

nothing to do with the real qualities of water. Indeed there are times when people look at these fountains and sculptures and ask whether it wouldn't have been better to leave the water out altogether. Every artist and planner realizes when designing a water feature that water needs a great deal of respect when you are working with it: it is mysterious, and likes to be investigated sensitively. It is easy to assess when looking at projects and works of art involving water how thoroughly the people planning it understood water. Did the water in the project become a mere side issue, or is this a successful installation that does justice to water and brings out its best qualities? Here at the latest you see whether the planner had real insight, and how sensitively the water has been handled.

First experience and approaches

The knowledge we acquire at school and from the rest of our education is often not enough to grasp water in all the richness of its many manifestations. You cannot get to the bottom of water with abstractions like chemical and physical formulae, as the ideas associated with them are often too static and distanced. Water is full of dynamism, and it needs a sense of movement in the thinking and ideas of the people dealing with it. Professions that handle water every day gain experience of this kind and know the special inner flexibility that is needed to work with water successfully.

There are all sorts of ways of getting closer to this amazingly flexible material. This includes a number of sports that make it possible to experience water directly and physically, using some quite simple aids: swimming, surfing or diving, to name but three. Sensitive observation of water in a landscape is particularly valuable.

Water and air: You have to start by watching what happens when it rains. The weather front approaches trailing a curtain in the sky, and the threads of rain dance in the wind like a fine veil. If you are lucky, different coloured layers appear in the depths, and sunlight is split into its spectrum in a rainbow. Whether it is a veil of rain, or mist and cloud formations – the images change constantly, influenced by temperature, humidity, air pressure and temperature variations. But water is visible in air only when droplets or ice crystals catch the light.

Surfaces: If droplets fall into a lake from trees on the shore, you see a number of eccentrically expanding rings of waves, that seem to pass through each other without having any effect. Perhaps you can see from stalks, twigs and objects how the waves are diverted there, then break on the shore or are driven back again.

Wave structures with different patterns appear in all places where different media meet, e.g. on the borderline between

water and air. Here dimension or scale has only a minor role to play. A fine breath of air, the slightest stimulus is enough to produce an infinite number of rhythmic patterns in a pool or the sea, or even in a little basin. Here again it is worth noticing the play of light, as it is only reflections of the sky, the landscape or of objects that make the wave structures visible to us.

There are planes that appear on borders, and also waves, that are only seldom perceptible. This also includes horizontal interfaces between bodies of water, for example with different densities. These are caused by differences in temperature or different salt contents. We are often aware of them when swimming or diving in summer, and they can oscillate slowly from time to time, as a result of wind, variations in atmospheric pressure etc.

Eddies: A twig blowing in the wind in a lake, stones sticking up out of a stream, the piers of a bridge in a river – the attentive observer will notice a series of eddies produced by all these obstacles. Whole strings of eddies are made visible on the surface by differently reflected light. But most of the eddies in water remain hidden. They are to be found in a large variety of unseen forms, in all waterways. It is not until traces of sand start drifting with the water, or colour is provided by clay or mica-schist, that all this diversity becomes visible.

Meanders: Even small watercourses, like melting glacier water, trails of water trickling over fields of sand below the tongue of a glacier in the mountains, shapes left behind by the falling tide on the beach or glacial valleys that have not been dammed show water's natural tendency to meander.

These examples could continue. A great deal can be observed in nature, but she does impose limits. Random factors caused by a whole range of parameters and conditions that are often unfavourable to precise observation limit perception. And therefore some questions can only be investigated by experiment:

Experimenting in order to understand water

Even though flow movement in water does follow certain laws, about which we know a great deal today, the specific ways in which they develop are full of surprises. Experiments can be very simple. The more minimal their construction the more astonishing the results often are.

A smooth, water-resistant sheet, as polished as possible, made of something like glass, perspex or wood coated with plastic, is placed in a diagonal position. Water flows on to the highest point of the sheet from a small diameter hose. You expect a thread of water to trickle down in an absolutely straight line, following the shortest possible route according