

# **JUST CALL ME THOMAS: INCREDULITY, EVIDENCE, AND THE HYPE SURROUNDING INSIGHT-BASED TRAINING FOR NOVICE DRIVERS**

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## **ABSTRACT**

The Australian driver-training scene appears to have experienced a resurrection, with widespread belief in the value of an insight-based approach to driver training that stresses increasing self-awareness of one's limitations. The apparent resurrection of driver training as a road safety measure after a long, evidence-based decline in health owes much to theoretical developments in Europe, and especially in Sweden, and to some recent research studies conducted in Finland and Australia. This paper examines the nature of evidence supporting ongoing belief in insight-based approaches, and concludes that there is still no sound evidence to support the implementation of a driver training program based on insight principles. Swedish research has still largely failed to demonstrate real road safety benefits from an insight approach, and a close review of Finnish and Australian research raises significant doubts about drawing positive conclusions about the outcomes. Even current research studies in a number of jurisdictions in Europe will fail the simplest examination. A scientific approach to the driver training issue suggests that rumours of a resurrection may be somewhat overstated. The paper then goes on to discuss the type of valid evidence that would be needed to confirm that the driver training tomb is empty, and the likely problems associated with obtaining this type of evidence.

## **INTRODUCTION**

With its usual sense of irony, the Catholic Church has two patron saints for scientists – Albertus Magnus, a bishop in the 1200's and a teacher of the better-known Thomas Aquinas; and Dominic, the founder of the religious order that bears his name. To add some coincidence to the irony of having saints-for-scientists, this conference happens to coincide with Albert Magnus' memorial day – the 15<sup>th</sup> of November. Sadly, the real heroes of science have been overlooked in the Church's decisions about patron saints.

William of Ockham (born in Surrey, also the birthplace of my great-great-grandfather six-hundred years later) has been neglected entirely despite going along with (and making his own) a general philosophical idea current at that time that we should take the simplest view of things when trying to explain them – something that is central to this paper. William, like many of his Franciscan brothers, was not very popular in the Church and managed to get himself excommunicated by John XXII – one of the Avignon Popes. This might explain the fact that we do not have a Saint William for scientists.

Thomas the Apostle has also been neglected as a potential saint for scientists despite his creditable scepticism about the resurrection rumours he was hearing, and his apparent need to see and then play with some data before accepting as truth something that most likely seemed to be a staggeringly-silly hypothesis. Thomas and his strange need for data to confirm an unexpected result are also central to this paper. Thomas was probably overlooked because his incredulity has generally been seen as a negative in the resurrection stories – he is always portrayed to primary-school children as unfaithful rather than careful.

This paper concerns an area of current interest where there is an ongoing tension between almost-religious belief in something that has constantly been shown to be inconsistent with the facts and the suggestion, from a small number of researchers who are seen to be negative rather than careful, that there is still a need for data.

## **DRIVER TRAINING AND EDUCATION - BACKGROUND**

Until recently there was no credible evidence that supported the notion that driver training and/or education have positive effects on road safety. It was widely accepted by those with an understanding of the novice driver issue, evaluation research, and skill acquisition that there was little likelihood that any driver training program could take the place of experience or offer much of an added bonus to the “natural” development of safety-related driving skills. The issues and research findings have been dealt with elsewhere (e.g., Christie, 2001; Harrison, 1999). The key issues were:

- There were no sound evaluation findings supporting driver education and/or training as safety measures, and even some evaluation findings that suggested the opposite; and
- The acquisition of the cognitive skills underlying safe driving relies on experience in the driving environment – there were good reasons to believe that any education program not based on repeated experience in real traffic over an extended period of time would not have a significant effect on safety-related skills and mechanisms.

More recently, Christie and Harrison (2003) considered the potential of new approaches to driver education and training and concluded at that time that the situation was unchanged – there was still no evidence that provided credible support for the use of driver training or education as a road safety measure. They did note, however, that there were some results from an evaluation conducted in Finland that had been taken by some as evidence that the education program used there for novice (licensed) drivers had produced some road safety benefits.

Although the research evidence prior to the Finnish evaluation was consistently negative, and the Finnish study stood alone in its positive findings, there has been an increase in the level of interest in the Finnish approach and the insight concept that underlies it.

