

## Commentary Driving: exploring a method for operative safety reflections

Petter Helmersen Bogfjellmo

Road traffic division, Nord University, Norway. E-mail: [petter.h.bogfjellmo@nord.no](mailto:petter.h.bogfjellmo@nord.no)

Fred Størseth

Road traffic division, Nord University, Norway. E-mail: [fred.storseth@nord.no](mailto:fred.storseth@nord.no)

Commentary Driving is a prevalent part of the toolbox in Norwegian driving instructor education. The fundamental idea being that a running commentary while operating the vehicle is a way to develop awareness of one's thinking, perceptions and assessments of road traffic scenarios. It is a method to develop understanding, driving skills, and teaching ability. Commentary Driving is applied to emphasize how traffic situations are interpreted and acted upon. It is used as a method for developing an analytical mindset in the operative, with stringent attention to the language and terminology used to describe concepts and phenomena. The premise for this paper is that although the method is widely applied, the learning potential of Commentary Driving is to an extent left unspecified. There is a need to further specify, describe, and apply the learning potential of Commentary Driving. The aim of this paper is to report our exploration and development of a bowtie-based approach that we name 'Operative Safety Reflections:' a framework to systematically bring the safety potential into the practical and applied field of Commentary Driving.

*Keywords:* Bowtie approach, Commentary Driving, driving instructor training, methodological development, operative safety, road traffic scenarios.

### 1. Introduction

Commentary Driving is a prevalent part of the toolbox in Norwegian driving instructor education. To our knowledge, it was Marek and Sten (1971, 1973) that first brought attention to the method in Norway.

As part of their extensive study on driver behavior and driver training, Marek and Sten visited the Metropolitan Police Driving School in Hendon, England to learn about Commentary Driving – as developed and applied for advanced training for police drivers (ibid). As applied in Norway today, Commentary Driving is based on the premise that a running commentary while operating the vehicle is a way to develop awareness of one's own thinking, perceptions and assessments. This 'self-awareness' is considered to hold a double promise for the driving instructor student. First, it enables further development of understanding and driver skills. Second, it expands the teaching ability (e.g., ability to communicate with future driving pupils). Commentary Driving can be described as a (driving instructor) teaching method combining thinking, articulation, and doing.

Safety is a fundamental feature in Commentary Driving. The method holds a possibility to specifically address and 'work with' the driver's safety theories; i.e., (mental) models directing attention and informing decisions in the road traffic environment. Commentary Driving may be used as opportunity to reflect on, discuss, and question 'safety philosophies.' Emphasis on 'may,' indicating that this is a possibility embedded in Commentary Driving; a potential that we argue deserves, and needs further methodological specification. Operating a vehicle in the road traffic environment is infused by questions of risk. In other words, safety is a constant parallel that to various degrees could (and should) be tapped into – as part of the commentary exercise. How this is pursued and to what extent, ties in with the purpose of the commentary session, the selected driving scenario(s), as well as where the student is in terms of training, experience, and understanding. How can Commentary Driving systematically draw upon, and apply this potential? This question defined the starting point for our study.

The aim of this paper is to report our exploration and development of a bowtie-based approach that we name ‘Operative Safety Reflections:’ a framework to systematically bring the safety potential into the practice of Commentary Driving. The bowtie may serve as an analytical tool to strengthen safety reflections; before, during, as well as after (debriefing) Commentary Driving. This paper reports a theoretical analysis on how safety reflections could be added into the existing methodological architecture of Commentary Driving. We initialized our study by developing a ‘*status description*,’ i.e., how Commentary Driving is currently practiced in driving instructor education at Nord University (Norway). We then developed a ‘methodological map’ (heuristic work model) of the methodological trajectory (i.e., the stages of application). This map was based on Bogfjellmo (2018), who studied the learning potential of Commentary Driving. This map served as our analytical reference point for proposing where and how Commentary Driving could draw more systematically on safety-reflections.

Although this study is based on the Norwegian context, we are convinced that the issues addressed are of generic interest in the field of driving instructor training. For Commentary Driving in other contexts; see e.g.: Swedish study on young male drivers in the armed forces (Spolander, 1990); UK study on learner drivers (Crundall et al., 2010). It is also important to note here, that the assumed benefit of Commentary Driving does not stand unchallenged; see Young, Crundall and Chapman (2017), finding that producing a commentary while driving is detrimental to hazard perception.

