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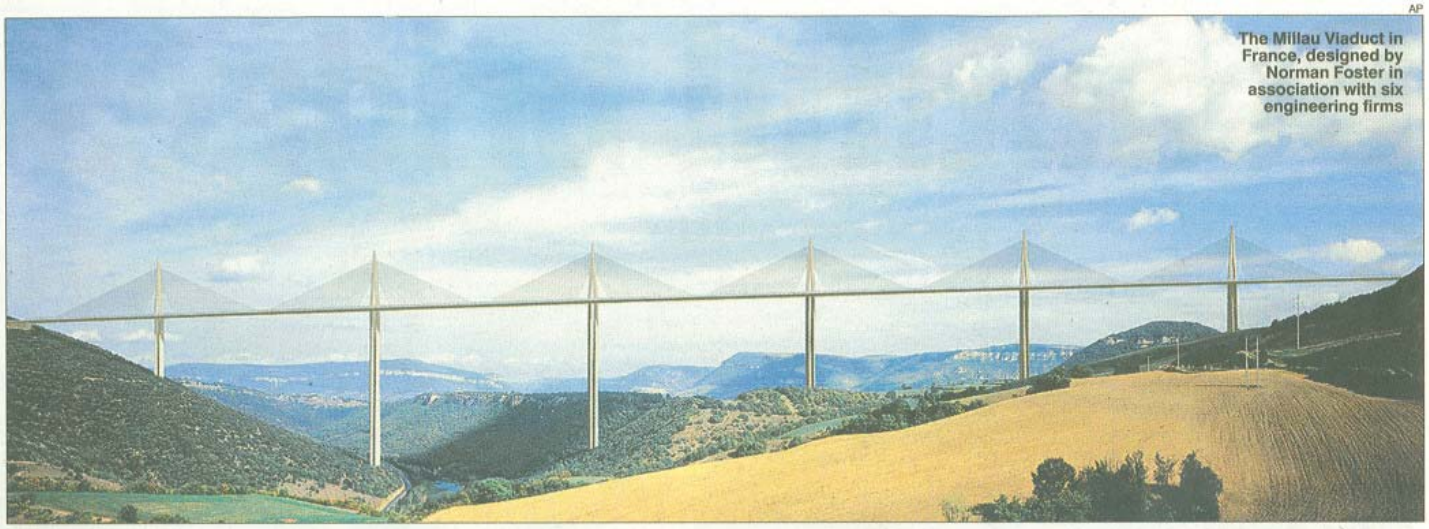

The Millau Viaduct in France, designed by Norman Foster in association with six engineering firms

They make the world go round

It is the engineers who will create a new vision of the future, says the award-winning architect Norman Foster

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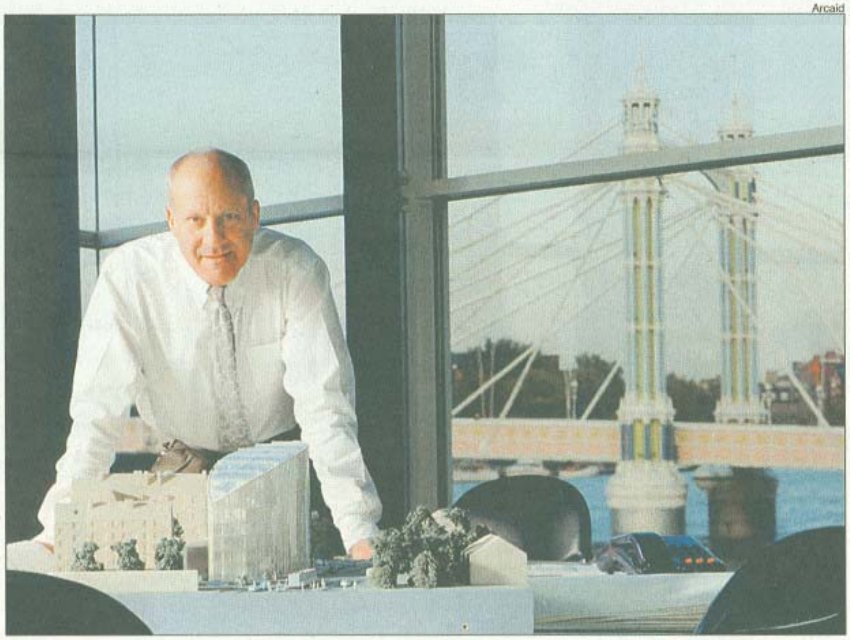