## THE INSIGHT NOTION

The Finnish novice driver education program was introduced as part of broader changes to their licensing system in the late 1980's and early 1990's. Its development and introduction occurred during the same period as increasing concerns about traditional, skills-based driver training (e.g. Glad, 1988), a number of European Union research programs, and research into an insight-based approach to driver education in Sweden.

The Finnish approach, the outcomes of EU Project Gadget (e.g. Siegrist, 1999), and the Swedish approach all share an assumption that education should be effective as a road safety measure. The underlying notion is that novice drivers will benefit by achieving greater insight into their own limitations when driving in traffic and into the potential problems and hazards that they may not be aware of with only limited driving experience. This definition of insight incorporates the Finnish focus on using driving experience as the basis for learning and the Swedish use of more-carefully defined educational experiences as the basis for learning. By making use of insight in the context of an education program based on adult learning principles, the European, Swedish, and Finnish approaches have attempted to move beyond an education model based on transmission of knowledge to one based on self-education.

EU Project Gadget recommended that driver training and education be considered in the context of the development of driving in the broader context of the role of driving for the individual and their psychological development as young adults (Siegrist, 1999). A key recommendation that came out of this project – interestingly after the development of the Finnish program discussed below – was that driver education and training should move beyond the usual focus on vehicle control into areas such as skill in traffic, purposeful and journey-related driving, and broader life skills.

By this stage the Finns had already redeveloped their licensing system (AKE, 1998). They moved to a three-stage system, with a learner period, a novice period, and a full licence. Within the first two periods they require completion of an education program. There is a set curriculum and a minimum number of lessons for learners, and novice drivers are required to undertake an expensive (up to AUD500) program that involves the following:

- Driving with an instructor who provides feedback on safety-related aspects of the novice's driving during a feedback session and presumably while driving;
- Driving-range activities that focus on the potential benefits of driving more slowly as a way to reduce risk; and
- A small-group discussion facilitated by an instructor focusing on drawing the novice's general driving experience and their experiences in the program together to address key safety-related issues.

The novice program must be undertaken when drivers have between six and twenty-four months of driving experience (or they return to the learner stage), and is attendance based without any assessment or active-participation requirements. The

focus is on adult-learning principles and the Finnish licensing authority specifies a core content that can be expanded by instructors as they wish.

The Swedish experience in insight-oriented training has primarily been in the research arena, with a series of studies undertaken at VTI over the last decade or more (e.g. Nolen & Nyberg, 2001; Nolen et al., 2002). The focus of these studies has been an insight-based program that leans more towards education than experience, with participants interacting with a series of demonstrations or activities that are designed to encourage them to introspect about aspects of driving and safety. This program has not been implemented as a formal component of the driver training and education system.

## **LOCAL BELIEVERS**

There has been some local interest in the insight notion, with one large insurance company offering a program in a number of states that is claimed to be based on an insight approach. Another insurer has been developing a program for evaluation based in part on the Finnish approach, and an ATSB program has been developed with a similar background.

Informal discussions with some driver trainers suggest that many of them are now claiming that they have introduced an insight-orientation into their programs, and some lay claim to inventing the insight approach to driver training. While the interest in developing driver training needs to be viewed positively, the recent evidence that a sample of driver trainers in Victoria knew the language of hazard perception but were unable to explain how they included it in their training (see Fitzgerald and Harrison, 1999) leads the author to suspect that the insight notion may not be as influential here (at a practical level) as some would claim.

The research study reported by Senserrick and Swinburne (2002) added to the general interest in insight-based approaches. The positive, uncritical response to this study and some others reflects the broader failure of caution and scientific scepticism in the road safety community. The result is now a situation where the research-based death of driver training and education as a road safety issue has turned into rumours of a resurrection – and there are few Thomas's wanting to see and play with real data before they commit themselves.

## **POSITIVE RESEARCH OUTCOMES**

Part of the problem has been an uncritical acceptance of positive research findings and an unwillingness to consider the implications of negative findings. Personal experience suggests that this is a common problem in road safety research and policy development across Australia, with an increasing tendency towards self-censorship of negative findings within some research organisations. It is interesting to consider actual research in this area.

The broader, historical context was mentioned earlier – the European driver-education research projects were planned and implemented in a context that would have argued against further research and development in this area. Sound research has consistently failed to demonstrate road safety benefits resulting from driver education and training.

The Swedish insight research has consistently failed to demonstrate the hoped-for positive results. There have been some results suggesting an increase in so-called behavioural intentions and changes in perceptions of risk in some safety areas (Nolen & Nyberg, 2001), but there is a large body of research suggesting that behavioural intentions are generally a poor predictor of actual behaviour except in well-defined situations. The Swedish research is not particularly positive.