## 2. Method

### 2.1. Status description

The starting point was ‘self-reflective;’ that is, we began by looking at our own practice: How is Commentary Driving presented to the students at Nord University? How is the training structured, performed, and applied? This served as our operationalization of Commentary Driving.

### 2.2. Methodological map

Based on Bogfjellmo (2018), we developed a methodological ‘map’ (heuristic work model) of

the methodological route in Commentary Driving. This model served as thematic map to explore *how* and *where* issues of safety may be further developed / put to effective use.

### 2.3. Paper format and structure

The paper is a theoretical discussion on method – and is structured as follows.

The *Results* segment includes two sections. First, we present the ‘*status description*,’ i.e., how Commentary Driving is currently practiced (at Nord University). Second, we introduce Bogfjellmo’s (2018) study on learning potentials, and a ‘*methodological map*’ of how Commentary Driving is practiced and applied.

In the *Approach & Discussion* section, the ‘methodological map’ is used as reference for proposing *where* and *how* ‘Operative Safety Reflections’ could be put into systematic use in Commentary Driving. The paper ends with ‘*Conclusions*.’

## 3. Results

### 3.1. Commentary Driving: status description

The driver instructor students first encounter Commentary Driving in a theoretical lecture. In this *Preliminary Stage*, the students are presented with the theoretical foundation for Commentary Driving. Its key principles and rationale. This is quickly followed by the *Operative Stage*. Here, the methodological principles are tied into practical performance; meaning that the students begin performing Commentary Driving sessions.

As the students progress on their path of Commentary Driving, the method is taught as a continuous alternation between and combination of theory and practice. The following presents key teaching principles in the *Preliminary* and *Operative stage*.

#### 3.1.1. Preliminary Stage

The introductory Preliminary Stage is a lecture covering four main topics: (1) Connecting theory to scenario, (2) Commentary precision, (3) Rules of application, and (4) Underpinning principles. Each topic is elaborated in the following.

*1. Connecting theory to scenario:* Students are first presented with the rationale for Commentary Driving (what it is, how it is

performed, and why). This involves connecting theory to scenarios from the get-go. Road traffic situations are presented by using images (photos). The primary objective is to contextualize and specify various scenarios where Commentary Driving may be applied. The students are invited and encouraged to discuss and reflect on themes and topics pertaining to the provided examples (e.g., risk assessment and driving strategy).

It should be noted that Commentary Driving may be applied in a wide range of scenarios and situations. Basically, Commentary Driving may be applied in any road traffic environment, with commentary sessions tailored to any given educational or training objective (both regarding driving skills and efficient commentary). However, in the initial teaching and training stages, Commentary Driving is often tied to 3 specific road traffic scenarios: (1) Driving straight through a roundabout; (2) Passing bus on bus-stop; and (3) Entering and exiting right of way road with complex intersection. These scenarios are presented to the students in the *Preliminary Stage*. The same scenarios later serve as defined practical training sessions in the *Operative Stage* (section 3.1.2., page 4).

These scenarios may be used to highlight a range of topics and issues. The use of specific scenarios is an effective approach to prepare the students for the Operative Stage. The scenarios (1-3) are progressively complex. The idea is that the students are gradually exposed to complexity – depending upon their skills, both regarding driving and commenting. In general, the scenarios are used to teach and practice: Commentary format (precise wording); Commentary timing (when to comment); Driving strategies (approaching situations); Driving tactics (assessing and doing ‘inside’ the situation); Safe driving and risk-preventive strategies.

After this lecture segment, the Preliminary Stage moves on to present a practical guideline for how Commentary Driving is performed in practice. These ‘*rules of application*’ are presented in the following.

*2. Rules of application:* Application rules are introduced by first emphasizing the fundamental idea of Commentary Driving: That the running commentary (what is expressed and how) reveals the driver’s thinking. On this background, ‘rules of application’ are presented:

- Driver decisions and choices influence risk levels, both before and during driving.
- The commenting driver’s performance is shared with everybody present in the vehicle.
- After a commentary session, the commenting driver is invited to comment on own performance. The student observers are also given the opportunity to assess the performance. Finally, the instructor provides performance feedback; this may involve a detailed breakdown of the scenario, with specific questions relating to decisions and comments that were made during the commentary session.

The next step in the Preliminary Stage is to focus in on ‘commentary precision.’

*3. Commentary precision:* This concerns both *commentary format* (terminology) and *focus placement* (timing; when comments should be given when driving through a given situation).

