

Presentation 1: To err is human...to forgive, *DESIGN*

Max Hely*

We're repeatedly reminded that most crashes on the road are due to "human error". Estimates vary widely, but are often as high as 70 to 90 percent – "If only people would be more careful" Why do drivers cause crashes by making so many errors? The answer is – **they don't!**

We build our vehicles (and road systems) for human use, yet their designs often fail to accommodate the abilities and limitations of the people who must use them. When the perceptual, attentional and behavioural demands of the driving environment exceed the driver's intrinsic resources, performance suffers....and errors occur.

The extraordinary advancements in vehicle and road engineering and technology have yielded safety benefits in many respects, resulting in far fewer "**faulty**" designs (i.e., where components of a system fail to perform as intended). However, we seem to be lagging in addressing "**bad**" design (i.e., where a system doesn't *fail* in the former sense, but hasn't taken adequate account of human characteristics and thereby presents difficulty to the users).

The concept of **bad design** leads us to more readily identify **design-induced error**, and demotes "human error" from a "cause" of incidents to a "consequence" of bad design.

Recognition of the unintended consequences of designs that were mismatched to human characteristics stimulated the development of the science and practice of human factors (a.k.a. ergonomics). This presentation will provide a brief overview of the contributions human factors can make to the design of systems generally, and transport-related systems in particular.

** Max Hely is a Human Factors and Safety Management professional with over 30 years' experience in service provision, research, investigations and education in safety-critical environments across most industry sectors. Now in private practice, Max is a past National President of the Human Factors & Ergonomics Society of Australia. Previous roles include Director of Human Factors for Sydney Trains and senior human factors positions with the National Rail Safety Regulator, Transport for NSW, the National Occupational Health & Safety Commission, WorkCover NSW, the National Safety Council of Australia and the University of NSW's School of Risk & Safety Sciences.*

Presentation 2: Case study: User-centred design in road transport

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This presentation will illustrate how human factors principles and methods can be used to support the design of road environments. Via a case study using task analysis to analyse how different road users approach and traverse an intersection, it will demonstrate how insights can be gained to inform re-design. Through applying structured methods such as task analysis, and taking a user-centred perspective, we can better support road user decisions and actions, improving not only road safety, but also efficiency and user experience.

** Gemma Read is an Associate Professor in Psychology and the Director of the Centre for Human Factors and Sociotechnical Systems at the University of the Sunshine Coast. Gemma has over 16 years' experience applying human factors and systems thinking methods in both academia and government roles. Her work spans a number of safety-critical domains including transportation, healthcare, construction, defence, sport and outdoor recreation. She has published over 90 peer-reviewed journal articles, 4 books, and numerous technical reports in the areas of human factors, systems thinking and safety science.*