The sculptures of Peter-Randall Page draw on the natural vocabulary of pattern.

The British sculptor Peter Randall-Page, whose works have been on show at the Yorkshire Sculpture Park since June of last year, makes objects that seem simultaneously organic and geological. His monolithic sculptures squat and perch like boulders left grounded by the retreat of glaciers (which is actually what many of them are made from), and yet they are grooved and bulging with ridges and folds that bring to mind fruits, pine cones, intestines.

Put like this, it sounds an odd combination. But on the contrary, the shapes look satisfyingly familiar, and if you came across one on a remote, deserted beach, you'd probably wonder for a moment whether it was natural or artificial.

A palette of patterns

There's a good reason for this. Randall-Page makes use of patterns and forms that are natural and universal: ones we can find in nature in many different settings and varieties. He reveals with the insight of an artist some of nature's palette of patterns, which we encounter everywhere from the shapes of plants to the striations of sand dunes and ripples or the convolutions of the brain.

These forms are the subject of my trilogy *Nature's Patterns: Shapes, Flow, Branches* (OUP, 2009), and in March I had a public discussion with Peter at the Yorkshire Sculpture Park about the relationship between the patterns in his work, and the rules of nature that they echo. Peter explained that he sets himself 'patterning rules' and then lets them unfold over his complex surfaces and shapes, adapting the forms as he goes like a jazz musician improvising within a prescribed format.

Soft shapes, hard science

Smooth, rounded contours are something we generally associate with life and soft squishy things: fruit, bacteria, human organs. But nature makes them from hard stuff too, like the potato shapes of pebbles worn down by the sea – each one unique, but each with a recognizably 'pebbly' shape.

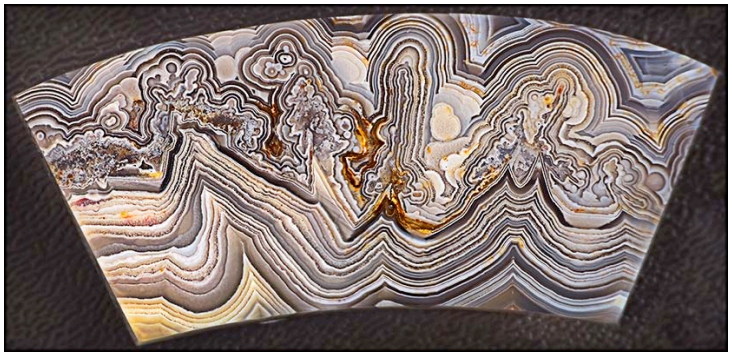
Mathematics, the natural language of pattern and form, allows us to say what it is that all pebbles share in common. This 'pebbleness' sounds like a fearsomely abstract thing when written down formally, being a prescription for the curvature at all points on the pebble surface. But it captures with precision what we already know through intuition.

What shape is a pebble? Image: Philip Ball.

Elaborate decoration

One of the enduring fascinations of sea shells is that they combine a much more elaborate, geometrical curviness with the glossy hardness of mineral. In this case the pattern is orchestrated by life: the shell-dwelling creature deposits the hard material little by little along the shell's edge, sometimes mixed with dark pigment to create spectacular arrays of spots and stripes.

But geology alone can do a lot of patterning, for example in the concentric bands of agates, which are the result of a cyclic process of crystallization as the mineral forms from cooling salty fluid. In at least one instance – jasper solidified from paste-like sediments squeezed in the earth, reported only recently by a husband-and-wife team of German scientists from the eastern deserts of Egypt – you could be forgiven for thinking that the stones are exquisite carvings made by a prehistoric Peter Randall-Page. However, Peter explains that he doesn't want his works to be confused with natural formations, but instead seeks to blend natural inspiration with recognizably human artistry.



The intricate banding patterns of agate. Image: zygzee.

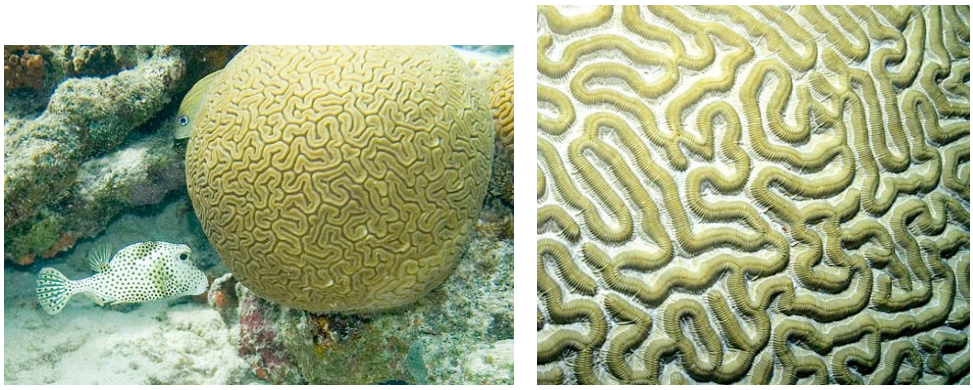
A naturally patterned jasper from Egypt. Image: Manuel Velarde.