The Finnish evaluation results were promising and entirely unexpected given the above-mentioned body of historical research. The Finns reported substantial reductions in crash involvement for young drivers who had been through the new licensing system compared to those who obtained their licences in the period before the new system was introduced (Katila et al., 2000). The crash involvement of older drivers before and after introduction of the new system was used to control for other factors. The results were more promising for young males than for young females, and even if the outcome reported by the Finns was over-stated it could at least be taken as evidence that there was something of value in the changes that took place in Finland in the early 1990's.

Local research has also been taken as evidence that an insight approach might have some value. Senserrick and Swinburne (2002) published an evaluation of a local program that they argued suggested some potential as a road safety measure. Their conclusions, although based on questionnaire measures only, were widely applauded in the driver training industry and have been used for commercial advantage by one training provider.

## **A PLACE FOR INCREDULITY**

Science is a conservative business. Its methods are designed to ensure that new ideas are consistent with existing data, and it focuses on patterns of findings in preference to a single result. Science seeks a high level of logical consistency and, perhaps most importantly, requires an emphasis on relevant data and their implications rather than theory or personal belief. It progresses largely by rejecting ideas that are inconsistent with data, and relies on a sceptical approach to research and theory.

The integration of a scientific approach into road safety is under constant threat from and number of sources, including the following:

- The political and policy focus of government authorities and their apparent need to support current policy, sometimes regardless of sound science. Consistent with the Church's view that science must serve faith, it could be inferred that there is sometimes a view that road safety research must serve current policy rather than the broader well-being of road users.

- The commercialisation of research products, such as driver training programs, and the consequent unwillingness of some research sponsors to see adverse findings reported. The increasing prevalence of intellectual-property controls over research outcomes, and the willingness of researchers to sign over their moral rights to their work seems inconsistent with what might be called scientific best practice.
- The internalisation of this discomfort with adverse findings by research organisations as they seek to keep their clients happy. There appears to be a lack of symmetry here – personal experience suggests there is closer scrutiny of results in some organisations when the results are unpleasant than when they are pleasant, as if the only research errors that could be made are those that fail to meet the client's expectations.
- A lack of scepticism on the part of researchers when they place a theoretical position ahead of sound science.

There is nothing new in this list – these issues have been a constant in road safety research and are experienced in other areas of science where there are commercial and policy implications for research. A key difference between road safety research and many other areas of scientific research, however, is the reliance of many local road safety research organisations on commercial contracts in preference to research grants. One result of this is a risk that researchers feel less able to speak independently, and are criticised (sometimes within their own organisation) when they do so.

In the driver training and education area there has been a substantial breakdown in the application of sound science in the last decade. The recent interest in insight-based approaches is largely a product of this. Although it is possible that an insight-based approach might one day be shown to provide road safety benefits, there is currently no credible evidence supporting this approach.

A more-sceptical view of recent developments would note the following:

- The weight of evidence concerning driver training and education is still unsupportive, despite a small number of apparently-positive findings in recent years.
- The focus on driver education and training in Europe and (especially) Scandinavia is a result of a cultural emphasis on education and training as a community-development tool rather than the result of any specific evidence supporting the effectiveness of education techniques in road safety or any other area of risk-related behaviours.
- There have been no programs developed and evaluated at this stage that are based explicitly on the European Union novice driver education model – the so-called GADGET matrix.
- The Finnish evaluation findings relate to changes to the whole licensing system – not to a driver education and training program. This is an important issue. It is not sensible to conclude that the positive Finnish findings provide

specific support for the novice driver education program because it was implemented in the broader context of substantial changes to the Finnish licensing system. The Finnish evaluation team accepts this, but it seems to have been overlooked by others.

- The research design used to evaluate the Finnish licensing changes does not allow any definite conclusions to be drawn about the effect of the changes on novice drivers because it did not control effectively for economic and related changes in Finland at the time the program was introduced. Finnish statistical data indicates, for example, that the licensing changes occurred at the same time as a substantial and prolonged increase in speed enforcement activity by the Finnish Police. High levels of speed enforcement are likely to have had positive road safety benefits, and it is not possible to separate these from any licensing-related benefits.
- Swedish research has not yet managed to demonstrate behaviour changes resulting from involvement in an insight-based driver education program.
- The recent evaluation of an Australian insight-based program (Senserrick & Swnburne, 2002) was methodologically sound, but was limited to questionnaire-based outcome measures and cannot be taken as evidence for a potential road safety benefit.

