

Skill 2: Sense of danger

Key points: - Without a good sense of danger you cannot be safe.
- Most motorists have a poor sense of where danger really comes from.

Unless you know what danger is, you can't control it. This is an obvious statement - but it uncovers a big problem, because:

most people are wildly overconfident about their understanding of where danger comes from.

If you ask any bunch of people, "What are the causes of danger on the road?", everyone's list will be different.

And they would include a lot of things they just wish other people would not do. But these are things you can't control, which is not very useful.

So this chapter looks at the causes of danger that are in every situation, and in a way that you can control. It will give you:

a grasp of danger that enables you to successfully manage risk.

This is the core of how the whole new approach to safe driving began.

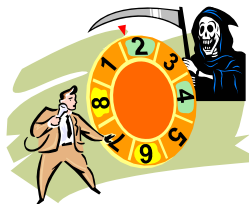
However, there are two ideas that allow people to put off thinking much about danger.

Firstly, the highways are, fortunately, quite forgiving places. Most mistakes have little consequence, so we get away with them. And this regular support from good fortune lets us ignore the errors. After all, why would you dwell on things that don't seem to matter?

But if it takes a crash or near miss to catch your attention, then experience is a very bad teacher. It invites you to continue to gamble on the leniency of fate.

It also confuses your sense of danger since most of it is shrugged off.

So a pattern emerges where minor errors are repeated, and grow into bigger ones - until disaster strikes and inflicts a severe punishment.



Secondly, and even more of a hindrance, is that we deliberately blame bad luck for crashes.

We call them "accidents". Which is a wonderfully convenient word, meaning "an event without apparent cause, a happening by chance".

What a superb release from feeling responsible!

With these two millstones around the collective mind of motorists, it is not surprising that a lot of danger is ignored, and:

the average sense of danger is quite poorly developed.

Specifically frail are the abilities to:

- detect risks very early, when they are easier to handle
- assess danger objectively, when luck can so often seem to affect the outcome
- control threats actively to keep them at a safe level.

The following sections examine the causes of risk quite radically, and build into a simple model that will:

- explain risk in terms you can detect and make decisions about
- show how danger always has multiple causes
- give a clear structure for a vast expansion in your thinking about danger.

2.2.1 Defining risk

Key point: - Risk is about the probability and the consequences of a collision. And they should not be confused.

We said before that risk is inevitable in driving. And that in practical terms, "safe" must actually be a deliberate reduction of danger, by actively managing risk. Furthermore, it is pointless to demand that risk is zero, or that someone else should take care of it.

The start point is:

to be totally clear about what risk really is.

Turning again to the dictionary, the definition of "risk" refers to the chance of something happening, and the bad consequences.

This is immediately useful in separating two things that are often confused:

1. the probability of a collision happening
2. the consequences if it does.

The first is about avoiding a crash, and the second is about how severe it would be.



For example, if you suddenly meet a tight bend on a wet night there is a certain chance that you might skid off the road. But if the edge is a flat grass verge the scenario is different to it being a sheer mountain drop. Your problem is rather different in each case - and your thoughts will be too!

Therefore, the full extent of a risk has two parts, that can be written simply as:

Risk = probability of collision x consequences of collision

Clearly, the first part is the most important - to have a low probability and avoid a collision. And then the role of the consequences is to influence the safety margin you want on that probability. The higher the consequences the more certain you want to be that the probability is low.

So there is a very practical way in which:

the two elements work together - like a seesaw.

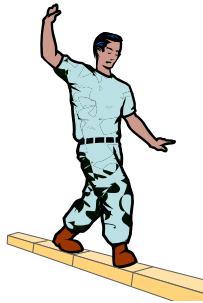
But there is another interplay too, which is less welcome. We have a mental feedback in which fear can reduce control. So bad consequences can increase the probability of something going wrong.

Look at an example. You probably find it easy to walk along a row of kerbstones. The consequences of falling off are low, so you are calm and in good control.

But if instead you were walking along a girder of the same width high on a construction site it would be very different. You would almost certainly fall off - because of the fear of doing so.

Staying in control would take nerves of steel.

In fact, you would perhaps do it better being blindfold and told it was kerbstones!



