The ICA presents the first solo exhibition in the UK by San Francisco-born, New York-based artist Tauba Auerbach, who works in a wide variety of media including sculpture, photography, painting, weaving and book design. For several years, Auerbach has been preoccupied with topology, the mathematical study of connectedness in shapes and spaces. 'I've begun to see it at the root of everything: the nature of the physical space we inhabit, the way atoms bond to one another, the structure of a thought, an idea or an argument, the geometry of the brain and all the chemical reactions that take place in the body, or the manner in which people are connected to one another socially. The character of each of these things seems to be defined in large part by topology.'

For this show, Auerbach takes as her starting point Martin Gardner's The New Ambidextrous Universe, republished in a revised form in 1990 following the success of the 1964 book, The Ambidextrous Universe. The text explores—amongst other topics—chirality (an object or a system is chiral if it is not identical to its mirror image), four dimensional space, the asymmetric DNA helix, and parity (left/right symmetry) in particle physics. The psychological and philosophical impact of symmetry and asymmetry, whether found in physics, language or mathematics have informed writers such as Lewis Caroll and L. Frank Baum, as well as the philosophy of Immanuel Kant.

Created especially for this exhibition, Auerbach has produced one photograph and a number of sculptures that engage with symmetry, light polarization and interconnectedness. Using innovative techniques to build forms in metal and glass, Auerbach has created interlocking and threaded three-dimensional structures. A series of floor based sculptures, waterjet cut from plywood and aluminium, circumnavigate the impossibility of reflecting a 3D object without flipping it over in 4D space. Through this new body of work, Auerbach hints at an alternate, mirror universe.

Auerbach has designed an architectural intervention to give definition to the ICA's Lower Gallery. She will also create a new open-edition publication under her own imprint, Diagonal Press, which will relate to the show and be presented at Room & Book, the ICA's inaugural Art Book Fair (5-8 June 2014).

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