been since the 1650s!

But old habits die hard - and who knows - in another few years my farm may get back to where it started!

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Accelerator Sense v Making Progress

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I was recently asked a question on how best to strike a balance between **making progress** and maximising use of **accelerator sense**:

"… say there's a long straight down which we are travelling at 60mph, and you're approaching a corner which will need to be taken at, say, 40mph. Is it best to keep going at 60 for longer and then brake to 40 before entering it, or should you lift off earlier and use accelerator sense so you arrive at the corner at 40mph? Could the latter be seen as 'avoiding using the brakes' or 'failing to make adequate progress"?

Firstly; be careful you don't mistake 'making progress' as the overall criterion upon which an Examiner would conduct the advanced driver test. Accurate application of 'The System of Car Control' will always be paramount and if things go wrong it will be because the System wasn't being employed correctly or in order.

Secondly; there are benefits in both techniques described, in that both are correct if the circumstance at that particular moment demand one over the other. Using accelerator sense shows skill in identifying and quantifying speed and distance as well as an understanding of your vehicle's parameters, whereas maintaining the drive for longer and braking later might show skill in the 'Feel Firm Feather' braking principle.

However, my enduring experience is that Associates almost invariably brake too late at a bend and so find the latter impossible to achieve without overlapping the braking stage with the gear stage and consequently with the steer stage as well. Remember; driving a car is one thing but controlling a car is an entirely new concept to many drivers – so suggesting that an Associate makes progress up to a hazard until the last moment, and then brakes smoothly using the 'feel in - firm on - feather off' principle before coming off the brake pedal completely and placing their foot over the accelerator to match the engine revs and thus sustaining a gear change - all before they steer, using the other entirely new concept of pull-push mirrored steering, cannot usually be achieved until they are some way through the Advanced Driver course - and more often, not until they are into FAD or even Observer Training!

The most important consideration as you approach a bend - at any speed - is the System of car control and being able to stop in the distance you can see to be clear. Concentrating hard to the exclusion of all else and making careful observations, then anticipating early on what is likely to happen next and planning how you intend to deal with whatever you anticipated.

*Running through the system at every hazard should invoke the thought *"at what point along this road will I need to get a gear appropriate for the speed I need to negotiate the bend?"*. The only sure way is to identify a point along the road where you intend to ***come off*** the brakes - even before you apply them, otherwise there can be no 'feathering off' or time to select the best gear before steering into the bend or turn.

In other words; first set your speed - then set your gear - and then steer. Three separate and simple actions which will change your driving for the better - for ever!

So; when approaching a bend, practice coming off the gas early enough to use accelerator sense and the principle (asterisked) above. Alternatively, if insufficient distance is available for accelerator sense (perhaps because you were late in your planning - or simply because you intended to make more progress on a series of bends) use FFF braking and the principle (asterisked) above.

The key point to remember and apply:

- Identify a point along the road where you intend to come off the brakes – even before you apply them. Drivers who fail to adopt this most basic of advanced driving principles habitually overlap their braking, their gear changing and their steering. Eradicating 'overlapping' really is that simple!

Those conversant with Roadcraft (and there are countless other publications) will know that the term used in that publication is 'Acceleration Sense'. This is an incorrect and confusing usage of the word! Acceleration sense can only be a sense of quickening, hastening, hurrying, rushing or speeding up. I prefer to use the more correct 'Accelerator Sense' which is the device, usually a foot pedal, which controls the fuel and air delivery to an engine and therefore controls the speed of a vehicle.

Acceleration Sense can only suggest a speeding-up and its usage induces some degree of confusion, especially with Associates who have enough to confuse them already - whereas 'Accelerator' is the thing to which we are actually referring, i.e., accurate use of the accelerator pedal; not 'accurate use of acceleration". Two entirely different things!

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Ancillary controls… (See also 'Shutdown Drill')

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This term is used to describe any controls which require no immediate attention from the driver. Broadly, these include anything that could wait until there are no hazards present before giving them attention or making adjustment. Specifically, they are everything apart from your steering wheel and brake pedal.

Usually, you will make sure that ancillary controls are switched off before starting or stopping the engine.

Examples of an ancillary include the following: radio, CD and tape player, heater, air vents, air conditioning, interior light, glove box, fog lights, clock, windows, sunroof, screen wash, windscreen wipers, cigarette lighter, head restraint adjustment, GPS systems, inboard 'gizmos', mirror adjustment and cruise control.

While on the road - even gear changes are ancillary! *'Get the gear when it's clear'.*

It is important that you categorise these ancillaries within your own vehicle and have a very clear understanding about the importance of maintaining total control at all times, especially whilst approaching and negotiating hazards. Most ancillaries demand that you take a hand from the steering wheel and thereby compromise safety and safety must never be compromised for any other advantage.

There are only two primary controls which require immediate attention in your vehicle:

- Steering wheel
- Brake pedal

REMEMBER: There has not yet been an ancillary control fitted to a vehicle which cannot wait until it is clear before giving it attention or making adjustment.

Next time you want to take your hands from the steering wheel to adjust any ancillary - wait until it is clear and ensure that no hazards are present.…

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Alertness, Anxiety and Anticipation

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"...expect the worst from others, come off best yourself"!

Alertness and anxiety are important factors when driving because your level of anxiety will govern your anticipation and invoke the question *"... What might I reasonably expect to happen here"*? See Roadcraft which states:

"Alertness depends on your level of anxiety and there is an optimum level of anxiety for any task. A small amount of anxiety arising from a sound understanding of the risks involved can help maintain alertness and readiness to respond. No anxiety at all dampens your responsiveness and decreases your speed of reaction. Too much anxiety can result in failure to process information and respond appropriately".

Anticipation, i.e. a constant analysis of what you might reasonably expect to happen as you drive along - be it along a single track lane when you are always expecting another vehicle to appear at each new bend or when you approach a speed camera and you anticipate the queue of vehicles ahead of you braking – is probably the most important sense of all!

Anticipation is the sense which gives us our 2 second rule and the one that makes planning possible. But remember; without concentration and observation in the first place there can be no anticipation and without anticipation there is no plan - only potential disaster!

If you always anticipate the worst from other drivers you will invariably come off the best yourself"!

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Brake Test - Rolling

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It's a good idea to say to the Examiner during the briefing *'I have driven the vehicle here so I know the brakes are working and the vehicle pulls up in a straight line - but would you like me to perform a moving brake test during the drive'?* The answer would generally be an emphatic No! But offering to demonstrate a RBT is usually evidence enough that an Associate knows and has practiced the routine. It would take a brave Associate to offer without having a thorough understanding of what is required and it would take an even braver Examiner to accept!

No-one in their right mind would consider a RBT unless the conditions are entirely suitable - so if the Examiner does take you up be absolutely certain that you have considered everything. Consider the SCLP principle, i.e., Safe, Convenient, Legal and Possible (try to remember the mnemonic 'scalp') before a RBT or other unusual technique; for instance, you will never be doing a RBT with a vehicle behind.

To be effective it should be done early on in the drive, probably within the first hundred metres; after which it might be pointless, but it follows that if you've just driven to the test venue you will most probably have used your brakes a couple of times already.

The reason for invoking a RBT early on in the drive is to ensure that the braking system and the seatbelts operate correctly although it should be noted that a seatbelt inertia check can be carried out when stationary as part of your cockpit drill by pulling very sharply on the chest strap of the belt.

What is checked during a RBT?

1. Under really heavy braking the seatbelt inertia system is brought into play - effectively 'locking' the seatbelt against the body (as in a collision) and preventing the body from making contact with the steering wheel, dashboard or windscreen.
2. Simultaneously, a check is made on the braking system itself to ensure the vehicle pulls up in a straight line indicating that the brake pads are contacting the discs with equal pressure on all four wheels. Any variation will result in the steering wheel pulling either to the left or right.

Firstly you should be able to reach a reasonable speed of say circa 30 mph so find a clear stretch of road and ensure that no vehicles are either following or approaching whilst conducting the test. It is generally inappropriate to try to perform this manoeuvre in car parks etc.

On observed drives, warn your passengers that you are about to carry out a RBT. Something on the following lines should adequately suffice;

"I'm now going to carry out moving brake test during which I will be applying the brakes very firmly. I shall count 'three - two - one - zero' and on the word ***'zero'*** *I shall carry out the test: -* ***are you ready?***

Check your mirrors and if it's clear apply the brakes very firmly, even to the point of invoking the ABS, (if you're really good you'll be using the 'feel-firm-feather' principle) but aim to keep moving and bring the speed down to about 5mph. Remember; you should not aim to come to a complete stop while performing this operation - you only need to brake sufficiently firmly and progressively to receive feedback from the brakes and the seatbelts so common sense should prevail.

N.B. It's probably best to perform the seatbelt inertia check described above as part of your cockpit drill before moving off because if you are unable to carry out the RBT early in your journey you can at least build in time for earlier braking for the first couple of hazards so that you are satisfied with the performance of the brakes.

See also: Static Brake Test & Cockpit Drill.

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Brake Test - Static

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Before starting the engine - check to see if you can stop the car!!!

A static brake check tests features which the moving/rolling brake check doesn't.

1. Before you start the engine:
    - Make sure the hand/parking brake is on and the vehicle is in Neutral.
    - Pump the footbrake pedal several times until it becomes firm (this removes the vacuum in the brake servo unit) then maintain the pressure on the footbrake. The pedal will become progressively harder to press - this is normal.
    - Maintain the footbrake pressure and….
2. Press the clutch pedal (this disengages the gear train and clutch weight from the starter motor and avoids excess drain on the battery - see vehicle handbook.) then start the engine.
    - Maintain the footbrake pressure and….
3. Servo Check:
    - Check that the footbrake pedal drops towards the floor - indicating that the brake vacuum servo system is functioning correctly. If it doesn't you either have a very, very old car - or there may be a leak in the servo unit or pipe*.
    - If the pedal keeps moving towards the floor there may be a hydraulic fluid leak. DON'T DRIVE THE VEHICLE until leaks are checked.
    - Maintain the footbrake pressure and now do the Hand/Parking Brake check….
4. Hand/Parking Brake
    - With footbrake pressure maintained - release the hand/parking brake and check that the corresponding lamp on the dashboard goes out. *If it stays on it may indicate that either the brake fluid level may be low or the brake pads may be worn. Re-apply the handbrake.

    *not applicable to all vehicles: check your vehicle handbook.

Brake Servo Unit

The brake servo is a unit placed between the brake pedal and the brakes. It is the flattish, round, frying pan shaped thing which sits under the bonnet, against the bulkhead, and is attached to the brake fluid reservoir in the bonnet and the brake pedal inside the cockpit.

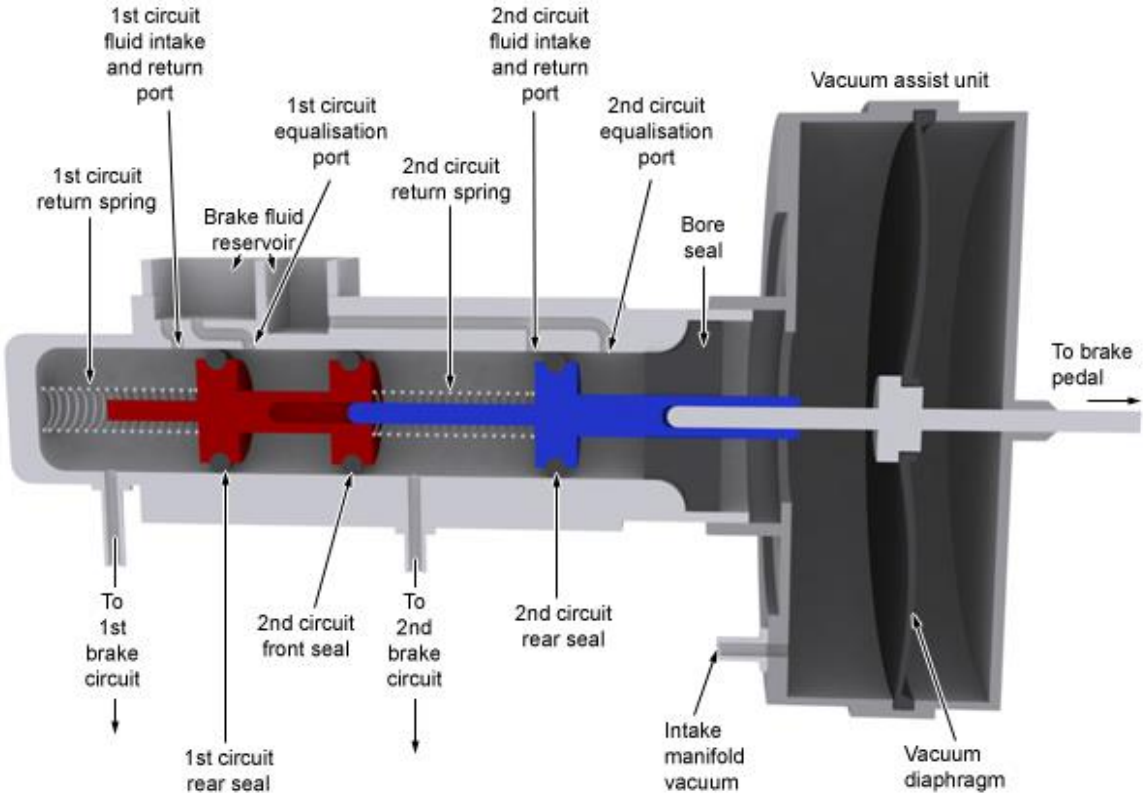
On petrol engines a pipe connects the servo to the fuel injector inlet manifold and when the engine is running air is sucked from the servo into the inlet manifold and thereafter into the engine, thus creating a vacuum in the servo unit. It is the power of this vacuum that is used to assist with braking. On diesel engines the principle is similar but instead of a pipe from the inlet manifold there is a separate vacuum pump.

The power of the vacuum and the size of the diaphragm within the servo combine so that with minimal foot force you can achieve very high pressures at the brakes themselves. Typically; a ratio of around 1 to 6 is achieved i.e., 1 kilo of foot pressure on the brake pedal will achieve around 6 kilos of brake pressure at the wheels.

On some models the servo is on the offside directly behind the brake pedal and on others (typically those vehicles designed for left hand drive markets) it is on the nearside and linked to the brake pedal by a connecting torsion rod.

So; by pumping the brake pedal before starting the engine you negate the vacuum in the brake servo unit; allowing air to get back in. In this state the brakes will work but you would need approximately 6 times the normal foot pressure to get them to work as efficiently.

Having done this, and by maintaining footbrake pressure when you start the engine, you can check that the brake pedal drops slightly thereby ensuring that the brake servo unit is functioning correctly.



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Braking: Feel – Firm – Feather (F.F.F.)

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A driver's skill can often be judged by the frequency with which they need to use their brakes.

Brake on the straights and steer on the bends and brake once for each hazard! If you find yourself braking twice for the same hazard it means that the first set of braking was inadequate and misjudged. If you find yourself braking on a bend it means you misread the limit point back in the planning stage before you invoked the system.

If braking is required then really excellent braking requires the driver to plan (before steering into a turn or bend) where they're going to come off the brakes even **before** they're applied - otherwise there can be no *'feathering off'* resulting in the bonnet lurching upward (along with the passengers) and overlapping of the brakes and gears stage of the system.

F F F

Use of the brake pedal should incorporate 3 separate phases which by careful planning and application meld into a single smooth action. This maintains stability by redistributing the vehicle weight gradually. Advanced drivers know these phases as Feel – Firm – Feather.

1. *Feel in*. At the beginning of braking apply the brake pedal just enough to take up the 'slack' and get the brake pads into contact with the discs.
2. *Firm on*. Use this middle stage to brush off all the unwanted speed. It doesn't matter how firmly of softly you apply the brake pressure in this second phase as long as you get the vehicle down to the required speed to negotiate the hazard before you move into the third phase. However, consideration should be given to the type of road surface, the prevailing weather conditions and where you plan to finish braking when judging how much pressure to apply in this second phase.
3. *Feather off*. Once you have brushed off the excess speed ease your foot back from the brake pedal in a similar but opposite way to phase 1 so that at the point where you stop or change to a lower gear there is little or no 'dipping' of the bonnet. If you're going to stop - this stage requires much practice!

One way to get these phases incorporated within the *System of Car Control* before a turn (and before you reach for the gear lever) is to imagine your turning or bend is 5m or so before your actual target. By adopting the "...5 metres before target" principle you are giving yourself more time to '*feather off*' the brakes and to select the appropriate gear following the braking stage.

If you find yourself using the brakes whilst negotiating bendy sections of road or you end up braking on a bend or you have to brake twice for the same hazard you are probably at the wrong speed and in the wrong gear! If you find yourself still braking whilst you are also changing gear (known as '*overlapping*') then you have left the speed stage too late in the approach to the hazard and need to try again! However, if brake/gear overlap is used it must be part of a planned approach that is the most appropriate for the circumstances, e.g. a left turn down a hill.

Braking, accelerating and steering all invoke strong dynamic forces within the vehicle so by applying this progressive use of brake pressure (F.F.F.) you smooth out the weight transferences thereby managing the dynamics more efficiently, you increase the overall stability of your vehicle and at the same time you will have improved your overall control.

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Camber and Superelevation … (Acknowledgments to Roadcraft)

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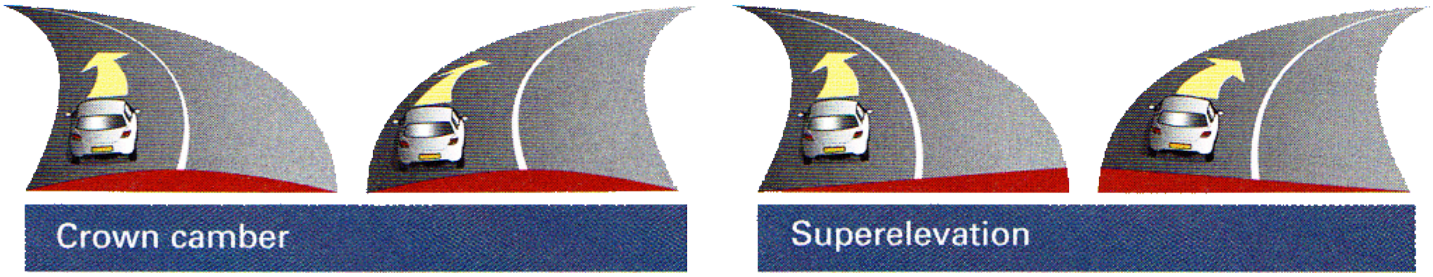

The road surface is not normally level across its width but is built with a slope to assist drainage. The slope across the road will affect your steering. The normal slope falls from the crown (middle) of the road to the left edges and is called camber.

- On a left hand bend camber **increases** the effect on your steering because the road slopes down in the direction of the turn.
- On a right hand bend camber **reduces** the effect of steering because the road slopes away from the direction of turn.

There are many instances, especially at junctions, where the slope across the road surface is at an unexpected angle. Whatever the slope, if it falls in the direction of your turn i.e., it falls from the crown to the left kerb and your turn is left, it will increase the effect of your steering. If it rises in the direction of your turn i.e., it rises from the kerb to the crown and your turn is right, it will reduce the effect of your steering.

You will need to consider the direction of the slope at an early stage in the System of Car Control when deciding on the most appropriate speed for a bend.

Super elevation is where the whole width of the road is banked up towards the outer edge of the bend, making the slope favourable for cornering in both directions.

Camber and super-elevation play major roles in both instability and stability of a vehicle when cornering and so it's important to identify at an early stage what sort of surface you are dealing with and be prepared to run the System again. …

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Centre Lines

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The DfT Traffic Signs Manual - Road Markings - Chapter 5 - 4.6 states;

'On rural roads below 5.5 m in width, overrunning of the carriageway edge can occur if centre line markings are provided, causing maintenance problems. Drivers might also expect a road marked with a centre line to be wide enough for opposing lanes of traffic to pass. In these circumstances the centre line should be omitted, but it would be helpful if edge of carriageway markings are then used'.

From the above, amongst other things, one should reasonably deduce that white centre lines denote that a carriageway lane is at least 2.75m wide - however this might not always be the case! Many authorities disregard the general rule by marking narrower roads with centre lines and this can lead to the *informed* driver being put in the lurch when their otherwise exemplary driving is dependent, amongst other things, upon intelligent signage!

Careful and early observation will generally assist in assessing carriageway width and drivers should avoid crossing the centre lines unless there is a good reason such as; increasing your safety margin from a cyclist or children on the pavement or gaining information for safety or overtaking.

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Clutch Pedal

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Do you know if the clutch on your vehicle is operated through cable or hydraulics? According to vehicle rescue services a good number of breakdowns occur because of clutch cable failures.

There are times when you might find your clutch pedal has been depressed for too long when stationary - for instance at traffic lights or at a junction - so you need to anticipate and plan to determine whether it's going to be a *short stop* (generally less than 10 seconds - when it's 'gear before handbrake') or a long one (select 'handbrake then neutral').

The power in the clutch springs is enormous; sufficient to lift a substantial share of the vehicle's weight, but this enormous force is masked by the leverage available firstly via the clutch pedal then through either cable or the hydraulic mechanism.

Generally it's best keep not keep the clutch depressed for more than about 10 seconds. This is because of the wear it induces on the clutch cable and the clutch thrust bearing. For the same reason, resting your foot on the clutch pedal whilst driving is also bad practice.

Don't worry if you have planned a short stop, at traffic lights for instance, only to find that it has developed into a long one; just move the gear lever to neutral. That's it - job done!

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C O A P

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This Crucial Quartet is an amalgam of:

- all the observations you make during the information stage of the System of Car Control (1 to 3) and
- your resulting driving plan (4).

