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A quarterly publication
for
the braiding artisan

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Copies may be obtained from:

A.G. Schaake,
21 Sundown Cresc.,
Hamilton,
New Zealand.

SEE NOTE BELOW.

No. 31

NOTE: the first Fig. number in this Issue is 554, but should have been 584 instead. Hence the Fig. numbers 554 - 583 not only appear in *The Braider*, Issue No. 30, but the numbers 554 - 574 appear again in *The Braider*, Issue No. 31 and the numbers 575 - 583 appear again in *The Braider*, Issue No. 32. This was noted too late for rectification.

No. 32

See NOTE under No. 31 above.

A Button Knot Saga

There are several Lanyard Knots which after a suitable deformation can serve as 'Button Knots', but should nevertheless not be regarded as true Button Knots. Since those so-called 'Button Knots' are only deformed Lanyard Knots, they have as such a distinct weakness as a Button Knot. Sometimes we encounter in the braiding literature an article about some of those so-called 'Button Knots' in which relationships between their construction methods are discussed and illustrated in a pictorial way. Often such discussions not only leave much to be desired, but since a pictorial drawing cannot show the whole braid, a pictorial drawing is never able to show relationships in a simple and clear manner. In the Australian Plaiters and Whipmakers Association's Journal *The Australian Whipmaker, issue No.51*, we find such a discussion about the 'Crown Button Knot', the 'Chinese Button Knot' and the 'Diamond Button Knot'. Of these three 'Button Knots' only the 'Crown Button Knot' may be regarded as a true Button Knot. The 'Chinese Button Knot' and the 'Diamond Button Knot' are suitably deformed Lanyard Knots, each based on a different 2-string $p/b = 3/4$ over–under coded Regular open-ender. The 'Crown Button Knot' comes in two forms which are each others complement (see the two leftmost grid-diagrams I and IV in Fig. 575). The 'Chinese Button Knot' and the 'Diamond Button Knot' also come each in two complementary forms as do the Lanyard Knots from which they are derived (for the complementary Lanyard Knots from which the complementary forms of the 'Chinese Button Knots' are derived see the central two grid-diagrams II and V in Fig. 575, and for the complementary Lanyard Knots from which the complementary forms of the 'Diamond Button Knots' are derived see the rightmost two grid-diagrams III and VI in Fig. 575). The 'Chinese Button knots' and the 'Diamond Button Knots' are obtained from their associated Lanyard Knots by working the loop away. The essential difference in the construction of the 'Crown Button Knot', the 'Chinese Button Knot' and the 'Diamond Button Knot' is indicated by the dotted string-sections and for the Diamond Knot by the additional rearrangement of the loop position (the loop can simply be slid into the indicated position). In the 'Crown Button Knot' the dotted string-sections are cut off.

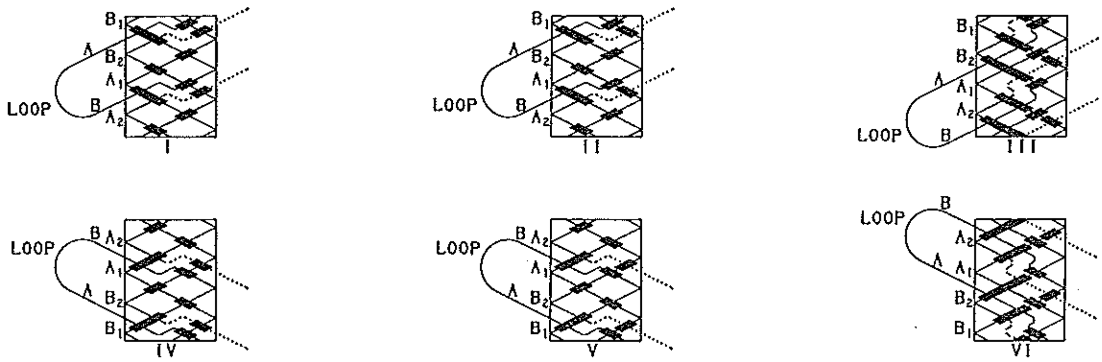

Fig. 575 — The 'Crown Button Knot' and the Lanyard Knots from which the 'Chinese Button Knot' and the 'Diamond Button Knot' are obtained.

The weakness in the 'Chinese Button Knot' and the 'Diamond Button Knot' as a Button Knot lies in the worked away loop which tends to sink somewhat down into the knot.

The 2-string Lanyard Knots from which the 'Chinese Button Knot' and the 'Diamond Button Knot' are obtained have a crown on the right bight-boundary of their depicted grid-diagrams in Fig. 575. This crown can be rolled over to the left whereby Lanyard Knot II goes over into the reversed Lanyard Knot II_R, Lanyard Knot V goes over into the reversed Lanyard Knot V_R, Lanyard Knot III goes over into the reversed Lanyard Knot III_R, and Lanyard Knot VI goes over into the reversed Lanyard Knot VI_R (see Fig. 576).

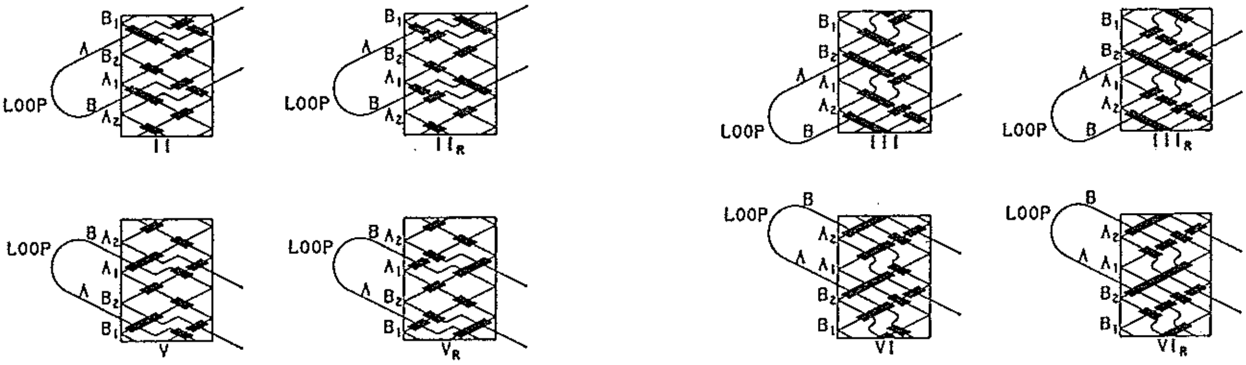

Fig. 576 — The 2-string Lanyard Knots II, V ; III, VI and their reversed forms.

Similar to the formation of 'Button Knots' from the 2-string over–under coded Regular Lanyard Knots $p/b = 3/4$, 'Button Knots' can of course also be formed from the 2-string over–under coded Regular Lanyard Knots $p/b = 3/2$ and $p/b = 4/6$. The weakness, pointed out above, in those 'Button Knots' becomes, however, more apparent with increased p/b values.

Of some special interest are the 2-string over–under coded Regular Lanyard Knots $p/b = 3/2$ and the 'Button Knots' obtained from them by working away the loop. The complementary lanyard forms II, V, and the complementary lanyard forms III, VI, as well as their reversed forms, are depicted in Fig. 577.

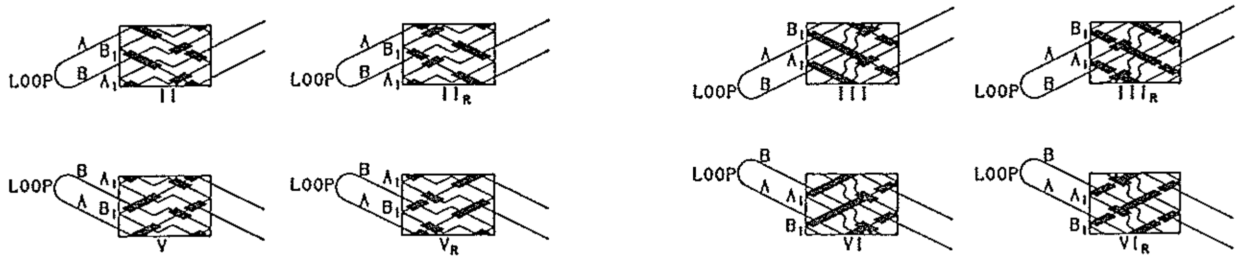

Fig. 577 — The Lanyard Knots $p/b = 3/2$.

Note how the complementary lanyard forms II and IV relate to the 2-string complementary Footrope Knots and complementary Ashley's Bends (see *The Braider*, Issue No. 5, pg. 95–106; Issue No. 20, pp. 452–456; Appendix 1997; Appendix 1999).

When the bights A_1 and B_1 of the 'Button Knots' obtained from the Lanyard Knots II and V in Fig. 577 are pulled up to form loops we create the respective left-hand and right-hand loop knots in Fig. 578. Hence we can form the Lanyard Knots II and V from these respective loop knots as shown in Fig. 579. An obvious modification of the loop knots in Fig. 578 leads to the useful loop knots in Fig. 580.

Similarly, the bights A_1 and B_1 of the 'Button Knots' obtained from the Lanyard Knots III and VI in Fig. 577 can be pulled up to form loops in order to create the respective left-hand and right-hand loop knots in Fig. 581. Hence we can form the

Lanyard Knots III and VI from these respective loop knots as shown in Fig. 582. An obvious modification of the loop knots in Fig. 582 leads to the useful loop knots in Fig. 583.

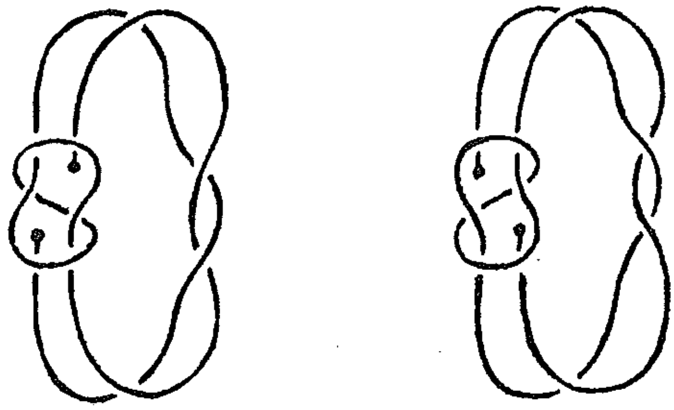

Fig. 578 — The loop knots created from the 'Button Knots' obtained from the Lanyard Knots II and V in Fig. 577.

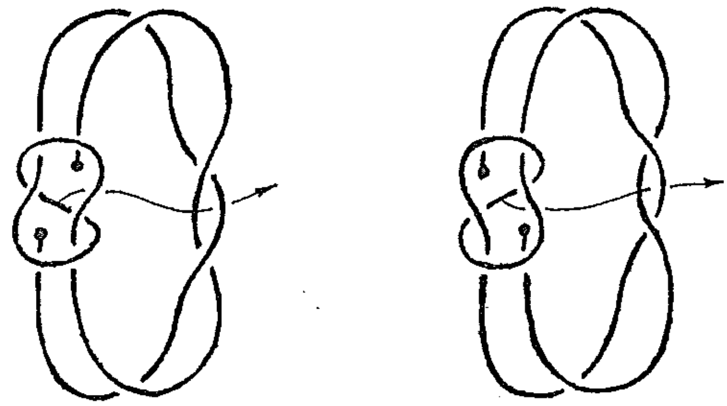

Fig. 579 — The construction of the Lanyard Knots II and V in Fig. 577 from the loop knots in Fig. 578.

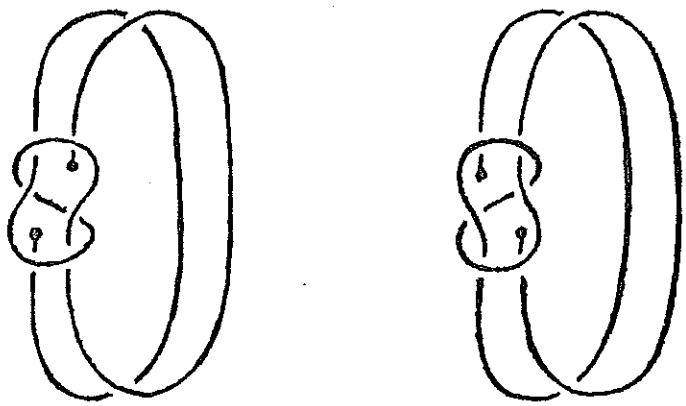

Fig. 580 — The modification of the loop knots in Fig. 578.

The reversed forms of the Lanyard Knots II, V and II, VI in Fig. 577 may be obtained by rolling the crown on their right bight-boundary over to the left. The Lanyard Knots

II_R, V_R, III_R and VI_R, in Figs. 576 and 577 do not lend themselves to the creation of 'Button Knots' in a way similar to the one used for the Lanyard Knots II, V, III and VI.

