



Frank Blackmore

Traffic engineer whose innovative approach to vehicle flow at road junctions led to the mini-roundabout in urban areas

Frank Blackmore's invention of the mini-roundabout was acclaimed for the huge difference it made on the roads in stemming the tide of traffic jams that has blighted motoring in Britain for more than 40 years. His innovative measures, which also included multiple "magic roundabouts", rendered traffic problems considerably less acute than they might otherwise have been.

His emergence as a government traffic engineer coincided with the growing problem of congestion on the nation's roads that was causing road junctions everywhere to snarl up. With no rule for giving way to traffic circulating on a roundabout from the right, the free-for-all would often result in long queues forming on junction approaches. As horns beeped away, overstretched police officers would arrive on the scene, compelled to solve the conundrum with a flurry of frantic hand signals.

Blackmore championed a growing campaign for vehicles approaching the junction to give way at a stop line, and the rule was written into Department for Transport guidance in 1966. The new system had an immediate impact on reducing road accidents and improving traffic flow.

The next challenge was to design a version of the existing roundabouts that could be applied in thousands of constricted urban settings where there was not the space to install a conventional large roundabout.

Blackmore's controversial solution, developed at the Government's Road Research Laboratory (today known as Transport Research Laboratory), was a smaller roundabout with a 2 to 4m-wide mini-island in the middle that minimised the curve for the vehicle driving around it, thus aiding traffic flow. The mini-roundabout was also safer than its large counterpart because drivers tended to approach it with greater caution.

The new roundabout, which first appeared in Peterborough in 1969, revolutionised junction design that had up to that point been characterised by large unwieldy roundabouts with huge traffic islands in the middle. Black-

more developed the concept further with the painted traffic island first used at Benfleet, Essex, in 1970. This was "over-runnable" by traffic, making it easier for larger vehicles to manoeuvre the junction.

Despite opposition to his concept from many in an engineering profession known for its conservatism, his roundabout designs were formally written into government design manuals in 1975. By this time his experiments had become increasingly radical. Among these were the "magic roundabout" in Swindon in 1972 and multi-ring junction in Hemel Hempstead in 1973.

Such junctions comprising as many as six mini-roundabouts — like a series of cogs in a piece of industrial machinery — did cause some chaos when first encountered by bewildered motorists. But Blackmore proved that the multi-roundabouts reduced speed, increased through-put and aided traffic flow. However, the idea was

perhaps one step too far for an incredulous engineering profession, and it never really caught on. Nevertheless, his early experiments remain as legacies to his boldness and still attract pilgrimages from "roundabout spotters" today.

Frank Blackmore was born in 1916 in Fort National, Algeria, where his British father, Josiah, was working as a missionary and set up an eye hospital. An early passion for engineering emerged, encouraged by his Swiss mother, Clarisse, who was delighted at the little devices he invented to solve practical problems, which included a flytrap made out of matchsticks.

He left Algeria to study civil engineering in Lausanne, Switzerland, and came to Britain in 1936 to work in the borough engineer's department at Colchester Borough Council.

After war broke out he joined the RAF and became a pilot of Wellingtons, famously making an emergency landing on the beach at Ardnamurchan Point on the west coast of Scotland and later winning a Distinguished Flying Cross.

He was closely involved in the successful testing of the Leigh Light,

which was fitted to maritime patrol aircraft enabling them to spot and attack U-boats at night. In this work a passion for testing emerged that would later serve him well as he turned his attention from the war effort to fighting traffic congestion.

He rose to the rank of wing commander and remained with the RAF until 1959, working for the Air Ministry in London and then for Nato in France and finally as air attaché at the British Embassy in Beirut.

He left the RAF in 1959 and joined the RRL in 1960, where his interest in roundabouts emerged. The huge facility near Wokingham, Berkshire, was a playground for a man who loved inventing concepts and testing them in full scale experiments.

"He was quite unstoppable," recalled Professor Rod Kimber, an ex-colleague and director of science and engineering at the TRL. "He worked intensively for hours sketching junctions that could be fitted into very small spaces. He would keep experimenting and adjusting them until they worked."

His iterative approach saw him make many improvements to his concept, such as "flared approaches" of three or four lanes, that replaced traffic backing up in single file. This design modification led to a large increase in capacity, although to begin with drivers did not use the approach lanes because they were so used to queuing in single file.

Blackmore was remembered among colleagues for taking his teams out onto the road to test his ideas out. Even family holidays with his second wife Eva and three children were not off limits to his exhaustive research, and he would regularly stop at junctions to take photographs from every possible vantage point while the remaining members of the Blackmore family waited patiently in the car.

Such single-mindedness served him well as he sought to win over suspicious traffic engineers who disliked the "shoe-horning" of junctions into confined spaces and what they saw as



excessive use of signage and road markings warning drivers on the approach to the roundabout. As a result, some local authorities shunned his mini-roundabouts, preferring to install traffic lights at conventional junctions.

But many changed their minds after meeting Blackmore, who, with his mixture of continental charm (with just the trace of a French accent) and forceful debating technique, had a talent for changing mindsets. He was able to persuade many local authority engineers to try things they would not otherwise have done.

Gradually his ideas took hold, but his crowning moment came when his mini-roundabout design was officially adopted in 1975, and recognised when he was appointed OBE the following year. It was, nevertheless, bittersweet for Blackmore because he did not agree with the way his designs had been standardised in the design manuals.

Blackmore never stopped tuning his ideas, and in later years argued that the painted island should be phased out and replaced with a slightly raised and tapered island that would ensure that drivers curved around them and reduced their speed to maintain safety.

Blackmore officially retired from his TRL post as scientific officer in 1980 and carried his crusade overseas as a consultant in Bangkok, Baghdad and California. His mini-roundabout concept may receive a major application later this year in the Nigerian capital Abuja, where power shortages often render the signal-controlled junctions inoperable.

Blackmore was twice married, first, in 1939, to Ginon Dufour, who died of tuberculosis in 1942. He married his second wife, Eva Johnson, in 1945. The marriage was dissolved in 1969. He is survived by two daughters and a son of his second marriage.

Frank Blackmore, OBE, DFC, traffic engineer, was born on February 16, 1916. He died on June 5, 2008, aged 92



ADRIAN SHERRATT



Solving the problems of congestion: Blackmore and the “magic roundabout” which was opened in Swindon in 1972