1. Concentration
2. Observation
3. Anticipation
4. Planning

It's this blend of driving skills which forms the basis upon which all your physical driving responses are dependent:

Develop your concentration when driving to the exclusion of anything unrelated. Turn off the radio - ignore the phone - stop admiring yourself in the mirror - and concentrate.

Very soon you will find that concentration is the key which opens the box containing all that follows. Your observations will increase and you will begin to develop an acute anticipation of things which are likely to happen. Only when you reach this point in this crucial quartet will you be able to plan what you might need to do about each hazard.

Standard and inexperienced drivers rarely think about this but without concentration you cannot observe. Without observation you cannot anticipate. Without early anticipation you cannot plan. Without the tools to plan there is the potential for disaster.

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Coasting in Neutral: The Myth

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I'm including this article following an observed drive with a young driver late last year who has been taught to drive by her father.

Just as we were preparing to go down a hill she selected neutral in readiness to 'coast' down it! It turned out that her father's advice was to "always coast in neutral when going downhill or when you're approaching something which will eventually make you stop such as traffic lights and pedestrian crossings …. that way you'll save fuel"!

Now; that would have worked with carburettors back in the days of old when knights were bold and fuel injectors weren't invented - but it doesn't hold water with a modern engine manufactured post-1995, most of which will be fitted with fuel injectors.
Believing you will save fuel by coasting in neutral or with the clutch disengaged in any situation is a complete myth in a modern car - and it comes with potential dangers!

Keeping the engine of a modern car running and in gear when descending a hill (assuming your foot is off the accelerator pedal) will automatically shut the fuel supply to zero which means that absolutely no fuel will be delivered to the engine - whereas coasting with the car in neutral will actually use fuel in order to keep the engine ticking over.

So, drivers of a certain era - be careful; if you teach or adopt the practice of selecting neutral when travelling downhill (or indeed whenever the vehicle is moving) and your engine cuts out, you will immediately lose power steering control and your servo assisted brakes.

Just as an added deterrent; you would fail the IAM RoadSmart and RoSPA Advanced Driving Test if you select neutral to travel downhill.

So, as they say, - don't try this at home!!

Cockpit Drill Definition

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Every control and ancillary fitted to your vehicle has a purpose. Therefore you ought to know they are functioning before you take control of that vehicle on the open road.

Cockpit Drill is the term used by advanced motorists to define a set of preliminary checks which will ensure that the primary vehicle controls and *ancillaries* are functioning correctly. The drill takes a while to become familiar but once inculcated it can be completed in a matter of seconds.

Really skilful drivers will run through this comprehensive safety check each time they enter their vehicle as a precaution against component or instrument failure en-route. They will do this even if they are returning to their vehicle after just a few minutes parking and have already carried out the drill earlier in the day although in this instance drill numbers 4, 5 and all except *'damage'* in the *P O W D E R Y* check may be omitted.

Schedule a P O W D E R Y check and carry it out regularly.

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Cockpit Drill in practice

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This drill should be implemented each time you enter the vehicle but before you start the engine.

1. First check that the handbrake is on. Keep pressure on the footbrake for a few seconds. If you feel it sinking to the floor pan there is a master cylinder seal malfunction or hydraulic fluid leak. Do not drive the vehicle.
2. Do a mental *P O W D E R Y* check. (Petrol - Oil - Water - Damage - Electrics - Rubber - Yourself).
3. Tell passengers how to open doors and windows to get out in an emergency.
4. Put on seatbelts (include your passengers) and test that the seatbelt inertia systems are working by pulling them sharply away from the side pillar. Important: When putting on a seat belt the lower loop should be well down over the hips and NOT over the stomach.
5. Confirm that your seating and steering wheel position are such that;
    i. When your arms are resting over the steering wheel it bisects an area between your wrist and palm.
    ii. Your legs can push the clutch pedal to the floor and still leave some bend at the knee.
    iii. The top of the head restraint is at least level with your eyes and if possible level with top of the head.
6. Check mirrors:
    i. Adjust rear view mirror for maximum rear window view.
    ii. Adjust side mirrors to include only 5% to 10% of the car.
7. Looking in the side mirrors check that all doors are closed.
8. Check that you know where all the ancillaries are, that they work and are all in the off position.
9. Check that the gearbox is in neutral by selecting 3rd and then 4th and then return to the neutral position. This principle will guard against false neutrals which ageing gearboxes often present when *'wobbling'* the gear lever sideways.
10. Don't start the engine yet - but turn the ignition key to the first position and;
    i. Check that all the warning lamps you expected to come on are working. A number of systems will self-check and their lamps will go out.
    ii. Check that there is sufficient fuel for the journey.
11. Whilst maintaining footbrake pressure check that the multi-purpose brake pad wear indicator warning lamp goes out when you release the handbrake. *If it stays on it may indicate that the brake fluid level may be low or the brake pads may be worn. Re-apply the handbrake.

    *not applicable to all vehicles: check your vehicle handbook
12. Pump the footbrake pedal a few times until it becomes firm (this removes the vacuum in the brake servo unit) and maintain the footbrake pressure (see 13 i) whilst you;
13. Depress the clutch pedal (this disengages the gear train and clutch weight from the starter motor and avoids excess drain on the battery - see vehicle handbook.) then with one hand on the steering wheel start the engine. Now:
    i. Check that the footbrake pedal drops towards the floor - indicating that the brake vacuum servo system is functioning correctly.
    ii. Check that all normal warning lamps go out. Note that *primary* lamps are red; *secondary* lamps are amber; *information* lamps are green/blue. (P.S.I.)
14. Release the clutch pedal if you are intending to wait - or select the gear and (after effective all round observations) move off.

NB. This is a general guide to cockpit drill which will satisfy the requirements of the vast majority of modern vehicles. However, for the very small minority the order of the drill may need some minor adjustment to suit your vehicle's specification. If you are unsure of anything in this guide you should seek the advice of your Observer.

Examiners will want to know that Associates are familiar and practiced in Pre-drive checks (PDCs)- POWDERY, Cockpit Drill (CPD) and Shutdown Drills (SDD) - but they may not require them all (except perhaps a SDD) on test day.

Examiners have a limited time to conduct the test and would prefer to make a judgement based mainly on driving skill in 'live' situations. However, in the event that the Examiner asks for or expects PDCs and the Associate can't do them, it may in certain instances influence the test!

Observers should ensure that Associates do PDCs on every observed drive and finish each with a SDD, and on the day of their test the Associate would be advised to offer PDCs and be ready to do them if the offer is accepted.

Usually I would advise the offer to go along the lines of; "I've driven the vehicle here so I know the brakes (etc.) are working and that everything is functioning correctly – but if you would like me to do full PDCs I will". That will usually get

a tick in the box and a polite 'No' from the Examiner but it tells the Examiner that the Associate is versed in the procedure.

Equally, and crucially, the Associate must be prepared, no matter how hard they've worked at perfecting their cockpit drills, for the disappointment of foregoing them if the Examiner so decides.

I always explain this last point to my Associates during their preparation and I advise all Observers to follow suit - no matter to which Group they are attached.

No matter what - PDCs and a SDD are good disciplines!!

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Commentary ...Adapted from the old IAM Observer Training Manual p10 (8.1) with additions by this author.

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Alertness and a good flowing commentary are strong pivotal points to good driving because together they force you to make acute observations which lead to anxious anticipation and accurate planning.

However, do not think that you have to cram the universe into your commentary; it is certainly not expected at today's standards and will generally not be appreciated. Commentary at bullet speed is often unintelligible and unhelpful to the listener and the technique is now a little anachronistic.

> Note: If you can, practice commentary by taking a pocket recorder in the car with you! Your mobile phone will probably have its own built in voice recorder. Plan a short 10 minute route and familiarise yourself with it so that when you play back the recording you can cross refer your commentary to your position and the various hazards en-route. This is a great way to analyse commentary and it gives you the opportunity to be critical about what you included and what you missed out! Start with a short route and gradually extend it.

Underpin your commentary with the 5 phases of the system of car control and remember; when scanning for information start at the farthest point along the road (start with something like; "looking in the distance I can see..." or "scanning forward there is a..."). Think of the analogy of the trawler net; i.e. throw the net out to the limit point, (*"...the farthest point along a road to which you have an uninterrupted view of the road surface")* and trawl the information back through the mid ground, to the foreground - then the sides and rear, analysing what you have discovered before **checking your mirrors** again and throwing the net out again. Do this repeatedly throughout the drive.

Gradually, your content will increase and you can begin to filter the chaff from the actual and potential dangers.

Do not expect information to just come to you – because a whole load of it won't! You have to actively prise it out from every nook and cranny by continuous scanning.

Deal with each hazard as a 'moving part' of the commentary but don't dwell on past events. What's missed is history! Bring yourself back to the next hazard with a lead something like; ***'...so, mirror check and scanning forward'*** - this is always good lead-in which ends one chapter and succinctly begins another. Anything similar will do just as well; for instance 'Looking ahead…' or 'Along the road I can see…' etc., but it's good to start and end each hazard as a separate 'paragraph' rather than jumbling everything up in a rush.

So; commentary is simply a verbal amalgam of the following 3 consecutive points: -

- "What can – or can't - I see?" **O** B S E R V A T I O N
- "What might I reasonably expect to happen?" **A** N T I C I P A T I O N
- "What might I need to do about it?" ***P** L A N N I N G

Although commentary is a skill which is no longer mandatory for the IAM RoadSmart test it really is an excellent discipline and it also forms a mandatory part of the Further Advanced Driving (FAD) test in addition to the various levels of Observer tests which follow – including Masters. It is also a skill that can be used by any driver as an aid to the development of concentration, observation, anticipation and planning. The ability to use commentary can be of great use when demonstrating the benefits of advanced driving to others because it illuminates the driver's thought processes. It demonstrates the knowledge you possess as well as your level of concentration and it highlights the observations, including observation links, you use whilst driving.

Commentary can be introduced to a 'non advanced' driver by firstly asking them to read out all the road signs they see and then moving on to identify hazards and gradually adding more to the commentary.

Good demonstration commentary begins before the drive with a POWDERY check and thorough cockpit drill followed by a synopsis of the car and its features plus road and weather conditions. For a really good demonstration this moves on to a brief description and purpose of the system of car control and takes place before moving off.

There are four levels of commentary in demonstration drives: -

1. Associate to Observer/Examiner
2. Observer to Associate (Pitched close to 'Public demonstration' but at a more explanatory level)
3. Public demonstration by Observer (An intermediate and less explanatory level)
4. Observer to Observer and FAD level (Ultimate demonstration of commentary skill used by drivers already having good knowledge of Advanced Driving techniques)

1. Associate to Observer/Examiner

Not too complex or indeed too comprehensive, this level will need to be developed further over the advanced driver course duration and initially would be along the lines of:

> *"**Scanning forward** on the left I can some children at the bus stop. So; checking mirrors; one car behind - no oncoming but junction up on the right. I need to move out so checking mirrors again but no need to signal as could*

be misinterpreted as an intention to turn right. Moving out gradually to give the following driver a clear picture of what I'm doing; considering a horn warning – not required as I have eye contact with children. ***I'm positioning*** *over the centre white line to increase my safety gap so I'm able to maintain my* ***speed*** *and* ***gear****; still no horn required. Still holding position and speed as I negotiate the hazard - checking mirror and nearside mirror before returning to safety position in the centre of the lane and scanning forward".*

2. Observer to Associate

This is a first introduction to a new Associate and *'invites'* them to join in with your observations. It is aimed at explaining in detail, and showing in action, how advanced driving techniques are used. It is used to 'bring to life' all of the theories explained in the classroom and to clarify to Associate Members how we wish them to employ their skills. This level would be along the lines of:

*"****If you look ahead*** *in the distance on the left you'll see some children at the bus stop.* ***Watch carefully*** *as I make my approach and begin to deal with the hazard at an early stage. I intend to move away from the bus stop so;* ***see how*** *I'm checking my mirror and offside mirror for other vehicles before moving out. There's a car behind but no oncoming traffic and there are no dangers from other pedestrians* ***but look up the road; can you see a junction up there on the right?*** *I'll need to build that into my driving plan. I'm checking my mirror and offside mirror again* ***but notice*** *there's no need to give a signal to move out and anyway the following driver would misinterpret a signal as an intention to turn right into that junction.* ***Notice*** *I'm starting my manoeuvre early and intending to move out gradually to give the following driver a clear picture of what I'm doing. I'm considering a horn warning to gain attention – but it's not required as I have eye contact with both children.* ***Look how*** *I'm positioning over the centre line to increase my safety gap. I'm still aware of the junction up on the right but I'm able to maintain my speed and gear.* ***So; you'll see that everything's considered and sorted out before the hazard!*** *I'm still holding my position and speed as I negotiate the hazard in this gear - checking my mirror and nearside mirror before making a gradual return to the safety position in the centre of the lane and scanning forward".*

The extra time taken to deliver this longer explanation, the slower rate of delivery and the clear invitation to the Associate to join in with the observations, means that the commentary on this particular manoeuvre would have been started very much earlier so that, perhaps, some other more minor hazard or piece of information may have been deliberately left out of the commentary.

3. Observer to Observer and FAD

This type of commentary is a quite a step-up from all the above and is not required from Associates. It is a constant high output level with no explanation of the techniques being employed and assuming that the 'audience' is familiar with advanced driving discipline and language. The commentary is brisk, attempting to cover the maximum number of observations, observation links and the actions being addressed. A high level of phrasing is used employing 'short-cut' phrases which can be equated to the familiar advanced commentary techniques employed by trained Police Advanced Response Drivers. This would be along the lines of:

*"****CHILDREN AHEAD****; mirrors, vehicle close behind; no oncoming traffic; junction on the right; mirrors, signal not required; horn not required;* ***POSITIONING*** *over centre white line; maintaining* ***SPEED*** *and* ***GEAR****; still no horn; maintain position and speed; mirrors; return to safety and scanning forward".*
(Note that in all examples above the first four stages of the System of Car Control are all in bold **= IPSG**.)

Remember; these observations build up into a *Driving Plan* and the explanation of each manoeuvre should stand out clearly and not just run together with preceding or succeeding pieces of commentary. Talk about things which unfold ahead and don't dwell on those which have passed by you, what's missed is history - and remember at all times and at whichever level you are in advanced driving to consider;

- What can I see all around and up to the limit point?
- What can't I see (but might reasonably expect to happen) which is likely to influence my actions?
- What actions do I need to take in order to "*…approach and negotiate the hazard in a way that is safe, systematic and leaves nothing to chance"* **and this is the point where the phases of the System of Car Control come in**.

Your job with commentary is to show that you use a systematic approach to your driving and that you can concentrate wholly on the task in hand. So; start thinking ahead and make the maximum use of the observation links as they unfold and present themselves to you but prise out all the information you can get from every situation.

"...information doesn't just come to you – you have to prise it out from every nook and cranny" ■ GKB 2019

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Cornering & Vehicle Dynamics

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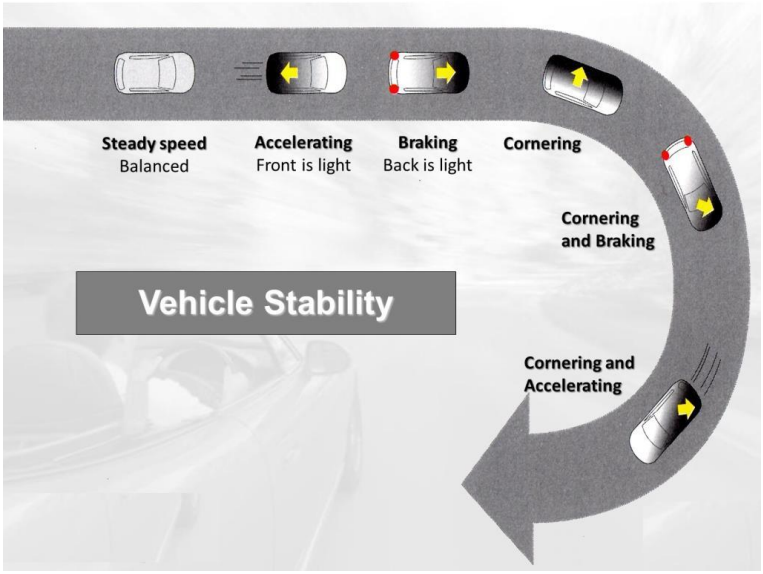
When positioning for cornering three factors should be considered.

1. Safety = Staying alive!
2. View = Information needs
3. Stability = Reducing the tightness of the bend

Various forces are brought into play when accelerating, braking and cornering and maximum stability is achieved only when a vehicle is travelling in a straight line and is neither accelerating nor braking.

The three forces inherently make the vehicle unstable for the following reasons;

1. Accelerating pushes most of the weight to the back of the car and over the rear wheels. This is why the accelerator pedal should be used with extra care when pulling away up a hill. In this instance even more weight is transferred to the back, steering becomes light and the front wheels are more likely to spin.
2. Braking pushes the weight to the front making the rear lighter. Under firm braking the steering becomes heavy and the rear tyres are more likely to lose their grip and break away.
3. Cornering produces a host of varying unstable diagonal forces on a vehicle. A look at how rally cars tend to slide when cornering gives some idea of the complex dynamics taking place. Braking and cornering together complicates these forces even more as one front wheel most of the weight whilst the opposite rear wheel loses contact altogether.



Counteract these forces by planning well ahead and using the accelerator in bends - just sufficient to maintain the speed. This has the effect of redistributing the weight and placing more of it over the rear wheels where you need it. Almost perversely; for all the above reasons, if you make a mistake by entering a bend too fast it is often better to use the accelerator to shift the weight on the rear of the vehicle down into the tarmac than to brake and lose grip at the back.

So, having taken up the correct position when approaching a bend, first get the speed for the hazard, then get the gear for the speed, then steer. Remember; SPEED-GEAR-STEER in that order! Brake on the straights – steer on the bends.

Camber and superelevation play major roles in instability of a vehicle when cornering and so it's important to identify at the 'information' stage of the system the sort of surface you are dealing with and be prepared to run the System again.

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Crossings: Pedestrian Crossings.

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Did you know - there are at least 7 types of pedestrian crossing going from the earliest zebra to the latest 'intelligent' versions? However, not all crossing types are mentioned in the Highway Code!

1. Zebra Crossing
    a. Possibly the most easily recognisable of all pedestrian crossings, these have flashing yellow beacons on each side of the road situated on poles painted with alternating black and white segments emulating the painted road crossing markings. The beacons are named after Lord Hore-Belisha – the then Minister of Transport who introduced them in 1934 following a record number of road casualties in the UK, with 7,343 deaths and 231,603 injuries being recorded.
        i. There are no traffic lights or button controls.
        ii. Once a pedestrian has placed one foot on the crossing below the kerb, drivers must give way and stop.
        iii. Drivers are not permitted to proceed until pedestrians have crossed completely and have reached and stepped onto the opposite kerb.
2. School Crossing – Lollipop
    a. Drivers are legally obliged to obey school crossing patrols as part of the Road Traffic Act 1988. Anyone disobeying signals and signs by patrols could face a fine of up to £1,000 and three penalty points on their licence.
3. Pelican (Pedestrian Light Controlled Crossing) Pe-Li-Can
    a. These are signal-controlled crossings where flashing amber follows the red 'Stop' light.
        i. You MUST stop when the red light shows.
        ii. When the amber light is flashing, you MUST give way to any pedestrians already on the crossing.
        iii. If the amber light is flashing and there are no pedestrians on the crossing, you may proceed with caution.
4. Puffin (Pedestrian User-Friendly Intelligent crossings) P-U-Ff-In
    a. The most 'intelligent' of all pedestrian crossings in Great Britain these lights have no flashing amber phase, so the lights act and change just like a normal traffic light at a junction.
        i. Infra-red cameras similar to those used to find trapped earthquake victims are used on these crossings.
        ii. The cameras extend the red light time so elderly or disabled people aren't at risk from oncoming traffic.
        iii. This system also uses heat sensors to tell if pedestrians are waiting on the pavement
        iv. It reduces delays to drivers and improves crossing conditions by automatically varying the crossing times.
5. Toucan (Two-Can Cross)
    a. In addition to pedestrians, cyclists are permitted to ride across the road.
        i. The lights have no flashing amber phase, so the lights just change like a normal traffic light at a junction.
6. Pegasus
    a. The crossing works in the same way as ordinary traffic lights.
        i. For riders there is a high level push button to operate the crossing.
        ii. Because this is placed on the traffic-light support, the horse has to be close to the road in order for the button to be pressed.
7. Pedestrian Refuges
    a. These crossings are rarely seen by drivers but they are numerous and usually found on dual carriageways where a zebra crossing either can't be constructed or if it were would be too dangerous due to the volume and speed of traffic.
    b. They are more usually found where a long-established public footpath has been interrupted by the construction of new dual carriageways.
        i. Pedestrians cross one half of the road to a refuge place in the middle to wait to cross the other half. Drivers have priority at these crossing points.

There are others, some short-term and temporary e.g., as deviations for road works plus one or two which are specific and permanent such as the set of lights near Keynsham for cattle crossing..

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Eye Contact and SMIDSY…

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I was just putting together the presentation for our next Further Advanced Driving course and I have come to the bit which deals with memory. Now, this is an area which has consumed huge amounts of philosophical and psychological research (and probably a few other 'icals' to boot) and it's even covered in Roadcraft so I'm certainly not qualified to add to that elevated debate but the little I have read has stood me in good stead over the years where driving is concerned and having conducted over 3500 hours of advanced driver training I am convinced that my understanding of the value of eye contact in driving is paramount in certain situations.

We understand from the police advanced drivers manual Roadcraft that memory has three stages; the first of which is 'Working Memory' where around 4 items can be stored at any one time before being progressively discarded to make way for new information. 'Short Term Memory' is where limited amounts of useful information are stored before either being discarded or passed up another level to 'Long Term Memory', where large amounts of important information can be stored for a long time.