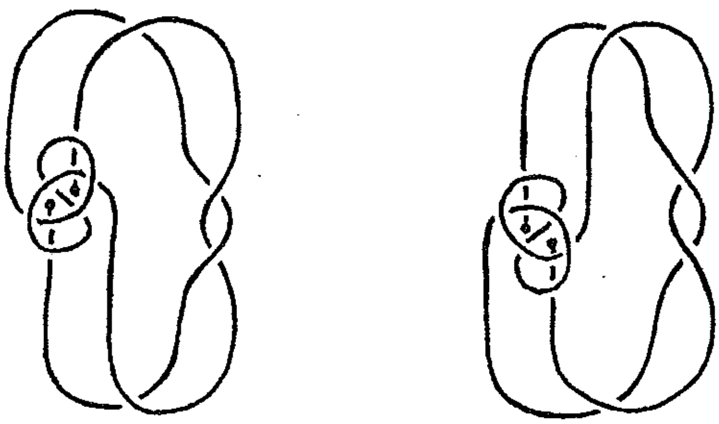

Fig. 581 — The loop knots created from the 'Button Knots' obtained from the Lanyard Knots III and VI in Fig. 577.

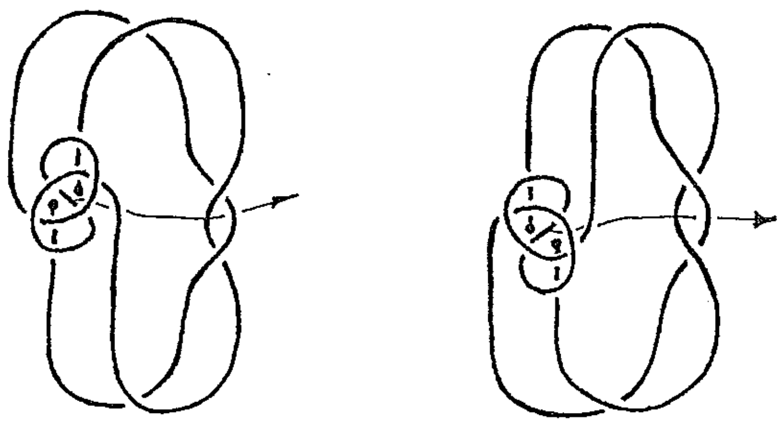

Fig. 582 — The construction of the Lanyard Knots III and VI in Fig. 577 from the loop knots in Fig. 581.

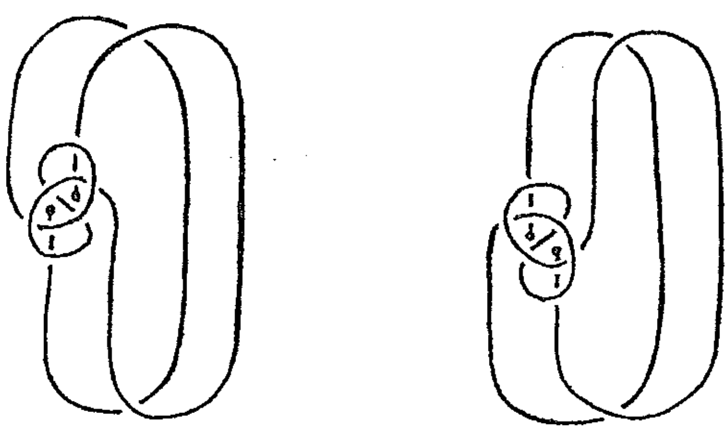

Fig. 583 — The modification of the loop knots in Fig. 581.

Designing Interbraided Knots

The interbraiding of knots not only gives us a means of creating colour-patterns, but also gives us the means of creating braiding-patterns (as opposed to colour-patterns) which we otherwise would not be able to create. For Interbraided Cylindrical Braids we do like the interbraid to have a great deal of flexibility with regards its possible number of bights since this determines its applicability rating with respect to diameter sizes it can properly cover. When the interbraid consists of more than two interbraided knots it is advantageous if at least each sequential interbraiding stage of these knots gives us a useful interbraid as well since this increases the overall usefulness of the sequential interbraids. The algorithm diagrams for the determination of the half-cycle braiding algorithms will be kept simple when we use for interbraiding Column-coded Regular Knots with identical p/b values. We shall discuss here four such interbraids which give us a pleasing colour-pattern and are easy to braid.

Say that we like our interbraid to consist of three interbraided Regular Column-coded Knots each with the same p/b value, but not necessarily the same coding. For the earlier mentioned flexibility we not only like the value of p to be a prime number, but we also like the coding-periodicity to be equal to the number of interbraided knots, hence in our case to be equal to 3, This can readily be accomplished since the three interbraided Regular Knots are column-coded. The interbraid will thus possess a number of three differently coded half-cycles from lower-left to upper-right and an identical number of three differently coded half-cycles from lower-right to upper-left.

Let the interbraided knot be a Regular Cylindrical Braid with the coding as in the diagram of Fig. 584.

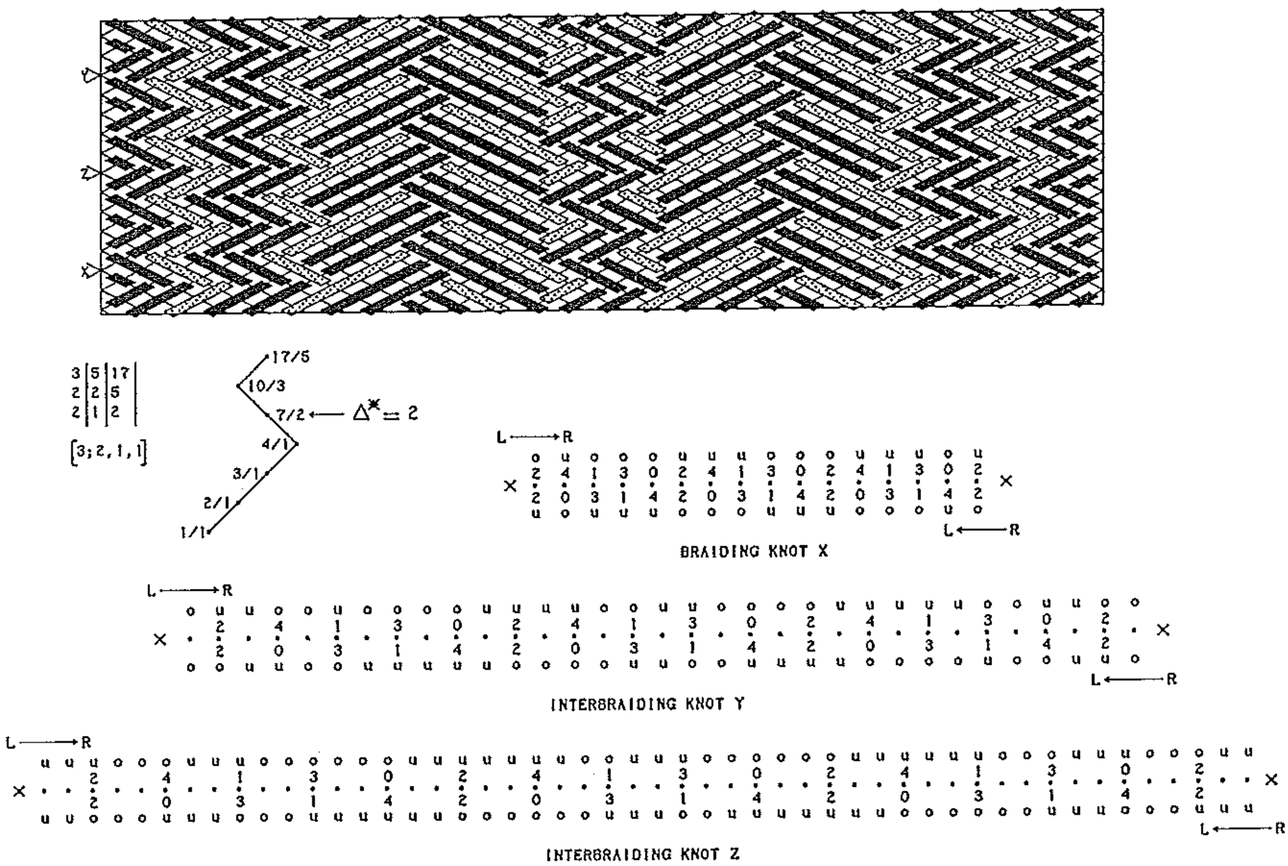

Fig. 584 — An interbraided Regular Cylindrical Knot.

The three interbraided components X, Y and Z of the knot in Fig. 584, and the interbraid of the components X and Y are depicted in Fig. 585.

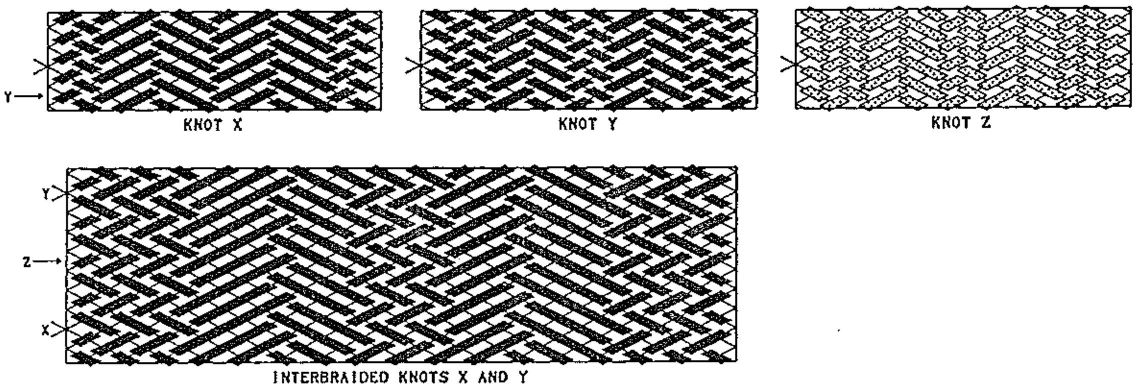

Fig. 585 — Components X, Y, Z and interbraid of X and Y of the knot in Fig. 584.

First we braid knot X which we then interbraid with knot Y. Next we interbraid the interbraid of knots X and Y with knot Z. For the Standing Ends of the knots X, Y and Z to be regularly distributed over the left bight-boundary as indicated in Fig. 584, we place the Standing End of knot Y in the knot X and the Standing End of knot Z in the interbraided knots X and Y as indicated by the respective arrows in Fig. 585.

Braiding knot X:

1. : Free run.
2. $i = 0$: $3o$.
3. $i = 0$: $3o$.
4. $i \leq 1$: $2o - u - o - u - o$.
5. $i \leq 1$: $2o - u - o - u - o$.
6. $i \leq 2$: $3o - 2u - 2o - u - o - u$.
7. $i \leq 2$: $3o - 2u - 2o - u - o - u$.
8. $i \leq 3$: $4o - 2u - 3o - 2u - o - u$.
9. $i \leq 3$: $4o - 2u - 3o - 2u - o - u$.
10. $i \leq 4$: $o - u - 3o - 3u - 3o - 3u - o - u$.

Interbraiding knot Y:

1. : $o - u - 3o - 2u - o - u - 2o - 3u - o - u - o$.
2. $i = 0$: $o - u - 4o - 2u - o - u - 3o - 3u - o - 2u - o$.
3. $i = 0$: $o - u - 4o - 2u - o - u - 3o - 3u - o - 2u - o$.
4. $i \leq 1$: $o - u - o - u - 3o - 2u - 2o - u - 3o - 4u - o - 2u - o$.
5. $i \leq 1$: $o - u - o - u - 3o - 2u - 2o - u - 3o - 4u - o - 2u - o$.
6. $i \leq 2$: $o - 2u - o - u - 3o - 3u - 2o - u - 4o - 4u - o - 2u - 2o$.
7. $i \leq 2$: $o - 2u - o - u - 3o - 3u - 2o - u - 4o - 4u - o - 2u - 2o$.
8. $i \leq 3$: $o - 2u - o - u - 4o - 3u - 2o - 2u - 4o - 4u - 2o - 2u - 2o$.
9. $i \leq 3$: $o - 2u - o - u - 4o - 3u - 2o - 2u - 4o - 4u - 2o - 2u - 2o$.
10. $i \leq 4$: $o - 2u - 2o - u - 4o - 4u - 2o - 2u - 4o - 5u - 2o - 2u - 2o$.

Interbraiding knot Z:

1. : $2u - 2o - 2u - 4o - 5u - o - 2u - 4o - 4u - 2o - 2u - 2o - 2u$.
2. $i = 0$: $2u - 2o - 2u - 5o - 5u - o - 2u - 5o - 4u - 2o - 3u - 2o - 2u$.
3. $i = 0$: $2u - 2o - 2u - 5o - 5u - o - 2u - 5o - 4u - 2o - 3u - 2o - 2u$.
4. $i \leq 1$: $2u - 2o - 3u - 5o - 5u - 2o - 2u - 5o - 5u - 2o - 3u - 2o - 2u$.
5. $i \leq 1$: $2u - 2o - 3u - 5o - 5u - 2o - 2u - 5o - 5u - 2o - 3u - 2o - 2u$.

