roadsafety behaviour symposium

PAVING THE WAY

putting behaviour change at the heart of a safe system

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FOREWORD

Our context is changing. An ageing society; driverless cars; urbanisation; distributed workforce, air quality. These tides of social, economic and technological change force us to think differently; to look beyond our traditional boundaries and see what we can learn from other sectors.

This report challenges us to examine the current context and future trends, raising fundamental questions about the maturity of the road sector, our culture of safety and societal views on acceptance of risk to road users.

Advances in behavioural sciences demonstrate that we have an increasingly broad mix of interventions, actors and disciplines to apply to societal challenges such as improving health and safety. This is an area where traditionally behavioural approaches have focussed on changing the attitudes and skills of individuals for example the THINK! road safety campaigns.

Notwithstanding the success of these, our understanding about how and why people behave as they do is improving all the time. How we use the roads, whether consciously or automatically, is shaped by who we are as individuals, the physical infrastructure and where we fit in society. We need to determine what works in terms of influencing behaviours through social and physical structures as well as influencing individuals. The value of these new behavioural insights and approaches is in their application, in an integrated and holistic way; reinforcing the process of behaviour change and leading to more sustainable behaviours. In this case a 'safe systems' approach.

To refresh our approach to delivering a safe, secure and sustainable road system we need to take some time away from our immediate concerns and reframe the challenge in a broader context, explore what we can learn from other domains and apply the latest evidence of what works in behavioural approaches. I hope this report will be a catalyst for:

- more collaboration and smarter ways of working;
- a more outward looking and multi- disciplinary safer systems approach; and
- the development of a robust and accessible evidence-based approach to investment and delivery.

The 2017 Symposium enabled a strategic look at the issues within and beyond the sector, this report challenges us to go on exploring behavioural perspectives on making our roads safer.

Deirdre O'Reilly, Highways England

roadsafety behaviour symposium 2017

INTRODUCTION

The 2017 Highways England Symposium on Road User Behaviour took place on 14 to 15 March 2017 at Coombe Abbey, Warwickshire. The event drew together a wide range of perspectives on behaviour as it relates to road risk, reflecting available good practice from associated domains. All of the presentations have been made available online, links to these are included in Appendix I – Symposium Agenda & Resource Links

Inspired by expert input from researchers, practitioners and funders and by insights shared by those working in other sectors, this paper sets out a high-level vision for a refreshed approach to behaviour change in road safety, and proposes actions that leaders in the sector can be taking now.

We begin by explaining why we think a refreshed approach is called for, and describing two revolutions we believe are driving the need for change: a revolution on our roads and a revolution in behaviour change.

The aim of this paper is not to summarise the wide-ranging and diverse perspectives shared and discussed at the event – probably an impossible task – but to offer a response to them. We've drawn freely on ideas from both the presentations and discussions at the event. All of the best ideas in this thinkpiece are 'stolen goods'. Any mistakes or inanities are entirely our own.

Boxes in the text provide links to presentations made at the Symposium.

Simon Christmas, Dan Campsall, Nicola Christie

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Disclaimer: The views and opinions expressed in this report are those of the authors and do not necessarily reflect the policy or position of Highways England or the participants of the Road User Behaviour Symposium, 2017.

1 - For further discussion of the impact of connected and autonomous vehicles, see Cohen, T., Jones, P. & Cavoli, C., (2017), Social and behavioural questions associated with automated vehicles. Scoping study by UCL Transport Institute. Final report, London: Department for Transport, downloaded (12th May 2017) at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/585545/social-and-behavioural-questions-associated-with-automated-vehicles-final-report.pdf

THE REVOLUTION ON OUR ROADS

Why does the sector need to refresh its approach to understanding and changing behaviour? The first half of an answer lies in the unique challenges and opportunities that will be created by the ways in which road use and road user behaviour are changing anyway, independently of any safety interventions. It may seem melodramatic to talk about a revolution on our roads. But when you think about the big trends that will shape road use over the next few decades, it's clear that the potential for radical change is there.