This article concerns the first stage; Working Memory and a specific part of driving i.e., drivers waiting to turn right at side turnings - because the problem with working memory is that in complex situations, as new information comes in, it discards 'old' information to make room for new (remember, it can only hold around 4 items?), sometimes before it has even had time to process some of the old!

Now, you're asking 'what's all this to do with eye contact'? Well; as I say to my Associates; 'Eye contact gained - is worth a million dollars'!

"Eye contact gained - is worth a million dollars"!
Eye contact with another driver is critical if they are waiting to pull out onto your road from a side road or crossroads because once eye contact is gained and maintained your safe approach and negotiation of that particular hazard, although not entirely guaranteed, is that much surer.

"Eye contact gained then lost - is a potential disaster"!
Here's the problem; 'Eye contact gained then lost - is a potential disaster'! Be particularly attentive of the other driver who, having first seen you, takes their eye off you to look in the opposite direction (usually categorised under 'Failed to look properly' in police crash stats). Now, if traffic is coming from the opposite direction they are unlikely to pull out in front of you unless the space is large enough for them to do so - but if it's clear in the opposite direction and this 'new' information nudges out 'older' items in the working memory, they may well forget that they have seen you in the first place and pull out into your path!

These aptly named 'T-bone' crashes account for one of the largest fatal crash statistics which involve not only car drivers but also dispatch a disgraceful number of motorcyclists – SMIDSY = "Sorry mate, I didn't see you".

What can you do about this?
Firstly; call me old-fashioned but if you're the driver emerging from the side road, look right - look left - look right again before you move! Concentration and alertness are strong factors in advanced driving because together they force acute observations which lead to anticipation and accurate planning.

But if you're the driver (or especially the rider) approaching the junction, particularly in built up areas, be especially attentive to the vehicle which approaches your road from a side turning. In this situation you should be asking yourself '... what might I reasonably expect to happen here' because it will compel you to form a new driving plan and if sufficient light allows, seek eye contact from the other driver as a part of the system of car control.

I repeat: If they maintain eye contact then your safe approach and negotiation of the hazard is that much surer - but beware; if that eye contact is then lost – and there is no traffic coming from the opposite direction, they may well pull out in front of you! Worse still; if a second car is also waiting to pull out – they almost invariably blindly follow the first!

So, when you approach a vehicle waiting to pull out at a road junction or crossroads, be ready! Consider your road position and speed, maybe even cover the brake pedal and, if the driver looks the other way, think about a good longish audible horn warning to make sure you regain their attention - always followed of course by a friendly acknowledgment and a smile - this invariably defuses difficult situations - and they'll probably spend the rest of the day thinking they should've known you - but more importantly, you took control and gave yourself time and space to react.…

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Danger: Actual & Potential (From a paper by Andy Poulton: IAM ex Staff Examiner)

See also: Hazards

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POTENTIAL DANGER: EARLY GEAR SELECTION
Potential danger is where road sense and common sense suggest that certain safety precautions are taken before entering the DANGER area.

In this instance you will have anticipated the danger based on what you can see and what you can't see but are reasonably expecting to see - so the gear selection would fall in the usual run of the system of car control.

ACTUAL DANGER: DELAYED GEAR SELECTION
Actual danger is where the law, the rule of the road or unanticipated event places the onus upon the driver to make sure it is safe before continuing. It may be something which challenges your normal expectation and anticipation and which happens between your position on the road and your overall stopping distance.

In this instance you would defer to the two primary controls; the steering wheel and the brake pedal, and delay the gear selection until the danger has passed.

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Flashing Headlights

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Here are some of the reasons driver's flash headlights at each other – but only one of them is correct!

INFORMATION

This one: I am here – see me!

LIGHTS!

1. Your main beam is dazzling me!
2. Your lights are not on and it's getting dark!
3. One of your lights is out!
4. You've left your rear fog lights on!
5. Your brake light is stuck on!
6. You've left your indicators flashing!

GREETINGS etc

7. Hello friend or family!
8. Hi! We've got the same vehicle!
9. We work for the same haulage/bus company!
10. Hello fellow motor homer

AGGRESSION

11. Don't pull out of that junction!
12. (To an oncoming driver) Don't you dare turn in front of me – I'm coming through!
13. (To an oncoming driver) Don't you dare go first!
14. Get a move on - can't you drive any faster?
15. Get a move on - the lights have changed!
16. You stupid *****!!
17. I don't like the way you're driving!
18. Stupid git – overtaking on the Queen's highway!
19. That's a stupid place to overtake!
20. Move over!
21. Use you indicators!
22. Get off your mobile phone!

COURTESY MISPLACED

23. There's a speed camera ahead of you!
24. The police are stopping drivers ahead of you!
25. There's a census ahead of you!
26. There's a crash ahead of you – slow down!
27. You go first!
28. Yes! I'm letting you out of the junction!
29. Yes! Pull round that parked vehicle!
30. It's safe to pull back in now! (Lorry driver)
31. One of your tyres is flat!
32. There's something hanging under your vehicle!
33. Thank you!
34. Etc. etc.

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CHARACTERISTICS OF AUTOMATIC GEARBOXES

Left in the 'D' position, the one distinguishing but woeful characteristic presented by the majority of automatic gearboxes is their failure to put you in the most appropriate gear in the most appropriate time - automatically.

Left to their own devices in the 'D' position they are inclined to change up when going downhill, endlessly 'hunt' when going uphill or change up or down through bends as they seek a compromise.

However, when left in 'D', their supreme attribute is their ability to automatically clutch and de-clutch.

Every model of every manufacturer has its own characteristic. For IAM Observers before your first run in an Automatic, read the manufacturer's manual with the Associate for exact agreement and understanding on the finer points of that gearbox.

GEARS

The range of gears to choose from depends on the make of the vehicle but could be covered by the following;

- **P** Park: This mechanically locks the transmission. It should only be selected when the vehicle is stationary.
- **R** Reverse: To drive the vehicle backwards. Please note the reversing lights are illuminated when gear lever passes through this position.
- **N** Neutral: This disengages the drive from the transmission.
- **D** Drive: The engine is engaged with the transmission to provide automatic selection of all available forward gears.
- **L** Low or Lock, e.g.;
- **4** Automatic use of 1st, 2nd, 3rd and 4th gears.
- **3** Automatic use of 1st, 2nd and 3rd gears (or hold 3rd)
- **2** Automatic use of 1st and 2nd gears (or hold 2nd)
- **1** Automatically restricted to 1st gear only (1st gear hold)

  - **E** - Economy: Holds on to higher gears longer
  - **S** - Sport: Holds on to lower gears longer
  - **W** * - Moving off when slippery. (In a higher gear)

  } Refer to Owner's Manual

WHEN STATIONARY

When stopped, with the handbrake in the off position and with a drive gear engaged, there will be a tendency for the vehicle to creep forward. The amount of creep will depend on the particular gearbox design. It will also vary with the engine idle and choke settings. This is noticeable, for example, just after starting when the automatic choke is in operation.

ACCELERATOR SPEED CONTROL

Because of the direct drive automatics have, acceleration should be applied smoothly otherwise wheel slip and stability could possibly be affected. It should be remembered that automatics are not as controllable as manual gearbox vehicles when using engine braking; therefore the driver needs to rely much more upon better planning.

KICK DOWN (To give rapid acceleration).

This is the depression of the accelerator pedal to its full extent in one sharp movement causing a quick change down to the next lower gear. Easing off the pressure on the accelerator pedal causes the gearbox to move back to a higher gear.

AUTOMATIC'S APPLICATION

The advice given here is unique for automatics. If not specifically stated otherwise, methods for manual vehicles apply.

COCKPIT DRILL

Carry out a cockpit drill as specified for a gearshift vehicle; with the following exceptions:

- Position of the gear lever to be as in the manufacturer's handbook. Generally in Park (P).
- The handbrake should be checked before selecting Neutral (N).
- Clutch operation is, of course, not applicable

DRIVING METHOD

The System of Car Control should be followed as for manual vehicles with different selection of gears made depending on circumstances pertaining at the time.

Any gear selection, acceleration and manoeuvre must be made at the correct phase of The System.

GEAR SELECTION

1. *Whilst at a standstill*

a. Following the Cockpit Drill, the handbrake should be in the ON position and the gear lever should be in the Neutral (N) position ready to start. This avoids moving the gear lever through Reverse (R) with the engine running, causing transmission jerking and reverse light flashing [Note in most new cars now an electronic interlock prevents this]

2. *When moving off from a standstill*
   a. If the prevailing traffic to be joined is moving at a speed that will be suitable for the highest gear, then Drive (D) should be engaged.
   b. If the traffic flow is slower, then the appropriate highest gear required should be engaged.
   c. If the flow of traffic changes before it can be joined then the choice of gear will need to be changed accordingly.

To sum up you should move off in a gear no higher than will be needed for next few hundred metres.

3. *Driving along*
   a. If the progress is unrestricted and is suitable for the highest gear, then Drive (D) should be engaged
   b. As the flow of traffic changes then the choice of gear will need to be changed accordingly.
4. *Following a flow of traffic*
   a. If progress is determined by the vehicle(s) in front then the gear selection should be the highest gear to suit that speed. In certain situations that may even be position **1.**
   b. If too high a gear is selected and a variation in speed causes the auto to make a change in gear, this indicates that a lower gear should have been selected earlier. Improved perception of speeds and distance together with better anticipation will cure this error.

APPROACHING HAZARDS

Within an area which has a clear exit

This is where gear changing in automatics varies from that in manual vehicles. For greater flexibility in a manual vehicle one would change down to negotiate some hazards and then change up when clear. In an automatic this can often be achieved by braking on the approach to the hazard (if not applying accelerator sense) causing the gearbox to change down allowing the driver to gently accelerate without greatly increasing speed, then a change up once a higher speed is reached. Often, this can also be achieved with a quick 'blip' of the accelerator pedal but to use this 'blip' system you have to be far enough away from the hazard or followed vehicles.

Within an area which has other hazards beyond its exit

The estimate of the highest speed that can be attained for the complete hazard will determine the gear to be selected. It must be remembered that, due to reduced pressure on the accelerator when approaching a corner (and sometimes actually in the bend) automatics change up involuntarily. As above, slowing down before the corner, or other hazard, then applying the accelerator gently avoids this.

Driving up hill

The speed of the vehicle can be determined by the speed and proximity of preceding vehicles as well as by the slope of the hill. It will often be found necessary to manually select a gear to prevent the gearbox *'hunting'* for an appropriate gear to suit the speed.

Driving down hill

Remember a low gear should be selected at an early stage in the descent. When it is necessary to slow down on steep winding descents, brake firmly on the straight stretches and gently on the bends.

Overtaking

The *kick down* technique (see above) for rapid acceleration may be necessary to expedite an overtaking manoeuvre. Remember the acceleration may not be maintained and will be restricted once a speed that will cause an automatic change up of gear has been reached. If you judge that a greater increase in speed is required then, before the overtake, a manual selection to hold a lower gear will be necessary, just as engaging a lower gear on a manual gearbox vehicle.

Hand/Parking Brake use when stopping in traffic (see also Handbrake Long stay or Short stay?)

This will occur at hazards such as traffic lights, pedestrian crossings, junctions and at normal traffic hold-ups, etc. The safe rule is to apply the handbrake fully whenever pulling up. However if momentary stops occur of less than a few seconds, then only using the footbrake can accommodate the stop. For longer stops, the handbrake should be used and the gear moved to Neutral (N). This last point is especially important when stopping at pedestrian crossings.

THE SAFE RULES ARE:

- If an automatic gearbox selects an inappropriate gear then the driver should manually override this by selecting a more suitable gear.
- Selecting one of the numbered gears could give the same flexibility as in a manual geared vehicle.
- If the gearbox is going to do something you do not want, then you can exercise your control over it.

Note:

It is again emphasised that all manual and automatic selection of gears must be accomplished at the gear phase of the

System of Car Control.

NB. TO ALL OBSERVERS

At your first run with an Associate: If you are not confident about your own understanding of the Associate's particular gearbox it is probably sensible to read the vehicles manual with the owner for exact agreement and understanding on the finer points of the relevant gear box.

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Gears: Block Changing.

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Block changing is encouraged in most situations because it achieves more by doing less thus giving the driver more time to react. But it should be noted that blocking from 2nd gear to 4th is unusual - although it is not entirely wrong in certain circumstances.

For instance, if you're pulling away in a 40mph zone you may choose to accelerate up to 40mph in 2nd gear and then, depending on the road and traffic conditions (if slipping into 3rd gear is inappropriate) blocking directly from 2nd to 4th is entirely reasonable.

However, if you're in a 60mph zone, accelerating to 40mph in 2nd and then selecting 4th may be wrong because you should have gone from 2nd to 3rd and used the power you get from 3rd gear to accelerate briskly to 60mph before selecting the most appropriate gear – perhaps 4th, 5th or even 6th.

Equally, block changing down the gears should be considered in the same way. It is sheer nonsense to slavishly run through every gear in the box when a single gear shift can achieve the same result – with less effort by the driver and less wear and tear on the car.

It is not a prescriptive science. You have to make the right assessment in each situation and plan which response is going to be the most appropriate in each..

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Gears: Rev-Matching (Manual Gearboxes) See ADCL P23

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Along with mastering the separation of the 'speed, gear and steer' stages of the system of car control rev matching (or sustained gear changing) is without doubt the most challenging of advanced techniques which requires the use of the accelerator pedal at the very end of the speed stage.

'Rev-matching' or 'Sustained gear changing' is the term we use for a technique of gear changing which, by careful use of the **accelerator pedal** in synchronous combination with the **clutch pedal** and **gear lever,** provides an imperceptibly smooth transition between gear changes – smoother even than some automatics.

It is achieved by maintaining (sustaining) the engine revs with the accelerator pedal whilst selecting the most appropriate gear for your speed. It can further be described as: *'...matching the speed of the engine to the speed of the anticipated gear'* and is used when changing either up or down with single as well as block changes.

Of all advanced driving techniques this is one of the most difficult to master so to achieve success you will need to PRACTICE, PRACTICE, and PRACTICE. Never give up on developing this technique because of all the physical techniques of advanced car control this is probably the Rolls Royce!

So, let's assume you want to maintain your current speed but change down to a lower gear. This situation will usually occur at junctions where you turn off a major road into a minor. But it might occur as you're approaching a higher speed limit and you anticipate a firm acceleration, or as you approach a series of bends where your speed is right but your gear is too high for accurate accelerator control.

Changing down 1

Many drivers, whilst **changing down**, find that their foot goes **on** the brake pedal briefly and unconsciously and they begin to lose speed.

This is because they have always associated 'changing down' with 'losing speed'. In advanced driving this practice doesn't work because your foot needs to remain on the accelerator pedal so that you can raise the engine speed (revs) whilst at the same time selecting the most appropriate lower gear for that speed.

Changing up 1

Note also that when you are **changing up** you may find that your foot comes **off** the accelerator pedal completely and unconsciously followed by the familiar lurch or jolt as you re-engage the clutch with the new gear and the engine's crank shaft catches-up with the road speed.

In the above situation abandoning the accelerator is wrong because pivotal to *smoothness* when changing up is in finding the ***'limbo'*** position with the accelerator pedal and then matching the speed of the engine (revs) to the speed of the anticipated gear. I use the term 'limbo here to describe neither accelerating nor decelerating: some may describe it as 'cruising'.

This ***'limbo'*** stage is achieved by briefly easing back the accelerator at the very end of acceleration (before you disengage the clutch) just enough to maintain the speed **but** without slowing down.

Adopting rev-matched gear changing will provide the following benefits:

a) Prevent clutch slip
b) Prevent nose dive when changing down
c) Prevent the vehicle from lurching and jolting when changing up
d) Achieve higher vehicle stability by planned vehicle weight transference
e) Provide smoother and more comfortable gear changes than are possible even with some automatic gearboxes
f) Ensure the engine, gearbox, clutch, clutch cable (if not hydraulic), brake pads, brake discs, drive shaft CV Joints and tyres will all last longer.

HOW'S IT DONE?

Changing Down 2 (requires going on the accelerator)

1. Firstly, **achieve your intended lower road speed** either by using accelerator sense or brakes. This should be the terminal speed (without further braking) at which you intend to enter the hazard.
2. Now, with your foot over the **accelerator**, simultaneously depress the **clutch** pedal to disengage the gearbox whilst you apply just enough pressure on the **accelerator** pedal to match the engine revs in readiness for the new gear (precision here is a matter of practice and judgement), and then;
3. Select the new lower **gear**, observing the *'speed and gear'* rule (see below[1]) before releasing the **clutch** pedal smoothly to re-engage the gearbox.

If you've got it right, the gear change should be imperceptibly smooth - and all this should happen within the span of around a second!! Say *"...speed and gear"* or *"...one and two"*.

Changing Up 2 (*this requires only partially backing off from the accelerator*)

1. At the peak of the acceleration stage – back off the accelerator momentarily just enough to maintain the speed - but without slowing down (this is a ***'limbo'*** position sometimes known as *'cruising'*). **DO NOT** RELEASE THE ACCELERATOR PEDAL COMPLETELY!

2. Declutch whilst simultaneously selecting the new higher gear, observing the 'speed and gear' rule, (see below[1]) so that when you re-engage the clutch the engine speed and the gear speed are the same.
3. Now either accelerate to a higher speed and gear or maintain your current speed.

As with changing down, if you've got it right - and you count '…speed and gear' with the gear lever, the gear change should be imperceptibly smooth.

*The *'speed and gear'* rule (I like to use the phrase "speed and gear" because it fits in to the system of car control rather conveniently) refers to the timings between gear changes. Say ***'speed'*** as your hand first holds the gear lever; ***'and'*** moves the current gear to the neutral position; ***'gear'*** takes you from neutral to the anticipated gear.

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Gears: Gear Lever Grip

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One of the hallmarks of an advanced driver is their smooth technique with manual gear changes. An advanced driver will, as a matter of course, usually change gear more smoothly than is often possible with an automatic gearbox.

A car's gearbox is a wonderful piece of engineering, rarely causing problems during its lifetime, notwithstanding the hundreds of thousands of shifts up and down the ratios. It's so well developed that all you should need to do is guide the gear lever to the gear of your choice.

Yet, given all the sophistication of the syncros built into a modern gearbox, "snatching" at gears is a common driver fault, causing an abrupt gear change and a less than comfortable ride for passengers. Another problem arises when drivers hold the gear stick constantly, refusing to let go, in order that they can make the gear changes as quickly as possible. That hand would be more use on the steering wheel where it is ready to take evasive action in the event of your own or another driver's action.

To make the gear change smoother, let the gearshift pause for a moment as it crosses the 'central gate' or neutral zone. Counting a quick march time of "one and two" (or saying "speed and gear") as you cross through 'neutral to gear' alone will make your gear changes smoother - there's no need to rush them.

When changing gear, try to guide the gear lever with the knob placed in the palm of the hand. For all 1st or 2nd gear changes, turn your hand so that your palm is facing away from you with the thumb downward and guide the gear lever away from you - pushing the lever against the springs which self-centre it. This technique will also guard against your hand slipping off – and loss of control - see picture on right.

If you are practiced at 'setting the steering' to change gear on bends, this technique will also guard against false 4^{ths} when intending to select 2nd in left handers.

For block changes (when you "skip" superfluous intermediate gears) involving 1st or 2nd gear, say - from 5th direct to 1st when coming to a short stop or 3rd to 2nd when you need brisk acceleration, keep the thumb downwards.

For 3rd, 4th and 5th (or even 6th) guide the lever towards you with the thumb uppermost.

And remember, around town - especially in 30mph limits - you can often stay in third gear (or even 2nd) and respond to new hazards early by gently easing off the throttle in good time. Adjusting your speed with this kind of fine throttle control rather than endlessly using brakes has all sorts of advantages.

As a check to see how smooth your gear changes are, take a peripheral glance at your front seat passenger's head. Are they constantly "nodding" forwards as you change gear? If so you need to make your gear changing smoother and less hurried.

Your passengers (and transmission system!) will certainly appreciate it.

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Gears: 2nd Gear Starts… (Not recommended for engines below 1.8l)

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NOTE: IAM RoadSmart recommends only pulling away from stationary in 1st gear: ***'…Always set off in first gear, as 'launching' in second can leave you in the lurch…'***

Therefore the use of second gear when pulling away **should be rare** and reserved for experienced drivers and occasions where you have planned that a distinct safety advantage may be gained by keeping your hands on the steering wheel and where the quicker (although shorter distance) acceleration of first gear is inappropriate.

- One example of a distinct safety advantage is when turning right at traffic lights on a large main junction where selecting second gear would allow you to negotiate the hazard with both hands in control of the steering wheel.
- Another example is when pulling away at a roundabout. If you select 1st gear you will invariably be reaching for the gear lever to move into 2nd just as you steer round to the right; thus compromising safety.
- A further example is when pulling away downhill where the use of 1st gear would be superfluous.

If you do decide to select 1st gear for such a situation it would generally be a *'short first'* i.e. just enough to get the vehicle moving before selecting 2nd gear to enter the main hazard and begin to steer.

Pulling away from standstill in 2nd gear is unusual and requires practice to develop the required coordination of the accelerator and clutch pedals and new response of the vehicle. As with many of the advanced principles it is worth considering practicing 2nd gear starts on quiet sections of road and where you will not compromise safety.

However, unless you are absolutely certain about the differentiation of the above examples you should stick to first gear when pulling away and perhaps only use second gear to pull away on a decline.…

Remember; *"Never compromise safety for any other advantage"!*

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Gears: The Right Choice.

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The system says "…be in the right position … in the right gear … etc" but *"…what is the right gear?"* is something I'm asked frequently.

Quite simply, you need to ask yourself *"...can I accelerate briskly or decelerate rapidly in the current gear".* If you can't, then it is probably the wrong gear!