6.	$i \leq 2:$	$3u - 2o - 3u - 5o - 6u - 2o - 2u - 6o - 5u - 2o - 3u - 3o - 2u\,.$
7.	$i \leq 2:$	$3u - 2o - 3u - 5o - 6u - 2o - 2u - 6o - 5u - 2o - 3u - 3o - 2u\,.$
8.	$i \leq 3:$	$3u - 2o - 3u - 6o - 6u - 2o - 3u - 6o - 5u - 3o - 3u - 3o - 2u\,.$
9.	$i \leq 3:$	$3u - 2o - 3u - 6o - 6u - 2o - 3u - 6o - 5u - 3o - 3u - 3o - 2u\,.$
10.	$i \leq 4:$	$3u - 3o - 3u - 6o - 7u - 2o - 3u - 6o - 6u - 3o - 3u - 3o - 2u\,.$

Since each of the knots X, Y and Z have a symmetric coding-pattern, not only do the knots X and Y give us a useful interbraid, but the interbraids of the knots X and Z and the knots Y and Z also give us useful interbraids. In Fig. 586 we find again the interbraid of knots X and Y depicted in Fig. 585, but note that for using this interbraid as the final braid, the Standing Ends of knots X and Y are regularly distributed over the left bight-boundary and consequently the Standing End of knot Y is placed in knot X as indicated by the arrow in Fig. 586. Since the coding-pattern of knot Z is identical to the coding-pattern of knot Y, we can in the interbraid of knots X and Y replace knot Y by knot Z (see Fig. 586).

The half-cycle braiding algorithms for knot X and the interbraiding of knot Y (and of course the replacement of Y by Z) are the half-cycle braiding algorithms for these knots on pg. 734.

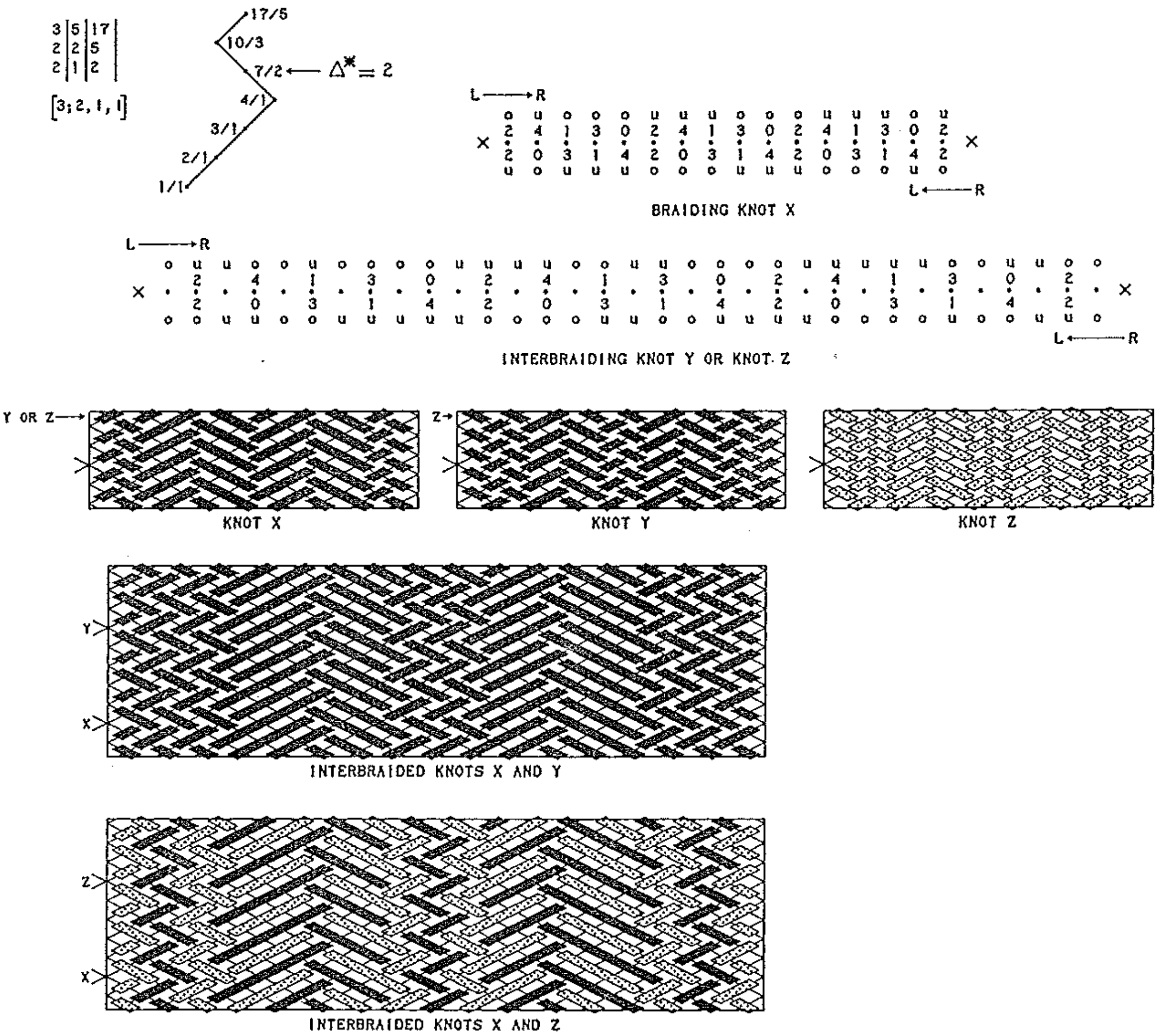

Fig. 586 — Interbraided knots X and Y, and the replacement of knot Y by knot Z.

The interbraid of knots X and Z is depicted in Fig. 587, and for the same reason as above, knot Z can be replaced by knot Y. The half-cycle braiding algorithms for knot X are the ones for this knot on pg. 734, and the half-cycle braiding algorithms for the interbraiding of knot Z (and of course the replacement of Z by Y) can be read from the algorithm diagram in Fig. 587 as follows:

Interbraiding knot Z:

1.	:	$u - o - u - 2o - 4u - 2o - 2u - o - u - o - u$.
2.	$i = 0$:	$u - o - u - 3o - 4u - 3o - 2u - o - 2u - o - u$.
3.	$i = 0$:	$u - o - u - 3o - 4u - 3o - 2u - o - 2u - o - u$.
4.	$i \leq 1$:	$u - o - 2u - 3o - 3u - o - u - 3o - 3u - o - 2u - o - u$.
5.	$i \leq 1$:	$u - o - 2u - 3o - 3u - o - u - 3o - 3u - o - 2u - o - u$.
6.	$i \leq 2$:	$2u - o - 2u - 3o - 4u - o - u - 4o - 3u - o - 2u - 2o - u$.
7.	$i \leq 2$:	$2u - o - 2u - 3o - 4u - o - u - 4o - 3u - o - 2u - 2o - u$.
8.	$i \leq 3$:	$2u - o - 2u - 4o - 4u - o - 2u - 4o - 3u - 2o - 2u - 2o - u$.
9.	$i \leq 3$:	$2u - o - 2u - 4o - 4u - o - 2u - 4o - 3u - 2o - 2u - 2o - u$.
10.	$i \leq 4$:	$2u - 2o - 2u - 4o - 5u - o - 2u - 4o - 4u - 2o - 2u - 2o - u$.

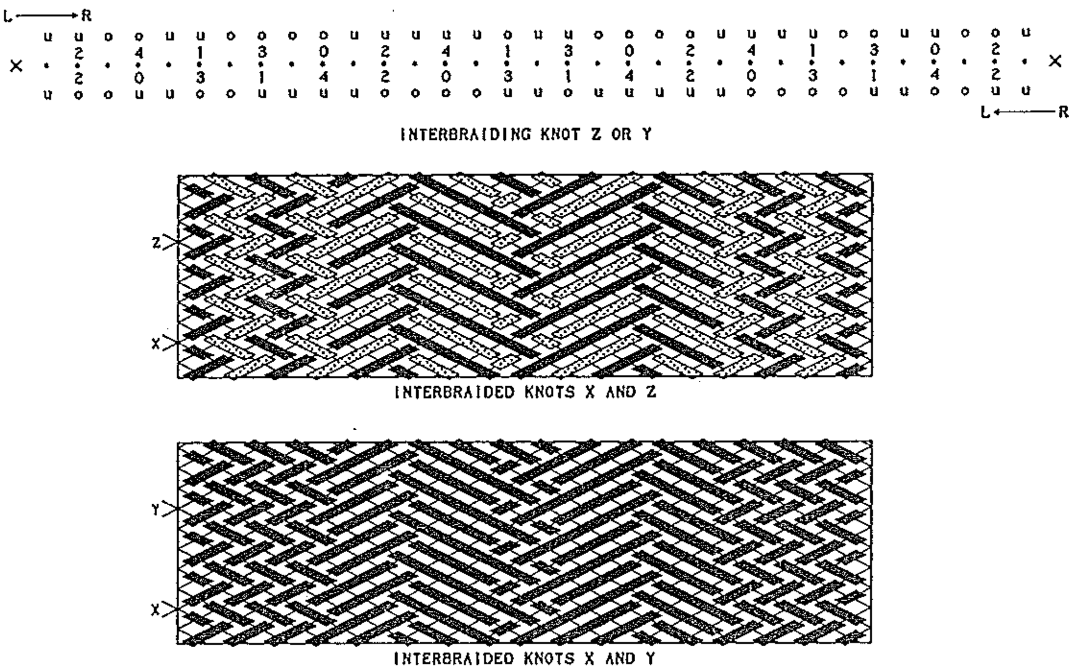

Fig. 587 — Interbraided knots X and Z, and the replacement of knot Z by knot Y.

The interbraid of knots Y and Z is depicted in Fig. 588, and again for the same reason as mentioned earlier, knot Z can be replaced by knot Y. First we braid knot Y which we then interbraid with knot Z. Note that for using this interbraid as the final braid, the Standing Ends of knots Y and Z are regularly distributed over the left bight-boundary and consequently the Standing End of knot Z is placed in the knot Y as indicated by the arrow in Fig. 586. Since the coding-pattern of knot Z is identical to the coding-pattern of knot Y, we can in the interbraid of knots Y and Z replace knot Z by knot Y (see Fig. 588). The half-cycle braiding algorithms for knot Y and the half-cycle braiding algorithms for the interbraiding of knot Z (and of course the replacement of Z by Y) can be read from the algorithm diagrams in Fig. 588 as follows:

Braiding knot Y:

1. : Free run.

2. $i=0$: $2o-u$.
3. $i=0$: $2o-u$.
4. $i\leq 1$: $u-3o-2u$.
5. $i\leq 1$: $u-3o-2u$.
6. $i\leq 2$: $2u-o-u-3o-2u-o$.
7. $i\leq 2$: $2u-o-u-3o-2u-o$.
8. $i\leq 3$: $2u-2o-u-o-u-2o-u-o-u-o$.
9. $i\leq 3$: $2u-2o-u-o-u-2o-u-o-u-o$.
10. $i\leq 4$: $u-o-u-2o-2u-o-u-2o-2u-o-u-o$.

Interbraiding knot Z:

1. : $u-o-u-2o-2u-o-u-2o-2u-o-u-o-u$.
2. $i=0$: $u-o-u-3o-2u-o-u-3o-2u-o-2u-o-u$.
3. $i=0$: $u-o-u-3o-2u-o-u-3o-2u-o-2u-o-u$.
4. $i\leq 1$: $u-o-2u-3o-2u-2o-u-3o-3u-o-2u-o-u$.
5. $i\leq 1$: $u-o-2u-3o-2u-2o-u-3o-3u-o-2u-o-u$.
6. $i\leq 2$: $2u-o-2u-3o-3u-2o-u-4o-3u-o-2u-2o-u$.
7. $i\leq 2$: $2u-o-2u-3o-3u-2o-u-4o-3u-o-2u-2o-u$.
8. $i\leq 3$: $2u-o-2u-4o-3u-2o-2u-4o-3u-2o-2u-2o-u$.
9. $i\leq 3$: $2u-o-2u-4o-3u-2o-2u-4o-3u-2o-2u-2o-u$.
10. $i\leq 4$: $2u-2o-2u-4o-4u-2o-2u-4o-4u-2o-2u-2o-u$.

