A Braid Name Change

Let's kick this new century off by changing the name of a braid that is known by at least two rather ambiguous names. It is the Regular Cylindrical Braid† of **one** string with an **over–under** weaving pattern throughout. Initially we defined this braid as a **Turk's Head Knot**‡ Since the name *Turk's Head* is used by many people for a large number of single and multi string cylindrical braids, it is not a good name for a specific braidform. Later we adopted the name **Casa Knot**, solely for the shortness of the name. This name was extensively used by Tom Hall, for in the purely pragmatic world of braiding this braidform formed, and still forms, the main basis of interwoven braids.†† It is therefore not surprising that in most publications far too much emphasis is placed on these so-called 'Casa Knots' in the case of interwoven knots.

It should be remembered that for interbraided knots, one knotform is not any more important than any other knotform.

The by us previously adopted names *'Turk's Head Knot'* and *'Casa Knot'* may cause a further problem in that an **over–under coding** throughout a braid not only may be seen as a *'Turk's Head' coding* or *'Casa' coding*, but also as a **column-coding** and **row-coding**. However, an **over–under coding** throughout a braid does in general **not** imply that the braid has a column-coding or a row-coding! The braid in Fig. 387 has an *over–under coding* throughout, its coding is a *column-coding*, but it is **not** a *row-coding* (see arrowed rows).

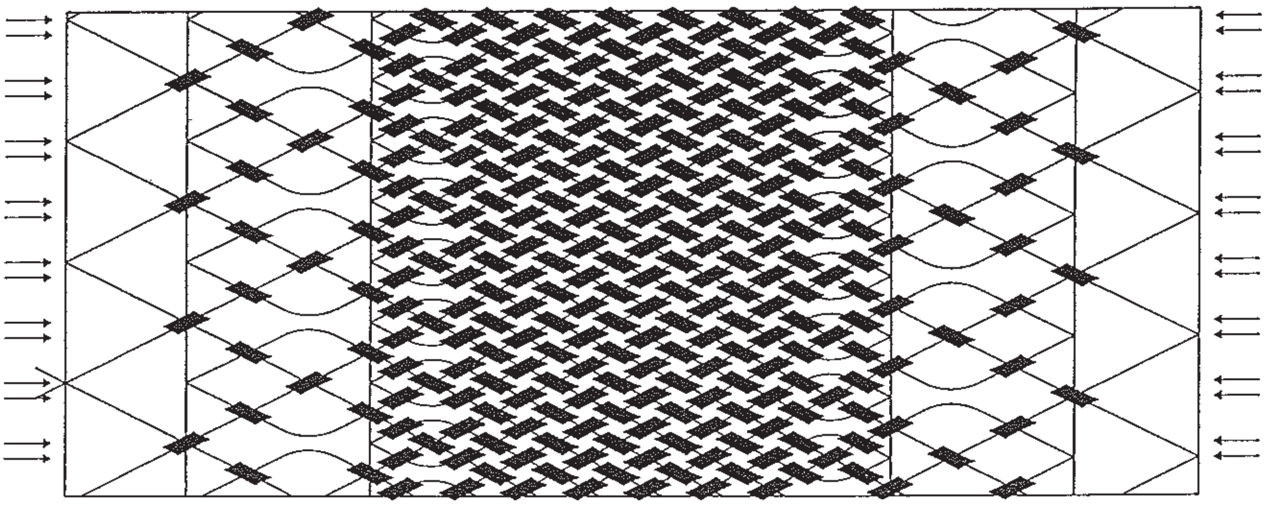

Fig. 387 — Over–under coding throughout; a column-coding, but not a row-coding.

The braid in Fig. 388 has also an *over–under coding* throughout, its coding is a *row-coding*, but it is **not** a *column-coding* (see arrowed columns).

In order to overcome the ambiguity associated with the names *'Turk's Head'* and *'Casa'*, we shall in future denote a braid which has an *over–under coding* throughout, as

† For the definition of **Regular Cylindrical Braid**, see *The Braider*, Issue No. 2, pg. 30, and Issue No. 1, pg. 6.