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Gears: Using Lower Gear at 30mph…

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The subject of speed, speed limits, speed cameras and the use of the most appropriate gear for a particular speed often causes some confusion and misunderstanding. A MORI poll commissioned by BBC's Today programme revealed that 74% of drivers found that their car tended to creep over 30mph without them realising it. Furthermore 54% of drivers thought that they should be in fourth or fifth gear when trying to do a steady 30mph!

More accidents occur in 30mph zones than in any other and this is why it's important to limit them to 30mph – because people die or are injured in them. 75% of all motoring insurance claims arise from crashes in 30mph zones yet fewer than 4% of claims originate from motorways.

With few exceptions the IAM finds that drivers who increase their speed in 30 and 40mph zones do so as a direct consequence of impulsively changing up into higher gears rather than consciously selecting the most appropriate gear for the circumstances. There are a few reasons they do this.

1. At lower speeds in a lower gear an engine is more audible at a given rev range than the same rev range at a higher speed (* see below).
2. High gear at low speeds induces an engine to 'buck' causing drivers to unconsciously increase the power in an attempt to effect a more comfortable ride.
3. Until the 1990's cars generally were so unreliable that for the basic driving tests drivers were taught to get into top gear as early as possible so as '…not to overheat or strain the engine'! It is thanks to the build standard of motor vehicles before the 1990's that we still have the annual vehicle DoT test today!

Our experience in Advanced Driver training is that many drivers don't realise that third gear is so flexible. Today many modern cars have a useable third gear range from as low as 15mph up to 65mph and beyond. Today all petrol driven cars have higher performance engines with upper rev ranges of between 6000 and 7000rpm (close to double those of 30 years ago) allowing drivers to cruise along motorways for hours and days on end at 70mph without fear of damage to the engine.

*But here is the essential part of which many drivers may not be aware! Depending on the model of car, at 70mph in 5th gear your engine speed (rpm) is between 2900 to 3300rpm; approximately the same as they would be if you selected **second** gear in 30mph zones and **third** gear in 40mph zones! Drivers may wish to substantiate these figures by asking a passenger to record readings from your rev counter whilst you drive. You might be in for a surprise! However, unless you are an advanced driver, we do not expect all drivers to adopt second gear in 30mph zones, even though many modern cars will comfortably achieve 50mph plus in 2nd, but we are strongly advocating the use of third gear.

The benefits of selecting third gear in 30mph zones are numerous:

1. By selecting third gear you have more command over your vehicle because you can control both engine braking and acceleration very effectively.
2. Because you can hear the increase in the engine pitch you are audibly in touch with your vehicle speed.
3. By staying in third gear, (and because you have to press your accelerator pedal further to achieve a higher speed than you would in fourth or fifth), it gives you even greater control in 30mph speed limits.
4. Your likelihood of keeping within the speed limit increases immeasurably.

Third gear is a very flexible gear in modern cars, including diesel cars, and it's the ideal gear when you need to keep your speed to 30mph or under. The IAM has a simple maxim. 'Get the correct speed for the hazard – then get the correct gear for the speed'. At 30mph that gear should always be no higher than third!

In built up areas advanced drivers will often be in second gear at 30mph!…

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Gear Lever - Points of touch

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Considering the most appropriate gear is in the final stages of 'the system' for a hazard before you negotiate it. It is the point where you are closest to the hazard and where your eyes need to be scanning for changing information which could turn a potential hazard into an actual hazard.

Many drivers approach a hazard without knowing which gear is currently selected. They then have to take their attention away from the looming hazard to glance down at the gear lever for confirmation or correction! This is patently ludicrous because it not only takes the focus away from where it is most needed but it culminates in late gear changing which usually means that the gear change occurs in a bend and at a point where vision and full steering control is imperative whilst denying time to match the engine revs to the new gear.

If you forget which gear you have selected and you have not yet trained yourself to audibly differentiate between the various rev ranges of your engine.....rather than take your attention off the road by looking down at the gear lever, try to adopt a more subtle approach and train yourself to confirm the current gear by touching the gear lever with your knee and feeling where it contacts in different gears.

Do this by bringing your left foot towards you so that it frees your leg from the central consul and allows it to bend to the left. In this position (see the NB below) you should be able to feel the point where the gear knob touches your knee. Each gear has a different point of touch whilst it should be noted that first and second positions are usually too far to reach.

Practice makes perfect with this one because you may have to learn to overcome some disorientation of the left foot and you will certainly have to learn to discern and interpret the various 'points of touch' of the gear lever knob on your leg. But the principle has huge advantages in that it keeps your visual attention focused on the road ahead whilst it keeps your hands on the steering where they are needed most.

As with many of the advanced principles - it is worth considering practicing these 'points of touch' on quiet sections of road and where you will not compromise safety.

NB. Some vehicle configurations preclude this particular technique.

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Gear Changing: A measured action… *"One and Two"*

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Gear changing should be a planned and 'measured' action rather than a subconscious and hurried one. The more you plan your next choice of gear well in advance, the smoother the drive will be, the vehicle stability will not suffer and the longer the gear linkages and synchromesh will last!

The way to achieve all this is to say a brisk *"one and two"* or *"speed and gear"* (simply because it falls in nicely with the *speed/gear* phases of the system) as they go through the shift. So the *"speed and gear"* rule refers to the timings between gear changes.

Say ***'speed'*** as you're your hand first touches the gear lever then say ***'and'*** as you cross the neutral gate then ***'gear'*** as you change into the anticipated gear. The time span covers about ½ second; i.e. ***"speed & gear"*** whether or not you have chosen to block change.

It is a fallacy to believe that taking a half second to change gear will result in a significant loss of speed! The only time you will lose speed with this principle is if you change gear uphill - which you should have done at the bottom of the hill!

As with any driving situation, select the most appropriate gear **before** ascending a hill thus negating any loss of speed.…

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Gear Changing .v. Steering … (see also 'Gear Lever')

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"Every action you take as an advanced driver must be the conclusion of a carefully formulated and planned thought process".

This philosophy sits paramount on the System of Car Control and gives you 'time to react' by your having reviewed all options for any hazard. It follows therefore that the decision of *"when do I take my hand from the steering wheel to change gear?"* must be part of that thought process. Too early and you may have to compensate for a bad decision – too late and you may be into the hazard and unable to respond.

Drivers often take their left hand away from the steering wheel some time before they actually select the new gear and this can be as long as 4 seconds! It is worth remembering that even at 30mph you will travel 54m (177ft) in 4 seconds and require 0·75 seconds to react. At 70mph this increases to 126m (414ft)!

Therefore you should practice keeping your hands in control of the steering wheel until you have made the decision and are **'ready now'** to change gear but remember;

i. The gear change should be measured and
ii. **"Only get the gear when it's clear"!** …

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Parking Brake (handbrake) – Long stay or Short stay?

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Apart from an emergency (i.e. if the brakes have failed) the purpose of the parking brake is primarily to secure the vehicle when it is stationary and this is the reason that it should always be the first step in your Cockpit Drill'. However, once you are on the road it would usually be applied before selecting neutral and after the vehicle has come to a stop. Selecting neutral before securing the vehicle with the parking brake leaves you vulnerable if another vehicle comes into the back (or front) or if you have inadvertently stopped on a slope or are manoeuvring on a camber.

However, there are two types of '*stationary*' or '**stay**' as we sometimes say – these are ***long stay*** and ***short stay***. Long stay might be at a road junction waiting to turn right and for a long line of traffic to pass - or where the traffic lights you are approaching have only just turned red. Short stay might be when you have just drawn up at red lights but you are confident they are about to turn green - or perhaps at a roundabout when you are waiting on only two or three vehicles before you can go. **NB. You should always adopt the short stay principle at pedestrian crossings!**

1) **Long stay**: Parking brake before Neutral. Adopting the *long stay* principle immediately secures the vehicle from forces both without and within. It will also save wear on the clutch thrust bearings and linkage components such as cables and cylinder seals.
2) **Short stay**: Gear before parking brake. Adopting the *short stay* principle sets you ready to go with only the parking brake to release. In principle, advanced drivers are ***"planning to go but always prepared to stop".***

However, whichever principle you adopt for a particular hazard you should apply the parking brake without '*ratcheting*' the lever. Ratcheting is the malpractice of pulling up the parking brake without first pushing in the release button - thus invoking the all too familiar *click-click-click* sound which demonstrates a lack of knowledge or vehicle sympathy and which results in premature wear of the parking brake ratchet rack and pawl.

Remember that an advanced driver should not expect to use the parking brake every time they stop. Learner drivers are taught to apply the parking brake every time they stop because of the complexities of dealing with a multiplicity of considerations at an early stage in their driving career but for advanced drivers there are many circumstances where this is quite unnecessary. For example, you will usually apply the parking brake at traffic lights, on hills, waiting to turn right and **always at a pedestrian crossing** but not always necessarily when manoeuvring on level ground or when stopping briefly at a 'Stop' sign.

However, see the document 'Stop Signs' for more information about how best to deal with this situation when on your advanced driving test.

For parking brake use with automatics – by Andy Poulton:

> *"For Autos the same applies at long and short stops but the car 'may' be left in drive unless the brake is weak and engine strong when it 'may' have to be put in neutral or park.*
>
> *For Mercedes cars with left FOOT operated parking brake - the above still applies but the routine of applying the parking brake with the foot needs to be adopted. Some Observers with the necessary patience and the good skills of the Associate have been able to encourage the Associate to apply and release this brake without the ratchet noise and clunk!*
>
> *This takes up a lot of time and practice and will not be needed to be demonstrated on test".*
>
> *Andy Poulton; ex Staff Examiner*

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Hazards

See also: Danger etc. Back to Index

"A hazard is anything you might encounter in the driving environment which has an element of actual or potential danger and could force you to change speed or direction".

There is a multiplicity of hazards which we encounter on the roads and it would be unusual if we could travel more than 100m after leaving one hazard and encountering another. However, all hazards can be grouped into just 3 categories;

1. Moving hazards: i.e. other vehicles, people, animals etc.
2. Stationary hazards: i.e. road surface, bollards, lamp posts, parked vehicles, junctions and roundabouts etc.
3. Environmental hazards: i.e. sun, rain, hail, snow, ice etc.

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Horn

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Many drivers rarely sound their horn at all because they feel that it can be interpreted as being aggressive. The danger of this is that if an emergency were to occur, they may have difficulty actually finding it. On the other hand, some drivers seldom go through the day without sounding theirs.

Typical reasons drivers have for sounding the horn include; reminding the driver in front that the traffic lights have now changed to green and they should get moving - or to blast someone for pulling out in front of them. In other words, correcting another driver's mistakes using mistakes of their own.

In fact, the whole purpose of the horn is to warn other road users of your presence. They may not have noticed you or simply cannot see you. Either way, this represents a risk. In the example above, where a driver pulls out in front of you, the horn should be sounded before the other driver pulls out (so that you can prevent it) rather than after they have pull out (as a rebuke).

Now, you may be thinking '…but how would I know someone is about to pull out - until it's too late?' Well, advanced drivers know – and they plan for these sorts of errors from other drivers all the time they are behind the wheel!

Ideally you would consider sounding your horn about 100 to 80 metres on the approach to a hazard. This does not mean of course that you actually have to use it each time, just consider it. Generally speaking, a horn warning should be followed by a friendly acknowledgment because, although the horn serves as a very effective warning instrument which travels at the speed of sound, the acknowledgment is given as a simple courtesy to other road users.

Consider adjusting the length of the horn note to suit the particular circumstances at the time. As a general rule, the closer you are to the hazard, the shorter the note to be used because you don't want to startle someone.

On the other hand, if you are well back from the hazard or if there is less chance of the horn being heard because of background noise or at higher speeds, a longer note could be considered. In situations where you are not able to see other road users, for instance on approach to blind bends or hump back bridges, a longer horn note may be appropriate.

The whole point is to attract the attention of other road users and to put them and you in a better position to deal with impending danger.

Using the horn should not be aggressive! Use it as you would your own voice and you won't go too far wrong – and remember; always follow it up with a friendly acknowledgment.

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Information: Plan to Go –Prepare to Stop…

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Plan to go – Prepare to stop! ?…

Generally, you will want be looking ahead of the crowd but doing it in such a way that it's imperceptible to other road users.

Anyone can crassly overtake and cut back in with full anchors on and brake lights glaring, or pull out of a side road forcing traffic to brake or take avoiding action – we see these things every day - but accelerating firmly and smoothly out of low speed limits to higher speeds, reading limit points accurately, planning early by looking far along the road, expecting mistakes from others and **taking in information at an early stage** all put advanced drivers in advantageous positions to make decisions earlier than most standard drivers.

Bear in mind that there is a huge difference between going fast and making progress! Many drivers can drive fast but a significantly more complex set of skills are involved in making the sort of progress that police response drivers make than mere speed alone.

Try to remember the maxim ***'Plan to go – Be prepared to stop'*** whenever you approach a hazard which might cause standard drivers to stop. If you are always *planning to go* - you'll tease out all the information available. It will force you to search for a reason to stop and thus often allow you to proceed.

Roundabouts are a classic example where, by *looking to go*, you will be splitting your vision between the vehicles in front of you and vehicles coming from the right. By slowing your speed at an appropriate stage you will judge the point where you can slip unobtrusively between vehicles already on the roundabout.

Calculate safe opportunities when you're driving – but never take a risk!…

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Observation - completing the jigsaw.

You will find that your observation and anticipation need to be developed so that you can use the advanced driving techniques to best advantage. It's the scanning element, what and where to scan, which you need to start with.

Road signs, vehicles approaching or going away in the distance, observation links such as church spires in the distance which are usually followed by a change in speed limit, changing road surfaces (from camber to superelevation), telegraph poles and wires which often tell where the unseen road is going are just a few things which frequent scanning will reveal. Observing all these plus many more in your vision scans gives the early information from which you can anticipate what might happen next and therefore allow for planning.

Information is not always obvious and it rarely comes easily or indeed automatically so much of the time one has to consciously seek it out of every nook and cranny. Continuous vision scans will bring it to you!

Scanning simply means repeatedly moving your eyes over a wide area of vision; to the far distance, back to the mid ground, the foreground, then to the sides, above (generally for bridges with pedestrian access) and behind (as in the image from Roadcraft below). By scanning different areas you can become more aware of the whole picture and be more able to deal with changing situations.

Most drivers are at risk of the 'looking but not seeing' syndrome! It's too easy to miss road signs - probably because they are the 'punctuation marks' of our roads. Make a point of looking out for all signs (including Joe's Café) and include them in commentary. Road signs along with skid marks on tarmac or paint on the road act like a preface to a book – they tell you what's coming next.

Just focussing on the far distance or the vehicle/object ahead (it doesn't matter if the vehicle/object is 50 metres or 200 metres away) puts you in danger of 'looking but not seeing' where peripheral objects begin to disappear - until you start moving your eyes around and scanning.

Obviously, the faster we travel the less information we can absorb because of the greater distance covered in a given time span. So the slower we travel the more information we can absorb because of the shorter distance covered over the same time span.

Try to employ really efficient vision scans. It's by keeping your eyes on full beam and scanning all around that you can begin to complete the jigsaw which unobservant drivers are never able to finish!

Extend your vision beyond its normal resting place so that you can identify the different sections of the road as they unfold and begin to 'bolt the pieces together' to give yourself an overall picture.

Also, when you approach a bend, road junction, T junction or roundabout, or any hazard where you might have to alter your speed or change direction, consider slowing your approach at an earlier stage. This will allow you to absorb a greater amount of information in the available time span and you will be pleasantly surprised at just how often you are able to keep your vehicle moving.

Don't forget that the information stage of the system is more than gathering it for your own use! The information stage is broken down into 3 parts:

- Taking gives - 'what you can see'
- Using gives - 'what you can't see but might reasonably expect to happen next' so you can formulate a driving plan
- Giving means - informing others of your driving plan intentions

There are nine ways a driver can give information to others.

1. Lights
2. Indicators
3. Hazard lights
4. Brake lights
5. Reversing lights
6. Horn
7. Arm signals
8. Courtesy signals
9. Chassis language (vehicle position and speed)...

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Intelligent use of Lights

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There are many instances where the intelligent uses of your lights can assist in road safety. Maintaining the main beam on tight right handers - even when vehicles are approaching will increase your view whilst keeping the beam aimed at the left hand wall or hedge and not directly at the approaching driver.

Flashing your headlights when planning to overtake will warn the driver ahead of your intention. Dipping your main beam momentarily just as you approach a bend will allow you to pick up oncoming lights. Switching off your lights momentarily in the dark to thank other drivers for their courtesy will be appreciated a whole lot more than the ubiquitous 'blinding flash in the eyes' favoured by the untrained driver.

These are just some but here's one which will assist you when you observe a new lower speed limit ahead and you need to let following drivers' (who probably wouldn't have seen it) know why you are going to slow down.

If there is no one in proximity ahead of you, or approaching you, consider giving information to a following driver by using your main beam to highlight an approaching speed limit sign. The reflection thrown back from the sign will be on the same plane as the following driver so their attention will automatically be drawn to it and they will usually figure out why you are slowing. Beware though! This technique works in most lights, including dull daylight, but use it cautiously and with common sense in very bright sun light!

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Limit Point Analysis … (see ADCL p27)

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"… drive at a speed which enables you to stop on your own side of the road in the distance you can see to be clear"

Analysed intelligently, limit points will never let you down! They are the really true friend of the driver - one of the few utterly dependable features on the road. Of course, all this is only true if the driver has a clear understanding of speed, distance and overall stopping distances!

The limit point is defined as *"…the farthest point along a road to which you have a clear and uninterrupted view of the road surface."* (ADCL P29). It is the point along the road ahead of you where both sides of the carriageway appear to meet and form in a point; this is the limit of your vision - and of course to the vehicle ahead if you're driving too close.

Many drivers will impulsively use the brake pedal when they want to slow down but really excellent drivers repeatedly analyse the information they gain from the limit point to make a direct cerebral connection to their accelerator pedal, adjusting the vehicle's speed to the speed at which the limit point either comes toward them or moves away from them by use of the accelerator pedal alone. This use of accelerator pedal to adjust speed without using brakes is known as 'Accelerator Sense'.

This doesn't mean you should never use brakes on the approach, especially important from high speeds, but practicing 'accelerator sense' is a good discipline to get under your belt.

Limit Points always occur in 3 stages and in the following order:

1. **It comes towards you.** This occurs either;
   - **a.** as you approach a bend in the road or,
   - **b.** as you approach a humped back bridge or,
   - **c.** as you reach the apex of a hill.
2. **It is matched.** This is the point where the road ahead is now neither coming towards you nor going away from you and the distance between your vehicle and the limit point remains the same. It is the point where the speed of the vehicle is now *matched* to the speed at which the limit point is moving
   - Important: Be aware that this 'matched' distance will be the same whether you are doing 10mph or 100mph! Contrary to popular advanced driving thinking - just because the limit point is matched doesn't mean your speed is automatically correct!
   - I can't stress the above point enough! If the limit point of vision is, for instance, 25m - it will be 25 metres at 10mph and 100mph. The true guiding principle is not 'is the limit point matched'. but "at the speed I'm doing can I stop on my own side of the road in the distance I can see to be clear'.
3. **It goes away from you.** This is the stage where the limit point begins to rush away from you towards the far distance and where you can begin to accelerate out of the bend. As long as the limit point continues to move away, you can accelerate quite firmly and still not be able to catch up with it.

Limit Point Analysis is the technique of appraising the limit point during your approach to bends in such a way that you can place your vehicle in the most appropriate position before getting the correct speed and leaving enough time to select the most appropriate gear (in that order) before you steer, to deal with the particular bend - whilst always making sure *'you can stop on your own side of the road in the distance you can see to be clear'*.

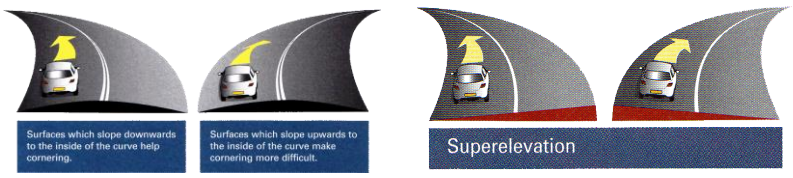
However, being able to stop in this distance requires a really tried and tested understanding of the overall stopping distances which can be found in the Highway Code.

By constantly applying 'Limit Point Analysis', understanding overall stopping distances and continuously using the information gained from the analysis to make a direct cerebral connection between the limit point and your accelerator pedal foot, you will always be able to assess whether you can *'stop in the distance...you can see to be clear'*. Limit Point Analysis is a technique which must be used at every corner in order to negotiate the hazard in a way that is safe, systematic and which leaves nothing to chance.

Each time you approach a bend you should also be considering three factors:

1. From what I see – how best can I apply Limit Point Analysis? =	**O**	OBSERVE
2. What might I reasonably expect to happen? =	**U**	UNDERSTAND
3. How do I plan to deal with it and **can I stop in the distance**? =	**R**	REACT

Camber and superelevation play major roles in both instability and stability of a vehicle when cornering and so it's important to identify at an early stage what sort of surface you are dealing with and be prepared to run the System of Car Control again.…



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Manoeuvring: Briefing for Observers…

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OBSERVERS: For many drivers, and even some experienced drivers, manoeuvring presents a horrific challenge. It is as difficult for many men as it is for woman so before asking any Associate to carry out a manoeuvre you should make sure you observe the following procedure.