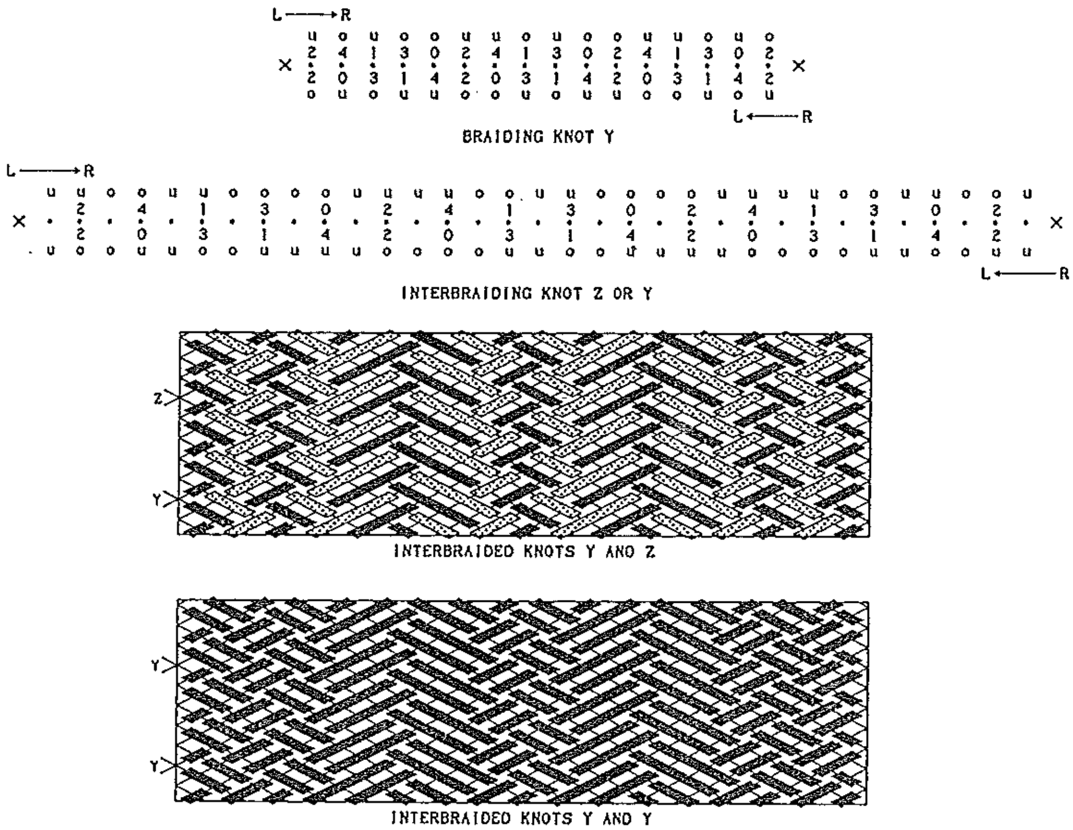

Fig. 588 — Interbraided knots Y and Z, and the replacement of knot Z by knot Y.

In many applications we require the Interbraided Cylindrical Knot to have constricting ends. The grid-diagram offers us the ideal braid representation which facilitates the modification from a Regular Cylindrical Braid to a Regular Nested Cylindrical Braid (a Nested Cylindrical Braid in general) or vice versa. The Interbraided Regular Cylindrical Knot of Fig. 584 has been modified to the Interbraided Regular Nested Cylindrical Knot of Fig. 589.

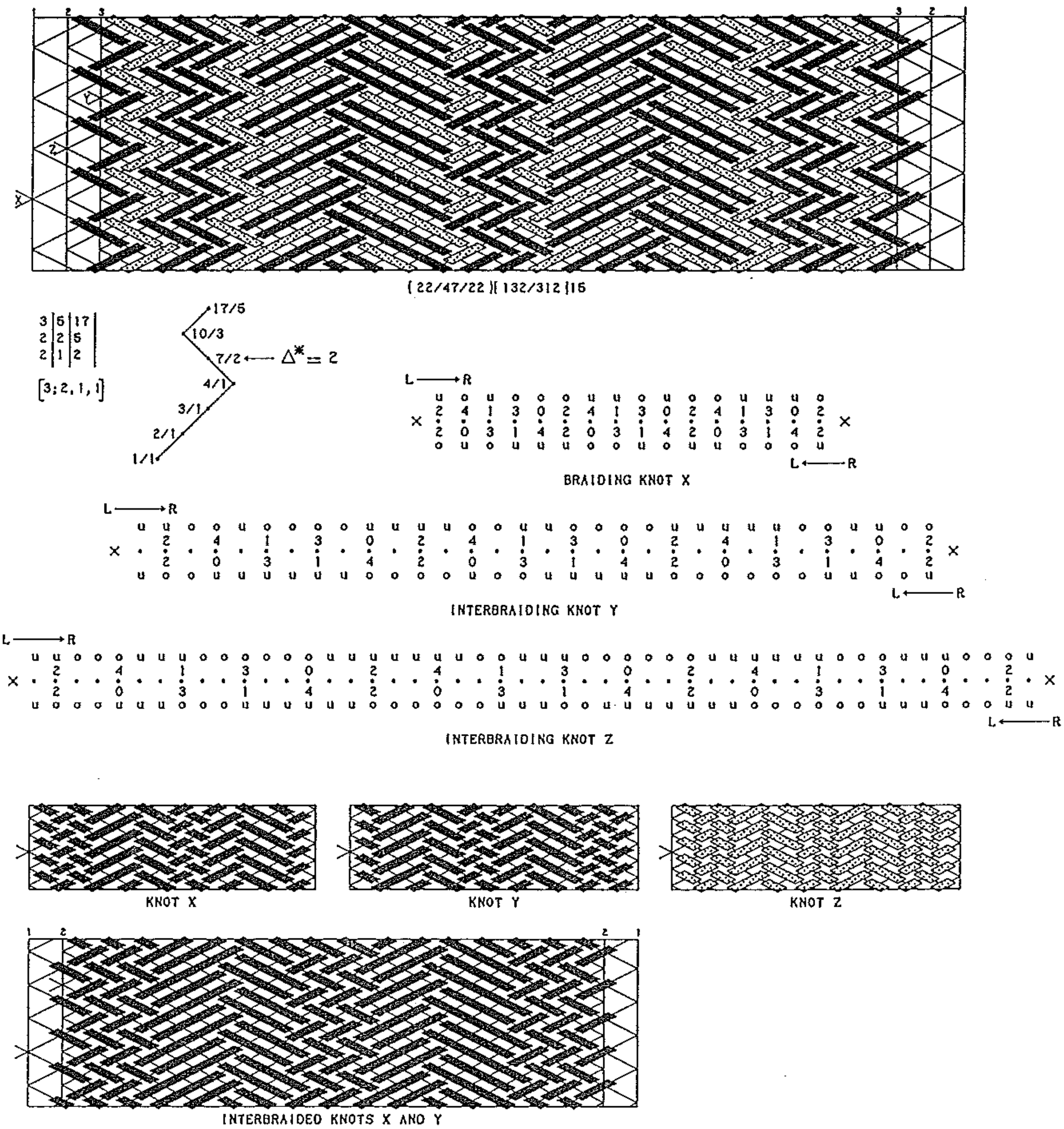

Fig. 589 — The Regular Nested interbraid of knots X, Y and Z.

First we braid knot X; its left bight-boundary is 1 and its right bight-boundary is 3 in the final interbraid of the knots X, Y and Z. Then we interbraid knot Y; its left bight-boundary is 3 and its right bight-boundary is 1 in the final interbraid of the knots X, Y and Z. Finally we interbraid knot Z; its left bight-boundary is 2 and its right bight-boundary is 2 in the final interbraid of the knots X, Y and Z. Note that the coding of knot Z in Fig. 589 is identical to the coding of knot Z in Fig. 584, but that the codings of knots X and Y in Fig. 589 differ from their respective codings in Fig. 584. The half-cycle braiding algorithms for the respective braiding stages may be obtained from the algorithm diagrams in Fig. 589.

Braiding knot X :

1.	:	Free run.
2.	$i = 0$:	$u - o - u$.
3.	$i = 0$:	$o - 2u$.
4.	$i \leq 1$:	$o - 2u - o - 2u$.
5.	$i \leq 1$:	$u - o - 4u$.
6.	$i \leq 2$:	$u - o - 3u - o - 3u - o$.
7.	$i \leq 2$:	$2u - 2o - 2u - o - 2u - o$.
8.	$i \leq 3$:	$u - 2o - 3u - 2o - 2u - o - u - o$.
9.	$i \leq 3$:	$2u - 3o - u - o - u - o - 3u - o$.
10.	$i \leq 4$:	$u - 3o - 2u - o - u - 2o - 3u - o - u - o$.

Interbraiding knot Y :

1.	:	$u - o - u - 2o - 2u - o - u - 2o - 2u - o - u - o$.
2.	$i = 0$:	$o - u - 4o - 3u - o - u - 2o - 4u - o - u$.
3.	$i = 0$:	$u - o - u - 2o - 3u - o - u - 3o - 2u - o - 2u - o$.
4.	$i \leq 1$:	$o - 2u - 4o - 4u - o - u - 2o - 5u - o - u$.
5.	$i \leq 1$:	$u - o - u - 3o - 3u - o - 2u - 3o - 3u - o - 2u - o$.
6.	$i \leq 2$:	$u - o - 2u - 5o - 4u - o - u - 3o - 5u - 2o - u$.
7.	$i \leq 2$:	$2u - o - u - 3o - 4u - o - 2u - 3o - 4u - o - 2u - 2o$.
8.	$i \leq 3$:	$u - o - 2u - 6o - 4u - 2o - u - 3o - 6u - 2o - u$.
9.	$i \leq 3$:	$2u - o - u - 4o - 4u - o - 2u - 4o - 4u - 2o - 2u - 2o$.
10.	$i \leq 4$:	$u - 2o - 2u - 6o - 5u - 2o - u - 4o - 6u - 2o - u$.

Interbraiding knot Z :

1.	:	$u - 2o - 2u - 4o - 5u - o - 2u - 4o - 4u - 2o - 2u - 2o - u$.
2.	$i = 0$:	$u - 2o - 2u - 5o - 5u - o - 2u - 5o - 4u - 2o - 3u - 2o - u$.
3.	$i = 0$:	$u - 2o - 2u - 5o - 5u - o - 2u - 5o - 4u - 2o - 3u - 2o - u$.
4.	$i \leq 1$:	$u - 2o - 3u - 5o - 5u - 2o - 2u - 5o - 5u - 2o - 3u - 2o - u$.
5.	$i \leq 1$:	$u - 2o - 3u - 5o - 5u - 2o - 2u - 5o - 5u - 2o - 3u - 2o - u$.
6.	$i \leq 2$:	$2u - 2o - 3u - 5o - 6u - 2o - 2u - 6o - 5u - 2o - 3u - 3o - u$.
7.	$i \leq 2$:	$2u - 2o - 3u - 5o - 6u - 2o - 2u - 6o - 5u - 2o - 3u - 3o - u$.
8.	$i \leq 3$:	$2u - 2o - 3u - 6o - 6u - 2o - 3u - 6o - 5u - 3o - 3u - 3o - u$.
9.	$i \leq 3$:	$2u - 2o - 3u - 6o - 6u - 2o - 3u - 6o - 5u - 3o - 3u - 3o - u$.
10.	$i \leq 4$:	$2u - 3o - 3u - 6o - 7u - 2o - 3u - 6o - 6u - 3o - 3u - 3o - u$.

The Regular Nested interbraid of knots X and Y gives us also a useful symmetrical knot.

The Regular Nested interbraid of knots X and Z, depicted by the uppermost grid-diagram in Fig. 590, does not give us a useful knot, which is of course not surprising since knot X has no symmetrical coding-pattern whereas knot Z does have a symmetrical coding-pattern. We can, however, readily make two changes: one which does neither affect the coding of knot X nor the coding of knot Z, but only the coding of the interbraid, and one which extends knot X by two parts to the right in order to enable us to make its coding-pattern symmetrical (see in Fig. 590 knot X^*). The Δ^*-value of knot X^* is 1, and since the string-run of knot Z does not change, its Δ^*-value does not change either, hence remains equal to 2. The grid-diagram of the Regular Nested interbraid of knots X^* and Z is depicted in Fig. 590. First we braid knot X^* and next we interbraid it with knot Z. The associated half-cycle braiding algorithms are read from the respective algorithm diagrams in Fig. 590.