CONNECTED AND AUTONOMOUS VEHICLES

The most obvious driver of change in road use is the arrival of connected and autonomous vehicles. It's tempting to leap to imagined futures where sensors and algorithms have entirely removed human error and its attendant risks from the roads; and maybe one day that dream will become a reality. In the immediate future, however:

- *connected and autonomous vehicles will carry a variable range of features – often at the discretion of those buying them*
- *they'll co-exist with older vehicles, which lack any such functionality*
- *they'll co-exist with other road users – including two-wheelers and pedestrians*
- *they'll be driven on roads which themselves have varying degrees of technological sophistication and legibility*
- *they'll be driven by human beings with different levels of experience of connected and autonomous vehicles – along with their own views on who is and should be in charge of driving, and their own ideas on when and how to use new functionality*
- *they'll be experienced and made sense of in the context of existing social norms, while at the same time prompting hard-to-predict changes in those norms*
- *they'll be rolled out alongside existing non-vehicle technologies, such as smartphone apps, which are already connecting drivers to each other and changing in multiple ways our experience and expectations of driving*

With vehicle autonomy being the topic that often attracts most attention, there's a particular need to think about the implications of greater connectivity on the roads. Just a few decades ago, for example, the risks of being distracted by a call or texting while driving simply did not exist – because mobiles and texts did not exist. Social navigation apps had not even been dreamed of. An explosion of connectivity is changing both who we can interact with while driving and how we can interact with them.

SYMPOSIUM SPOTLIGHT

Richard Cuerden and Pete Thomas reviewed the current reality and future prospects of connected and autonomous vehicles, and considered the possible implications for road user behaviour and safety.

Richard Cuerden is Chief Scientist and Research Director at TRL, see his presentation on '*New Technology, New Connectivity*' here.

Pete Thomas is Professor of Road and Vehicle Safety at Loughborough University and Director of the Transport Safety Research Centre, see his presentation on '*Where next for Infrastructure & Vehicles*' here.

What will the implications of all this be for road user behaviour and road safety? It could be very positive. It could be very negative. It could be anywhere in between[1]. It's up to us to take action now to maximise the positives and minimise the risks.

THE PLACE OF ROADS IN A CHANGING SOCIETY

The arrival of connected and autonomous vehicles could change what it means to drive 'from the inside out'. At the same time, however, larger social trends have the potential to create change 'from the outside in'. For example:

- *How will new forms of remote working, themselves enabled by technology, impact on road use and road user behaviour?*
- *What about new patterns of 'remote shopping', and the growing importance of delivery?*
- *Where will people choose to live? How will the trends such as those above influence choices between urban and rural locations?*
- *Will models of car ownership change – for example, with a rise in sharing or leasing – and what impact will this have?*
- *What will the implications for road use be of an aging population, given the specific mobility needs and challenges of older people?*
- *How will other public health needs, such as physical activity and air quality, shape what we need from our roads as a society? How will broader social values – relating to the environment, place and landscape – impact on road use?*

- *How will modes of transport that rely fundamentally on fossil fuels be changed by the end of the carbon-based economy?*
- *How will other public health needs, such as physical activity and air quality, shape what we need from our roads as a society? How will broader social values – relating to the environment, place and landscape – impact on road use?*

No-one has a crystal ball, of course. But approaches such as scenario planning, modelling and longitudinal studies at least provide a structured, evidence-based way to consider and prepare for possible futures.

SYMPOSIUM SPOTLIGHT

Charles Musselwhite reflected on the needs of older drivers, and the possible implications of an aging population for approaches to safety, including the design of roads.

Charles Musselwhite is Associate Professor at the University of Swansea Centre for Innovative Ageing, see his presentation on '*Older Drivers in a Physical Context*' here.

SYMPOSIUM SPOTLIGHT

Glenn Lyons gave an overview of the scenario planning approach, and considered the possible implications of current social trends for the future behaviour and safety of road users.

Glenn Lyons is Professor of Transport and Society at University of the West of England's Centre for Transport and Society, see his presentation on '*Trends in Technology & Society*' here

HOW MUCH SHOULD AND DO WE CARE ABOUT SAFETY?

The last two questions about the future overleaf point towards a further, deeper question. As we rise to the challenges and opportunities of the future, how much should and do we actually care about road safety?

Safety, of course, is everybody's first priority. At least that's what everybody always says – usually after something has gone wrong. In fact, the priority of safety is very much open to question, at two distinct levels.