1. Stop. (explain that on test the Examiner may not require a complete STOP before executing the manoeuvre - but that's the Examiner's prerogative)
2. Make sure the manoeuvre is SCLP (think 'scalp'!);
    a. **S**afe
    b. **C**onvenient
    c. **L**egal
    d. **P**ossible
3. Brief the Associate as to what you want them to achieve and the techniques you want them to employ to achieve it.
4. Guide them throughout the manoeuvre if you see they need it and don't forget to suggest a 'short stay' procedure if circumstances demand i.e., if there's a camber on a 'turn in the road' manoeuvre.
5. Stop immediately after the manoeuvre and debrief. …

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Manoeuvring: Multi Point Turns - or Turn in the Road … (See also Parallel Parking)

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"Manoeuvring is any driving operation incorporating either reverse - or forward and reverse gears".

Generally there are 3 types of manoeuvre and you may be asked to demonstrate any one or all of them on your Advanced Driving test.

Types of Manoeuvre:

1. A turn in the road using forward and reverse so that you are facing in the opposite direction; so called '3-point-turns'.
2. Reversing round a left or right hand corner. (The advanced driving test only uses reversing to the left)
3. Parallel parking between two vehicles.

Multi point turns

IMPORTANT: IF YOU USE AN AUTOMATIC – USE THE 'LOW' GEAR SETTING!

Much of this manoeuvre (especially with Diesel engines and automatics) can be achieved with little or no accelerator pedal use. If you do need to apply the accelerator then you should aim to keep the revs well down and avoid too much clutch slip.

There are three key essentials to this manoeuvre as follows:

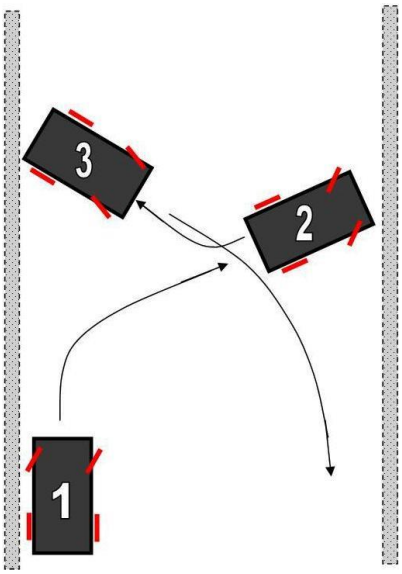
1. Slow vehicle.
2. Fast steering.
3. All the steering for each point done in the first and last ½ metre.

The closer you are to the kerb when you begin this manoeuvre the more success you will have but you don't necessarily need to stop the vehicle before beginning stage 1 unless you are forced to.

1. Start by edging forwards and within the first **½ metre** aim to have turned the steering fully clockwise to **full right lock**. (3 hand movements)

2. Keep full right lock until your wheels are about **½ metre** from the opposite kerb when you should aim to turn fully anticlockwise to **full left lock** (6 hand movements) whilst avoiding contact with the kerb. You have now set your steering ready in the direction of your next manoeuvre.

3. Reverse the car on full left lock until your rear wheels are about **½ metre** from the kerb when you turn to the steering enough to exit the manoeuvre - avoiding contact with the kerb. You have now set your steering ready to pull away and continue your journey.



If you aim to have the vehicle at or beyond 90° to the kerb at stage 3 you should be able to pull away and continue your journey.

Sometimes the road will be so narrow that you will require 5, 7 or even 9 points but the more you practice the more adept you will become and the fewer points you will need. If you always apply the three key elements above you will be surprised to find that what used to take a lot of effort is now a relatively simple operation.

Depending on the camber of the road you may need to apply the handbrake at the end points but if you do, it should always be 'short stay' i.e. Gear before handbrake (GBH). Touching a kerb on an advanced driving test could result in a failure. …

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Manoeuvring: Parallel Parking

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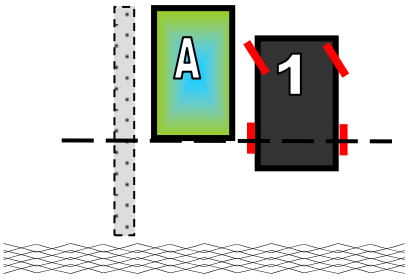
Many Associates have difficulty with this manoeuvre and they may be asked to perform it during their IAM Advanced Driving Test. It is a simple arithmetic problem with a simple arithmetic answer! But remember, if your car requires 3 or even 4 pull-push motions of the steering wheel on the first stage, it will require a corresponding number on the fourth.

Here is the IAM method and to achieve it you will need a parking space of about 2 metres longer than your car i.e., 1 ½ car lengths.

- Draw up parallel with car A (about ½ metre away from it) so that the rear bumpers of both cars are approximately in line.
- Check all around and, after a final look over your right shoulder, start reversing slowly - looking over your shoulders and to the front to check that you will not impede anyone or hit anything as the front of your car swings out into the road.

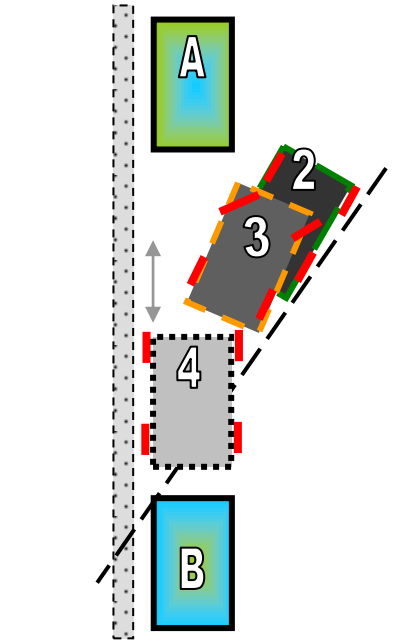
1. When your car's rear seat (and hence the rear axle) is in line with the rearmost part of car A - turn the steering wheel briskly to the left 2 complete 'pull-push' actions*. Fig 1.



2. Hold the steering wheel in this position and continue reversing (and checking all round) until the offside (driver's side) of your car is aimed at the nearside corner of car B next to the kerb. You can check this in your driver's mirror. When this alignment is reached, steer briskly to the right (the same amount as in 1 above*) but in the opposite direction so that the front wheels are again straight. Fig 2.

3. Continue back in this straight line until you are sure that the front left corner of your car will clear the rear right corner of car A. Immediately the front of your car is safely clear of car A turn the steering wheel quickly to the right as in fig 3 (the same amount as in 1 above*) then, holding the steering wheel in this position, continue reversing slowly (and checking all around) until your car is parallel with the kerb, as in fig 4.

4. Straighten your steering wheel quickly (the same amount as in 1 above*) then if necessary move forward until you are parked centrally between cars A and B - apply the handbrake and select neutral.



With this method you will always end up parallel because you use the same amount of steering in each direction. You may need to adjust the amount of steering lock slightly or the distance of straight travel in order to suit an individual car and end up parking close to the kerb.

In preparation before you go out and practice this manoeuvre you may find it helpful to park near the kerb and look over your shoulder to the pavement behind - and then make a note of exactly where your lower rear windscreen bisects a line from the pavement to your line of sight. You may want to place a small sticker to the rear windscreen at this point.

*Note: The precise degree of steering wheel turn (or number of complete 'pull-push' actions) will depend on a number of factors; length and width of your car, width of vehicle 'A', actual available gap between 'A' and 'B' and to some extent the degree of camber. Some cars will require more – some less.

It's quite important to understand that all steering is an arithmetic process. When manoeuvring, the key to accurate steering is: if you need to turn the steering wheel by a factor of 'x' degrees one way, you will need to return it by the same amount the other way.

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Manoeuvring: Parallel Parking – An alternative method

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Many Associates have difficulty with this manoeuvre and they may be asked to perform it during their IAM Advanced Driving Test. This alternative method (see also *Manoeuvring: Parallel Parking*) is different in that it employs a mechanical rather than a simple arithmetic answer to the problem!

An important principle of this manoeuvre is SLOW VEHICLE - FAST STEERING.

Here is the alternative method:

Draw up parallel (about ¾ metre away) so that the steering wheel is just passed the parked vehicle's door. Fig 1.

When your door pillar covers the parked vehicle's mirror apply full left hand lock. Fig 2.

Maintain left lock until the parked vehicle's number plate can just be seen in your offside mirror. Now straighten the steering. Fig 3.

With the steering straight, reverse slowly until your left door mirror is central with the parked vehicle's rear centre. Fig 4.

Now apply full right hand lock until you are parallel with the kerb. Fig 5.

Straighten your steering quickly then if necessary move forward until you are parked centrally between vehicles. Apply the handbrake and select neutral.

* The precise degree of steering turn (or number of complete 'pull-push' actions) will depend on a number of factors; length and width of your car, width of parked vehicles, actual available gap and to some extent the degree of camber. Some cars will require more steering – some less.

It's quite important to understand that all steering is actually an arithmetic process. When manoeuvring, the key to accurate steering is: if you turn the steering wheel by a factor of 'x' degrees one way, you will need to return it by the same amount the other way.

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Manoeuvring: Reversing round a Corner … (Notes for Bristol Advanced Motorists Observers)

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OBSERVERS

OBSERVERS PLEASE NOTE: For many drivers, even 'experienced' drivers, manoeuvring presents a horrific challenge. It is as difficult for many men as it is for woman and before asking any Associate to carry out a manoeuvre it might be an idea to check if they can reverse in a straight line (not many drivers can!). This will give you a clue as to whether or not they understand the different effect that steering input has when going backwards from when going forwards. But before asking any Associate to carry out a manoeuvre you should;

1. Make sure the manoeuvre is SCLP (try to remember 'SCaLP')
    a. Safe,
    b. Considerate,
    c. Legal,
    d. Possible.
2. Brief the Associate as to what you want them to achieve and how you want them to achieve it.
3. Guide them throughout the manoeuvre if you see they need it. Don't let them flounder.
4. Stop immediately after the manoeuvre and debrief.

Steering characteristics when reversing are very different from what we expect when going forward and as most of us spend comparatively little time reversing there is little opportunity for practice. It requires a good degree of accuracy but available references to the subject are scant to say the least and both the IAM RoadSmart's Associate's Logbook and the police handbook Roadcraft offer no guidance on the subject.

Remember that - as in all manoeuvring - views should be taken over the shoulder as well as from the mirrors and it is also worth noting that, depending on the degree of camber, almost all manoeuvring (especially with diesels) can be achieved without the use of the accelerator pedal.

The differing steering characteristics are as follows;

- Forwards:
    - When the vehicle is moving **forwards** whilst turning the steering wheel counter clockwise **to the left** the nose of the vehicle moves off to the **left**. Now, this is fairly obvious and it follows our natural expectations.
- Reverse:
    - However, when reversing and turning the steering wheel counter clockwise to the left the nose of the vehicle moves off to the right. For some drivers, who expect the rear to move to the left, this action is contrary to their expectation and some may even feel a sense of disorientation leading to an over compensation of steering.

If your Associate is having difficulty it will often be caused by over compensating on steering as they try to counteract this '*opposite*' effect that the steering wheel now has on the sideways direction of the nose of their vehicle. You will see them shuffling the steering first one way and then the other resulting in the front of the vehicle endlessly swinging in and out whilst the rear heads towards a bank or kerb! You must nip this in the bud and the following may help in the process. **See also** Steering.

As a short test and prelude

Find a quiet area with a clear long straight pavement (Thornbury Leisure Centre car parks on a Sunday is an ideal location for most manoeuvring practice) and ask the driver to draw up parallel to and about 30cm from the kerb with the pavement on their left. Next, ask them to reverse along the kerb for 30-40m keeping their vehicle the same distance from the kerb. Now make a note of their steering. Is it steady and controlled or are they habitually over-compensating - steering back and forth, creating an exaggerated zigzag pattern?

In this short test, steering adjustment of more than $^{1}/_{8}$ of a turn (12.5%) in either direction should be unnecessary. The key to steering control in manoeuvring (**except** 3 point turns) is ***'slow vehicle – slow steering'*** and this is how *'reversing round a corner'* should be approached. Note that if your Associate is new to 'Advanced Driver' you should ensure that they **stop** the vehicle before beginning manoeuvres so that you can explain the principles.

You would normally precede this manoeuvre by telling the Associate that *"...I would like you to reverse round the corner and then park the vehicle as if you are going to leave it for the day".*

ASSOCIATES

Reversing round a Corner Method

1. Assuming a left hand reversing manoeuvre; find a quiet area with clear straight pavements as above and ask the driver to draw up and park their vehicle about 30cm from the kerb with the pavement on their left in preparation to reversing round the corner.
2. Once parked get them to look over their shoulder to the kerb behind and then ask them to make a mental note of where their rear wiper or lower rear windscreen bisects a line from the kerb to their line of sight. You may

want to suggest that they place a small sticker to this point as this will assist them in judging the vehicle's distance from the kerb in future manoeuvres.

3. Ask them to begin the manoeuvre and, keeping the kerb in sight, wait until it (the kerb) disappears from their over-shoulder view. This is the point where they should begin to use nearside mirror in addition to over-shoulder observations. Please be aware that if your Associate lowers their nearside mirror as an aid to this manoeuvre (and this is perfectly acceptable) you should make a note if they fail to return it to the driving position before moving off after completing the manoeuvre as this could lead to a test failure if the rest of the drive was substandard. (In my experience those who do lower their mirror usually do forget!)
4. When the backrest of the rear seats is level with the point where the kerb begins to turn, they should begin to turn the steering wheel counter clockwise about ½ of a full rotation (approximately 1 movement of mirrored steering - although some cars may need a little more) in the direction of the turn and aim to maintain a distance of 30-40cm between the kerb and the rear wheel but remember that the front will naturally be slightly further out than the rear in this manoeuvre. Counsel against large and over compensating bites of the steering wheel in favour of small, slow, smooth and progressive steering control.
5. Watch what happens to the front of the vehicle. Is it swinging out and away from the kerb (indicating over compensation) or are they able to keep an approximate distance of 40cm or so? This is a really important point so monitor it carefully and keep at it until they get it right.
6. When the kerb begins to straighten out behind they should begin to return the steering wheel to its centre position with just enough steering control to bring the tyres about 10-15cm from the kerb and at least 10m from the junction once parked.

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Metres of travel per second table…

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10mph	4.5m	(15ft)
20mph	9.0m	(30ft)
30mph	13.5m	(45ft)
40mph	18.0m	(60ft)
50mph	22.5m	(74ft)
60mph	27.0m	(89ft)
70mph	31.5m	(104ft)
80mph	36.0m	(119ft)
90mph	40.5m	(133ft)
100mph	45.0m	(148ft)

Example of making a calculation for 70mph

70 mph ÷ 2	35 ÷ 10	35 – 3·5
= 35	= 3·5	= 31·5metres per second

This calculation will get you to within 15cm (or so) and can be applied to any given figure. It's so simple it can be done en-route!

Put another way; 45% of your speed in mph = metres per second. (45% of 100 = 45)

Speed is customarily thought of in miles per hour; i.e. *"how many miles will I travel at a given speed in the period of one hour"?* Now, to some it may seem odd to suggest - but this quaint and very *British* component is not very useful when trying to gauge real 'quickness' or pace - your real speed! Obviously at 60mph one will travel 120 miles over a 2 hour period but this *mph* component gives no clear perception of the actual pace of travel.

For instance, it took a spaceship 7 ½ years to travel the 1·3bn miles across space to Titan but does this really give any clear understanding of its swiftness or rapidity? Discovering that the spacecraft actually travelled 11.9km every second (7.4 miles per second) provides a more tangible and immediate understanding of its pace than its equivalent 42,840kph (26,640mph) because it brings us more in touch with real instantaneous speed. In one second the spacecraft travelled the distance from Clifton to Portishead. Bristol to Penzance is a mere 20 seconds away – not long enough even to read this paragraph!

Metres (or feet) per second can be of real practical use to a driver when dealing with endless streams of ever changing hazards – especially when analysing limit points and other hazards and asking *"can I stop … in the distance I can see to be clear".* Not miles and hours.…

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Mirror Checks…

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Frequent mirror checks are a vital part of 'taking in information'. If all the available information is not being taken in then there is less of an opportunity to form a driving plan or to give back information to other road users.

T.U.G. = Take, Use, Give. At each change to the Limit Point remember to cast your vision first to the far distance and then trawl it back to the car and then do a mirror check. You then need to consider the following;

1. What can I see? Observation.
2. From what I can see, what might I reasonably expect to happen? Anticipation.
3. From the first two, what might I need to do about it? Planning.

It is vital to know what is behind you when you intend to slow down or stop. Being aware of the artic behind, especially important on a motorway, gives you a fighting chance before it smashes into the rear. Therefore in the normal flow of things mirror checks will be done every few seconds during the drive - but only do a mirror check when it is safe and you have first cleared the front.

Mirror checks should be included as an inherent part of your driving before you change your speed or direction - every time – and, as a continuing part of your 'Driving Plan' they should be done at least every 10 seconds.

Additionally, shoulder checks should be done just before you take a left or right turn and each time the vehicle moves off.

Poor drivers rarely think about this sort of observation as important but without careful observation you cannot anticipate. Without early anticipation you cannot plan. Without planning there is potential disaster!

Remember: *"Mirrors give you information. Only shoulder checks give you confirmation"*.…

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Observation Links

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This is the term we use to describe the link between what you actually see around you and an anticipated event. You 'link' together what you see and from that you decide what you might reasonably expect to happen next. Observation links invoke the acronym **O U R = Observe – Understand – React**.

"...observation links are a way of making a cerebral link from what you can see - with what you can't see and then anticipating what you might reasonably expect to happen next"

Just some examples of observation links are listed below although there are of course many more.

- Post boxes. Unusual these days but someone may need to cross the road to post a letter.
- Telephone kiosks. As above except they now hold either books or defibrillator!
- A child looking across the road. Maybe a friend is on the other side. Be prepared for the child to run into the road.
- A mother pushing an empty pushchair or pram. Look out for the child.
- A vehicle is waiting to pull out at a road junction or crossroads. Get eye contact –be ready to react. If the road is clear in your opposite direction they may pull out in front of you!
- Parked vehicles. The driver's door will open at least twice a day! Check to see if the wing mirrors are retracted.
- A loose dog.
- A dog on a lead. If it is a retractable lead will the dog run into the road?
- Horse poo in the road. Expect a horse and rider round the next bend.
- A horse showing the whites of its eyes is frightened and inexperienced.
- A horse with its rear end pointing out into the road is preparing its defences!
- A horse trailer with only one horse will be more unstable on either left or right hand bends.
- Bin bags beside the road mean it is collection day. Look out for the bin men.
- Hay or straw wisps on verges could mean the hay-wain is round the corner.
- The smell of grass or vegetation could mean a tractor with a flail mower round the next bend.
- A speed camera ahead will mean that the average driver might brake in front of you.
- Condensation or water coming from an exhaust pipe means the vehicle has just started. It is probably going to take a while for the driver to 'accustom' them self to their new environment. Look for an early opportunity to overtake.
- Wing mirrors tucked in – car door might not open.
- Wing mirrors out – car door might open.
- Foreign number plate on a lorry. This will probably be a left hand drive vehicle so the driver may not be able to see you as you overtake.
- Bus stops. You may encounter a bus ahead. Be aware that it will stop in front of you at some point.
- Traffic queuing on the motorway off-slip bridge means that the top of the on-slip will probably be traffic light controlled. Watch for a stream of traffic joining the motorway.
- Caravans usually have under inflated tyres! On a long journey they could overheat and burst!
- You see one BT or Open Reach van – expect another. They usually operate in twos so look out for the second van round the bend.
- There're plenty more! Start thinking!

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Overlapping

See also: *'Speed - Gear - Steer'* and *Sustained Gear Changing*

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"…overlapping has no place in advanced driving". (IAM Examiners' maxim)

Overlapping the actions of braking and gear changing or braking and steering or the combination of all three is nearly always a result of poor planning or misjudgement of speed/time/distance through inexperience. Unless braking to **maintain** speed on a winding downhill overlapping should be avoided for the following reasons:

1. Changing gear before finishing the braking stage forces you to take a hand from the steering wheel at a time when both hands should remain in control of the vehicle's direction.
2. Braking whilst changing gear prohibits you from effecting a sustained gear change (rev matching) which requires use of the accelerator pedal.
3. Braking whilst changing gear into a turn leaves no time for 'feathering off' the brake pedal before steering.
4. Braking and steering together bring into play the potentially disastrous *'tyre grip trade off'* where the tyres are asked to provide 100% grip to both actions simultaneously, which of course is impossible. Brakes usually win with this combination which is why two thirds of fatal crashes (for drivers under 30) occur as the driver loses control on a bend or a curve by asking more from the tyre grip than physics can provide.

All braking, even slight, brings a dynamic into play as the vehicle weight is shifted towards the front, simultaneously lightening the rear. In this event the vehicle is naturally unstable.

Concentration, observation, anticipation and planning (in that order) are pivotal to really good driving and by applying these four skills you will use the brakes or accelerator sense in good time when you approach a hazard and only select the correct gear once the braking stage is over. Generally the gear change will be made **after braking** and **before steering** i.e. Speed → Gear→ Steer.

- If you find yourself still braking whilst you are also changing gear (overlapping) then either you are going downhill (which, to some extent, is allowed) or, more commonly, you have left your **speed** stage of the system too late in the approach to the hazard and need to try again!
- If you find yourself still changing gear after you reach the steering stage then you have also left your **speed** stage too late in the approach. Get the correct speed earlier in the approach to the hazard.
- If, having sorted out all these, you then find you have to brake again before or during the steering stage, again you left your **speed** stage too late in the hazard and must try again.

Adjusting to the correct **speed** is pivotal in this *triplet* stage of the System. If you get the correct **speed** just at the right moment then there will be plenty of time left for everything else to follow in a smooth, systematic way.

- Overlapping any combination of braking, gear changing or steering is taboo. The Examiner's maxim is *"Overlapping has no place in advanced driving".*

So; get the speed for the hazard - then get the gear for the speed – then steer". **SPEED – GEAR – STEER**

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Overlapping – Eradicating it

You'll remember that 'overlapping' is the term used for the actions of braking and gear changing, or braking and steering, or the combination of all three at the same time.