*Commentary format:* Comments are short, with precise wordings and sentences describing operation and evaluation. This underscores the need for precision in terms of use of terminology and wording. This also emphasizes the connection between understanding and articulation; a key premise in Commentary Driving.

*Focus placement:* Comments should be directed ahead in time. The comments reveal the driver’s assessment and prioritization (not everything can or should be commented). The Preliminary Stage then moves on to its final step: ‘*Underpinning principles:*’

*4. Underpinning principles:* Building on the first 3 elements (Connecting theory to scenario, Rules of application, and Commentary precision), these are general principles to create an overview:

*I. Planning:* The commentary should reflect both *strategic* planning (e.g., approaching a situation), and *tactical* planning (assessing and doing – inside the situation). The ‘reach’ of the driving plan depends on the situation. Some situations demand assessing longer sequences of contingencies (considering possibilities further ‘into the scenario’). Other situations involve shorter sequences.

*II. Risk assessments:* Looking for, recognizing, and assessing risk should be a priority. Risk

assessments should be an inherent process in planning (strategic and tactical).

*III. Predictions:* Looking for, and articulating expectations is a continuous commentary element. This connects with the ability to adequately place the focus of attention.

*IV. Environmental and area descriptions:* All the above (planning, risk assessments, and predictions) ties in with the ability to ‘read’ and interpret the surroundings. Different surroundings (should) trigger different evaluations. Expectations and possibilities should be part of the running commentary.

*V. Reference to road signs/markings, rules and regulations:* When appropriate, comments should cover assessments on road signs and markings, as well as rules and regulations that are relevant in the given situation. This adds an important reflective dimension to the running commentary: the ability to apply and communicate road traffic rules/regulations.

The presentation of these underpinning principles concludes the Preliminary Stage. Commentary Driving is now put into practice: Operative Stage.

### **3.1.2. Operative Stage**

The Operative Stage is initiated by a series of thematical lectures, each combined with practical training sessions. That is, the students perform Commentary Driving. As already noted, Commentary Driving may be performed in any road traffic environment and situation. Thus, students may perform their first commentary attempts in broadly defined environments like: city; suburban area; roads with multiple lanes; rural areas; highways.

Frequently, the 3 scenarios mentioned in 3.1.1. Preliminary Stage are used as ‘testing grounds.’ However, the specifics in terms of ‘type of situation’ and purpose will (and must) vary – depending on the skill level of the student. Irrespectively of situation and educational purpose, the key is that distinct scenarios serve to define practical situations for the student training. The underlying idea is that the operative testing and performing is done in a way that builds on,

and connects with the knowledge base from the Preliminary Stage (see section 3.1.1.).

As part of the ‘Rules of application’ (section 3.1.1. Preliminary Stage, page 3), a commentary session ends with a kind of ‘debrief;’ a joint discussion (performer, observers, and instructor). The aim is to retrace the performance, and reflect on assessments, decisions that were made; what could/should have been solved differently and so on. This is part of the current practice. However, it is important to note that the specifics in terms of methodological application do vary with different instructors. This methodological variation relates to the entire methodological course, from introduction, via operative driving sessions, and finally – the ‘debrief.’ In particular, the methodological details concerning the final ‘debrief’ remains elusive and sparsely defined. Exactly this created the starting point for Bogfjellmo’s (2018) study, presented below.

### **3.2. The learning potential**

Bogfjellmo (2018) explored the learning potential of Commentary Driving. Combining observation and interviews, the study is a qualitative analysis examining 5 Commentary Driving sessions. The participants were 5 Norwegian driving instructor students. Each case was initiated by observation during a Commentary Driving session (the researcher participated as a silent backseat passenger). The driving session was sound recorded for subsequent analysis. Building on the observations, separate follow-up interviews were performed for each driving session (ibid).

Overall, the results of the study support the fundamental premises for Commentary Driving as method (see 3.1.1. Preliminary stage and 3.1.2. Operative stage). First, this relates to the use of articulation and reflection as method (approach) to develop the capability of verbal operative situational analysis. Second, that a running commentary holds the potential of self-awareness; both in terms of one’s own thinking and understanding – but also directed to one’s future role as driving instructor. Based on the study, Bogfjellmo (ibid) defined a set of ‘learning dimensions’ in Commentary Driving. These are presented in the following.

### 3.2.1. Learning dimensions

*I. Terminology:* The value of and precision of terminology (and thus theory).

*II. Connecting to tacit knowledge:* the practice of articulation (of observations, evaluations and decisions) establishes a connection to tacit knowledge. The verbalization of ‘doing’ in the operative is a way to bring the tacit into focus.