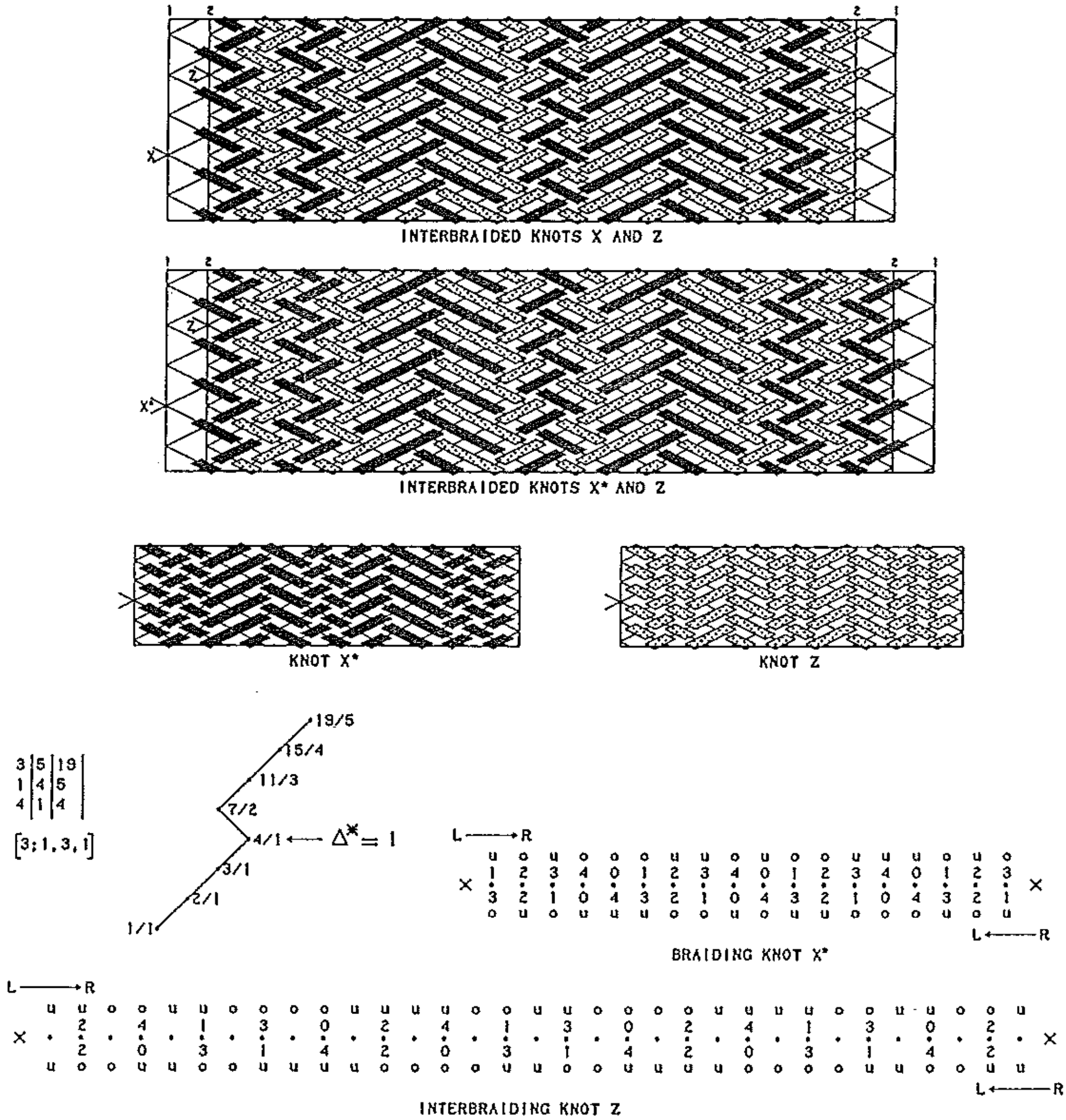

Fig. 590 — The Regular Nested interbraids of knots X^* and Z.

Braiding knot X^*:

1.	:	Free run.
2.	$i = 0$:	$o - 2u$.
3.	$i = 0$:	$o - 2u$.
4.	$i \leq 1$:	$u - 2o - u - o - u - o$.
5.	$i \leq 1$:	$u - 2o - u - o - u - o$.
6.	$i \leq 2$:	$u - 3o - 2u - 2o - u - o - u$.
7.	$i \leq 2$:	$u - 3o - 2u - 2o - u - o - u$.
8.	$i \leq 3$:	$u - o - u - 2o - 3u - 2o - 2u - o - u - o$.
9.	$i \leq 3$:	$u - o - u - 2o - 3u - 2o - 2u - o - u - o$.
10.	$i \leq 4$:	$u - o - u - 3o - 2u - o - u - 2o - 3u - o - u - o$.

Interbraiding knot Z:

1.	:	$u - o - u - 2o - 2u - o - u - 2o - 2u - o - u - o - u$.
2.	$i = 0$:	$u - o - u - 3o - 2u - o - u - 3o - 2u - o - 2u - o - u$.
3.	$i = 0$:	$u - o - u - 3o - 2u - o - u - 3o - 2u - o - 2u - o - u$.
4.	$i \leq 1$:	$u - o - 2u - 3o - 2u - 2o - u - 3o - 3u - o - 2u - o - u$.

5.	$i \leq 1:$	$u - o - 2u - 3o - 2u - 2o - u - 3o - 3u - o - 2u - o - u\,.$
6.	$i \leq 2:$	$2u - o - 2u - 3o - 3u - 2o - u - 4o - 3u - o - 2u - 2o - u\,.$
7.	$i \leq 2:$	$2u - o - 2u - 3o - 3u - 2o - u - 4o - 3u - o - 2u - 2o - u\,.$
8.	$i \leq 3:$	$2u - o - 2u - 4o - 3u - 2o - 2u - 4o - 3u - 2o - 2u - 2o - u\,.$
9.	$i \leq 3:$	$2u - o - 2u - 4o - 3u - 2o - 2u - 4o - 3u - 2o - 2u - 2o - u\,.$
10.	$i \leq 4:$	$2u - 2o - 2u - 4o - 4u - 2o - 2u - 4o - 4u - 2o - 2u - 2o - u\,.$

The Regular Nested interbraid of the knots Y and Z is the mirror image of the Regular Nested interbraid of the knots X and Z depicted by the uppermost grid-diagram in Fig. 590, and is for the same reason not a useful interbraid. When we make similar changes to the interbraid of knots Y and Z as we did above to the interbraid of the knots X and Z, then we extend knot Y by two parts to the left. The resulting interbraid will be identical to the interbraid of the knots X^* and Z.

The two component interbraids in Figs. 586 , 587 , 588 , 590 are of course not the only suitable arrangements here, in fact several other useful interbraids can readily be derived from them. For example, the interbraids in Fig. 591 are derived from the interbraids in Fig. 587.

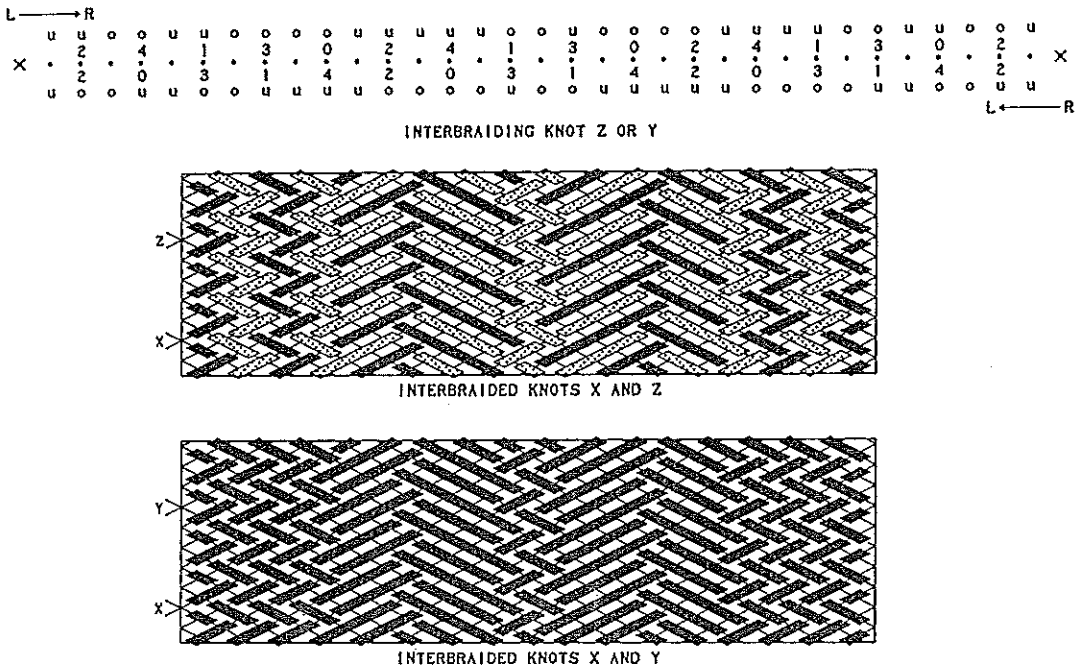

Fig. 591 — Interbraided knots X and Z or Y.

Observe that the interbraids in Fig. 591 do not affect the coding of the knots X , Y and Z in Fig. 586, but only affect the coding of the interbraids and hence only the coding of the algorithm diagram for interbraiding knot Z or Y when knot X is the first knot to be braided. Thus the half-cycle braiding algorithms for knot X are those on pg. 734. The half-cycle braiding algorithms for interbraiding knot Z or knot Y are read from the algorithm diagram in Fig. 591 as follows:

Interbraiding knot Z or Y :

1.	:	$u - o - u - 2o - 3u - 3o - 2u - o - u - o - u\,.$
2.	$i = 0:$	$u - o - u - 3o - 3u - 4o - 2u - o - 2u - o - u\,.$
3.	$i = 0:$	$u - o - u - 3o - 3u - 4o - 2u - o - 2u - o - u\,.$
4.	$i \leq 1:$	$u - o - 2u - 3o - 3u - 5o - 3u - o - 2u - o - u\,.$

5. $i \leq 1:$ $u - o - 2u - 3o - 3u - 5o - 3u - o - 2u - o - u\,.$
6. $i \leq 2:$ $2u - o - 2u - 3o - 4u - 6o - 3u - o - 2u - 2o - u\,.$
7. $i \leq 2:$ $2u - o - 2u - 3o - 4u - 6o - 3u - o - 2u - 2o - u\,.$
8. $i \leq 3:$ $2u - o - 2u - 4o - 4u - 2o - u - 4o - 3u - 2o - 2u - 2o - u\,.$
9. $i \leq 3:$ $2u - o - 2u - 4o - 4u - 2o - u - 4o - 3u - 2o - 2u - 2o - u\,.$
10. $i \leq 4:$ $2u - 2o - 2u - 4o - 5u - 2o - u - 4o - 4u - 2o - 2u - 2o - u\,.$

Although all the above useful interbraids have symmetrical coding-patterns, none of these coding-patterns can be regarded as being balanced since in the cicumferential direction they point in one specific way. This shortcoming can be overcome by turning one of the two directional coding arrangements into the opposite direction as has been done in Fig. 592.

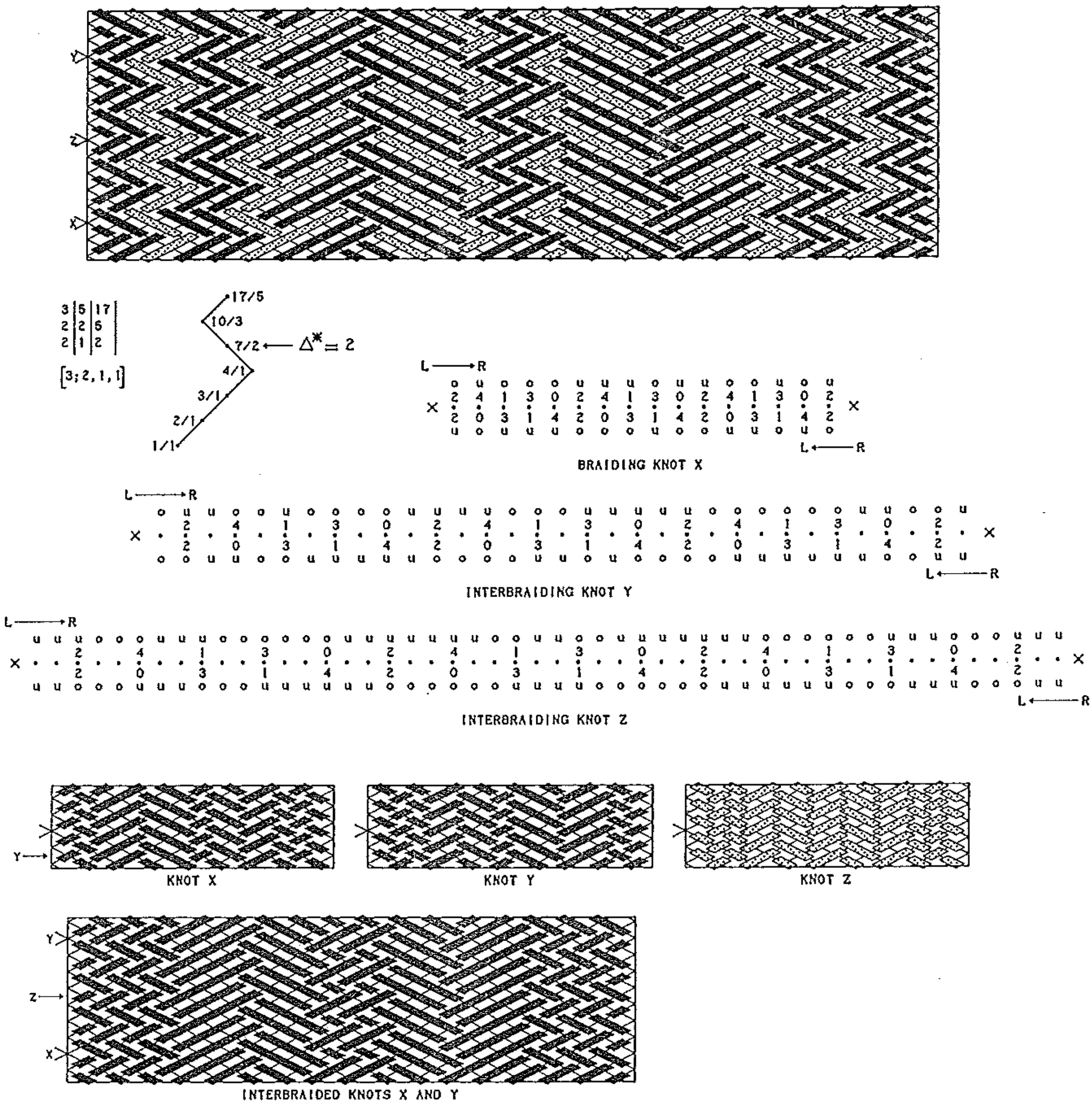

Fig. 592 — An interbraided Regular Cylindrical Braid of knots X , Y and Z.