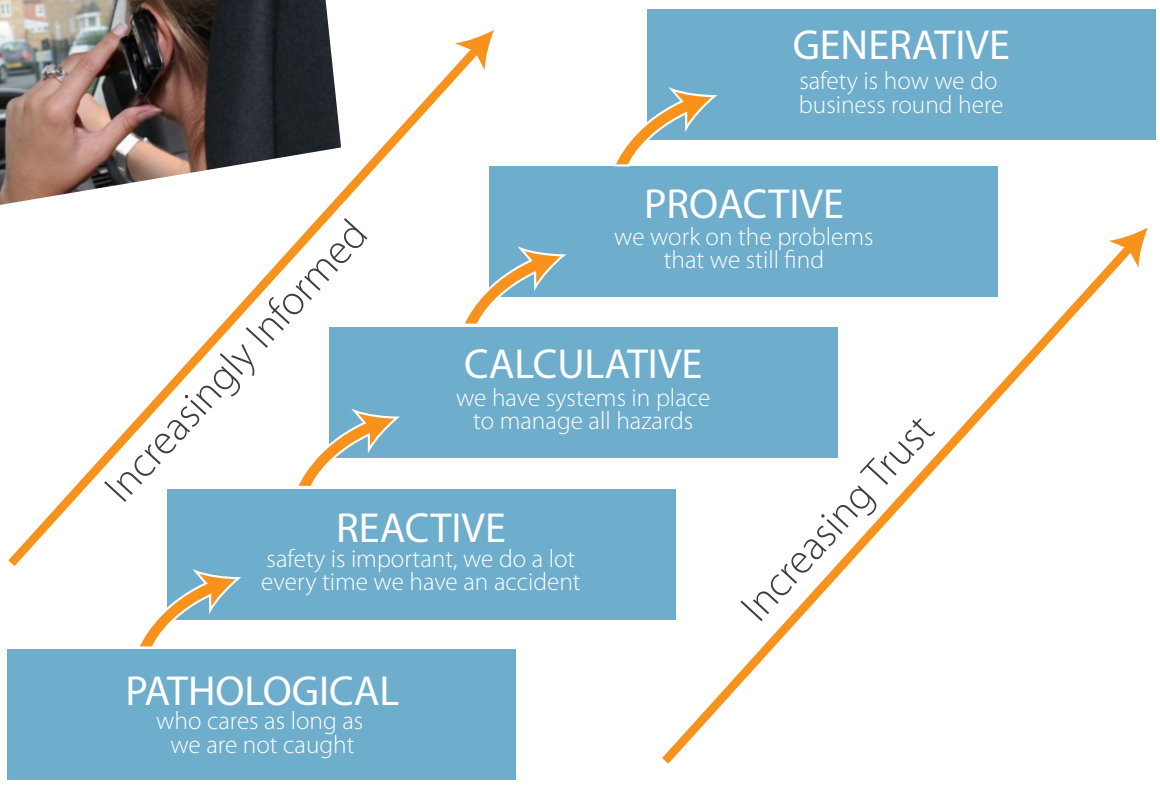
First, at a rational level, there are legitimate arguments to be had about whether and how best to weigh road safety against other priorities, including

- *other public health issues related to road use, such as physical activity, obesity, mobility, accessibility, mental health, and air pollution*
- *other kinds of priority, such as economic growth or carbon reduction or safety in other areas.*

In fact, the dominant approach to policy-making in this country – as set out for example in the Treasury Green Book – very clearly implies that safety should not be a "first" priority, but one priority to be valued consistently alongside others in the appraisal of options. Other stances on safety exist which are logically coherent and defensible.

Secondly, at a cultural level, what matter most are not espoused values – the things we say we care about – but values in action – the values we actually demonstrate in what we do. And seen from this perspective, it is clear that organisational safety cultures vary greatly: for example, in how reactive or proactive an organisation is about addressing risk, or in its tolerance of different kinds and sources of risk. As a simple matter of fact, safety is not everybody's first priority.

Safety cultures can also change over time. There was discussion at the Symposium of a useful model of the evolution of safety cultures, illustrated in the diagram below.



The evolution of safety culture. Source: Hudson (2001)[2]

Hudson, P.T.W. (2001), 'Safety management and safety culture: the long, hard and winding road' In: Pearse W, Gallagher C and Bluff L, (eds) Occupational health and safety management systems, pp3–32Melbourne: Crown Content

At what level of maturity are safety cultures in the road safety sector? There's an argument to be made that – compared to some other industries – we are still at a relatively low level of maturity, characterised by:

- *A tolerance of overall levels of injury and death that would be intolerable in other industries*
- *A tendency to focus on fixing things after they have happened, rather than acting proactively*
- *Key elements of the system that are still focused on establishing individual blame as opposed to reducing systemic risk*

There is, potentially, a great deal to be learned from looking at the evolution and maturation of safety cultures in other industries and sectors.

SYMPOSIUM SPOTLIGHT

Paul Jackson, Saul Jeavons, Alistair McKenzie-Kerr and Rob Hunter offered a range of insights on the topic of safety culture – what it is, and what it takes to build and sustain it – drawn from their experiences in other sectors with comparable challenges, such as aviation, rail, and oil and gas. Focusing on safety not only of road users but also of those who work on the roads, Richard Leonard introduced the Highways England Safe Systems approach.