*III. Connecting to inner processes:* the articulation of observations, evaluations, and decisions create a natural passage to the ‘inner workings’ of the commentator. This may relate to specific emotional states as related to a specific situation or event (during commentary). However, the potential reaches beyond a given situation. The commentary may be used to explore theories and ‘manuscripts,’ e.g., how the commentator reflects and resonates concerning risk and safety.

*IV. Operative focus:* in addition to the articulation of ‘reading’ situations; the commentary has a parallel focus that revolves around the technical, tactical, and strategical of operating the vehicle.

*V. Training for teaching:* thinking and articulation ‘in action’ as a training approach in terms of how to teach: what is observed, evaluations, decisions – situational contingencies.

*VI. Rapport and knowledge development:* the articulated reflections may serve as a topic for further discussion and exploration (commentator, observers, instructor). This induces the potential for rapport and mutual understanding.

*VII. Flexible analytical focus:* the analytical focus in a Commentary Driving session is naturally placed ‘in the now,’ e.g., attention may be isolated on what occurred during a given session. However, the commentary session may also be used to direct attention to reflections regarding both before and after (future). Adding to this – is the potential of continuous learning.

As noted by Bogfjellmo, the learning potential is distributed to all actors present in the vehicle (commentator, instructor, and student observers) (Bogfjellmo, 2018).

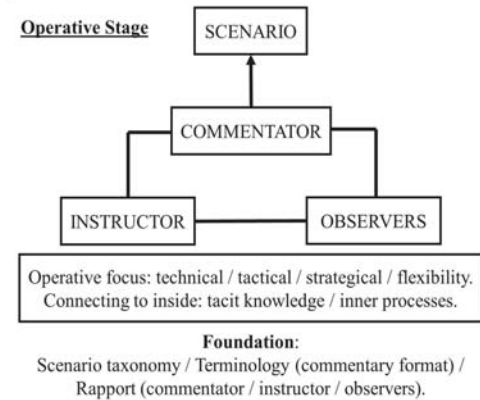
### 3.2.2. Methodological map

Based on the learning dimensions in Bogfjellmo (2018), we developed a ‘methodological map’ (heuristic work model). See Figure 1.

#### Preliminary Stage

Scenario brief / training purpose.

#### Operative Stage



#### Post-Operative Stage

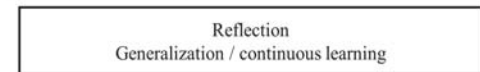


Fig. 1. Methodological ‘map’ of Commentary Driving – based on Bogfjellmo (2018).

Figure 1 categorizes Commentary Driving in 3 stages reflecting the methodological course (from theoretical introduction, scenario presentation, and training purposes), via the operational (commenting and driving through a scenario), to the ‘debrief’ discussion and reflections after a Commentary Driving session. In section 4. Approach & Discussion (below), this methodological ‘map’ served as our reference point for discussing and proposing *where* and *how* safety-reflections could be accentuated and put more into systematic use within the existing methodological architecture.

## 4. Approach & Discussion

The scenario focus is prevalent throughout the methodological route of Commentary Driving (Preliminary, Operative, and Post-Operative Stage). Thus, our basic idea was that an accentuated safety-focus should be based on a systematic approach to engage in elaborated scenario interpretation and analysis. On this

premise, we argue that the *bowtie diagram* could serve as a ‘support tool.’

The bowtie diagram is an established way to depict and communicate risk (de Ruijter and Guldenmund, 2016). A bowtie depicts risk sources (threats), an unwanted event – and a set of consequences. The diagram may also illustrate barriers intended to prevent or reduce the probability of an event (proactive barriers), and barriers intended to stop or reduce the consequences of a given event (reactive barriers) (Rausand and Utne, 2009). See Figure 2.

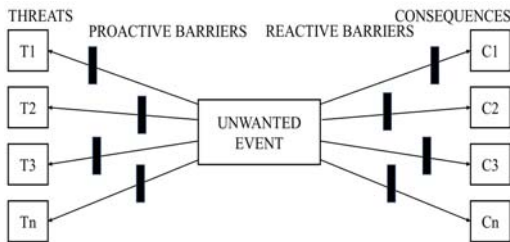


Fig. 2. Bowtie diagram.

Consider one example: ‘*Passing bus on bus stop.*’ A frequently used scenario as it underscores the importance of risk assessment in a tightly defined (‘compact’) situation. A key feature being high risk, even at low speed. As can be seen in Table 1, the bowtie provides a precise approach for specifying threats, barriers, and consequences.