‡ Refer to *Braiding — Regular Knots; pg. 16.*

†† Casa is the Spanish word for: house, home, building. In the purely pragmatic world of braiding, a 'Casa Knot' forms the foundation knot of nearly all interwoven knots, and in that world many interwoven knots do consist of interbraided 'Casa Knots' — in interwoven knots, 'Casa Knots' house other knots, or are used in building them.

an **over–under coded** braid. Although the name is somewhat long, there is at least no ambiguity. For example, in future we shall call a 'Turk's Head Knot' or 'Casa Knot' (a single string Regular Cylindrical Braid with an over–under coding throughout) an **over–under coded Regular Cylindrical Knot**. A multi-string Regular Cylindrical Braid with a Casa-coding we shall in future call an **over-under coded Regular Cylindrical Braid**. In this context, the term **Braid** will be used as a general term, hence one or more strings may be required in the construction, while the term **Knot** will indicate that only one string is required in the construction.

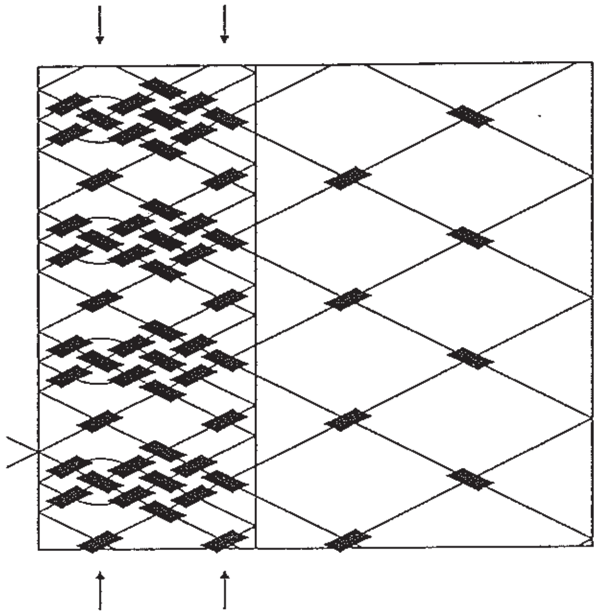

Fig. 388 — Over–under coding throughout; a row-coding, but not a column-coding.

Nested Cylindrical Braids

In the previous Issue of *The Braider*, No. 20, pp. 437-441 we have seen that a set number $(\eta_l \cdot \eta_r \cdot d)$ of possible braid-types is associated with a left and right bight-boundary position specification pair. Under these possible braid-types there are η_l left bight-boundary arrangements and η_r right bight-boundary arrangements.

One of the most often encountered left and right bight-boundary position specifications is $222\cdots$ with $\mathcal{K}_l = A_l$ and $\mathcal{K}_r = A_r$ (the well-known 'asymmetric Pineapple knots' have such a left and right bight-boundary position specification with $\mathcal{K}_l = A_l$ and $\mathcal{K}_r = A_r$). Hence let's have a look at an example of such a left and right bight-boundary specification and see which left and right bight-boundary arrangements are associated with them.

Let the left bight-boundary specification be 222 and the right bight-boundary specification be 22222. Hence $\mathcal{K}_l = 4 = A_l$ and $\mathcal{K}_r = 6 = A_r$. The calculation of the left and right valid cyclic sequence sets of k-values is shown in Fig. 389. These calculations show that there are $\eta_l = 2$ valid left cyclic sequence sets of k-values and $\eta_r = 12$ valid right cyclic sequence sets of k-values. Since the g.c.d. $(A_l\,,\,A_r) = \text{g.c.d.}\,(4\,,\,6) = 2 = d$, the number of possible braid-types is $\eta_l \cdot \eta_r \cdot d = 2 \cdot 12 \cdot 2 = 48$.