Great engineering and architectural projects rely on teamwork as well as individual input, says Lord Foster

I have been privileged to work with some of the best engineers in the world. It is perhaps a sign of the times that their names today tend to be corporate — Arup or Atkins — rather than such romantically titled entrepreneurs of the past as Isambard Kingdom Brunel, Joseph Paxton, Gustav Eiffel, Pier Luigi Nervi, and so on.

But the reality today has much in common with the past. Teamwork is essential, regardless of the scale of the enterprise, but the role of the individual is still critical. From my own creative collaborations I would cite names such as Jack Zunz, Mike Cook, Tony Hunt, Tony Fitzpatrick, Peter Rice, Bob Halvorson, Ysrael Seinuk, Michel Virlogeux, to mention but a few.

I quote these names not just to pay tribute to them, but to draw the reader's attention to the fact that many emblematic works have been made possible by highly creative engineers who are relatively unknown beyond their professional circle. My list of names embraces the talents behind the Sydney Opera House and many well-known skyscrapers as well as, more personally, the recent Great Court of the British Museum and the Millau Viaduct in France.

Writing as an architect, I cannot deny the importance of the individual building. But the quality of our lives is far more influenced by the quality of our infrastructure — the routes and connections in our cities, the public spaces, squares, streets, bridges, public transport, airports and vital services. In these areas the collaboration between engineers, planners, architects, urbanists and landscape architects is crucial. Infrastructure is the urban glue that binds together individual buildings and makes life in our cities, towns or villages either a delight or a tribulation. It is significant that infrastructure and engineering, in all of its many facets, are indivisibly linked.

In a world that is witnessing the growth of megacities, depletion of fossil fuels and the environmental threats of global warming and pollution, the pressures on infrastructure are multiplying and offer new engineering as well as social challenges. There is much scope for innovation in terms of systems and products for harvesting as well as conserving energy. This is truly the domain of the engineer beyond the traditional role of consulting.

One might argue that, on a finite planet, the biggest challenge today is to provide for increasing density — putting more people into less space — at the same time as improving the quality of urban life. This proposition is not as contradictory as it might first appear. Monaco, Hong Kong and Macau share similar densities of development across a wide social spectrum. Even the most affluent areas of London — Belgravia, Chelsea and Notting Hill among them — are several times denser than the more deprived areas of our capital city. There is also a direct relationship between density and consumption of energy. Aside from such measures as quality of life and consumption of precious green space, the compact city, whether low or high-rise, consumes significantly less energy than the sprawling metropolis. These urban issues are inseparable from the integration of public transport, and it is here that the engineer is uniquely placed to make a vital contribution.

These issues are global, but their effects are local, whether on a crowded European island or in a city on the highly populated rim of the Pacific. Their resolution will determine the fate of future generations — the dimension of sustainability. They require a holistic approach to environmental design which cuts across professional boundaries and opens up ever wider horizons for engineering skills. A combination of strong political leadership and multi-disciplinary teamwork is called for. In this approach, function is not only a response to the material needs but also to quality of life — the humanistic dimension of design that can touch our soul and lift our spirits.

The engineering professions, in all their diversity, are in a unique position to help shape the future. Their status in society varies according to the culture of the place. Here in the United Kingdom we would all benefit from their gaining a new and long overdue respect.

An essential first step would be to encourage younger generations to join their ranks by embarking on the first rungs of the academic ladder — a route that will lead to one of the most fulfilling career choices of the 21st century.

❑ *Lord Foster designed Stansted Airport and the Hongkong and Shanghai Bank in Hong Kong*

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Supplements editor
Karen Robinson
Sponsorship
James Alexander
Contact
printsolutions@newsint.co.uk
020 7782 7185
Read this supplement online
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