Paul Jackson is Co-founder and Managing Director of Clockwork, see his presentation on 'Safety cultures in aviation' here.

Saul Jeavons is Director of TransSafe Network Ltd, see his presentation on '*Safety cultures in industry*' here.

Alistair McKenzie-Kerr is Principal Human Factors Consultant at ERM, see his presentation on '*Safety cultures in rail*' here.

Rob Hunter is Head of Flight Safety, British Airline Pilots Association, see his presentation on '*Illusions of safety; Safety Management Systems in the aviation sector*' here.

Richard Leonard is Head of Safer Roads at Highways England, see his presentation on '*The HE systems approach to road safety*' here.

WHO ARE "WE" ANYWAY?

A key difficulty with the question we posed above – 'how much should and do we care about road safety?' – is that it is not really clear who "we" are.

It makes sense to talk about the stance and culture of a single organisation – an airline, for instance. It may even make sense to talk about the stance and culture of a whole industry – such as aviation. But the domain of road safety is characterised by a multiplicity of diverse actors:

- *across the private, public and third sectors – plus road users themselves (see below)*
- *working at local, national and international levels*
- *with remits in which roads are more or less salient*
- *with aims to which safety may be more or less central*
- *with varying areas of focus – e.g. on different types of road, road user or road safety issue*
- *with their own particular safety stances and cultures*

As noted above, moreover, those actors include the road users themselves. In stark contrast to other forms of transport such as rail and air, road users are not passive beneficiaries of road safety, but active partners in its delivery (although they themselves may be more inclined to blame other drivers if things go wrong). And road users have their own views and priorities. They belong to a wider, public safety culture – or perhaps to a safety sub-culture, shared with other road users of a particular type (segmentation techniques can help to shed light on this kind of diversity). Changing that culture and sub-cultures may itself be a critical element of a viable approach to changing behaviour.

The question of how much we should and do care about road safety is one we need to keep asking. But we also need to find ways of making progress in the absence of agreement on the answers, as it's unlikely all the actors involved in the delivery of road safety will ever share a common stance or culture. And we need to recognise that building wider public consensus on key road safety issues – such as drink driving, wearing seatbelts, or speed – is not an optional add-on to the task in hand, but a central component of behaviour change.

NEW WAYS OF UNDERSTANDING BEHAVIOUR

Across all areas of policy, and not just road safety, approaches to behaviour change have been – and are being – transformed by new understandings of human behaviour. The way we think about human behaviour has been revolutionised in four key ways:

- The *automatic turn*. Human beings are not the rational agents of classical economic theory, weighing costs and benefits to select a preferred course of action. Much of our behaviour is automatic, guided by habit, heuristics and mental shortcuts. Understanding these automatic processes can give us new insights into risky behaviour, and what might be done to change it.
- The *contextual turn.* Behaviour is shaped as much by context as by what goes on insides someone's head. Context structures and cues our choices, often without our conscious awareness: behaviour change is as much about changing contexts as it is about changing minds. To put the point another way, you can't build a road first and then worry about how to influence its users' behaviour: the way you build the road will already shape behaviour, for better or worse.
- The *social turn*. It's not just our physical context that shapes our behaviour. Human beings are intensely social animals, and social context plays a critical role in structuring, cueing and constraining behaviour. Moreover, social context is not just about people who are literally there beside us: it extends to the signs and meanings encoded in every part of our environment – including the vehicles we drive in and the roads we drive them on.
- The *network turn*. Over and above the impact of social context on individuals, we also need to take into account the dynamics of social networks, and emergent patterns of behaviour that can be impossible to predict at the level of the individual. Increasing connectivity on the road underpins the importance of a better understanding of social networks in road safety.

SYMPOSIUM SPOTLIGHT

Bev Bishop considered the role of contextual 'nudges' and choice architecture in changing behaviour, drawing on examples from her own work at the Health and Safety Executive.

Bev Bishop is Chief Social Researcher at UK Health and Safety Executive, see her presentation on '*Behaviour change, a HSE perspective*' here.

SYMPOSIUM SPOTLIGHT

Nigel Shardlow explored our current understanding of the behaviour of social networks and the implications for behaviour change, and challenged prevailing myths such as the ideas of 'social contagion'.

Nigel Shardlow is Director of Planning at Sandtable, see his presentation on '*Understanding social networks*' here.

