

'See & be Seen'

What can a Jet Fighter Pilot Teach us About the Secrets of Vision

By Linda Ashmore

Following on from Doug's lectures observation has to be one of the prime skills we need to teach ourselves. We all 'look' but do we 'see'? Time and again as an observer I say to my associate after a ride—I didn't see your head moving, you should be scanning the far distance, middle distance and close to (and, of course, behind). "Oh, yes I am," is invariably the reply, "You just didn't see my head move". They just can't understand why we try to insist on physically moving their head in order to 'see' rather than just 'look'.



I found a fascinating article in Motorcycle News recently, written by fighter pilot, Group Captain John Sullivan, and the following is the essence of that article explaining exactly why we have to move our eyes and head in order to 'see'.

Firstly you need to understand that for small but significant periods of time you are completely incapable of seeing anything at all !

Peripheral vision

Only small parts of the retina, in the centre and called the fovea, can see detail. The rest of the retina contributes peripheral vision but cannot resolve detail. Just twenty degrees away from your sightline your visual acuity is reduced by eighty percent. To test this, stand ten metres from a car, look one cars width to the side and see if you can read the number plate. Technically you are blind to detail in your peripheral vision but you are very good a detecting movement.

Focus

When you are on a collision course, there is no apparent movement to be detected. So that each will remain in exactly the same position until impact. There is no relative movement so our peripheral vision is not suited to detecting it. To have a good chance of seeing an object on a collision course, we need to move our eyes, and probably our head, to bring it into the centre of our vision.

You Cannot Scan

Our eyes are incapable of moving smoothly across a scene and seeing everything. They move in a series of fast jumps, called saccades, with very short pauses, and it is only during the pauses than an image is processed. Our brains fill the gaps with peripheral vision and assumption. Test this by looking repeatedly from your right eye to you left eye in a mirror. You will not be able to see your eyes moving, but a friend observing you will. This is because your brain actually blocks images received within a saccade. If a driver at a junction isn't looking directly at youworry !

Beware of Windscreen Pillars

Another problem drivers have is that research has shown that we tend not to look near to the edges of a framed scene. In a car the frame is the windscreen. So not only do the pillars represent a physical blind spot, but the driver will tend not to fixate near to them, leading to an even bigger jump, or saccade, around them. This is called windscreen zoning—remember this when a windscreen pillar is between you and the driver's face.

Assume something is there

Just when you thought it couldn't get any worse, your brain is also less likely to register something you are not expecting to see. (If you were at the lectures—remember the gorilla ! And hence the 'Think Bike' campaign).

Look Methodically

When you look left and right always deliberately focus (which probably means moving your head) on at least three different spots along the road, close, middle-distance and far. With practice, this can still be accomplished quickly and each pause is only for a fraction of a second. It means you are overriding the natural limitation of the eye and brain. Fighter pilots call this a 'lookout scan' and it is vital to their survival 🚗