By Another Ocean I, II and III (Peter Randall-Page).

Following nature's mathematical blueprints

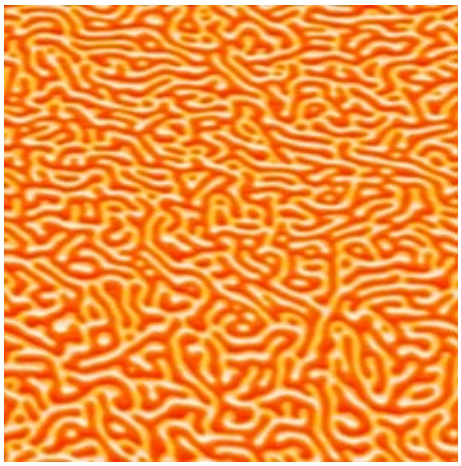
Some of his other works echo the labyrinthine patterns of brain coral, or the spiralling geometric arrangements of elements in sunflower heads, pine cones and pineapples. But these patterns aren't just found in the wild, as it were – they recur in some exotic technological products, such as magnetic materials and liquid crystals. Randall-Page's dimpled stones, a hybrid of flower head and boulder, were recently made in microscopic miniature by Chinese researchers from blobs of molten silver coated in silicon oxide.

The point about these and other natural patterns is that they are generic: it doesn't much matter what materials you use, or what the scale is, so long as the *mathematics* of the patterning process remains the same.



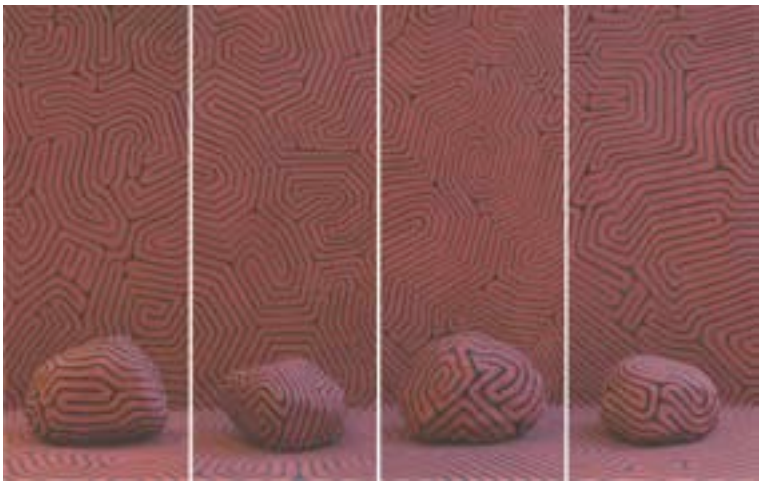
Brain coral. Images: Paul and Jill (left), Laszlo Ilyes (right).

A pattern formed by perennial grass in the Negev desert. Image: Ehud Meron, Ben Gurion University.



Domains of different magnetic orientation in a sandwich of very thin metal films. The area shown here is about 20 micrometres square. Image: James Wang, Swinburne University of Technology

In Mind of Monk (Peter Randall-Page).



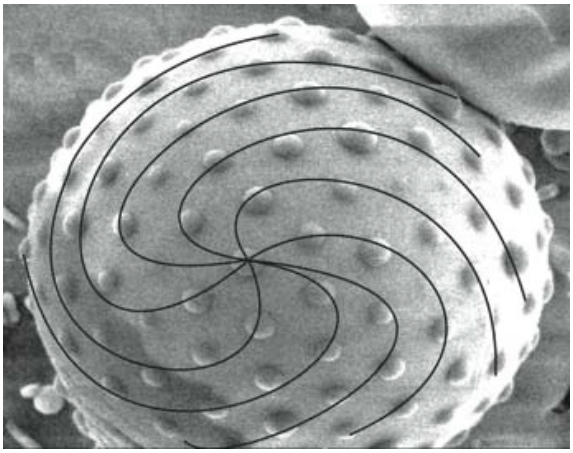
Rocks in My Bed (Peter Randall-Page).

Patterns in a sunflower head, a pineapple, and a Norfolk pine seed cone. Images: Esdras Calderan (flower); Dakota Duff (pineapple); tree-species (pine cone).

The Seed (Peter Randall-Page). Installed at the Eden Project, Cornwall.

Theme and Variation I (Peter Randall-Page).

.



Spontaneous patterning of nodules on a blob of silver coated with silicon oxide, seen in the electron microscope. Image: Cao Zexian.

Something artists have always known

This resonance with universal forms is one reason why Peter Randall-Page's works are timeless – they could equally be modern or very ancient. And indeed, there is a long tradition of fashioning these natural patterns in stone, from the spirals of the Bronze Age site of Newgrange in Ireland to the folded convolutions of the labyrinth at Chartres cathedral. For we have always recognized that these universal patterns seem to bridge the divide between art and nature.

Stone carving at Newgrange (left) and the stone labyrinth of Chartres cathedral (right). Image: Kevin Lawver.

The Hundred Year Stone (Peter Randall-Page). Derwent Water, Cumbria.