SCIENCE VERSUS 'COMMON SENSE'

Underpinning this ongoing revolution is the recognition that a science of human behaviour – like any other science – needs to be rooted in robust empirical evidence. An over-reliance on 'common sense', received wisdom and unexamined assumptions has held behaviour change back for decades.

And yet, sometimes, those charged with changing behaviour fall back on their old ways, as if the revolution had never happened. For example, in the past, 'changing behaviour' was often understood solely in terms of changing attitudes, through education, persuasion and, when all else failed, enforcement. All of these approaches remain important in the overall behaviour change mix: but we now know these are just a few of the tools which can be used to achieve positive changes – and that if used in isolation, without consideration of that broader mix, they may not be effective. Yet all too often, when behaviour needs to be changed, it's to those same old interventions that people turn.

SYMPOSIUM SPOTLIGHT

Robert West introduced the Behaviour Change Wheel as a systematic approach to developing behaviour change interventions, and highlighted the value of the COM-B framework as a way of getting a handle on the complex system of interacting factors which drive behaviour. In his presentation, Neale Kinnear provided a 'worked example' of systems thinking applied to the specific problem of young drivers, showing how a systematic approach can work in practice, and highlighting the implications for future research and interventions.

GETTING A HANDLE ON COMPLEXITY

Perhaps one reason for this tendency to cling to old ways of thinking is that it offers a comforting illusion of simplicity and predictability. Life would certainly be a lot easier if human beings were the rational agents of classical economic theory.

In the real world, however, behaviour is the output of a complex system of interacting factors. That can make it hard to get a handle on – and tempting to put too much faith in single, linear models which capture only part of the picture. The alternative sometimes seems to be to throw up our hands and declare in despair that "It's all too complicated" or "More research is needed".

But it doesn't have to be like that. The good news is that frameworks exist which can help us:

- *analyse behaviour systematically while acknowledging its complexity*
- *explore the full range of potential change approaches, and not just the usual suspects – education, persuasion and enforcement*
- *balance the effectiveness of interventions against other considerations – such as their public acceptability, or ethical questions*
- *make sense of the uncertainties of behaviour change in the context of a fast developing science*

The real potential lies in applying these comprehensive but necessarily generic frameworks with detailed sector knowledge and evidence-based insight. In this way, we can begin to unpick the complex reality of risky behaviours, and to develop multi-faceted interventions to change them.

Robert West is Professor of Health Psychology at UCL and Associate of the Centre for Behaviour Change UCL, see his presentation on '*Making sense of behaviour: the COM-B framework*' here.

Neale Kinnear is Principal Research Psychologist at TRL, see his presentation on '*Safe systems in practice: younger drivers*' here.

HEROES OF THE REVOLUTION

A framework can help us get a handle on complexity. But if we're serious about understanding human behaviour as the output of a complex system, we need to think hard about who applies that framework, when they apply it, and how. After all behaviour change insights and interventions are themselves the outputs of a complex system of researchers, funders and practitioners.

So what does our new understanding of behaviour mean for those whose work has a bearing on road safety? Three key implications are worth highlighting:

1. Studying human behaviour requires an interdisciplinary approach. To understand the full range of factors involved, we need to integrate insights from different disciplines using different methods. Unfortunately, many barriers exist in practice to effective interdisciplinary work. But there's real potential to tackle those barriers in an applied domain of research such as road safety, if funders and researchers can find a way to work together more effectively.

2. Explaining needs to be separated from blaming. There's an important lesson to be learned from other sectors, such as aviation or healthcare, about the need to set aside questions of blame if we're to understand and address behaviour from a truly system perspective. If a pilot makes a mistake, for example, then we need to understand how the system made that mistake possible in the first place: and blaming the pilot gets in the way of that. For road safety, this raises particular questions about the current main source of crash data, STATS19: how can the (legitimate) focus of the police on establishing fault in an investigation be reconciled with the need for a fault-neutral system perspective on 'contributory factors'?

3. Changing behaviour is the job of everyone in the system. The wide range of factors involved in shaping human behaviour mean behaviour change spans traditional organisational and policy silos. No-one can now treat behaviour change as 'someone else's job'. Whether you're building a road, designing a vehicle, installing new signage, or developing a policy or standard or process, you too are actively shaping human behaviour. You can't just state what people should do and hope someone else will get them to do it: you need to understand what people will do, and own that as the outcome of your work. Indeed, real care is needed to make sure parts of the system are not designed in ways that actually encourage risky behaviours: vehicles that go too fast, for example, or distracting technologies, or roads which lack legibility.