Therefore, although fear is usually a protective mechanism, it can act in reverse.

On the road too, fear will work against calm control. This is how nervous drivers can get into a spiral if their fears lead to errors, which then confirm their fears.

This makes it even more important to:

**understand risk in a very rational and practical way
that will give you real control.**

2.2.2 Probability of collision

Key points:

- Your chance of a collision has three elements: **Speed, Surprise and Space.**
- You manage risk by keeping these three things well balanced together.

What a real triumph of technology it would be to have a “probability-of-collision” meter on the dashboard! Like the fuel consumption gauge of a trip computer.

As we learnt how to keep the needle in the green zone, it would teach us safe driving.

It would have to scan the total situation and think ahead, of course:

to catch all the dangers.

And it would need to be accurate, or false alarms would teach us just as effectively to ignore it.



Until that day, though, you must do the job for yourself! And you can - by understanding what is going on in the right way.

Let's look at how crashes happen. At the very basic level, they all need three things:

- something is moving
- something unexpected happens
- someone runs out of room...

Then the impact occurs - it is that simple. Removing any one of these prevents it happening. We can't collide if nothing moves, we don't do it intentionally, and contact is only when a distance comes to zero.

This reveals the fundamental elements in the probability of a collision, which we can call:

Speed, Surprise and Space.

The following table explains each in turn.

Speed

seems easy to understand, though is often taken too much in isolation. The key question here is:

"How well can I change speed or direction to avoid danger?"

Braking ability is important, but not just in panic mode - and it is not your only option.

There are also many aspects of speed that are deceptive (as we will see later).

Surprise

is less well understood, together with the perils that it brings. The question for you now is:

"How certain am I about everything that will happen next?"

At this stage, we can take surprise to be "anything that makes you do, or consider doing, something before you can calmly check it is safe".

Everything that is not predicted is a potential threat. Having the time to react safely is crucial - not being rushed.

Space

is partly understood, though most drivers use it badly. This time the vital point is:

"How much room do I have available to use, and share?"

The concept of "threatened space" is the key, and means recognising what all road users are doing. It is about everyone's need for space.

These three elements form a simple, yet complete "risk model" for the probability of a collision occurring. Increasing Speed will tend to increase risk, and increasing Surprise will too. But increasing Space will decrease risk. So this is easy to remember as:

$$\text{Risk} = \frac{\text{Speed} \times \text{Surprise}}{\text{Space}}$$

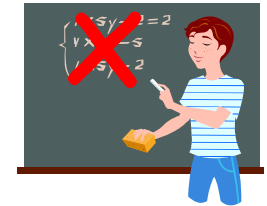
This works very intuitively out on the road. If space opens up in front of you, and you are confident about what will happen next, then you are happy to go faster. Or, if you are not sure what to expect, you should drop your speed and/or put more distance between yourself and the uncertainty. And so on.

It works elsewhere too. It is safe to fly in a thin aluminium tube at 600mph, because the planes are kept far apart and the pilots get so few surprises.

But don't try to do mathematics with this model, like double the speed is offset by twice the space, that doesn't work.

It is just:

a logical model of the causes of risk,
and the direction in which they operate.



So, as expert drivers apply their concentration and instincts, these are the essential control levers they use to manage risk - whether consciously or not. And the three elements constantly interact, since changes in any one of them will alter what is needed from the other two.

The model is also a very practical tool. It is easy to remember, and the three elements are things you can think about together, especially with practice. And even more:

it holds true for all situations and all levels of driver skill.

Which makes this a tremendously powerful insight into the dangers you will encounter.

Other people use simple models like this too. All sorts of decision-makers use them to clarify their thinking, and to help them "describe, explain, and predict" the events that they are trying to control. Knowing how things work reduces the chance of wrong decisions being made. And all of this is exactly what we need to do!

It is also clearer now that dangerous situations, or crashes, are not caused by one thing alone, but by the three factors getting out of balance for the circumstances.

So that is the key task - to keep them matched to each other in every situation.

Remember that no single cause of danger can be a viable model for driving.

**You are controlling risk when you keep
Speed, Surprise and Space
in balance.**