The sequential half-cycle braiding algorithms for the knots X , Y and Z may be read from the sequential algorithm diagrams in Fig. 592 as follows:

Braiding knot X:

1. : Free run.
2. $i=0$: $u-2o$.
3. $i=0$: $o-u-o$.
4. $i\leq 1$: $o-2u-o-u-o$.
5. $i\leq 1$: $2o-2u-2o$.
6. $i\leq 2$: $2o-u-o-u-2o-u-o-u$.
7. $i\leq 2$: $3o-4u-2o-u$.
8. $i\leq 3$: $2o-2u-o-u-3o-2u-o-u$.
9. $i\leq 3$: $4o-2u-o-2u-o-u-o-u$.
10. $i\leq 4$: $o-u-o-2u-2o-u-3o-3u-o-u$.

Interbraiding knot Y:

1. : $o-u-3o-2u-2o-2u-3o-u-o-u$.
2. $i=0$: $u-o-4u-2o-2u-3o-3u-o-2u-o$.
3. $i=0$: $o-u-4o-2u-2o-3u-3o-2u-o-u$.
4. $i\leq 1$: $u-o-5u-2o-u-o-u-3o-4u-o-2u-o$.
5. $i\leq 1$: $o-u-o-u-3o-2u-3o-3u-4o-2u-o-u$.
6. $i\leq 2$: $2u-o-5u-3o-u-o-u-4o-4u-o-2u-2o$.
7. $i\leq 2$: $o-2u-o-u-3o-3u-3o-4u-4o-2u-2o-u$.
8. $i\leq 3$: $2u-o-6u-3o-u-o-2u-4o-4u-2o-2u-2o$.
9. $i\leq 3$: $o-2u-o-u-4o-3u-3o-5u-5o-2u-2o-u$.
10. $i\leq 4$: $2u-2o-6u-4o-u-o-2u-4o-5u-2o-2u-2o$.

Interbraiding knot Z:

1. : $2u-2o-2u-4o-5u-o-2u-o-5u-4o-2u-2o-2u$.
2. $i=0$: $2u-2o-2u-2o-5u-4o-2u-5o-4u-2o-3u-2o-2u$.
3. $i=0$: $2u-2o-2u-5o-5u-o-2u-o-6u-4o-2u-3o-2u$.
4. $i\leq 1$: $2u-2o-2u-3o-5u-4o-3u-5o-5u-2o-3u-2o-2u$.
5. $i\leq 1$: $2u-2o-3u-5o-5u-2o-2u-o-6u-5o-2u-3o-2u$.
6. $i\leq 2$: $2u-3o-2u-3o-5u-5o-3u-6o-5u-2o-3u-3o-2u$.
7. $i\leq 2$: $3u-2o-3u-5o-6u-2o-2u-o-7u-5o-2u-3o-3u$.
8. $i\leq 3$: $2u-3o-2u-3o-6u-5o-4u-6o-5u-3o-3u-3o-2u$.
9. $i\leq 3$: $3u-2o-3u-6o-6u-2o-2u-2o-7u-5o-3u-3o-3u$.
10. $i\leq 4$: $2u-3o-3u-3o-6u-6o-4u-6o-6u-3o-3u-3o-2u$.

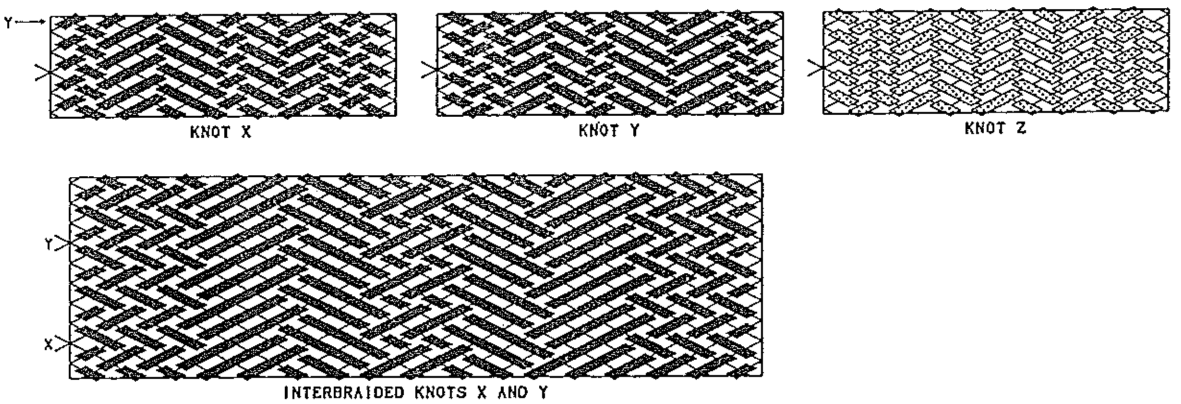

Fig. 593 — Interbraided knots X and Y.

In Fig. 593 we find again the interbraid of knots X and Y depicted in Fig. 592, but note that for using this interbraid as the final braid, the Standing Ends of knots X and Y are regularly distributed over the left bight-boundary and consequently the Standing End of knot Y is placed in knot X as indicated by the arrow in Fig. 593. The half-cycle braiding algorithms for knot X and the interbraiding of knot Y are the half-cycle braiding algorithms for these knots on pg. 743.

The Regular Cylindrical interbraid of knots X and Z, depicted by the uppermost grid-diagram in Fig. 594, does not give us a useful knot, which is of course not surprising since knot X has no symmetrical coding-pattern whereas knot Z does have a symmetrical coding-pattern. We can, however, readily make a coding change which does neither affect the coding of knot X nor the coding of knot Z, but only the coding of the interbraid (see the lower grid-diagram in Fig. 594).

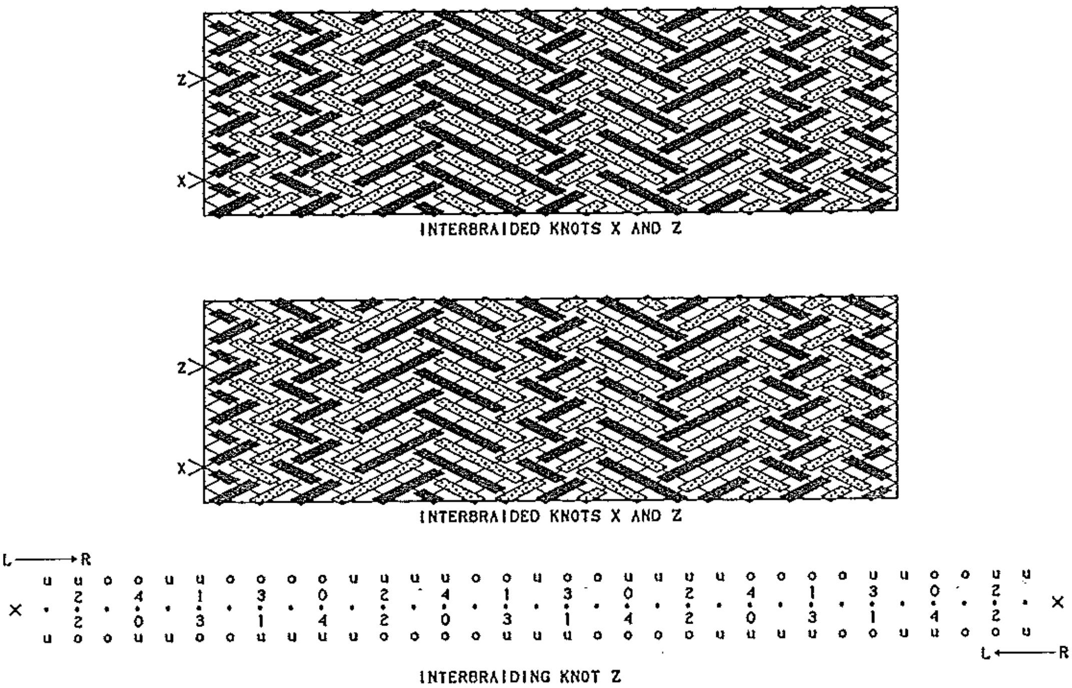

Fig. 594 — The interbraid of knots X and Z, and its modification.

For the modified interbraid of the knots X and Z, first knot X is braided in accordance with its half-cycle braiding algorithms on pg. 743. Next knot Z is interbraided; the associated half-cycle braiding algorithms are read from the algorithm diagram in Fig. 594 as follows:

Interbraiding knot Z:

1. : $u - o - u - 2o - 2u - o - u - o - 2u - 2o - u - o - u$.
2. $i = 0$: $u - o - u - o - 3u - 2o - u - 3o - 2u - o - 2u - o - u$.
3. $i = 0$: $u - o - u - 3o - 2u - o - u - o - 3u - 2o - u - 2o - u$.
4. $i \leq 1$: $u - o - u - 2o - 3u - 2o - 2u - 3o - 3u - o - 2u - o - u$.
5. $i \leq 1$: $u - o - 2u - 3o - 2u - 2o - u - o - 3u - 3o - u - 2o - u$.
6. $i \leq 2$: $u - 2o - u - 2o - 3u - 3o - 2u - 4o - 3u - o - 2u - 2o - u$.
7. $i \leq 2$: $2u - o - 2u - 3o - 3u - 2o - u - o - 4u - 3o - u - 2o - 2u$.
8. $i \leq 3$: $u - 2o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u$.
9. $i \leq 3$: $2u - o - 2u - 4o - 3u - 2o - u - 2o - 4u - 3o - 2u - 2o - 2u$.
10. $i \leq 4$: $u - 2o - 2u - 2o - 4u - 4o - 3u - 4o - 4u - 2o - 2u - 2o - u$.

This particular interbraid visually appears to have a symmetrical and balanced pattern, but this is a false impression created by the domineering effect of the colour-pattern. The coding-pattern is not symmetrical, and even the colour-pattern is not of a true symmetrical nature either. In certain applications we can use this interbraid in series, but not necessarily adjacent, with its mirror-imaged interbraid depicted by the lowermost grid-diagram in Fig. 595.

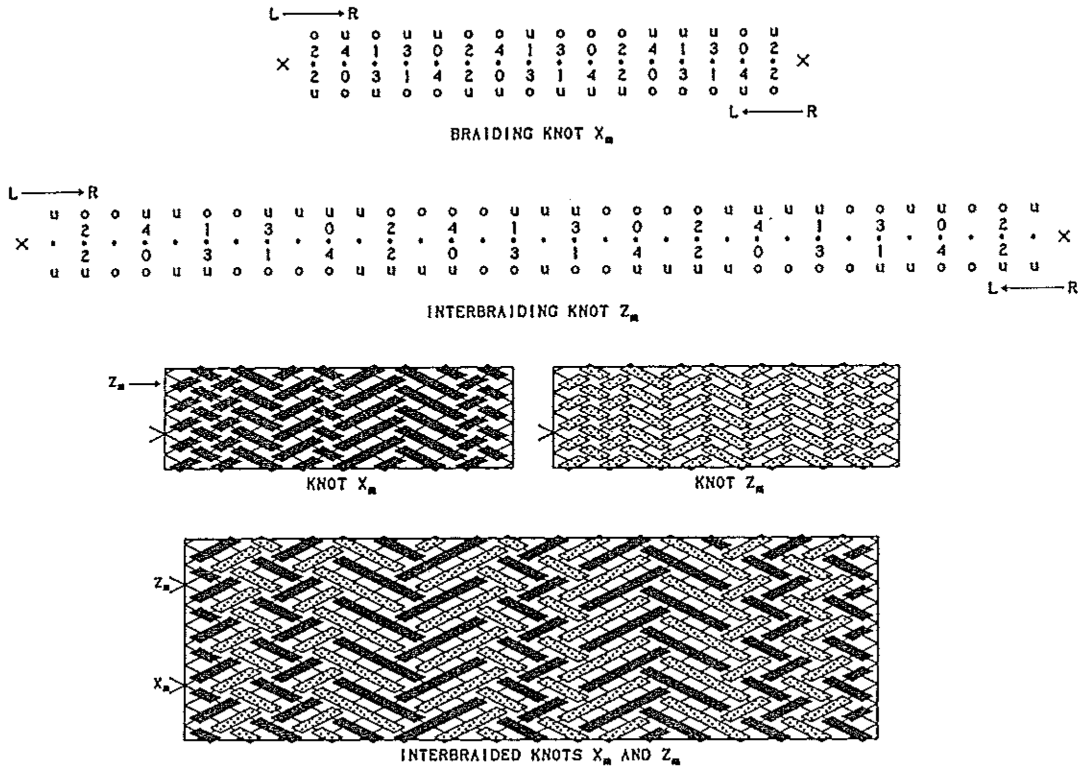

Fig. 595 — The interbraid of knots X_m and Z_m.