To eradicate overlapping of any of these three phases you simply have to identify the point along the road where you intend to come off the brakes - even before you begin to apply them - leaving sufficient time and distance to select the appropriate gear and re-engage the clutch before you begin to steer. Eradicating 'overlapping' really is that simple!

Drivers who fail to adopt this basic principle habitually overlap their braking, their gear changing and their steering.

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- Ancillary controls:
  - *Any control other than the brake pedal and steering wheel.*
- Primary controls:
  - *The brake pedal and steering wheel are the most important primary controls.*
- Accelerator:
  - *Ease - Squeeze*
- Brakes:
  - *Brakes to slow – and gears to go*.
  - *Brake on the straights – steer on the bends.*
  - *Brake once for each hazard.*
  - *The 3 F's. "Feel in – firm on – feather off".*
- Commentary: This is a verbal amalgam of the acronym 'O U R':
  - *What I can see?* O B S E R V E
  - *What might I reasonably expect to happen?* U N D E R S T A N D
  - *What might I need to do about it?* R E A C T.
- Eye contact:
  - *Eye contact gained is worth a million dollars - Eye contact gained then lost is a potential disaster!*
- Flashing headlights:
  - *There are over 30 reasons that drivers flash headlights at each other.*
- Following position:
  - *Only a fool breaks the two second rule. In a downpour make it four.*
- Gears:
  - *Other than on motorways or unrestricted dual carriageways if the gear you are in doesn't allow acceleration or deceleration as efficiently as a lower one then it is probably the wrong gear!*
  - *Get the gear when the road is clear.*
  - *Thumbs down for Cesare* (Advanced drivers' hand position for 1st and 2nd gear selection).
- Handbrake:
  - *Long stay v Short stay.*
- Hazards: Three types:
  - Moving
  - Stationary
  - Meteorological.
- Horn:
  - *Use the horn to inform other road users of your presence.*
- Information:
  - *Early vision – early decision*
  - *Slow to Flow*
  - *The slower you approach - the quicker you can get away.*
- Junctions:
  - *If one vehicle pulls out – expect a second.*
  - *Second vehicle syndrome.*
- Limit point:
  - *The farthest point along the road to which you have a continuous and uninterrupted view of the surface.*
- Manoeuvring:
  - *Any operation incorporating forward and reverse gears.*
  - *Slow vehicle – fast steering"!* (three point turns)
- Mirrors:
  - *Mirrors give you information – only shoulder checks give you confirmation.*
- Overlapping - eradication:
  - *Plan where you come off the brakes – before you go on the brakes.*
- Planning:
  - *Everything you do must be the result of a well-considered plan.*
  - *Be ready to go but always plan to stop.*
  - *Calculated safe opportunities but never take calculated risks.*
- Positioning:
  - *The optimum position is the one which gives the highest regard for safety, the best view and the greatest stability.*
- Puddles and Potholes:
  - *Every puddle is a potential mineshaft.*
- Progress and Restraint:
  - *Slow to Flow.*
- Safety:

    - *Drive so that you can stop on your own side of the road in the distance you can see to be clear.*
    - *Never compromise safety for any other advantage.*
    - *The steering wheel and brake pedal are the most important primary controls.*
- Signalling:
    - *Give a signal whenever it could benefit other road users*
    - *Don't signal indiscriminately.*
    - *Make sure your signals will not confuse others*
- Signs:
    - *Road signs act like a preface to a chapter in a book – they tell you what's coming next".*
- Shoulder checks:
    - *A deep shoulder check is a life saver.*
- Single Track Roads:
    - *Speed on Speed.*
    - *Slow to Flow*
- Speed
    - *Be able to stop on your own side of the road in the distance you can see to be clear*
    - *If speed is inappropriate - it is probably dangerous.*
- Steering:
    - *Pull-Push and Mirrored Steering.*
    - *Fixed Grip - or - Fixed Input*
- The Vital Quartet – C-O-A-P:
    - *Concentration - Observation - Anticipation - Planning.*
- Tyre Grip Trade-off is:
    - *Any combination of accelerating - braking - steering.*
- Vision:
    - *Early vision – early decision.* ….

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Parking Brake (handbrake) – Long stay or Short stay?

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Apart from an emergency (i.e. if the brakes have failed) the purpose of the parking brake is primarily to secure the vehicle when it is stationary and this is the reason that it should always be the first step in your Cockpit Drill'. However, once you are on the road it would usually be applied before selecting neutral and after the vehicle has come to a stop. Selecting neutral before securing the vehicle with the parking brake leaves you vulnerable if another vehicle comes into the back (or front) or if you have inadvertently stopped on a slope or are manoeuvring on a camber.

However, there are two types of '*stationary*' or '**stay**' as we sometimes say – these are ***long stay*** and ***short stay***. Long stay might be at a road junction waiting to turn right and for a long line of traffic to pass - or where the traffic lights you are approaching have only just turned red. Short stay might be when you have just drawn up at red lights but you are confident they are about to turn green - or perhaps at a roundabout when you are waiting on only two or three vehicles before you can go. **NB. You should always adopt the short stay principle at pedestrian crossings!**

1) **Long stay**: Parking brake before Neutral. Adopting the *long stay* principle immediately secures the vehicle from forces both without and within. It will also save wear on the clutch thrust bearings and linkage components such as cables and cylinder seals.
2) **Short stay**: Gear before parking brake. Adopting the *short stay* principle sets you ready to go with only the parking brake to release. In principle, advanced drivers are ***"planning to go but always prepared to stop".***

However, whichever principle you adopt for a particular hazard you should apply the parking brake without '*ratcheting*' the lever. Ratcheting is the malpractice of pulling up the parking brake without first pushing in the release button - thus invoking the all too familiar *click-click-click* sound which demonstrates a lack of knowledge or vehicle sympathy and which results in premature wear of the parking brake ratchet rack and pawl.

Remember that an advanced driver should not expect to use the parking brake every time they stop. Learner drivers are taught to apply the parking brake every time they stop because of the complexities of dealing with a multiplicity of considerations at an early stage in their driving career but for advanced drivers there are many circumstances where this is quite unnecessary. For example, you will usually apply the parking brake at traffic lights, on hills, waiting to turn right and **always at a pedestrian crossing** but not always necessarily when manoeuvring on level ground or when stopping briefly at a 'Stop' sign.

However, see the document 'Stop Signs' for more information about how best to deal with this situation when on your advanced driving test.

For parking brake use with automatics – by Andy Poulton:

> *"For Autos the same applies at long and short stops but the car 'may' be left in drive unless the brake is weak and engine strong when it 'may' have to be put in neutral or park.*
>
> *For Mercedes cars with left FOOT operated parking brake - the above still applies but the routine of applying the parking brake with the foot needs to be adopted. Some Observers with the necessary patience and the good skills of the Associate have been able to encourage the Associate to apply and release this brake without the ratchet noise and clunk!*
>
> *This takes up a lot of time and practice and will not be needed to be demonstrated on test".*
>
> *Andy Poulton; ex Staff Examiner*

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Positioning and SVS - Safety, View, Stability versus SSV

SVS

Roadcraft page 179 'New Edition 2013' says:

Position

When positioning your vehicle for cornering you need to consider:

- Safety
- View
- Stability

SSV

It is a common myth that Roadcraft lists SSV (Safety, Stability, View) as the order needed to be considered for cornering!

Obviously safety comes first but be aware that you need to get the best view before you can choose the most stable path through the hazard.

Be careful! Trying to choose the path of greatest stability before securing the optimum view is a short term expedient which can lead you to a course of least stability and a change of plan once the view develops.

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Positioning for Bends

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"The optimum position on the road is the one which gives you the highest regard to safety, the best view, and the maximum stability".

Too often a driver's natural focal point rests on the road a few metres ahead or on the rear bumper of the vehicle in front - generally not far enough ahead to allow for early and accurate planning. Keep your vision on 'full beam' and look as far ahead as possible so you can gauge any situation or hazard which needs attention.

For much of the time the amount of vision you get is related to your road position. So the better you are at positioning your vehicle, the earlier you will receive the vision – and the earlier you get the vision, the earlier you can make the decision.

Early Vision - Early Decision!

So, now we all know that the optimum position is the one which gives you the highest regard for safety, the best view, and the maximum stability but it's also worth bearing in mind that the position which gives you the best view is also the one which benefits the driver coming towards you simply because you arrive in their vision earlier. However: on left handers, being just left of the centre white line can also be the least safe so extra caution and excellent anticipation is required.

But optimum positioning - especially on left handers – does not come easily to the standard driver! With left hand bends it takes much practice as you have to learn to 'split your vision' between the limit point ahead of you in your main vision whilst keeping the white centre line in you peripheral vision where an expert driver would aim to be just a few centimetres to its left.

Right side practice for left hand bends:

Motorways (very quiet motorways) are a good place to practice splitting your vision in this way but make sure you have a reasonably clear road both front and rear before you practice. Begin by moving the vehicle gradually out towards the lane marking so that the tyres are JUST touching the cat's-eyes. Then make a minute left steering adjustment so that you are now 5cm or so from the cat's eyes. Now, splitting your vision between 'full beam' and peripheral, make a mental note of where the lane markings bisect a line somewhere on your car bonnet or windscreen wipers - to your line of sight.

Begin to apply the principle to left hand bends.

Left side practice for right hand bends:

Practice your vehicle width by driving so that the left wheel only just touches the rumble strip between lane 1 and the hard shoulder and then place that same 'mental marker' where the white line appears to touch the bonnet and windscreen. Do not take your eyes off the road ahead to do this and always choose a place where the hard shoulder is empty.

Begin to apply the principle to right hand bends.

On right hand bends however, be aware that you may be inclined to drift over the white centre line - for instance because you might be apprehensive about the width of your vehicle. Look to the limit point keeping the centre line in peripheral vision and take up a position just left of the white centre line or as close to it as gives you the optimum view with the highest regard to safety.

Remember: most vehicles (offside to nearside mirror) are about the same width as your outstretched arms (try it!) so that there is often more room on the left of the carriageway than is sometimes thought.

This part of the System needs endless practicing using peripheral vision so get out there - at least 100 miles per week - and practice

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P O W D E R Y Check…

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The acronym 'POWDERY' refers to a regular check of the 'driver friendly' components and accessories which are fitted mainly to the outside of the vehicle but note that some are found under the bonnet and some in the boot. The 'Y' in POWDERY refers to YOU!

Schedule a POWDERY check before a long journey and at least every two to three weeks in between.

1. PETROL. (OR DIESEL)
    a. Ensure that you have sufficient fuel (petrol or diesel) for your intended journey. Top-up regularly.
2. OIL. There are various oil/fluid reservoirs and they all need checking regularly. Note that not all vehicles have all the following. Check yours and if you are not sure about which is fitted to your vehicle you should consult the handbook. For instance: do you know if you have a cable controlled clutch - or is it hydraulic? This is important! Check the following oils/fluids:
    a. Brakes
    b. Clutch
    c. Engine
    d. Gearbox
    e. Power steering
3. WATER. There are various water reservoirs and they all need checking regularly. If you are not sure about which is fitted you should consult the vehicle handbook.
    a. Engine coolant. Depending on the age of the vehicle this will be either the expansion tank or radiator.
    b. Screen washer.
    c. Battery (if applicable). If sealed, check the electrolyte indicator for correct colour.
4. DAMAGE. (Not cosmetic damage) If you have parked your vehicle in a road overnight or you have left it in a car park whilst shopping etc., it might have suffered some damage from other vehicles or shopping trolleys without your knowledge. Therefore a quick visual check of the fundamentals is important:
    a. Wheels for damage. If you are in the habit of parking with your wheels pointing outwards they are at risk of being hit by careless drivers - especially in car parks. You'll probably not notice this kind of damage until some months later when one tyre wears unevenly due to misaligned tracking! Straighten your wheels next time you park!
    b. Tyres for slits and punctures.
    c. Lamps and reflector covers for breakage.
    d. Mirrors for breakage.
5. ELECTRICS.
    a. Exterior lamps working.
    b. Interior warning lamps all working
    c. Horn working.
6. RUBBER.
    a. Tyre pressures and tyre tread depth **including the spare**. Tyres must have a tread depth of at least 1.6mm across the central three-quarters of the breadth of the tread and around the entire circumference.
    b. Wind screen wiper blades and their carriers. Blades for nicks and tears - carriers for slackness in the blade spine. Don't forget the rear if applicable.
    c. Water hoses under the bonnet.
    d. Pedal rubbers. Are they worn smooth? Are they missing?
7. YOURSELF.
    a. Are you fit to drive?
    b. Were you partying last night?
    c. Are you taking medication which might dull your reaction time?…

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Progress … (See 'Speed and Acceleration' Roadcraft p115-118)

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Making and Maintaining Progress

"Knowing when to use your car's power and when to take it easy are skills which every advanced driver has mastered. Advanced driver isn't about driving around at a snail's pace: it's about using power and acceleration smoothly and safely".

In the early stages of Advanced Driver Associates often do not have the skills and confidence to take up the optimum road position, or choose the most appropriate speed or select the most flexible gear to enable them to deal with hazards and bends in the safest, most progressive and systematic way.

Associates often say to me *'…but I don't know this road and that is why I am not making good progress'!* Unfortunately, I'm afraid this statement doesn't wash that easily in advanced driving! If the 'system of car control' and especially 'limit point analysis' is used when approaching and negotiating bends there will be no road in the British Isles that holds surprises for you - even though you may never have driven on it before!

The key to building the confidence which enables Associates to make and maintain progress lies in the information stage of the system of car control. When dealing with bends the information stage should include 'limit point analysis' which also requires an understanding some basic overall stopping distances. But remember: information doesn't come automatically to any driver – you have to go and actively seek it out from every nook and cranny before asking yourself *'what might happen next'* and then, what driving plan do I need to make (including contingency plans) which deals with the hazard in a way that is safe, systematic, leaves nothing to chance and allows me to stop in the distance I can see to be clear!

So: the key points to using limit point analysis are:

1. Seek out all available information,
2. Having knowledge of overall stopping distances at given speeds,
3. Visualising those distances along a stretch of road,
4. Fusing the information, knowledge and visualisation to answer the question: can I stop in the distance I can see to be clear?

If the answer to No:4 is yes - then you may have the potential to make even more progress.

By the time you have completed the Advanced Driver course you should have inculcated the 'system of car control' (and have practiced the techniques to destruction), and have the confidence to read limit points and understand what they are telling you. You should be able to scan the road surface for condition, camber or super elevation, review the traffic and weather conditions and to endlessly ask yourself *'can I stop on my own side of the road in the distance I can see to be clear'*. All this will enable you to make and maintain progress in the optimum position and most appropriate gear for any road and bend. …

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Rev Counters…

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Don’t get in a spin about rev counters - they're mostly superfluous!

And don't be afraid to hear your engine!

Firstly: rev counters when fitted to small cars are often unnecessary. Secondly, a good number of standard drivers often don’t understand the significance of the information a rev counter offers and thirdly, you shouldn’t allow your vision to dwell on the rev counter because it doesn’t tell anything which is more important than the road ahead!

A rev counter simply shows the number of revolutions an engine’s crankshaft (that's the rotating bit which converts the reciprocating motion [in a car’s case, the up and down motion of the con-rods and pistons] to circular motion) is revolving per minute (RPM) – usually divided by 1000: i.e., 2 on a rev counter is telling you that your engine’s crankshaft is revolving 2,000 times per minute. Typically, petrol engines of 1000cc to 1800cc (1.0litre to 1.8litre) have a useful operating range between 800 (tick-over) and 6,000RPM. Some sporty models can rev up to 9000RPM - or even higher.

The rev counter dial normally has a red line area in the higher numbers indicating that the engine (not the car) is reaching its manufacturer's recommended maximum safe speed: entering this red area is known as ‘red-lining’. As a general rule it would be unnecessary to run the engine in this red area for more than a second, if at all. Having said that, most modern cars have a built in ‘rev limiter’ which electronically prevents the engine from ‘over-revving’ by momentarily shutting off the power until the engine speed is lowered: and it does all that without you ever being aware it’s happening!

If rev counters do have any use it is to assist the you in selecting an appropriate throttle and gear setting for a particular situation: employing 'sustained gear changing' sometimes known as 'rev matching' for instance. Also: by audibly matching the pitch of the engine at a particular RPM with the speed with which things travel in your peripheral vision, it is possible to maintain a fairly constant speed, in a particular gear, without either looking at the rev counter or speedometer – but this requires a good deal of practice.

Don’t get too hung-up on the rev counter but if you do want to experiment with the information it gives, you can start practicing in 1st or 2nd gear in say, a 40mph zone.

Many petrol engine cars are eminently capable of achieving 50mph in second gear without over-revving so, take it to 40mph in second, check the road ahead is clear and give a quick glance at the rev counter (and I really do mean a quick glance because at 40mph you're travelling at 18 metres per second!). It’ll typically be somewhere around the 4,000 - 5,500 rpm area on the dial. Next, find a 50mph zone and, using 2nd gear again, take the car to 45-50mph and try to remember the audible pitch of the engine at that speed and in that gear.

Experiment in other gears on unrestricted dual carriageways and motorways and with practice you’ll get to know how to obtain the best performance from your car in any gear without fear of over-revving the engine. …

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Road Signs

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Road signs and markings, road surface, tyre marks on tarmac or paint on the road are akin to the foreword and punctuation marks in a book. Read them from top to bottom. They inform you of what you might reasonably expect to happen next. They break up the sentences and often tell you the nature of the road you are on. They should give you a clearer understanding of what you might expect to find along the next section.

Signs and surface form a part of the *information* stage of the System of Car Control. Add them into your commentary and integrate them into your *'driving plan'* - even the seemingly unimportant ones such as 'Joe's Café' - because the more information you take in at an earlier stage the better you can anticipate what might happen and the more you are equipped to deal with impending hazards.

From the information provided from road signs and markings you get a 'better than the average' opportunity to make a *driving plan* because by analysing ***what you can see*** you will anticipate ***what you can't see*** and prepare for ***what you might reasonably expect to happen***. Observation – Anticipation – Planning.

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Scanning and the Driving Plan …

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"Every action you take in a vehicle should be the result of a well-considered Driving Plan".

The driving plan is reliant on the following factors:

- Concentration
- Observation
- Anticipation
- Planning

= ALWAYS IN THAT ORDER

The need to concentrate and anticipate must never be under estimated. As you drive along all the factors and observation links which constantly unfold in front of you build up into an ever-changing picture which allows you to make a 'Driving Plan'. Typically, a driving plan incorporates all that can be seen in front of you, to the sides, behind and above but it must also include contingencies to help you deal with *'…things that you can't see but might reasonably expect to happen'*.

For instance, when you are driving along a winding single track lane you will not be able to see if vehicles are approaching from the opposite direction. Not seeing them however does not preclude their existence so meeting them is *'what you might reasonably expect to happen'*. This example is only one of the hundreds in this ever-unfolding environment and the real key to the success of a driving plan is anxious anticipation. If you always anticipate the worst – you will usually come off best. Optimism has no place in advanced driving.

Scanning is a fundamental component of the Driving Plan and is the method of observation which uses regular visual sweeps of the whole driving environment to ensure that the driver is constantly aware of all that is happening so that *they* can be included into the 'Driving Plan'.

Remember that information is not always obvious: for much of the time you have to seek it out and constant scanning for information will bring it to you! The faster we travel the **less** information we can absorb because of the greater distance covered in a given time span. Conversely, the slower we travel the **more** information we can absorb by scanning because of the shorter distance covered over the same time span.

When you approach a road junction, T junction or roundabout, or any hazard where you might have to alter your speed or change direction, consider slowing your approach at an earlier stage. This will allow you to absorb a greater amount of information in the available time span and you will be pleasantly surprised at just how often you are able to keep your vehicle moving. Remember: " *…the slower you approach, the more information you can take in, the quicker you can get away".*

However, don't forget that safety should never be compromised for any other advantage so although you will be planning to go you should always be prepared to stop. …

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Shoulder Checks …

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Shoulder checks should be done each time before the vehicle moves off from stationary and at junctions before turning left or right and roundabouts before exiting but always make sure that it is clear from the front before doing a shoulder check on the move.

Standard drivers rarely think about this sort of observation as important but without careful observation from all around, drivers cannot anticipate and without early anticipation they cannot plan. Without planning they are potentially a disaster!

However, if you are not used to shoulder checking take care! As you look deeply over your left shoulder you will pull the steering wheel to the left because your shoulder rotates with the head and vice versa for the right! To counteract this: slightly loosen the grip of the corresponding hand on the steering wheel as you do the deep shoulder check. So: left check – loosen left hand.

Motorcyclists refer to shoulder checks as 'A LIFE SAVER'!

Remember: *"Mirror checks give information. Only shoulder checks give confirmation"*.…

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Shutdown Drill ….With acknowledgments to an article by Andy Poulton – ex Staff Examiner

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At the end of an observed drive and as part of your commentary remember to do a shutdown drill. Say: *"I started with a drill – I'll finish with a drill".*

1. Bring the vehicle to a smooth halt with the road wheels and steering wheel straight and maintain footbrake pressure (until stage 6).
2. Apply the parking/hand brake - without ratcheting if it's mechanical) - whilst maintaining steering control with one hand.
3. Select neutral and disengage the clutch.
4. Whilst still maintaining footbrake pressure (until stage 6) switch off all ancillary controls[1].
5. Still holding the steering wheel - turn off the engine.
6. Release the footbrake slowly ensuring that the handbrake is holding.
7. Release your seatbelt by feeding its return to safeguard against the steel hasp damaging the windscreen.
8. If returning from an observed drive, return both hands to the steering wheel until you are debriefed or advised to leave the vehicle so that you maintain control in the event of a rear shunt.
9. Note (and arrange to investigate) any defects during the drive, e.g. a light problem, brake fade, unusual noises etc.