From a scientific viewpoint, the driver education and training area currently has a large, consistent body of evidence suggesting that there are unlikely to be any road safety benefits, some theoretical notions that an alternative approach could work, and two evaluations supporting this alternative approach – with only one, poorly-controlled study using crashes as an outcome measure. The results of this one study could be accounted for in terms of changes to the whole licensing system or new enforcement programs rather than the effect of an insight-based approach to driver training.

## **SCIENCE, THOMAS, AND DRIVER EDUCATION**

From an educational point of view there is no doubt that taking an insight-based, adult-learning approach with novice drivers should be expected to result in improvements in knowledge and, perhaps, self-awareness. The issue that still needs to be investigated is whether this type of change is sufficient to produce behavioural changes and reductions in crash risk or involvement. If the results of a well-conducted study (or two) indicated that this approach does reduce crash risk, then it would be necessary to accept the value of driver education and training. Without this evidence, it is not sensible believe that driver education and training can produce road safety benefits.

This is the point of view that seems to be the basis of Thomas' need to see the wounds and even to place his hands in them. Thomas wanted access to the data in order to confirm or reject a theory that others believed in, and expressed a point of view that needs to be central in our assessment of the current belief in a new version

of driver education. We need good-quality, publicly-available data to assess the potential benefits of this approach to driver education.

In an ideal world, the following might occur:

- Development of a new driver education program for novices based on the insight ideas, the European Union GADGET matrix, and/or the Finnish approach.
- A large-scale, crash-based evaluation or trial of the program conducted using widely-accepted experimental research methods with an appropriate control group, overseen by a group of young-driver and evaluation experts to ensure the trial is sound.
- Distribution of outcome data to any road safety researchers with an interest in the area with the freedom to conduct and release any analyses relevant to the success or otherwise of the program.

This would provide a large data set from a crash-based trial, free of the potential conflicts of interest that might arise in a commercially-based trial. As noted in another paper at this conference, the first step has been taken. In fact, two novice driver development or education programs have been developed in Australia in the last eighteen months based in part on the Finnish model. They differ in a number of key respects, but they share a common basis in the broader insight and adult-learning areas. Either would be suitable as the basis for a sound evaluation.

Conducting a sound evaluation is likely to be expensive, with power calculations conducted using Monte Carlo techniques for the ATSB novice program suggesting a need for about 6,000 program participants and 6,000 in a control group to detect a modest 10% reduction in the frequency of self-reported crashes. Anything less is unlikely to detect a reduction or increase in crash involvement. The need to ensure that the study design detects an increase in crash involvement is central to any evaluation in this area, given the history of driver education programs.

A well-conducted study would need to ensure that potential criticisms about bias or conflict of interest are minimised, which is why it is suggested that the outcome data should be made available across the road safety research community. This would require, however, an uncommon openness about program evaluation.

## **WILLIAM HAS THE LAST WORD**

William of Ockham was not excommunicated for his specific views on taking the simplest option, but rather for his more-specific views on poverty (as a Franciscan) and the papacy. Underlying the specific views, however, was a general tendency to lean towards simplicity rather than complexity.

The scientific community has taken up this tendency and theoretical arguments can sometimes be resolved by reference to Ockham's razor – the notion that in the absence of data the best way to resolve theoretical differences is to favour the

simplest theory or explanation. Application of the razor to the Finnish evaluation results would favour an interpretation in terms of the change to the whole licensing system and the effects of enforcement rather than one that focuses on the driver education component of the changes to the exclusion of everything else. It is simpler to account for the reported changes in terms of a known enforcement effect than it is to claim that the changes are somehow due (magically) to one of the many licensing-system characteristics that were changed at the time.

In the driver training and education area, the bulk of evidence is against expecting driver education to have an effect on safety outcomes. Advocates of insight-based programs have not yet managed to demonstrate the success of their approach, and neither have they suggested a cognitive or psychological mechanism that could link increased knowledge gained in an insight-based program and changes in largely-habitual, cue-controlled driving behaviours. The simplest scientific position at the moment is one that remains sceptical about driver education and training, regardless of its flavour, pending the outcomes of a public trial that is sound enough to provide clear data one way or the other.

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