The half-cycle braiding algorithms for the knot X_m and for interbraiding knot Z_m may be read from the respective algorithm diagrams in Fig. 595 as follows:

Braiding knot X_m :

1.	:	Free run.
2.	$i = 0$:	$o - u - o$.
3.	$i = 0$:	$u - 2o$.
4.	$i \leq 1$:	$2o - 2u - 2o$.
5.	$i \leq 1$:	$o - 2u - o - u - o$.
6.	$i \leq 2$:	$3o - 4u - 2o - u$.
7.	$i \leq 2$:	$2o - u - o - u - 2o - u - o - u$.
8.	$i \leq 3$:	$4o - 2u - o - 2u - o - u - o - u$.
9.	$i \leq 3$:	$2o - 2u - o - u - 3o - 2u - o - u$.
10.	$i \leq 4$:	$o - u - 3o - 3u - o - 2u - 2o - u - o - u$.

Interbraiding knot Z_m :

1.	:	$u - o - u - o - 2u - 2o - u - 2o - 2u - o - u - o - u$.
2.	$i = 0$:	$u - o - u - 3o - 2u - o - u - o - 3u - 2o - u - 2o - u$.
3.	$i = 0$:	$u - o - u - o - 3u - 2o - u - 3o - 2u - o - 2u - o - u$.
4.	$i \leq 1$:	$u - o - 2u - 3o - 2u - 2o - u - o - 3u - 3o - u - 2o - u$.
5.	$i \leq 1$:	$u - o - u - 2o - 3u - 2o - 2u - 3o - 3u - o - 2u - o - u$.
6.	$i \leq 2$:	$2u - o - 2u - 3o - 3u - 2o - u - o - 4u - 3o - u - 2o - 2u$.
7.	$i \leq 2$:	$u - 2o - u - 2o - 3u - 3o - 2u - 4o - 3u - o - 2u - 2o - u$.

8.	$i \le 3$:	$2u - o - 2u - 4o - 3u - 2o - u - 2o - 4u - 3o - 2u - 2o - 2u$.
9.	$i \le 3$:	$u - 2o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u$.
10.	$i \le 4$:	$2u - 2o - 2u - 4o - 4u - 2o - u - 2o - 4u - 4o - 2u - 2o - 2u$.

We can also form a symmetrical and balanced knot by combining parts of the mirror imaged knots in Figs. 594 & 595 as depicted in Fig. 596. The half-cycle braiding algorithms for the interbraided knots X and Z in Fig. 596 are as follows:

Braiding knot X:

1.	:	Free run.
2.	$i = 0$:	$o - u - 3o - u$.
3.	$i = 0$:	$o - u - 3o - u$.
4.	$i \le 1$:	$3o - 2u - o - u - 4o - u$.
5.	$i \le 1$:	$3o - 2u - o - u - 4o - u$.
6.	$i \le 2$:	$3o - u - o - u - o - u - o - 2u - 4o - u - o - u$.
7.	$i \le 2$:	$3o - u - o - u - o - u - o - 2u - 4o - u - o - u$.
8.	$i \le 3$:	$u - 3o - 2u - o - u - 2o - u - 2o - 2u - o - u - 3o - 2u - o - u$.
9.	$i \le 3$:	$u - 3o - 2u - o - u - 2o - u - 2o - 2u - o - u - 3o - 2u - o - u$.
10.	$i \le 4$:	$o - u - 3o - 3u - o - 2u - 2o - u - o - u - o - 2u - 2o - u - 3o - 3u - o - u$.

Interbraiding knot Z:

1.	:	$u - o - u - 2o - 2u - o - u - o - 2u - 2o - u - o - u - o - 2u - 2o - u - 2o - 2u - o - u - o - u$.
2.	$i = 0$:	$u - o - u - 3o - 2u - o - u - o - 3u - 2o - u - 2o - u - o - 2u - 3o - u - 3o - 2u - o - u - 2o - u$.
3.	$i = 0$:	$u - o - u - 3o - 2u - o - u - o - 3u - 2o - u - 2o - u - o - 2u - 3o - u - 3o - 2u - o - u - 2o - u$.
4.	$i \le 1$:	$u - o - u - 4o - 2u - o - u - 2o - 3u - 2o - 2u - 2o - u - o - 3u - 3o - u - 4o - 2u - o - 2u - 2o - u$.
5.	$i \le 1$:	$u - o - u - 4o - 2u - o - u - 2o - 3u - 2o - 2u - 2o - u - o - 3u - 3o - u - 4o - 2u - o - 2u - 2o - u$.
6.	$i \le 2$:	$u - o - 2u - 4o - 2u - 2o - u - 2o - 3u - 3o - 2u - 2o - u - o - 4u - 3o - 2u - 4o - 2u - 2o - 2u - 2o - u$.
7.	$i \le 2$:	$u - o - 2u - 4o - 2u - 2o - u - 2o - 3u - 3o - 2u - 2o - u - o - 4u - 3o - 2u - 4o - 2u - 2o - 2u - 2o - u$.
8.	$i \le 3$:	$u - 2o - 2u - 4o - 3u - 2o - u - 2o - 3u - 4o - 2u - 2o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u$.
9.	$i \le 3$:	$u - 2o - 2u - 4o - 3u - 2o - u - 2o - 3u - 4o - 2u - 2o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u$.
10.	$i \le 4$:	$2u - 2o - 2u - 4o - 4u - 2o - u - 2o - 4u - 4o - 2u - 2o - 2u - 2o - 4u - 4o - 3u - 4o - 4u - 2o - 2u - 2o - u$.

Besides the above combination in Fig. 596 derived from the knots in Figs. 594 & 595, several other symmetrical and balanced combinations can be made, one of which is shown in Fig. 597. The half-cycle braiding algorithms for the interbraided knots X and Z in Fig. 597 are as follows:

Braiding knot X:

1.	:	Free run.
2.	$i = 0$:	$o - u - o - 2u$.
3.	$i = 0$:	$o - u - o - 2u$.

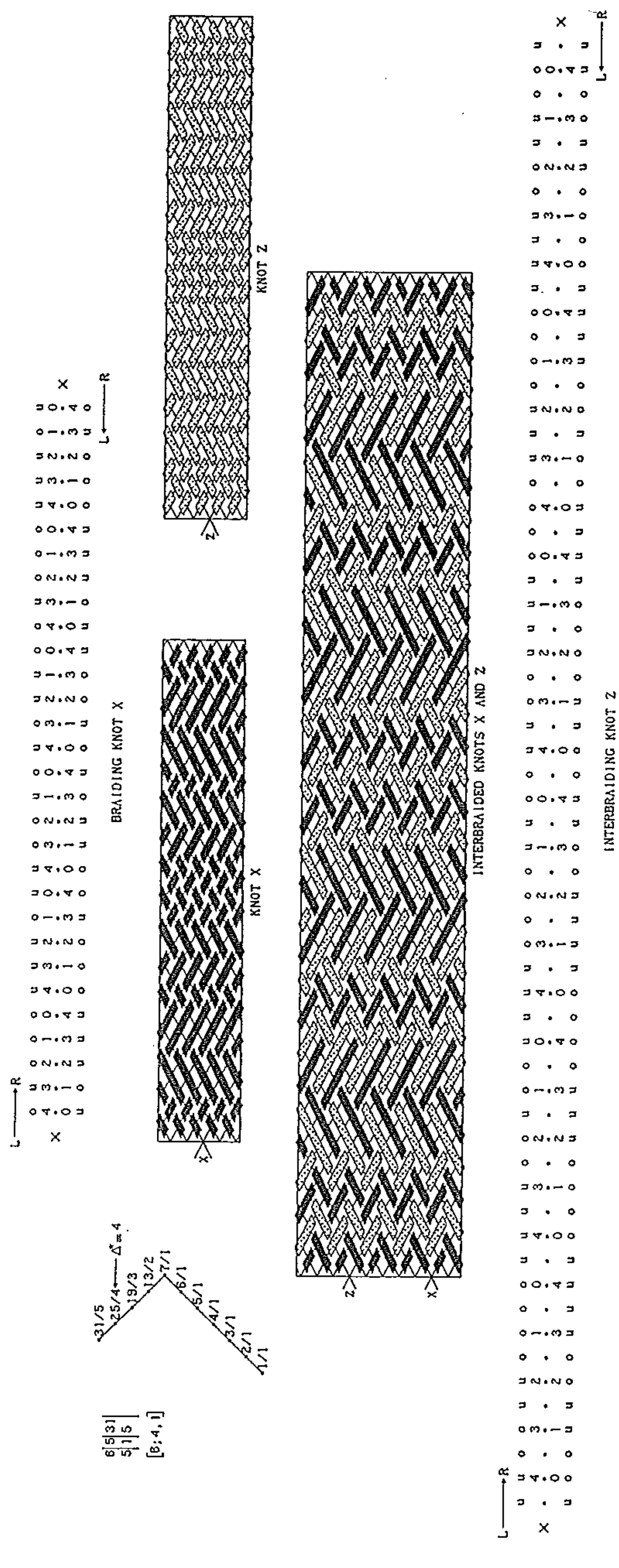

Fig. 596 — A knot derived by combining parts of the knots in Figs. 594 & 595.

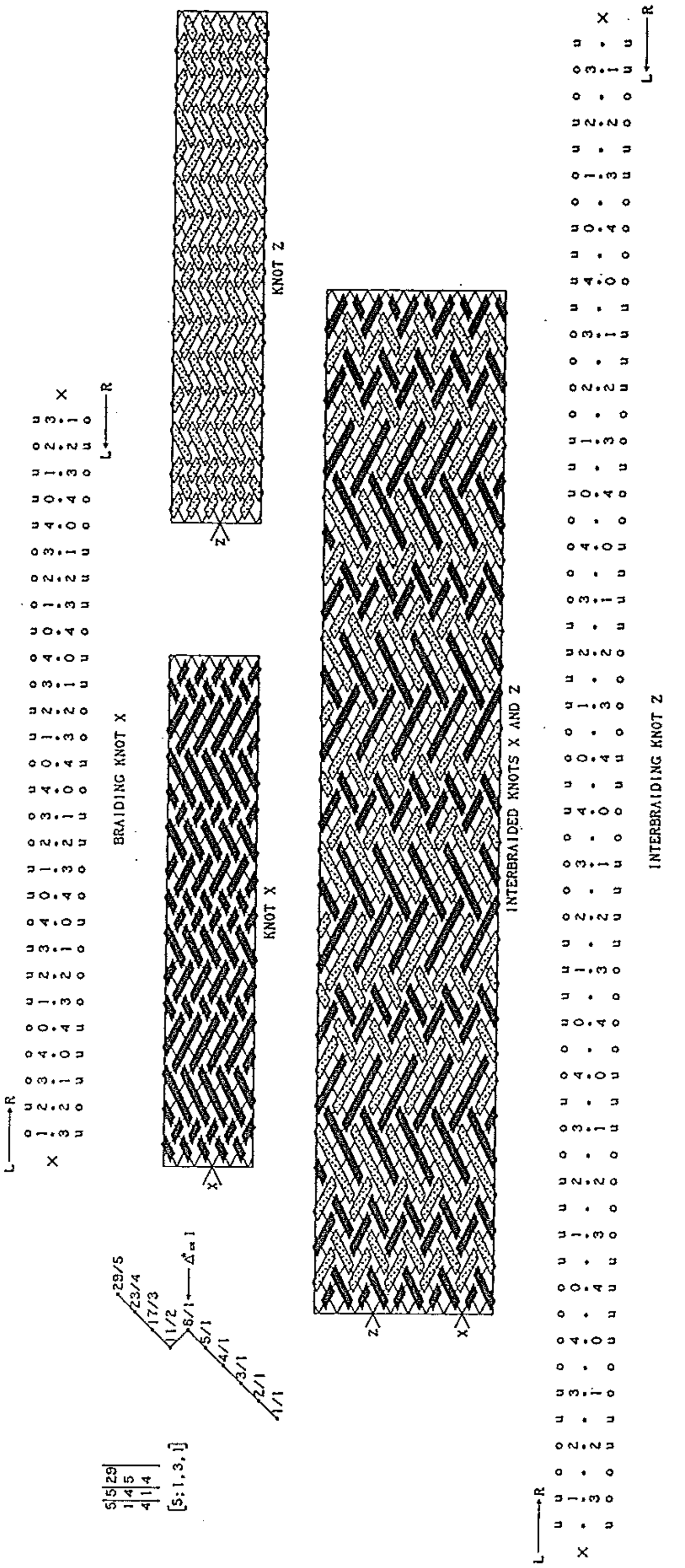

Fig. 597 — A knot derived by combining parts of the knots in Figs. 594 & 595.

4. $i \leq 1$: $2o - 3u - o - 2u - o - 2u$.
5. $i \leq 1$: $2o - 3u - o - 2u - o - 2u$.
6. $i \leq 2$: $o - u - o - 4u - 2o - 3u - 2o - 2u - o$.
7. $i \leq 2$: $o - u - o - 4u - 2o - 3u - 2o - 2u - o$.
8. $i \leq 3$: $o - u - 2o - 5u - 3o - 2u - o - u - 3o - 2u - o - u$.
9. $i \leq 3$: $o - u - 2o - 5u - 3o - 2u - o - u - 3o - 2u - o - u$.
10. $i \leq 4$: $o - u - 3o - 3u - o - 2u - 2o - u - o - 2u - 2o - u - 3o - 3u - o - u$.