[1.] An ancillary control is anything other than the brake pedal and steering wheel.….

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Signalling…

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The purpose of signals is to ***'…inform other road users of your presence and intentions. Think before you signal: indiscriminate signalling is not helpful to anyone.'*** Roadcraft page 100.

Give a signal whenever it could benefit other road user - but do not signal indiscriminately**.**

Signalling, when to signal and when not to signal, is a subject that causes some of the greatest confusion amongst drivers and other road users. It is therefore one which leads to much debate.

The rule is: *'Always give a signal if another road user will benefit'*. That is quite straightforward and in the main you there will usually be someone around who will benefit from a signal - so, if this is the case, build it into your driving plan and give one in good time.

This is even more imperative on the motorways where speeds are greater and time is shorter. So on motorways, and only if it would benefit another road user, allow one signal click for every 10 mph before you change a lane. At 70mph you should therefore plan for 7 clicks before changing lanes. If you are the sort of driver who is inclined to 'FLASH 'N' GO' it indicates to all around you that you are not planning sufficiently far enough ahead.

However, you should note that when returning to lane 1 after overtaking on a motorway, it is generally unnecessary to give a signal because lane one is the 'normal' driving lane and ideally that is where you should be much of the time. *'…If you are overtaking…you should return to the left-hand lane as soon as you are safely past'.* Highway Code rule 264

Signalling is part of **'giving information'**. Associate Members taking the Advanced Driving Course will hear that you should only ***'…give a signal whenever it could benefit another road user'.*** After some analysis it will be appreciated that ideally a signal should be employed in any situation ***where you are not sure if someone will benefit or not*** so as to ensure safe passage through *a* particular *'hazard'.* However, in deciding whether or not *'another road user will benefit'* from your signal you will need to consider the various factors and *'observation links'* which constantly unfold in front of you whilst you are driving.

When evaluating the benefit of a signal you should consider the 'TUG' acronym attached to the 'INFORMATION' stage of the System of Car Control, i.e., Take information – Use the information – Give information. You will also need to include 3 other major factors, i.e. **'what you can see – what you can't see – and what you might reasonably expect to happen in the particular situation'**.

If for instance, as you approach a wide and open junction, you observe that no one is following and that no other road user is approaching from any direction who could benefit from a signal, and also that there is no possibility of someone 'unexpectedly' appearing, then to give a signal would be unnecessary.

However, if something is obscuring your view at the junction: for instance hedges, walls or parked vehicles, it would be wrong to assume the principle *"I can't see anyone who might benefit therefore there is no one who will benefit"* because you will almost invariably be caught out as someone 'unexpectedly' appears in view.

In other words: if the view to other road users is obscured then you should consider applying a signal in anticipation of *"...what I might reasonably expect to happen in this particular situation".*

Generally it is unnecessary to give a signal to pass a parked vehicle especially if your signal could be misconstrued to meaning *"... I intend to turn right".* However, as with many facets of advanced driving you need to weigh up whether, by giving a signal to pass, it would be beneficial to another road user or just downright confusing. Therefore, any signal you give should leave the beneficiary in no doubt as to your true intentions.…

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Sparkle and the Seven S's... Back to IndexGood advanced drivers are not only good - they are excitingly good! Flair, panache and spirit - what we sometimes refer to as 'sparkle' - play a part in heightened driving skill.

You won't find anything about sparkle or panache either in IAM RoadSmart publications or Roadcraft but sparkle is that Je-ne-sais-quoi which separates the excitingly good from the advanced!

Sparkle in advanced driving terms is one of the seven S's:

- Safety
- System
- Speed
- Stability
- Space
- Smoothness
- Sparkle

Although not necessarily in that order - except SAFETY!

For instance:

- Sparkle is the difference between staring ahead and slavishly following in the tracks of the vehicle in front: - and moving the vehicle surreptitiously left and right for view, or looking for the possible overtake.
- It's the difference between flying up to a road junction or roundabout and stopping to look only to find a clear road: - and approaching slightly slower, planning to give yourself more time and space to take in all the available information, and getting away without stopping.
- It's the difference between braking, changing gear and steering simultaneously during a bend: - and getting the speed down before the bend, changing down a gear whilst rev matching so that the vehicle is all set up ready for complete control by just the accelerator and steering wheel.
- It's the difference between mundanely driving along at a steady 40mph in a national speed limit for no good reason and then braking for a lower speed limit which you should have seen some way back along the road: - and making good safe progress at 60mph, then using accelerator sense to adjust your speed to a lower speed limit at the entry signs before selecting a lower gear.

That's sparkle!! There're plenty of examples and I hope you can think of others. Advanced Driving is about creating many safe opportunities and making good steady progress with stealth - never taking a risk.

Give everything you do that extra bit of polish - and make it sparkle!...

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Speed - Gear - Steer triplet … (See also: Overlapping)

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SPEED

Obviously, varying your speed can be achieved with either the accelerator or brake pedal but whichever is used it should be progressive in order to produce the most stable and comfortable ride. Therefore both these pedals have to be used in exactly the same way. Feel In - Firm On - Feather Off.

Before you actually start braking - plan far up the road to a point where you need to finish braking and come off the brake pedal at that point. Your speed at this final stage should be the speed that you intend to negotiate that particular turn or hazard - without further adjustment. Now take the most appropriate gear for the hazard.

This simple principle will eradicate any problem you have with overlapping.

GEAR

If you have chosen to brush off the speed with brakes - once the appropriate speed has been achieved your foot should come off the brake pedal and go straight onto the accelerator, so that you can raise the engine speed whilst at the same time selecting a lower, more appropriate gear for that speed. We describe this by the term 'sustained gear changing' (or rev matching) i.e. sustaining the engine revs.

STEERING

Steering should come into play *ONLY AFTER* the previous 2 phases have been completed. If it is done correctly you should find that both speed and gear have been 'sorted out' and that your hands back on the steering wheel about 10 metres before the intended turn.

However:

- If you find yourself still braking whilst you are also changing gear (overlapping) then either you are going downhill (which, to some extent, is allowed) or, more commonly, you have left your **speed** stage too late in the approach to the hazard and need to try again!
- If you find yourself still changing gear after you reach the steering stage then you have also left your **speed** stage too late in the approach. Get the correct speed earlier in the approach to the hazard.
- If, having got these all sorted out, you then find you have to brake again before or during the steering stage, then again, you left your **speed** stage too late in the hazard and must try again.

Adjusting to the correct **speed** is the key in this *triplet* stage of the System. If you get the correct **speed** just at the right moment then there will be plenty of time left for everything else to follow in a smooth, systematic and methodical way.

- Overlapping any combination of braking, gear changing or steering is taboo!
- The Examiner's maxim is *"Overlapping has no place in advanced driving".*

The only sure way to get all this sorted out is to plan where the speed stage should finish, i.e., where along the road ahead you need to come off the brake pedal before you even go on it. Inculcating this principle never fails to eradicate overlapping…

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Staggered Road Junctions

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Expressed loosely, crossroads were formed over eons as travellers from east to west crossed the paths of those from north to south! This occurrence continues today and one has only to examine any crossroads to see that in the majority of cases drivers go straight over rather than turn left or right. The potential for danger is obvious!

Staggered road junctions are quite a modern feature on our roads and they came about in an attempt to reduce the possibility of a crash as two vehicles (both at right angles to, and unseen by, the other) approached crossroads intending to continue straight ahead.

The idea attempted to remove the crossroads danger element and force drivers to slow or stop at a road junction before continuing on their way and in the main they have achieved this quite successfully. You will note that most staggered road junctions have been formed by creating a 'kink' in one of the minor roads in order to achieve the two separate junctions.

There are two types of staggered road junction and both present their own set of hazards. The use of the commonly employed phrases *'safe'* and *'unsafe'* to describe the two are misleading because neither is safe – in fact both are highly dangerous because to all intent and purposes they are still crossroads.

Therefore, whenever you approach a staggered road junction you should be aware of the probability that a vehicle coming from the minor road will generally want to continue straight ahead and possibly across your direction of travel.

See staggered road junctions diagram below.

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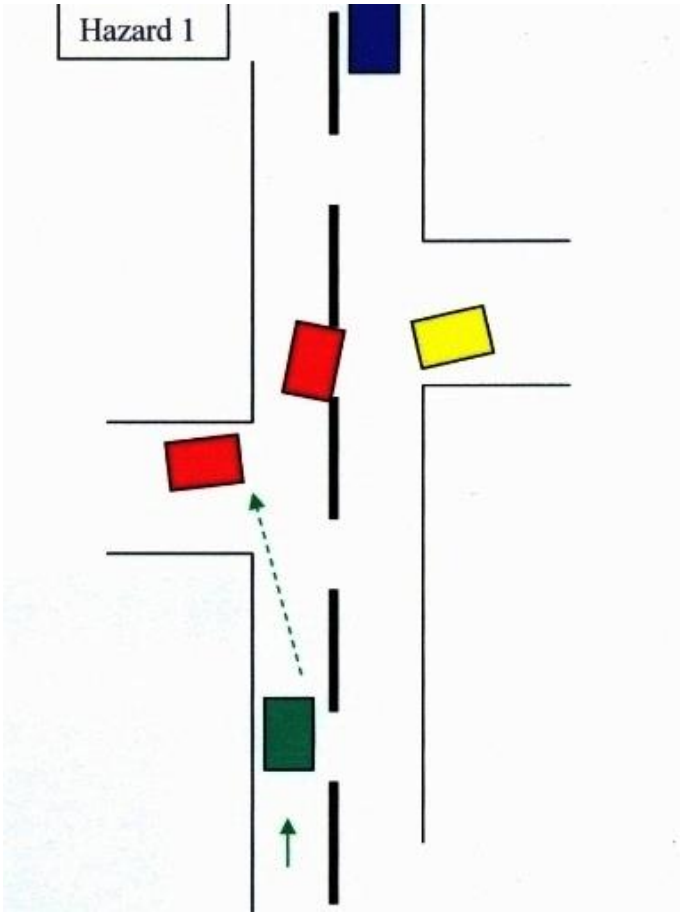
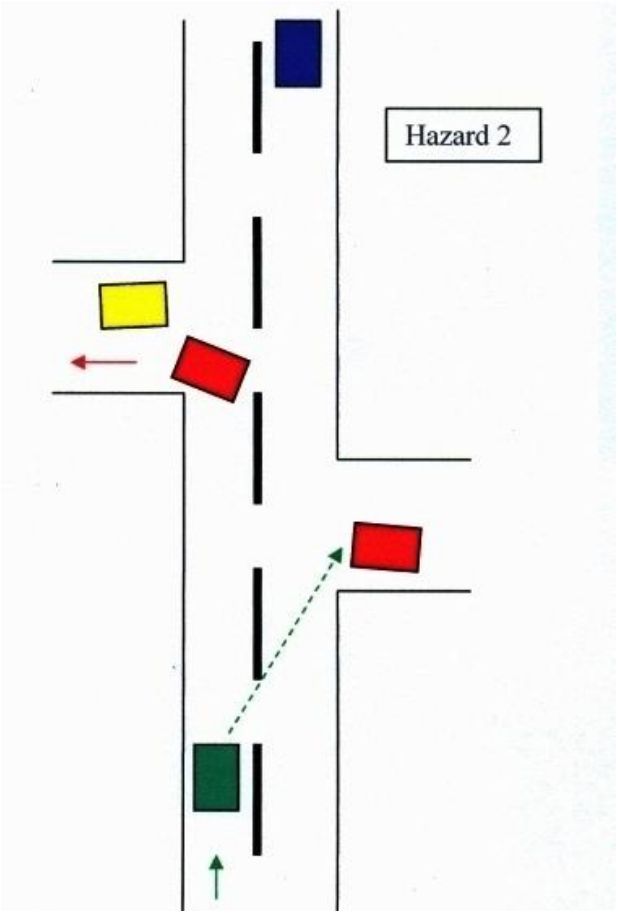
Hazard 1 Often called 'Unsafe' Junctions

On this junction the first road you encounter is on the left. This layout presents the following problems.

- Your green car's view into the junction is obscured because of the narrow angle of its approach. (----------►)
- If the red car pull out from the side turning it will usually have to stop in front of you before turning right thus forcing you to the left.
- If the yellow car comes out from the right the blue car is more likely to be forced out into the path of the red car thus compromising your own safety





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Hazard 2 Often called 'Safe' Junctions

This junction is slightly less hazardous than the first because from all aspects you have more time to react.

- Your green car's view into the junction is improved because of the wider angle of your approach. (----------►)
- If the red car pulls out to cross over the junction it has nothing in front of it to impede its progress and so it is less likely to remain in your way.
- If the red or yellow car pulls out and decides to continue in the direction of your travel then, because it is accelerating, you have more time to react and slow down.
- If the yellow car pulls out in front of the blue car, the blue car is more likely to pull to its left and away from you.

Steering: Mirrored Steering

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"...accurate steering sits at the heart of advanced driving".

IMPORTANT:

Your thumbs must reach and touch at the *12 o-clock or 6 o-clock* positions during pull-push steering input, especially during manoeuvring, otherwise you will fall into the *'RoSPA/IAM shuffle'* trap and end up with far too many steering movements for each turn or manoeuvre and you will find it impossible to end up with your hands automatically at the 10-to-2 position after the return of steering.

Apart from braking – accurate steering is the most important control when driving. *Mirrored Steering* is a term used to describe a system of steering which incorporates the ***Pull Push*** method. Mirrored steering ensures that your hands remain in contact with the steering wheel for the maximum amount of time during the drive and that they return to the 10 to 2 position after each steering manoeuvre.

Mirrored Steering provides greater control than can be achieved by other methods such as *crossing hands* or the *rotational* and is particularly valuable for accurate control in all manoeuvring exercises and especially for reversing round a corner when your eyes will (for the larger part) be through the rear window. It allows you to know exactly the position of the steering wheel in relation to the direction of the road wheels - without the need to look.

Self-Centring

Remember, mirrored steering should be applied right through the steering action and not abandoned in favour of allowing the wheel to *self-centre* after a turn. Allowing the steering wheel to self-centre can, under certain circumstances, rob you of steering control because for steering to work to its maximum efficiency it is dependent upon full tyre traction i.e., tyres in 100% contact with the road surface. Therefore, because the following surfaces do not provide 100% traction you cannot depend on self-centring to work on: ICE, SNOW, SAND, LOOSE GRAVEL, SEVERE ACCELERATION, SEVERE BRAKING or when AQUAPLANING!

If, during the course of hard acceleration or braking or driving on ice or snow etc., you lose traction with the road surface you will also lose the self-centring characteristic and therefore your full control (even with ABS). You may say *"...well that has never happened to me so I'll continue to let the wheel slip back..."* but one day it will happen and unless you are willing to adopt totally the recommended steering regime now you will not be ready when it does!

N.B. To get to grips with pull-push steering it may be useful to consider the steering wheel arithmetically:

a. The number of hand movements you add to turn in one direction (say, to turn right), must be subtracted when you turn in the other direction to go straight again!
b. So, if on a turning you count 3 hand movements of the steering wheel i.e., pull - push - pull, you will need to apply the same number of movements on the return! So, a '**pull**-push-**pull**' on say, a right turn must require a '**push**-pull-**push**' (note the reverse order) to straighten the car! Yes, I know - you're not daft and it's obvious. But now you try it!!!

Try to hold the steering wheel at the 10 to 2-o-clock position as it has the following benefits:

1. It provides 12% greater steering input than the ¼ to 3 position.
2. It allows for large 'bites' of steering as 180° pulls can be achieved with minimum effort compared with *cross-hands* which typically provide only around 100° so you get greater vehicle control and more time to react.
3. It provides faster and more accurate steering input and feedback than any other steering regime with the exception of the 'cleaning windows' method favoured by young male drivers which although fast, provides the least control of all.
4. In a crash the air bag has a clean, clear shot and can deploy without contacting the hands, thumbs and arms. Typically, the speed of an air bag when deployed is around 200mph with a pressure of 1000psi: far more than enough to cause serious injury to anyone within its firing range, so your arms and body should stay well clear and your head should never be nearer than 40cm.

Successful 'Mirrored Steering' is dependent on the following points:

Firstly beware! There is a danger that people training to take the Advanced Driving Test erroneously believe that 'pull-push' steering must be done in small shuffling movements (often known as the IAM Shuffle). **This is not so!** Steering should be done in large bites with both hands touching at the 12-o-clock and 6-o-clock positions and only changing their priority from active to passive (positive to negative) once they have touched.

1. The first action should be a '*pull*' with one hand - followed by a '*push*' with the other.
2. There will always be an *active* and *passive* (or positive and negative) hand. The *active* hand will be the one doing the work at that particular moment whilst the *passive* hand will *slide* round the wheel at an *equal and opposite* height – effectively mirroring or 'ghosting' the active hand.
3. All the 'active' steering is done within the upper 'D' area of the wheel i.e., above the spokes (see image below).
4. The *active* hand must remain the active one between its 12-o-clock and 6-o-clock radius.

5. Both hands remain *'equal and opposite'* to each other as if one hand is *mirroring* the other.
6. Each hand in turn should not cross the *12 o clock* or the *6 o clock* position.
7. **The last hand to be active at the end of a turn is the first to be active on the return. (This is very important).**
8. When a hand leaves the steering wheel, for example to change a gear, it should return to exactly that same place on the wheel (mirroring the other).

(N.B. If turning sharp left or right, for instance at a road junction, it is beneficial to begin the first *pull* from the 12-o-clock position).

Let us take, for example, a right turn at a junction:
Starting with the '*active'* right hand at 12-o-clock, *pull* down to the 6 o clock position where it will meet the '*passive'* left hand. If more steering is still required from this position then the left hand takes over (now becoming the *active* hand) by pushing up, if needed to the 12 o clock position, where it would meet the right hand.

The important part of this system of steering is that, whichever hand was the last *active* hand when you came to the end of the steering, it must be the first *active* hand when you begin the return.

Sometimes you will achieve all the steering required without the *active* hand reaching the 6 o clock position, for example on long bends and roundabouts. This hand therefore remains the *active* hand throughout and returns the steering wheel back to the straight ahead position where both hands are once again at the *'10 to 2'* position.

Be careful to avoid stopping dead each time you reach either 6 o-clock or 12 o-clock as this induces the jerky thrupenny bit syndrome common with the rotational (crossing hands) style of steering. Try to make your steering a continuous smooth turn from the first 'pull' to the last 'push'.

Here's how you can practice at home.
IMPORTANT: DO NOT PRACTICE THIS INSIDE A CLOSED GARAGE OR ENCLOSED SPACE.
Place a couple of thick 'glossy' magazines on the ground in front of each wheel and drive the front wheels onto them. **Secure the vehicle with the handbrake/parking brake and select neutral** and then with the engine running (so as to activate the power steering) you can practice as much as you like without fear of straining the steering linkages.

Aim to find your hands within the 'D' at the *10 to 2* position when you return the steering wheel to the straight ahead position and remember: if one hand crosses the other or you change from 'active' to 'passive' before you reach the 6 o-clock or 12 o-clock positions you will end up outside the 'D' and will need to try again.

Do not practice this without some kind of slippery medium under the tyres.
Turning the steering wheel when the vehicle is stationary with tyres in contact with tarmac or concrete (dry steering) should always be avoided as it subjects the steering linkages to immense strain which ordinarily is heavily masked by the power steering mechanism and rolling wheels.

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Steering: Setting the Steering.... (see also '**Sustained Gear Changes**')

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The term to 'set the steering' refers to the technique of setting the steering wheel to a particular arc of a bend or corner, without further input, usually as a precursor to selecting another or more appropriate gear.

This technique would usually be employed when combined with sustained gear changes but care should be taken that due regard is given to adverse weather, traffic and road conditions: including camber. Unless the driver can accurately sustain the gear change, i.e., match the speed of the engine to the speed of the anticipated gear, there exists the possibility of unbalancing the vehicle by the action of overlapping steering and lumpy gear changing – so don't do this, especially not on test, unless you're confident you can do it faultlessly.

The technique of setting the steering can be used when entering a roundabout in first or second gear and where within a short distance of travel you might require a higher gear. Here you would accurately set the steering to the arc of the roundabout (so that for the duration of your gear change the vehicle will remain on its course without further steering input) and at this point you would employ a sustained gear change.....

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Steering: Thrupenny Bit Steer-ers: One bend – One steer

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Thrupenny bit steer-ers take note because at the moment you're not very attractive!

I'm referring to those drivers who habitually alter their steering input through bends – not just when entering or exiting the bend but treating each corner as a series of separate bends as they oversteer, understeer, oversteer, understeer their way round - a bit like driving round the edges of the old thrupenny bit.

For those scholars struggling with the history of Britain's pre-decimal currency: there were four 3d bits to a shilling and 20 shillings to a pound! A £1 pocket full of thrupenny bits weighed over ½ kg (1.2lb) and pockets were a lot stronger back then!

During their first few weeks into an IAM RoadSmart Advanced Driver Course over two thirds of Associates exhibit this rather uncomfortable and very unattractive driving style until they have understood the most basic principles of the relationship between steering wheel and bend in that bends need to be worked with – not against, if maximum stability and smoothness (two of advanced driving's six S's) are to be achieved!

In almost all cases the curvature of a bend is not accidental but has been carefully engineered to a fixed radius rather as if someone came along with a very large drawing compass and scribed enough of a circle to join one bit of road heading in one direction - with the same road when it strikes a detour in another direction. Clever eh - not!!

