

Remoteness and Computation

Dave Robertson

(Text to accompany presentation to Loch Computer group, 6.9.14)

Slide 1

You can't touch the object in this image but, if you could, it would feel heavy in your hand and very smooth. The tiny white flecks are where it was rolled for four decades on a boulder beach before I picked it up. It's the tooth of a sperm whale that died in the last war when it tangled with its mate in torpedo netting and was washed up on a skerry. The rocks were so slick with whale oil that nobody could venture ashore and the sea broke up the carcasses, leaving the teeth amongst the boulders. Each year a few are washed up by winter gales and deposited at a single spot on the skerry. If you knew where this was, and if you could find the single place where it is safe to go ashore, you might find another tooth.

Slide 2

To find the skerry you have to go to Shetland which is far out in the North Sea near the edge of the continental shelf, between Scotland and Norway.

Slide 3

Then you need to head to the north end of the Mainland island, near the ferry to the island of Yell.

Slide 4

Then you need to take your boat into Yell Sound: among some of the strongest tides to be found around the British coast.

Slide 5

The skerry lies between the isles of Little Roe, Brother Isle and Laama. You can only land at certain tides and at one landing stone. Don't mistake it or you will die alone.

Slide 6

Shetland has hard weather and long winters. These breed stories of visitors with knowledge of secret places. They will lure you to join them but once you've passed over there's no return.

Slide 7

Salamanca. One of the oldest universities in the world and one of the more remote. I travelled there recently on a long bus journey from Madrid through arid plains in midsummer. Eight centuries ago, within these walls scholars were discovering how it was possible sometimes to reason about truth in an abstract world. They could never connect to this abstract world but I can, and you have.

Slide 8

I was born to a quiet inlet on the edge of Yell sound. The house is the dot to the right on the far side of the voe. On the left is the school. Midway, you can just see the noost where we had our boat hauled out.

Slide 9

For part of summer, when I was young, I went with my father on seal hunting trips to the isles. Through this I experienced the beauty and harshness of nature and this made me want to be a biologist. There being no biologists in the family, and, at that time, very little view of "professions" other than the standard five (teacher, doctor, lawyer, minister, failure) the destination was unclear.

Slide 10

By chance, I became acquainted with a circle of scholars who used abstract mathematical languages to describe how we think. These are languages, with syntax and grammar and elegance and style, but they are pared down to the essentials of the concepts they describe. The attraction is the same as playing the fiddle. No instrument could be so simple yet so expressive.

Slide 11

At the same time, we were learning how to use languages like these to turn elementary concepts from biology into abstract concepts with which we could play using our finely tuned instruments. It felt at this stage like rooing sheep. A small circle of dexterous hands plucking at a difficult and unruly object. It wasn't long before we felt the need for machines to make light of the work.

Slide 12

We built machines and, in doing so, I can't help but think of the fate of the Shetland Model boat. This was once the pattern for fishing boats in the isles and these served double duty as racing vessels. As competition grew we refined our designs until the boats were no longer of any use for fishing; they were racing machines. Relentlessly, the urge to refine these machines grew, until the effort to build and sail a winning boat was too complex to attain. Now there are no fleets of Shetland Model sailing boats. Instead there's the mix of dinghies and yachts that you'd find in any harbor.

Slide 13

To help us build the right machines we got together into bands and thought of ways to bridge across from the abstract world to the world we find more familiar. Some of those arrangements were, with hindsight, a bit of a leap in the dark. It turns out to be hard to pull away from the abstract world of computational logic without becoming enmeshed in the very logic from which we tried to escape.

Slide 14

But we invented ways of keeping computation at arm's length by using standard words that linked our abstractions to real things so we're tricked into being abstract when we think we're real. We tried our best to make these ontologies as ubiquitous as we could but the real world fights back. Shetland boats have an arrangement for rowing that is different from most of the rest of the UK. The oar rests on a ruth and is braced for the pull-stroke against an iron thole pin (or maybe a wooden kabe) with the back-stroke constrained by the humbliebaand. Words like these resist abstraction.

Slide 15

So we use our abstractions to coordinate. We embrace complexity in the individual and use our abstractions to assert social norms. Deep down the abstraction is played with the same instrument but it isn't playing a solitary tune but setting the rhythm for dances.

Slide 16

In the backroom at Shetland dances there was often somebody making reestit mutton soup. We consumed the results of their boiling and stirring but neither we nor they were exactly sure how the brew came together. So it is with our computing systems.

Slide 17

Meanwhile, the size of our computations grew until the identities of individuals became less effective than the statistics they imply. Fishing in Shetland was like this. In the old days we caught fish with our hands and celebrated the event. But we made machines that harvest so many that there's no time even to count them, and little point in celebrating a statistic.

Slide 18

But I've learned to enjoy the systems we've built. My social networks rise from the mass of abstraction and statistics and computation and machinery that connects me to remote communities on the ether - compressing time and suppressing distance.

Slide 19

A whale's tooth found only by a hidden path and on the wall of an ancient university building in Salamanca: "donde esta la camera".