

a more pedagogical pace as is done in Mermin's book.

Mermin introduces quantum computing by building up a few simple quantum algorithms, and then focusing detailed attention on Shor's algorithm for efficiently factoring and Grover's algorithm for searching. He finishes with a discussion of the basics of quantum error correction and a description of few-qubit protocols such as quantum cryptography. All of this

is done with a focus on the details of how the machinery of quantum circuits enables us to understand quantum algorithms and protocols. Although those well versed in the field will quibble that he has left out a particular part of the field, Mermin's focus on a detailed exposition of a few topics make the book the ideal first read for those wishing to learn quantum computing. In particular, the book's depth as opposed to breadth renders the book ideally suited

to computer scientists wishing to learn quantum computing. Who knows, there may even come a day when quantum computing is everyone's first introduction to quantum theory: even for physicists!

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TREETOP WALKWAY

Into the trees



JAMES MORLEY

When you are up there, standing on a steel grating in the tree canopy of a woodland glade, somewhere in the Royal Botanic Gardens at Kew, midway between Heathrow airport and central London, looking down to the ground 18 metres below, you might be forgiven for wondering, for just that little tiny moment, what it is you're doing.

However, the Treetop Walkway, a 200-metre-long loop composed of twelve trusses connecting ten 'node platforms', is not about looking down, but about looking around. True to its name, the walkway, opened on 24 May 2008, leads the visitor through the treetops, in one of London's most beautiful gardens. It's about experiencing nature, of course, but it's also about experiencing, from a slightly unusual perspective, the attraction of forms and shapes, an attraction that seems endless, and limitless.

Symmetries and regularities have always inspired scientists, engineers, architects, artists and musicians alike, and for the observer it might often be the satisfaction of recognizing the beauty of an underlying construction, a guiding principle if you will, that provides the most pleasure. (Or dissatisfaction if such an organizing principle remains hidden.) Arguably, the most stunning examples of such beauty comes from nature itself — the logarithmic spiral describing the growth pattern of the shell of *Nautilus pompilius*, the Fibonacci sequences found in the pattern of florets in the head of sunflowers, or the self-similar architecture of Romanesco broccoli.

The Treetop Walkway now takes us one level up, and grants a look at trees from an angle that most of us are not familiar with. Being so close to the trees provides a viewing experience on many

length scales: from branching patterns, to the arrangement of the leaves on the branches, to the leaves themselves. And the experience is only enhanced by the spectacular view of Kew Gardens' Victorian green houses with their eye-catching glass-and-metal aesthetics (whereas another reminder of civilization, the nearly endless string of landing aeroplanes, is rather distracting).

The walkway was created by Marks Barfield Architects, the team that also designed the London Eye, the capital's landmark observation wheel. In the construction of the Treetop Walkway, they used over 400 tonnes of so-called weathering steel, a low-alloy steel that rusts over time, giving it a natural complexion. A further element of the design — that architect Julia Barfield calls "unashamed man-made" — is the integration of the Fibonacci sequence in the spacing of the truss diagonals. These might be details, but the overall design simply works, in a very natural way.

Part of the complex that was built as the key attraction of Kew Gardens' Year of the Tree festival is the 'Rhizotron', somewhat of an underground counterpart to the Treetop Walkway. The Rhizotron gives a glimpse of tree-root biology, communicated not by providing a direct look at roots and their patterns (as a rhizotron traditionally does), but through a series of screens and animatronic models that are integrated in a bronze sculpture inspired by the root system of trees. But the main experience, no doubt, is the walkway, and when climbing the 18 metres down the stairways — the glazed panoramic lift was not operating — the thoughts of this writer were already on the next visit.

Andreas Trabesinger