So, what to do? Well, - as we know, to achieve maximum smoothness and maximum stability each of the controls needs to be used progressively and in three stages. You will have seen that braking is always 'feel in, firm- on and feather off'. Similarly, the accelerator is a 'squeeze down, hold on and ease up' action and likewise gear changing should be 'one-and-two' (one' - as the hand touching the gear lever, 'and' - as the gear lever is placed in the neutral gate, and 'two' - as the appropriate gear is selected).

Steering needs to be thought of in that same 3 stage action: gradually feeding the steering into the bend until you find the exact radius, fixing it there without any further in or output, and feeding it back as the road opens up. The whole should be one seamlessly smooth action: one bend - one steer, not a series of separate steers for the same bend.

Occasionally (although rarely) you will encounter a double apex on a bend, effectively making a single bend into two separate radii. It would be equally rare on these types of bend to feed the steering back completely but treat these as two separate bends applying the 'one bend – one steer' principle for each apex.

If you are a 'thrupenny bit steerer' you will unknowingly have been one for all your driving life so you will have to work hard at inculcating this 'one bend - one steer' principle but when you have mastered it your driving on bends will be smoother, more stable, much more comfortable for your passengers and you'll be 10 times more attractive! ...

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Stop Signs

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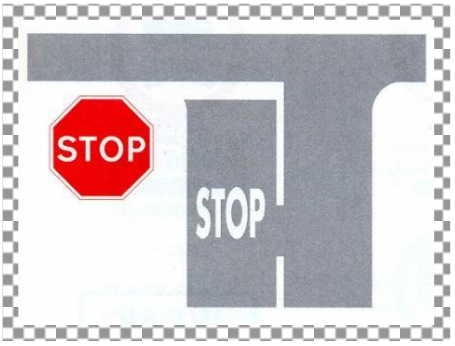

STOP SIGNS MEAN STOP! They have exactly the same meaning as RED traffic lights and they are accompanied by a similar but thicker white SOLID STOP LINE on the road set at 90° to the kerb.

Uniquely this is the only road sign which uses the octagonal shape and it is common right across Europe and most of the rest of the world. It has a red background and is bordered in white. Watch out for them when you are next driving. They are placed only at junctions with a restricted view and where there is a proven poor safety record. You must regard a stop sign as you would a red traffic light and stop at these junctions, even if you believe and can see that it is clear, before you proceed!

Many drivers fail to stop at the stop sign but would still put their hand on their heart and swear that they had actually brought the vehicle to a halt. Some even believe that creeping over the line constitutes compliance with the law.

You must stop – even if it's for a second! **On your Advanced Driving Test: even if you produced the best drive ever seen by the IAM Examiner but went through a STOP sign, you would fail!!**

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System of Car Control - Purpose and Definition

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I P S G A

INFORMATION
POSITION
SPEED
GEAR
ACCELERATION

For anyone undertaking the 'Advanced Driver' course it is essential to become intimate with its 'nerve centre', the System of Car Control, at an early stage. It is also a good idea to include the following points into your **demonstrated** Cockpit Drill.

When I was practicing for my ADT I found it easier to break down the definition with something along the lines of:

1. *The purpose of the System of Car Control is to prevent road collisions by providing a way of approaching and negotiating hazards that is methodical, safe, and leaves nothing to chance.*
2. *It promotes concentration, careful observation, early anticipation and planning and a systematic use of vehicle controls to maintain stability in all situations.*
3. *It is applicable in all circumstances and provides the most effective way of dealing with an unpredictable environment.*
4. *Above all, it provides **TIME TO REACT**.*

All the theoretical and practical advanced techniques you will learn on the Advanced Driver course, plus the naturally inherent attributes you possess, will amalgamate. Eventually many of them will become deeply embedded within your driving style but the trick is to bring them into play at the right time and in the order which allows you to *'…negotiate hazards in a way which is simple, safe and leaves nothing to chance…'* and the key to that trick is the System of Car Control.

Everything sits on the system and the order it brings out of chaos provides the foundation for all advanced driving. All the above attributes sit on the system so that, if used sequentially and intelligently, it provides a logical and flexible structure for dealing with all hazards.

Sounds simple doesn't it - four phases (position, speed, gear and acceleration) plus the information stage flowing all around them! But cunningly bolted to each phase are dozens/hundreds of 'tools' which we can invoke to suit varying situations.

The trick is to start building the collection of those 'bolt-ons' (many of which are 'observation links') so that it can be used flexibly and you can only begin this processes by using the system at every hazard. Don't despair that this process seems far off - I'm still building after 25 years as an advanced driver – over half of which has been as Chief Observer!!

For e.g., take the Information stage which is initially broken down into 3 'bolt-ons': T U G - Taking information, Using information, Giving information. 'Taking' is then further broken down into see, smell, hear, feel or touch etc. 'Using' gives the basis of a 'driving plan' and incorporates much of Roadcraft, and there are at least nine ways to Give information.

It is so important to understand the concept of the system as early in this course as possible.

No-one can ever complete an entire 'bolting-on' process but there are basic minimums which must be applied to pass the advanced driving test. It has to begin with the basic I P S G A and separating the stages so that no stage overlaps another.

Remember to consider all the phases of the system on the approach to each hazard even though you may not need to use every phase (other than *information*) in every situation. Also remember that the information phase spans the whole system, so you need to constantly reassess and if a new hazard arises consider whether to return to an earlier phase of the system.

After a few drives with your Observer you will have inculcated the system so that invoking it has become second nature, forming the foundation upon which all the finer practical points of your driving can be constructed.

For Observers when giving a demonstration drive and Associates on their test day

As part of your pre-drive checks you will be expected to demonstrate your skilled understanding of the System of Car Control and its phases so remember to include the definition of 'the System' at the end (or beginning – it doesn't matter which) of the cockpit drill. For a really impressive show you could recite Roadcraft's definition verbatim although a general paraphrasing will be satisfactory in which case the following would suffice:

> *"On this drive I shall demonstrate the System of Car Control.*
>
> *The purpose of the system is to prevent crashes and it does that by providing us with a way of approaching and negotiating hazards that is methodical, safe and leaves nothing to chance.*

The system involves careful observation, early anticipation and planning and a systematic use of controls to maintain stability in all situations.

It is the most effective way of dealing with an unpredictable environment, it's applicable in all circumstances and it provides time to react"....

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Ten top tips to passing the IAM Advanced Driving Test

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1. Set a 'test ready' target date for yourself

Possibly our most important tip is to set a 'test ready' target date with your Observer as soon as possible. This gives you a set date to work towards. Your Observer will plan your development to reach 'test ready' status – stick to the plan!

2. Be prompt and timely

Take the initiative: this is your decision and your course. You will be the main beneficiary of this learning experience and we'd appreciate it if you keep us on our toes – be prompt, chase us if we are not providing enough information and tell us if there is anything else we can do for you. We're one of the most successful Groups in the country for getting drivers through the advanced driving test but we're here solely to help you achieve your own success.

3. Read the book

'How to be a Better Driver' contains all the information you will need to know in a simple, clear style with plenty of photos and diagrams. Invaluable bed time reading!

4. Practice

You won't be able to change and develop your road skills without putting in considerable practice time - at least 100 miles a week or between Observed on-road sessions. The benefit will be from the changes that your passengers notice and comment on – try it and see!

5. Don't switch on and off

Advanced road skills need to become embedded as your normal everyday behaviours. You cannot switch between advanced skills and your 'everyday driving' behaviour.

6. Ask questions, get advice

Request demonstrations if you're not sure of something. People learn in different ways so please ask as many questions as you need to, speak to fellow associates, visit forums and request to see advanced skills demonstrated. Your group is here to help you pass the advanced test in whichever way suits you best.

7. Tell us if you need any help or support

We provide our time to coach and help you to pass the advanced test. If we are not meeting your expectations or there is something we are not doing for you then please let us know – speak to us! We can only put things right if we know about them.

8. Engage with your local IAM group

We receive great satisfaction every time one of our members passes the advanced test. As volunteers we all give our time willingly so that you can pass the test – make sure you make good use of our skills and knowledge.

9. Don't drift away

It's only natural that the early enthusiasm and commitment wears off a little as 'real life' takes over. Please try to stay focused and make the effort to attend the seminars and observed sessions regularly. Our Membership Development chap loves nothing more than to nag lagging Associates!

10. Enjoy the experience

We saved the best bit until last. You'll find that you will enjoy the Advanced Driver Course and have great fun developing advanced road skills with us. If you love the experience then please tell your family and friends about it – many of our new members come via word of mouth and we'd like that to continue.

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The Two Second Rule

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"...Only a fool breaks the two second rule – In a downpour make it four"

On a dry road the minimum time span you need to maintain between yourself and the vehicle in front is two seconds! BUT remember: Two seconds is the time span between zero and two i.e., zero and one and two. I'm afraid that in my experience most associates mark two seconds with 'one and two' the span of which is actually only one second!

Remarkably, a two seconds gap between yourself and the vehicle in front will be sufficient at any speed to ensure that `...you can stop on your own side of the road in the distance you can see to be clear'. This is the fundamental rule of safe driving. However, it is a rule that has sadly been missed by so many drivers who would still be alive today had they applied it!

Two seconds to save your life

Each year on motorways there are crashes of thousands of vehicles, people burnt alive and hundreds very seriously injured - all of which could be avoided if each driver had taken just two seconds from their life and used it to create a gap between themselves and the vehicle in front. It is as simple as that!

How can you measure two seconds?

Watch as the vehicle in front passes a certain point (this could be a post, a mark in the road, a parked car, a shadow or even a bridge) then count two seconds (zero and one and two) or say to yourself "only a fool breaks the two second rule". If you pass the same point before you have finished counting - then you are driving too closely and need to pull back - but check your mirror first!

Remember: Mirror checks should be done only when it's clear ahead but every 10 seconds or so and also before you change speed or alter your direction. (See also shoulder checks)

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The Crucial Quartet

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This Crucial Quartet is an amalgam of:

a. all the observations you make during the information stage of the System of Car Control (1 to 3) and

b. your resulting driving plan (4).

1. Concentration
2. Observation
3. Anticipation
4. Planning

ALWAYS IN THAT ORDER

It's this blend of driving skills which forms the basis upon which all your physical driving responses are dependent:

Develop your concentration when driving to the exclusion of anything unrelated. Very soon you will find that concentration is the key which opens all that follows. Your observations will increase and you will begin to have a 'restless' anticipation of things which you know are likely to happen. Only when you reach this point in this crucial quartet will you be able to plan what you might need to do about each hazard.

Standard and inexperienced drivers rarely think about this but without concentration you cannot observe. Without observation you cannot anticipate. Without early anticipation you cannot plan. Without the tools to plan there is the potential for disaster.

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Three in a Car

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The purpose of three-in-a-car sessions is to maintain a high standard of driving so they are centred on a high level of awareness and adherence to *'the system of car control'*.

When you arrive at the given venue a Team Leader will assign you, with 2 others, into a team of three. One of you elects to be 'first to drive' and all three of you drive off in that car for 30mins or so with the other two noting the standard of driving skills.

They will look for a high standard of driving including the level of concentration, observation, observation links, anticipation of what might happen and planning. In fact, during a 'three in a car' session you will be expected to apply everything contained within this guide, and more, if the opportunity so to do presents itself.

At the end of that drive there is a short de-brief where the noted points are put across to the driver. Someone elects to go next in their own car and so on until all three have had their turn. The whole thing is over in around 1 ½ - 2 hours and it is completely free of charge!

No records are made of the drives although any serious lapses in Advanced Driving standards are made known to the Team Leaders who will assist in appropriate re-training on those points.

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Tyre Grip Trade Off…

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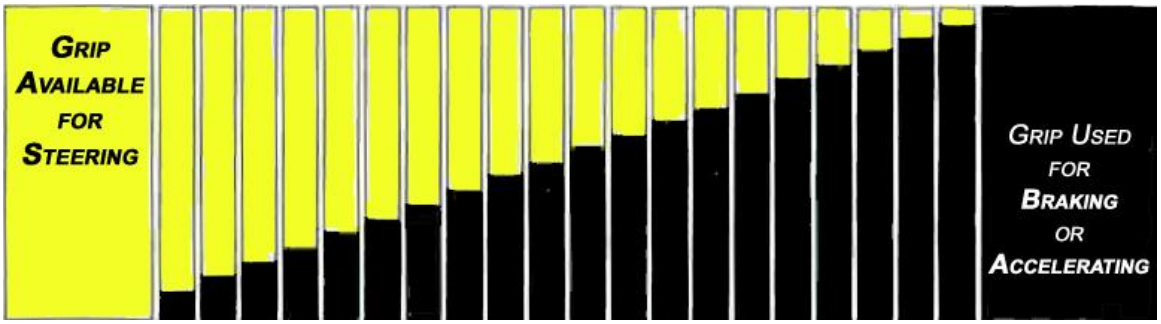
Maximum available tyre grip has to be shared between 3 independent functions: accelerating, steering, and braking. This is what is known as 'tyre grip trade-off'.

As more tyre grip is used for braking there is less available for steering and this reduces your control over the best positioning for the hazard.

Because many drivers enter a bend in the wrong position of the road, at the wrong speed and in the wrong gear they have to brake whilst actually steering through the bend – thus creating the 'trade-off'. This generally happens at the very point where maximum cornering grip is required. (See 'Speed - Gear - Steer)

Both cornering and braking transfer the vehicle weight onto the front wheels thus assisting grip and to some extent aiding water displacement. This however lightens the rear of the vehicle thus reducing the available tyre grip on the rear tyres with the potential for the rear end to slide outwards. Observe this the next time you watch a motoring programme like 'Top Gear'!!

It's worth considering that, as the only purpose of tyre tread is to displace water on the road surface, it might be a good policy to make sure you have the best treaded tyres on the rear whether or not you have front wheel drive, rear wheel drive or four wheel drive.…



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Tyre Run-Out: This May Surprise You!...

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Although most tyres are made to very high standards there are still variations in the thicknesses of the rubber, the steel belts and radial webbing which make up the tyre's structure. As we all know, one consequence of these variations is a weight difference around the tyre and the fact that new tyres have to be balanced when fitted.

You can actually see for yourself an indication of this on most new tyres - Look for coloured lines running around the circumference of the tread on your new tyre? Some of these lines are to give the tyre distributors easy to read information about the tyre but one of them is the 'run-out indicator' (usually red or blue) and will be to varying degrees on the left or right of the tread. The nearer to the centre line, the straighter the tyre will run, and the distance from the centre denotes the degree of the run-out.

Image courtesy of Sigmavision.com

But here is something which might surprise you - because rather less well known is something called 'tyre run-out'. This is a measure of how straight the tyre will run (track) if allowed to roll unaided along a horizontal surface set on a slight decline. Some will run straight and true, others will veer to the left or right by varying degrees.

Therefore, a steering problem can arise if both tyres on an axle happen to run out significantly in the same direction - which could easily be confused with poor tracking. So, ideally, when you're next buying new tyres you should select the two with run-out lines of about the same degree from centre, but on opposite sides of the centre. That way the two will cancel each other out and you'll get straight steering.

Regardless of the tyre combination, a regular check of the tyre pressures (when they are cold) is the best way to avoid premature wear. You may even see an improvement in the fuel consumption. And don't forget that all modern cars have tyre pressures in bar - so don't make the mistake of misreading 2.2bar as 22lbs/in^2.

And a quick check for condition at the same time is good practice. Look for a minimum tread thickness of 1.6mm in a continuous band across the central three-quarters of the tread width: this also has to be round the whole of the circumference.

Modern tyres have a series of 'wear indicators' (raised lumps) running around the circumference of the tread between the grooves. When the tyre has worn down level with these indicators it is time to replace the tyre - and contrary to popular belief, consider fitting the new tyres on the rear wheels - rather than the front. That way, the best tread is available on the rear-end - the end which breaks away first on a slippery surface - and in a downpour that's where you need the maximum grip.....

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What is Advanced Driving …

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Firstly, it's important to clarify what 'Advanced' driving is not. It's certainly not about driving mundanely or slower than road and weather conditions allow! Neither is it about driving along at 40mph for no good reason, especially if the speed limit you are in is the 60mph national! It's not about driving beyond the legal speed limit either, nor is it thinking you're better than the rest on the road and all the other drivers are the idiots – think about it!

It's about driving with a very high degree of concentration, observation, anticipation and planning: letting nothing else get in the way of these four vital mental processes during the drive!

Advanced training will test your skills and performance in car control and road craft to the highest road level standard. It will employ methods and techniques used by advanced drivers and police drivers to achieve optimum progress with the highest regard to safety, the best view, and maximum stability – what we know as SVS; safety – view - stability.

Advanced driving gives you the ability to control the position and speed of your vehicle safely, systematically and smoothly, using road and traffic conditions to make level-headed progress unobtrusively, with skill and responsibility. This skill requires a positive but courteous attitude and a high standard of driving competence co-coordinated with excellent handling skills.

The vehicle will always be at the right place on the road at the right time, travelling at the right speed with the correct gear engaged and can always be stopped safely in the distance that can be seen to be clear.

THE PRINCIPLES OF ADVANCED DRIVING

- Do you concentrate and avoid distractions?
- Do you read the road and anticipate potential hazards in good time?
- Do you always react to hazards early enough and do you deal with them in a planned and systematic way?
- Do you use the mirrors and all round observation links effectively before changing speed or position, and do you give the appropriate signals in time when they would benefit other road users?
- Do you drive with reasonable restraint, but not indecision?
- Is your judgement of speeds and distances always accurate?
- Do you drive with courtesy and consideration for other road users, including pedestrians?

ADVANCED DRIVING HANDLING SKILLS

- Do you steer the vehicle safely and effectively?
- Do you brake smoothly and progressively?
- Are your gear changes made at the right time and at the right road speed?
- Do you use accelerator sense?
- Do you use the controls with finesse and sensitivity?

ADVANCED DRIVING SKILLS ON THE ROAD

- Where conditions permit, do you maintain a safe and sensible level of progress?
- Do you anticipate and react correctly to situations that develop ahead?
- Do you adopt the correct road position, and maintain the right distance from other vehicles?
- Do you approach all signs, signals and road markings correctly and obey them?
- Do you overtake smoothly, decisively and safely?
- Do you exercise proper restraint and sensitivity of control when roads are slippery or visibility is reduced?
- Do you carry out parking and reversing manoeuvres safely, smoothly and competently and with all round observation?

I am so confident about the value of the IAM RoadSmart's Advanced Driver programme that I seriously believe no one can't afford to drive without it…

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Windscreen Haze

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Dirty windscreens can hinder a driver's vision - especially in the low winter sun.

This subject is woefully ignored in both the IAM RoadSmart Associate's Logbook and Roadcraft but is nonetheless an important feature of safe driving in both bright sunshine and night driving.

This murky film builds up on the inside of the screen over the summer months until it is thick enough just in time for winter when it diffuses the low winter sun's rays - sometimes completely obliterating the forward view whilst at the same time making it easier for windows to steam up!!

It also lets thieves know if you have a plug-in satnav (they know it's always kept in the glove compartment!) by the tell-tale circle on the screen! And rubbing off the circle left by the sucker is a dead give-away!! The screen has to be kept clean.

What happens is this haze causes diffusion of light so that low sun and oncoming headlights are effectively spread across the interior screen - often completely obliterating much of what is in front of you: and yet the inside of the screen rarely gets the attention it deserves!

Test yours! When you next sit in your car just wipe a tissue or the back of your hand (not the front - which could be oily) once down the interior screen and you'll get an idea of how much build-up there is!

The best solution is to clean the inside of your screen with glass-cutter cleaner occasionally throughout winter and dry it with a dry cloth or kitchen towel. Choose a dry, crisp or warm day: otherwise you could just be making things worse!

Normal spray domestic window cleaner is not as effective as the more old fashioned 'pink cream' cutter types which dry to a powdery finish such as Windowlene or the more modern equivalent Autoglym which is readily available from most motor spares outlets, but whichever cleaner you use make sure it doesn't contain waxes or silicone which simply exacerbate that problem - and try to avoid leaving it on the rubber seals because it leaves a white mark.

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Windscreen Wipers

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Firstly, get into the routine of turning your wipers off before you switch off – especially the rear! Windscreen wipers often get frozen to the glass overnight in winter causing motors to burn out and fuses to blow as a result of starting the car without first freeing the wipers - a large cause of call outs for the breakdown services.

If they are frozen to the windscreen take great care not to tear the fine feathered edge when freeing them.

As spring begins to make the morning routine easier have a look at the condition of the wiper blades. Quite often, wax from the car washes finds its way onto the windscreen and blades producing a smear or a less than clean sweep. Clean it off using detergent or a proprietary screen/blade cleaner.

As the season moves on be careful where you park your car. Lime trees naturally drop tree resin which makes those annoying lines as the blades pass over them. A thorough wipe over with a little detergent can extend the life of the blades considerably, take away those lines, and stop the smearing effect that destroys vision so effectively.

If squeaking wipers cannot be cured by traditional windscreen & blades cleaning methods (methylated spirit, vinegar, washing-up liquid etc.), it's probably not just the rubber blade inserts which need replacing!

1. Look carefully at the metal blade carrier and make sure that it too isn't worn.
    a. To test: hold the complete blade unit against the windscreen in its normal working position (90^{o} to the screen) and move the holder to the left and right against the screen. The solid part of the rubber blade (the part which fits between the carrier claws) should stay fairly tight within the claws whilst the flexible part of the blade (the part which touches the windscreen) should lie at an angle of no more than 45^{o} in either direction.
2. If the blades tend to lie too much towards one side or the other (indicating wear in pinions of the blade carrier claw) then the complete unit needs to be replaced.
3. If the blades and carriers indicate no excessive wear, remove the rubber blade from the carrier and fit it back the other way up - so that what was at the top of the windscreen is now at the bottom.

All modern cars (post 2011) are fitted with the superior AeroBlade type for which replacement blade inserts cannot be obtained.

If you have these fitted on your vehicle you may need to purchase an entirely new wiper set.

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