4. Models and metaphors matter in the science of behaviour. Do we think of human beings as machines, information processors, social animals, network nodes, meaning-makers, agents with a unique perspective, bearers of social practices, consumers, delivery partners? Each way of thinking has merits and limitations: but all too often we get stuck in just one, unable to understand anything that lies outside our chosen ways of thinking. Challenging our models and metaphors can feel too 'abstract', too 'philosophical', too far from the reality of people being killed and seriously injured on our roads. But unless we challenge them, we risk staying stuck in our ruts, doing what we've always done and getting what we've always got.

SYMPOSIUM SPOTLIGHT

John Parkin explored the potential tensions between models of road users as 'obeying instructions' and 'driving on sight', and the practical and ethical questions raised by these tensions.

John Parkin is Professor of Transport Engineering at University of the West of England's Centre for Transport and Society, see his presentation on '*Drive on Sight*' here.

Earlier we considered how new technology, in the shape of connected and autonomous vehicles, may transform the ways in which we use our roads. At the same time, technology is also transforming approaches to behaviour change.

On the one hand, technology creates new ways of intervening in behaviour. For example, think about the impact of something as simple as a seatbelt warning system: then think about the possibilities of connected and autonomous vehicles being driven on increasingly smart roads. New technology opens up new opportunities – but also new risks of unintended consequences, and new ethical questions about acceptability and inequality.

On the other hand, technology can help to drive our understanding of behaviour by providing the kind of real-time, real-world behavioural data that researchers in the past could only dream about. As technology policies and standards develop over coming years, there's a once-in-a-generation opportunity to define the data gathered about road user behaviour, and – perhaps even more important – to make sure that data is available to researchers.

- *What kind of data do we need to gather to better understand crashes and incidents?*
- *How can we gather 'lead' as well as 'lag' data? For example, how can we start to understand near misses?*
- *What can we learn from the many times when things go right, not wrong? What role is there for data about the road user behaviours that keep our roads safe?*

As before, technology creates not just opportunities but also risks and ethical questions, such as issues around privacy. One key risk, widely acknowledged, is that we find ourselves with ever-growing mountains of data and less and less sense of what it all means. Deploying technology as a tool for data-gathering does not mean we can overlook all the other methods at our disposal. For example, a robust approach to crash investigation, including more qualitative assessments, may be critical if we're to get the most out of the data from in-car recorders.

KEY STRANDS OF A REFRESHED APPROACH

How should we respond to these two revolutions: the revolution on our roads, and the revolution in behaviour change? What might a refreshed approach to behaviour change in the sector look like? In this section, we pull together some of the key themes of the discussion so far – before moving on to suggesting some immediate priorities for key actors in the sector.

AN UP-TO-DATE UNDERSTANDING OF BEHAVIOUR AS THE OUTCOME OF A SYSTEM

The mistaken idea that behaviour change is just a matter of changing attitudes retains a powerful hold on our thinking. Sometimes it is built into the structure and processes of organisations, with behaviour change seen as the responsibility of just a few functions, to be thought about late in strategic development.

We need to take seriously the revolution in behaviour change, and get to grips with the implications of the automatic, contextual, social and network turns. If behaviour is the outcome not just of an entire system of interacting factors, then every intervention we make in that system has implications for behaviour. Behaviour can't be left for a few people to think about at the end of the process: everyone needs to be thinking about behaviour from Day 1.

A LONG-TERM APPROACH TO BOTH EVIDENCE AND INTERVENTION

Many actors in the domain of road safety are under huge pressures to deliver results in the short-term, over periods of just a few years. These pressures can make it hugely challenging to invest in a long-term approach to behaviour change. But short-termism comes with many risks:

- *Superficial interventions, which meet the 'something must be done' test but fail to achieve real change.*
- *A reactive approach, focused on things that have already gone wrong, and failing to anticipate the problems of tomorrow.*
- *In particular, a tendency to allow problematic patterns of behaviour to become culturally entrenched before any action is taken to address them – making the task of behaviour change that much harder.*
- *An unrealistic fixation on simplistic, linear accounts of behaviour that promise, but may not deliver, outcomes.*
- *A failure to make time to challenge dominant models and metaphors, or to ask tough questions about how much we really care about road safety.*
- *A lack of investment in robust, long-term data series and other evidence-gathering activity.*
- *A failure to invest in skills and capabilities, or to create the opportunities that will attract new researchers and practitioners to the field.*

As examples such as drink-driving or seat-belt wearing demonstrate, significant and enduring behaviour change requires not short-term, discrete interventions but a prolonged, multi-faceted effort over many years.

