ion may be very complex and is not necessarily confined to specific regions of the embryo during the time when the serially repeated somite-derived tissues are being established, as might be expected by analogy with their expression in *Drosophila* embryos. Perhaps homoeo-box genes are needed for a much wider range of decision-making processes in mammalian embryos — unless, of course, they have nothing to do with development at all. For exploring these possibilities, F9 cells can be grown in large amounts so that cDNA libraries can easily be produced, and antibodies to fusion proteins used to try and isolate homoeo-box-containing proteins.

Such proteins promise to have extremely interesting properties. A possible homology between a 20-amino-acid subdomain of the homoeo box and the *MATa1* and *MATa2* proteins of yeast, and the helix-2-turn-helix-3 region of known DNA-binding proteins such as bacteriophage λ Cro protein and *Escherichia coli* CAP protein, has been emphasized^{4,13,14}. However, the rules governing prediction of three-dimensional structure from amino-acid sequence are not yet sufficiently refined for these homologies to be more than suggestive. Another motif of homoeo-box proteins is the presence of long strings of a single amino acid in regions flanking the homoeo box; repeats

of glutamic acid (15 at the 3' end of the clone described in ref. 1) glutamine, alanine and proline have been reported^{1,4,15}. These strings may act as spacers between different domains of the protein designed for functions such as DNA binding, RNA binding or interaction with other regulatory proteins. Perhaps assemblies of boxes and strings act in various combinations to pack up DNA that is no longer needed, or to link new batches of active genes to the nuclear matrix. □

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Archaeology

Megalithic recycling in Brittany

From Paul G. Bahn

A REMARKABLE discovery made and recently published by C.-T. Le Roux¹ links two of the most famous megalithic monuments in Brittany — the tomb of Gavrinis, known for the superbly carved orthostats lining the passage, and the passage grave of La Table des Marchands at Locmariaquer, which also bears fine examples of megalithic art².

The underside of the capstone of the Table des Marchands (lower section of figure) has deep carvings of a beautiful hafted axe with two loops, a 'crook' and a couple of 'commas'. In addition, at the broken end, there are more lines which some observers have thought to be a "curious motif with a double crook"², whereas others saw them as part of a quadruped. Because part of this engraving is obscured by an orthostat, it has seemed likely that the slab formerly stood upright with its decoration clearly visible, but was then re-used. This hypothesis has also been made for the capstone of the tomb of Mané Rutual, which also has carving on its underside and is almost 12 m in length³.

Le Roux's discovery has finally brought proof of this hypothesis. During restoration work on a capstone at the tomb of Gavrinis (now located on an island that was still linked to the mainland when these monuments were constructed), carvings

were revealed on the upper side that had been invisible ever since the tomb's tumulus was set in place. The slab had clearly been dressed by man at the sides, and was broken at either end. Its carvings (central section of figure) comprised a great 'hache-charrue' (axe-plough), most of a horned animal and the horns of a second. Despite some resemblance to a mouflon or ibex, it is clear from the thick muzzle, short neck, straight back, angular rump and double-curved horns that a bovid is depicted.

The dimensions and grain of the rock, the shape of its break and the nature of its motifs all led Le Roux to link it with the Table des Marchands capstone. Sure enough, the two fragments would fit together, revealing a second bovid. Moreover, a similar rock used for a capstone in the long tumulus of 'er-Vinglé', just north of the Table des Marchands, was probably broken off from the other end of the Gavrinis slab (upper section of figure).

If so, the reconstituted stela would have stood about 14 m high, 3.7 m wide and 0.8 m thick, weighed about 100 tons and been decorated on the central portion of one face. It would have been second in size only to the Grand Menhir Brisé, 'er-Grah', which now lies in four fragments beside the Table des Marchands, and was over 20 m in length. It too was deliberately dressed

and has an 'hache-charrue' carved on one of its fragments².

Because two of the three fragments of the 'new' stela are at Locmariaquer, it is likely that the block originally stood somewhere nearby, perhaps in the company of the Grand Menhir Brisé and the great carved endstone of the Table des Marchands. This means that the Gavrinis slab, of about 7.5 m³ and weighing 20 tons, was transported 4 km (as the crow flies) across several water courses.

It has been suggested that the discovery implies a megalithic phase that preceded the tombs and involved great decorated stelae which, later, were deliberately thrown down and broken with wedges into fragments used in the building of tombs⁴; as the carvings were hidden to view at Gavrinis, they must have lost all significance. Le Roux is more cautious and envisages coexistence and complementarity of the menhirs and the tombs. Dating is not good enough to distinguish between the two possibilities. Gavrinis was perhaps built around 5,200–5,000 BP, and its use may have ended about 4,500 BP; but we have no idea when the stelae were put up or how

The decorated slabs of Gavrinis (above) and Table des Marchands (below), as they would have fitted together (after C.-T. Le Roux).

long they lasted. Their decoration may provide proof of a very early use of the plough and of bovids for traction in the western-most part of Europe. But many questions about the history and function of these impressive but enigmatic monuments remain unanswered. □

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