Table 1. Passing bus on bus stop.

<p><b>T1: Bus suddenly exits the bus stop.</b>                  Proactive barrier: Pre-emptively adjusted speed (prepare sudden stop) / Reactive barrier: Braking hard / C1: Getting hit by car behind.</p>
<p><b>T2: Pedestrian walks out from behind the bus.</b>                  Proactive barrier: Same as T1 / Reactive barrier: Same as T1 / C2: Same as T1.</p>
<p><b>T3: Crowded scene (pedestrians, vehicles behind and oncoming traffic).</b>                  Proactive barrier: Risk awareness (reading the situation; pre-emptively slowing down to ensure time and space for any contingency), preparing for sudden stop / Reactive barrier: Adjust speed, attempting to restore time and space for contingencies / C3: Getting hit by car behind (your reduced speed may not be perceived by the car behind.)</p>

**Note:** This is by no means a complete scenario specification (of threats, barriers, consequences). The table merely illustrates bowtie application.

Although the bus stop scenario is simple, meaning that the situational borders are clear-cut, we argue that it demonstrates the analytical value of the bowtie approach. It is important to note that a paramount objective here is to sensitize the driving instructor student’s risk reflections and awareness. The specified elements of the bowtie (threats, barriers, consequences) are in this way important pedagogical tools, to encourage the student’s critical thinking and effort to develop a risk-analytical mind.

The bowtie offers concrete support for discussing scenarios. It is an efficient visual tool for mapping out a scenario. The bowtie puts emphasis to paths and patterns pertaining to risks connected to a situation: its antecedents, consequences, and potential barriers. We argue that the bowtie provides an efficient analytical platform to implement ‘Operative Safety Reflections’ as a supplement in the Commentary Driving method. In the following, we specify the ‘Operative Safety Reflections’ approach.

#### 4.1. The Operative Safety Reflections approach

We propose a guideline for Operative Safety Reflections as 3 bowtie-approaches, one for each of the methodological stages of Commentary Driving (cf. the ‘methodological map,’ Fig.1): Making the bowtie (Preliminary Stage); Breaking the bowtie (Operative Stage); and Beware of the bowtie (Post-Operative Stage).

##### 4.1.1. Making the bowtie (Preliminary Stage)

‘*Making the bowtie*’ may serve as a focused exercise in the Preliminary Stage, to define a given scenario by pursuing the following questions: (1) What may potentially occur? (2) How can the event be prevented/reduced? (3) How can consequences be stopped or reduced? We propose that including an exercise of ‘*Making the bowtie*’ is a viable approach to reinforce safety awareness at the Preliminary Stage.

##### 4.1.2. Breaking the bowtie (Operative Stage)

By applying the bowtie approach and ‘*Making the bowtie*’ at the Preliminary Stage, this lays the groundwork for what we see as a necessary secondary application of the bowtie approach: ‘*Breaking the bowtie.*’

Although this sounds dramatic, our intention is to underscore the necessity for students (and

instructor) to engage in critical safety reflections (in the Post-Operative Stage). To prepare for this, we propose that the instructor applies ‘Breaking the bowtie’ as a focused analytical approach during the Operative Stage. This entails that the instructor<sup>a</sup> systematically ‘collects’ (i.e., looks for, and identifies specific discussion points) that in the subsequent Post-Operative Stage will serve to ‘problematize’ details regarding the scenario. Examples of relevant questions to pursue may be: *What about uncertainties and ‘unknowns’ outside of the bowtie? What about surprises and the potential of sudden shifts?*

This problematization should also encompass the student’s performance. Themes for the instructor to ‘look for’ may concern indications of: safety-related perceptions, assessments, and operative ‘solution-strategies.’ The idea is that the instructor, throughout the Operative Stage, looks for, and ‘collects’ discussion points that may ‘break’ (i.e., challenge assessments and operative solutions) based on the established bowtie. This then provides a systematic preparation for the subsequent Post-Operative Stage, where relevant safety-issues are further elaborated, analyzed, and discussed.