GREATER COLLABORATION IN DEVELOPING AND DELIVERING A SHARED RESEARCH AGENDA

The road safety sector is highly fragmented, with portfolios of funding of varying sizes held by a range of government bodies, NGOs and charities. A lack of visibility, combined with differing agendas and timescales, can lead both to duplication of effort and critical questions falling through the gaps. Greater co-ordination between funding bodies, combined with a long-term approach, could deliver more value even within current funding constraints.

At the same time, more can always be done to close the gap between researchers and practitioners. This is not a new problem; and ensuring that research meets the needs of practice and that practice is informed by the latest research will always be challenging. But models exist that can help to bridge this gap, such as embedding academic researchers within local authorities.

A similar point could be made about the need to promote interdisciplinarity and bring together researchers from different disciplines on applied projects. The barriers to interdisciplinary work are deeply rooted in the institutional structures of both academic and commercial research. But funders can choose whether to reinforce these barriers or to seek to bypass them, for example through their approaches to procurement.

INVESTMENT IN A ROBUST, ACCESSIBLE EVIDENCE BASE

There is always a case to be made for investing in a better evidence base. As argued earlier, however, current changes in vehicle technology create a once-in-a-generation opportunity to define the data gathered about road user behaviour.

Perhaps as important, there's a need to make sure data sets are both accessible and to researchers and can easily be linked: telematics data, insurance claims data, licencing data, vehicle sensor data, highway monitoring data (on speeds, conditions, etc), and so forth.

At the same time, an opportunity arises to look again at crash investigation – to ensure that more data translates into better insights and interventions. A new approach to crash investigation should also tackle the need for a fault-neutral system perspective on 'contributory factors', of a kind that the police are not well-placed to provide.

In the longer term, both crash investigation and the management of other accessible and linked data sources would ideally be undertaken by an independent 'institute'. To make any progress, however, we first need to put in place the first two strands of a refreshed approach: a long-term approach underpinning greater collaboration.

An 'institute' of this kind could also tackle the need to continue developing skills and attracting talent into the sector. Data and evidence are critical: but their value can only be unlocked by an effective partnership between:

- *researchers with the skills to interrogate and interpret that data and evidence*
- *practitioners with the skills to use research findings and shape the agenda for future research*

TAKING THE TIME TO STOP, THINK AND DISCUSS

Events like the Highways England Road User Symposium provide a rare and vital opportunity for funders, practitioners and researchers to take a step back from everyday demands and reflect on the big questions that could make a difference across all our efforts to save lives and prevent injuries on our roads. What challenges and opportunities will we face in the future? How much do and should we care about safety? How should we conceptualise road users? What can we learn from other sectors?

These big questions will include issues of ethics and acceptability. For example, how do we balance the differing needs of different groups of road user on the network? This is not just a question about the needs associated with different modes of transport. How, for example, would we balance the needs of a confident driver, who wants to get to their destination as quickly as possible, against those of a less confident driver who finds fast, multi-lane roads intimidating? Whose needs do we prioritise, where, and how? There's no simple answer to a question like this, just decisions which have to be taken. What matters is that those decisions are taken consciously, and accountably, rather than the answers simply being assumed.

The revolution on our roads won't stop. Nor will the revolution in behaviour change. A refreshed approach should be one that keeps itself fresh, by building in the time to stop, think and discuss.

TAKING ACTION

So what should we do next? How do we make a start in practice on refreshing approaches to behaviour change in road safety? In a fragmented sector with multiple actors, we believe there is a need for clear leadership, both within organisations with responsibility for road safety and across the sector as a whole.

WHAT CAN LEADERS DO WITHIN ORGANISATIONS?

Build and sustain a safety culture. The pivotal role played by leaders in driving a commitment to safety across an organisation was emphasised by a number of speakers at our event. There are clear lessons from other sectors about the positive role leaders can play in this respect.

Make room for meaningful behaviour change activity. As we have argued, behaviour change requires a long-term, systems approach which recognises the potential for interaction between multiple interventions. Organisational targets and Key Performance Indicators which focus solely on the short-term, linear impacts of discrete interventions can make it hard to do behaviour change seriously.

Broaden the mix of interventions. Education, media campaigns, engineering, technology and enforcement can play a vital role in the overall mix of behaviour interventions. But they are not the only interventions; and their value may be constrained if they are delivered in isolation. Moreover, recognising that broader mix of interventions may also imply a broader understanding of who in the organisation has a role in delivering behaviour change

Model and contribute to sector-wide agendas. We go on to describe ways in which leadership could drive the smarter use of funding, the democratisation of data and evidence, and the raising of standards and skills. These are all agendas which leaders can promote at the organisational level as well – for example, by using their research budget to promote interdisciplinary and applied work; by ensuring the data and evidence they generate and own is accessible; and by building the skills of relevant employees across the organisation.

