

nature

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Hushing up Concorde

It is indisputable that Concorde is, by today's standards, a noisy plane on take-off and landing; no public relations exercise nor appeal to patriotism can allay the displeasure (at its mildest) that Concorde causes in the region of London Airport. But we are supposed to be objective scientists, and therefore not to resort to emotional phrases and subjective opinions when there exist adequate instrumental and numerical yardsticks.

The science of noise is still in a relatively primitive state, but there is general agreement between engineers, airlines and governments that the EPNdB scale (Effective Perceived Noise Decibels) is, at least for the present, an acceptable measure. This scale makes allowance for the duration of the noise but, as it is an average, obviously does not report short term fluctuations. Present noise standards at London Airport would require Concorde, weighing about 400,000 pounds on take-off, to generate no more than 107 EPNdB. Modern subsonic planes of comparable weight such as the DC-10 and L-1011 meet these standards with at least 6 dB to spare. Concorde seems, on average, to fail to meet the standards by several decibels. Figures generally indicating this have been issued both by the Department of Trade and by the Greater London Council within the past two weeks. Values on individual occasions fluctuate substantially; sometimes the noise is as much as 10 dB above the standards, whereas on 20 to 30% of flights the standards are satisfied.

Obviously, that is worrying enough in itself, but an equally major cause for concern is that such figures could have been withheld until such a ridiculously late stage in Concorde's development. It is absurd that extensive official documentation on noise appears only when planes have been painted in their owners' colours and bookings are being made for the first commercial flights, and, moreover, when the question of noise has become central for deciding whether there shall be operations into New York. Surely scientists and engineers could have made such predictions years ago.

They did. In 1972 Mr Michael Heseltine, then Minister for Aerospace, told the House of Commons the projections for 1975 noise levels for Concorde and subsonic jets. His figure of 114 EPNdB looks in hindsight about right, and did not look too offensive when placed alongside Boeing 707-320C and 747-100 figures. But what Mr Heseltine did not do—as Andrew Wilson pointed out in his book *The Concorde Fiasco* (Penguin, London, 1973)—was put Concorde's noise properly in context with the quietened versions of these noisiest subsonics. New models and retrofitted older planes were, even in 1972, achieving 6 dB reductions on the figures quoted for their noisier brothers. Between 1972 and 1975

there has been, any neighbour to an airport will testify, quite impressive noise reductions on subsonic planes. Concorde now sticks out like a sore thumb.

What then possessed those in charge of Concorde to soldier on, in the face of these depressing figures? The answer must have been a combination of immense technological momentum and confidence that regulations at London Airport would be no obstacle (though heaven knows where the plane would land) or a belief that something technological would turn up.

The only technological fix that would have been certain to reduce noise would have been to replace the Olympus engines (which are turbojets) with by-pass engines which, under names like turbofan and fan-jets, power many planes—including the supersonic Tu-144. But Olympus engines have been associated with Concorde from the very beginning, and design had been so carefully optimised around the Olympus that the idea was unthinkable. Beyond such a change, there is a very little. Talk of inexperienced pilots and improved antinoise procedures is a red herring. And devices such as the Thrust Reverser Aft and the spade silencer have not lived up to the promise that test-bed trials held out.

Blessed with hindsight, we can now see that in the early 1970s there were no well established grounds at all for believing that Concorde could meet airport regulations. This state of affairs is now confirmed just at the time that New York is looking at the noise problems.

The story has some rather unpleasant implications for the relationship between government and science and technology. Those who worked in noise were aware, years ago, that the Concorde problem was essentially insoluble, and that the chances of finding a palliative in a strictly limited time were negligible. And yet this message never got through to, or was ignored by, those who might, given a few years, have found political or administrative solutions which would have alleviated the present situation. "We couldn't write to the papers about it", one engineer told us, "quite apart from the risk of professional suicide, we knew that an immense public relations effort would be mounted to demonstrate how limited the horizons were bound to be of one man in one laboratory."

Whistle blowing is a risky enterprise, and many whistle blowers have suspect motives. But if the present Concorde problems are the result of a studied decision to override scientific and technical advice and simply to put on a brave face, perhaps one of the few good things that could come from this whole affair would be a more adequate exposure of the terms on which governments, and industries that governments encourage, use scientific advice. □