SDM could also be used to achieve enhanced bit-rate transmission through optical fibres. Although SDM is not compatible with single-mode optical fibres (the backbone of today global communication networks), it is compatible with multimode fibres, which inherently have a greater capacity for carrying information[10]. However, it is still not known how to convey high bit rates over long distances in multimode fibres, where information in different modes can mix uncontrollably and unpredictably. Exploiting the spatial degrees of freedom of light will require new ways to manage the transport of high-bit-rate signals in multimode systems. Potential solutions could be found in novel fibre designs containing multiple cores, or the development of new schemes for reading and writing information encoded in multimode fibres[11].

Finally, it may be worth exploring alternative uses for the OAM or spatial shape of photons in telecommunications systems. Whereas experimental implementations in the optical[3] and microwave[8] domains consider the OAM as a channel, another option would be to create an M-dimensional alphabet by encoding information in symbols bearing OAM. Unfortunately, this would require the development of SLMs that can generate and detect ensembles of OAM modes with response times in the picosecond domain, which is far from the capabilities of today's technology.

The work of Wang *et al.* contributes a new chapter to the long history of telecommunications by demonstrating the potential of OAM-based SDM for increasing the transmission capacity. The true impact of this development in the telecommunications industry will depend on how several important issues — some of them discussed here — are addressed and solved. ❐

Juan P. Torres is at the Institut de Ciencies Fotoniques and the Department of Signal Theory and Communications at the Universitat Politecnica de Catalunya, Barcelona, Spain.
e-mail: juanp.torres@icfo.es

References

1. Clarke, A. C. *How the World Was One* (Bantam, 1992).
2. Lebow, I. *Information Highways and Byways: From the Telegraph to the 21st Century* (Wiley, 1995).
3. Wang, J. *et al. Nature Photon.* **6,** 488–496 (2012).
4. Molina-Terriza, G., Torres, J. P. & Torner, L. *Nature Phys.* **3,** 305–310 (2007).
5. Allen, L., Beijersbergen, M. W., Spreeuw, R. J. C. & Woerdman, J. P. *Phys. Rev. A* **45,** 8185–8189 (1992).
6. Torres, J. P. & Torner, L. (eds) *Twisted Photons: Applications of Light with Orbital Angular Momentum* (Wiley, 2011).
7. Gibson, G. *et al. Opt. Express* **12,** 5448–5456 (2005).
8. Tamburini, F. *et al. New J. Phys.* **14,** 033001 (2012).
9. Paterson, C. *Phys. Rev. Lett.* **94,** 153901 (2005).
10. Stuart, H. R. *Science* **289,** 281–283 (2000).
11. Winzer, P. J. & Foschini, G. J. *Opt. Express* **19,** 16680–16696 (2011).

Correction

The Correspondence entitled "The behaviour of exciton–polaritons" (*Nature Photon.* **6,** 205; 2012) ended with a misquotation that could have been interpreted as being critically different in meaning to the original text.

This sentence has therefore been removed from the HTML and PDF versions of the Correspondence.