WHAT CAN LEADERS DO CROSS-SECTOR?

Drive smarter, more co-ordinated funding of research. The 'whole' of road safety research funding could be more than the sum of its parts. By co-ordinating agendas and identifying opportunities for partnership, funders could work together to foster a refreshed approach to research – for example, by fostering interdisciplinary work, innovation, or collaboration between researchers and practitioners. The strategic use of match-funding could also help to ensure behaviour change is addressed more seriously in other well-funded domains of research, such as research on connected and autonomous vehicles.

A more systematic approach to co-ordination of funding might start by mapping the sector. Who currently funds research? Who could and should be doing so? And where are the opportunities for better co-ordination? Even in the absence of a systematic approach, however, there are opportunities for better co-ordination which sector leaders can act on now.

Democratise data and evidence. Existing sources such STATS19 make abundantly clear the value of openly accessible data and evidence. But there's a lot more data and evidence out there that could help drive a refreshed approach to behaviour change in road safety. Tackling the practical, commercial and institutional barriers to that data being freely available to researchers is a significant challenge for leaders across the sector.

Once again, a systematic approach might start by mapping data and evidence. Who currently gathers and owns data and evidence? What gets in the way of access? How can those barriers be overcome? Even in the absence of a systematic approach, however, there are opportunities for sector leaders to influence the availability of data and evidence.

Raise standards and skills across the sector. Across many different sectors, behaviour change is being professionalised, creating new opportunities for practitioners to make the best use of available evidence and contribute, through effective evaluation, to the growing science of behaviour change. Practitioners in road safety deserve the same opportunities to raise their standards and achieve the outcomes they strive for. There is good work already happening, but plenty more to do.

Once again, a systematic approach might start by mapping needs and competencies across the sector. Even in the absence of a systematic approach, however, there are opportunities for sector leaders to support skills across the sector. For example, the competency frameworks already in existence for public health practitioners have clear relevance for those working in the specific domain of road safety. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/584408/public_health_skills_and_knowledge_framework.pdf

APPENDIX 1
Symposium Agenda & Resource Links

DAY 1		
Highways England	Welcome and introduction	
SAFETY CULTURES AND ROAD SAFETY (Chair: Nicola Christie)		
What kind of safety culture do we currently have in road safety? What kind safety culture should we have? How would we get there in practice?		
Paul Jackson	Safety cultures in aviation	Video
Saul Jeavons	Safety cultures in industry	Video
Alastair Mckenzie-Kerr	Safety cultures in rail	Video
MAKING SENSE OF BEHAVIOUR (Chair: Simon Christmas)		
How in practice can we take proper account of all the multiple influences on behaviour without becoming paralysed by the complexity?		
Robert West	Making sense of behaviour: the COM-B framework	Video
Spotlight on interaction in networks		
Nigel Shardlow	Understanding social networks	Video
Richard Cuerden	New technology, new connectivity	Video
Spotlight on interaction with physical context		
Charles Musslewhite	Older drivers in a physical context	Video
John Parkin	Drive on Sight	Video
Bev Bishop	Behaviour change in other sectors	Video
DAY 2		
FUTURES (Chair: Steve Gooding)		
What are the big trends that will have an impact on road safety in the future? *How should we be preparing for them? What do we need to know? How could we find it out?*		
Pete Thomas	Where next for infrastructure and vehicles?	Video
Glenn Lyons	Trends in technology and society?	Video
WHAT DOES A SAFE SYSTEM APPROACH MEAN IN PRACTICE? (Chair: Jeremy Phillips)		
We all talk about systems approaches – but what does it mean in practice? *What are we doing well, and what do we need to do differently?*		
Richard Leonard	The HE systems approach to road safety	Video
Rob Hunter	Learning from other domains – Air	Video
Neale Kinnear	Safe systems in practice: younger drivers	Video
CREATING AN AGENDA (Chairs: Fiona Fylan; Rob Gifford & Louise Palomino)		
How can we promote collaboration, build capacity and maximise the impact of research? What would a strategic framework for road safety research look like?		
Fiona Fylan	Maximising the impact of research	
Rob Gifford & Louise Palomino	Building collaboration and capacity	
Highways England	Symposium wrap-up	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