#### 4.1.3. *Beware of the bowtie (Post-Op. Stage)*

The principal focus at the Post-Operative Stage should be directed at the given scenario (i.e., the given Commentary Driving session). However, the joint discussion at this stage is also an important opportunity to look at safety issues more broadly. The rationale for this broader scope is to direct student attention towards a more generic safety awareness – to keep questioning, reflecting, and analyzing. In this way, the Post-Operative Stage may serve as a theoretical ‘testing-ground’ covering both the given scenario, as well as more generic safety-issues and concepts. To capture this double potential, we name these safety reflections ‘*Beware of the bowtie.*’ We propose ‘Beware of the bowtie’ as a reflection exercise covering: (1) the given scenario, and (2) generic safety-issues. This is elaborated in the following.

#### *Beware of the bowtie #1 (given scenario):*

After a Commentary Driving session, the method moves into a phase of joint discussion (involving instructor, performer, and observing students). At this stage, the ‘data collection’ made during the Operative Stage (‘Breaking the bowtie’) may serve as a specific analytical approach for further analysis, reflection, and discussion.

For the students (Commentary Driving performer and observers), ‘Breaking the bowtie’ underscores the importance of questioning and problematizing established scenario definitions and descriptions. A key teaching goal is to retrace the driving session, share thoughts, and reach new, more nuanced understandings of safety assessments and operative strategies. Adding to this is the wider teaching goal of acknowledging the importance of continuous and active reflection and analysis; both pertaining to scenario categorization as well as one’s own established understanding and solution approaches.

#### *Beware of the bowtie #2 (generic safety-issues):*

The Post-Operative Stage is an important opportunity to look at safety concepts more broadly. The key here is, for both instructor and students to look at the wider landscapes of safety science; to identify relevant ideas and concepts that may be extrapolated and applied in the context of Commentary Driving. We provide 2 *examples*, to illustrate our point:

##### *1. Scenario movements and changes.*

Skjerve et al., (2012) explored a collaboration method to support professionals in safe (resilient) decision-making in the planning processes of a new petroleum installation. The method involved a Reflection Guide that served as a categorization tool for professionals to analyze operational states and safety. Specifically, the operational states were distinguished as: Normal operation; Transition; Beyond design basis; Transition; and Emergency (Skjerve et al., 2012). We would like to draw attention to the two ‘transition states;’ i.e., conditions that concern states of change or movement. We argue that this is a highly relevant point to consider regarding road traffic scenarios. Thus, inspired by the transition states as defined in Skjerve et al., (2012), we propose that a focus

<sup>a</sup> Later on in the training course, student observers should also engage in this ‘problematization.’

on transitory movement; i.e., indicators of how a scenario changes or ‘moves’ into something else, is an adequate dimension of *problematization* for Commentary Driving.

2. *Dangerous expectations.* Driving skills and abilities are tied to scenario exposure and experience. This connects with what is often referred to as *routine*. That is, with adequate understanding, operative skills and experience – the handling of a given ‘situation’ becomes fluent, natural and in a sense ‘instinctive.’ This is a good thing. However, there is another ‘side’ to experience and routine that should be considered: the dangers of expectation. The following is a quote from Weick and Sutcliffe’s (2007) book ‘Managing the Unexpected: Resilient Performance in an Age of Uncertainty.’

*‘Expectations act like an invisible hand that guides you toward soothing perceptions that confirm your hunches and away from more troublesome ones that don’t (Weick and Sutcliffe, 2007, page 32). Weick and Sutcliffe (2007) addresses organizational safety and the features of High Reliability Organizations (HROs). However, we argue that their ‘warning’ pertaining to perception represents a critical reminder for Commentary Driving. Perception in general, and more specifically risk perception is a key element in Commentary Driving.*

In Størseth (2021) risk perception is described as ‘*a compound of capabilities to identify, understand and recognize risk and hazard*’ (Størseth, 2021, page 2189). See e.g., Trimpop (1994) for a detailed discussion on risk perception. For the driving instructor student, risk perception is a skill to learn and develop. A skill that contributes to reaching the necessary stage of *routine*. However, as Weick and Sutcliffe’s reminder suggest, the ‘dangers of expectations’ (routine) is a crucial counterweight that needs continuous vigilance. The above are merely two examples of how the broader scope of safety-thinking and -science could inspire and aid a broader analytical scope in Commentary Driving.

## 5. Conclusions

This paper represents our preliminary, theoretical effort to explore systematic application of safety-reflections throughout the methodological course of Commentary Driving. Based on the prevalent

scenario-focus in Commentary Driving, we conclude that Operative Safety Reflections built around the bowtie is a viable and promising approach to accentuate safety within the existing methodological architecture. We also conclude that an important next step will be to empirically explore ‘Operative Safety Reflections’ during Commentary Driving practice.

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