Interbraiding knot Z:

1. : $u - o - u - 2o - 2u - o - u - o - 2u - 2o - u - o - 2u - 2o - u - 2o - 2u - o - u - o - u$.
2. $i = 0$: $u - o - u - 3o - 2u - o - u - o - 3u - 2o - u - 2o - 2u - 2o - 2u - 2o - 3u - o - u - o - u$.
3. $i = 0$: $u - o - u - 3o - 2u - o - u - o - 3u - 2o - u - 2o - 2u - 2o - 2u - 2o - 3u - o - u - o - u$.
4. $i \leq 1$: $2u - o - u - 3o - 3u - o - u - o - 4u - 2o - u - 2o - 3u - 2o - 3u - 2o - 3u - 2o - u - o - u$.
5. $i \leq 1$: $2u - o - u - 3o - 3u - o - u - o - 4u - 2o - u - 2o - 3u - 2o - 3u - 2o - 3u - 2o - u - o - u$.
6. $i \leq 2$: $2u - 2o - u - 3o - 4u - o - u - o - 4u - 3o - u - 2o - 4u - 2o - 3u - 3o - 3u - 2o - 2u - o - u$.
7. $i \leq 2$: $2u - 2o - u - 3o - 4u - o - u - o - 4u - 3o - u - 2o - 4u - 2o - 3u - 3o - 3u - 2o - 2u - o - u$.
8. $i \leq 3$: $2u - 2o - 2u - 3o - 4u - 2o - u - o - 4u - 4o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u$.
9. $i \leq 3$: $2u - 2o - 2u - 3o - 4u - 2o - u - o - 4u - 4o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u$.
10. $i \leq 4$: $2u - 2o - 2u - 4o - 4u - 2o - u - 2o - 4u - 4o - 2u - 2o - 4u - 4o - 3u - 4o - 4u - 2o - 2u - 2o - u$.

When we require the Interbraided Cylindrical Knot to have constricting ends, we can modify, as before, the Regular Cylindrical Braid to a Regular Nested Cylindrical Braid (a Nested Cylindrical Braid in general). The Interbraided Regular Cylindrical Knot of Fig. 592 has been modified to the Interbraided Regular Nested Cylindrical Knot of Fig. 598.

First we braid knot X; its left bight-boundary is 1 and its right bight-boundary is 3 in the final interbraid of the knots X, Y and Z. Then we interbraid knot Y; its left bight-boundary is 3 and its right bight-boundary is 1 in the final interbraid of the knots X, Y and Z. Finally we interbraid knot Z; its left bight-boundary is 2 and its right bight-boundary is 2 in the final interbraid of the knots X, Y and Z. Note that the coding of knot Z in Fig. 598 is identical to the coding of knot Z in Fig. 592, but that the codings of knots X and Y in Fig. 598 differ from their respective codings in Fig. 592. The half-cycle braiding algorithms for the respective braiding stages may be obtained from the algorithm diagrams in Fig. 598.

Braiding knot X:

1. : Free run.
2. $i = 0$: $2o - u$.
3. $i = 0$: $3o$.

4. $i \leq 1$: $u - o - u - o - 2u$.
5. $i \leq 1$: $u - o - u - 3o$.
6. $i \leq 2$: $o - u - 2o - u - o - 3u - o$.
7. $i \leq 2$: $2u - 2o - u - o - u - 2o - u$.
8. $i \leq 3$: $o - 2u - 2o - u - 2o - 2u - o - u - o$.
9. $i \leq 3$: $2u - 3o - u - 2o - u - 3o - u$.
10. $i \leq 4$: $o - 3u - 2o - 2u - 2o - 3u - o - u - o$.

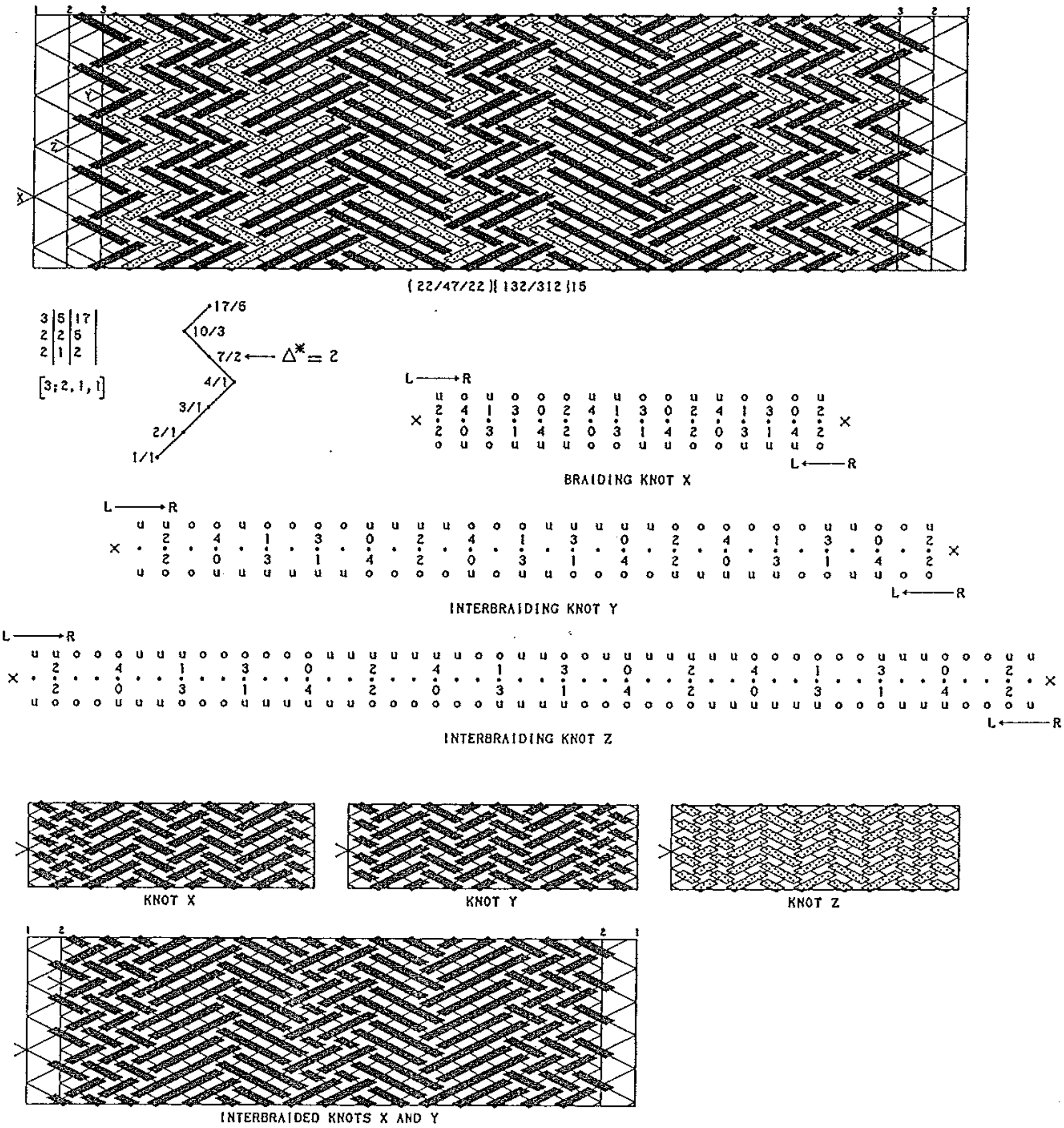

Fig. 598 — The Regular Nested interbraid of knots X, Y and Z.

Interbraiding knot Y:

1. : $u - o - u - 2o - 2u - o - 3u - 3o - u - o$.
2. $i = 0$: $o - u - o - 3u - 2o - u - o - u - 2o - 4u - o - u$.
3. $i = 0$: $u - o - u - 2o - 3u - o - 4u - 3o - u - 2o$.

4. $i \leq 1$: $o - u - 2o - 3u - 3o - u - o - u - 2o - 5u - o - u$.
5. $i \leq 1$: $u - o - u - 3o - 3u - 2o - 4u - 4o - u - 2o$.
6. $i \leq 2$: $2o - u - 2o - 4u - 3o - u - o - u - 3o - 5u - 2o - u$.
7. $i \leq 2$: $2u - o - u - 3o - 4u - 2o - 4u - 5o - u - 2o - u$.
8. $i \leq 3$: $2o - u - 2o - 5u - 3o - 2u - o - u - 3o - 6u - 2o - u$.
9. $i \leq 3$: $2u - o - u - 4o - 4u - 2o - 5u - 5o - 2u - 2o - u$.
10. $i \leq 4$: $2o - 2u - 2o - 5u - 4o - 2u - o - u - 4o - 6u - 2o - u$.

Interbraiding knot Z:

1. : $u - 2o - 2u - 4o - 5u - o - 2u - o - 5u - 4o - 2u - 2o - u$.
2. $i = 0$: $u - 2o - 2u - 2o - 5u - 4o - 2u - 5o - 4u - 2o - 3u - 2o - u$.
3. $i = 0$: $u - 2o - 2u - 5o - 5u - o - 2u - o - 6u - 4o - 2u - 3o - u$.
4. $i \leq 1$: $u - 2o - 2u - 3o - 5u - 4o - 3u - 5o - 5u - 2o - 3u - 2o - u$.
5. $i \leq 1$: $u - 2o - 3u - 5o - 5u - 2o - 2u - o - 6u - 5o - 2u - 3o - u$.
6. $i \leq 2$: $u - 3o - 2u - 3o - 5u - 5o - 3u - 6o - 5u - 2o - 3u - 3o - u$.
7. $i \leq 2$: $2u - 2o - 3u - 5o - 6u - 2o - 2u - o - 7u - 5o - 2u - 3o - 2u$.
8. $i \leq 3$: $u - 3o - 2u - 3o - 6u - 5o - 4u - 6o - 5u - 3o - 3u - 3o - u$.
9. $i \leq 3$: $2u - 2o - 3u - 6o - 6u - 2o - 2u - 2o - 7u - 5o - 3u - 3o - 2u$.
10. $i \leq 4$: $u - 3o - 3u - 3o - 6u - 6o - 4u - 6o - 6u - 3o - 3u - 3o - u$.

The Regular Nested interbraid of knots X and Y gives us also a useful symmetrical knot.

The Regular Nested interbraid of knots X and Z, depicted by the uppermost grid-diagram in Fig. 599, does not give us a useful knot, which is of course not surprising since knot X has no symmetrical coding-pattern whereas knot Z does have a symmetrical coding-pattern. We can again readily make two changes: one which does neither affect the coding of knot X nor the coding of knot Z, but only the coding of the interbraid, and one which extends knot X by two parts to the right in order to enable us to make its coding-pattern symmetrical (see in Fig. 599 knot X^*). The Δ^*-value of knot X^* is 1, and since the string-run of knot Z does not change, its Δ^*-value does not change either, hence remains equal to 2. The grid-diagram of the Regular Nested interbraid of knots X^* and Z is depicted in Fig. 599. First we braid knot X^* and next we interbraid it with knot Z. The associated half-cycle braiding algorithms are read from the respective algorithm diagrams in Fig. 599.

Braiding knot X^*:

1. : Free run.
2. $i = 0$: $3u$.
3. $i = 0$: $3o$.
4. $i \leq 1$: $o - 3u - o - u - o$.
5. $i \leq 1$: $u - 3o - u - o - u$.
6. $i \leq 2$: $o - 3u - o - u - 2o - u - o - u$.
7. $i \leq 2$: $u - 3o - u - o - 2u - o - u - o$.
8. $i \leq 3$: $o - u - o - 2u - 2o - u - 2o - 2u - o - u - o$.
9. $i \leq 3$: $u - o - u - 2o - 2u - o - 2u - 2o - u - o - u$.
10. $i \leq 4$: $o - u - o - 3u - 2o - 2u - 2o - 3u - o - u - o$.

Interbraiding knot Z:

1. : $u - o - u - 2o - 2u - o - u - o - 2u - 2o - u - o - u$.
2. $i = 0$: $u - o - u - o - 3u - 2o - u - 3o - 2u - o - 2u - o - u$.
3. $i = 0$: $u - o - u - 3o - 2u - o - u - o - 3u - 2o - u - 2o - u$.

4. $i \leq 1:$ $u - o - u - 2o - 3u - 2o - 2u - 3o - 3u - o - 2u - o - u\,.$
5. $i \leq 1:$ $u - o - 2u - 3o - 2u - 2o - u - o - 3u - 3o - u - 2o - u\,.$
6. $i \leq 2:$ $u - 2o - u - 2o - 3u - 3o - 2u - 4o - 3u - o - 2u - 2o - u\,.$
7. $i \leq 2:$ $2u - o - 2u - 3o - 3u - 2o - u - o - 4u - 3o - u - 2o - 2u\,.$
8. $i \leq 3:$ $u - 2o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u\,.$
9. $i \leq 3:$ $2u - o - 2u - 4o - 3u - 2o - u - 2o - 4u - 3o - 2u - 2o - 2u\,.$
10. $i \leq 4:$ $u - 2o - 2u - 2o - 4u - 4o - 3u - 4o - 4u - 2o - 2u - 2o - u\,.$

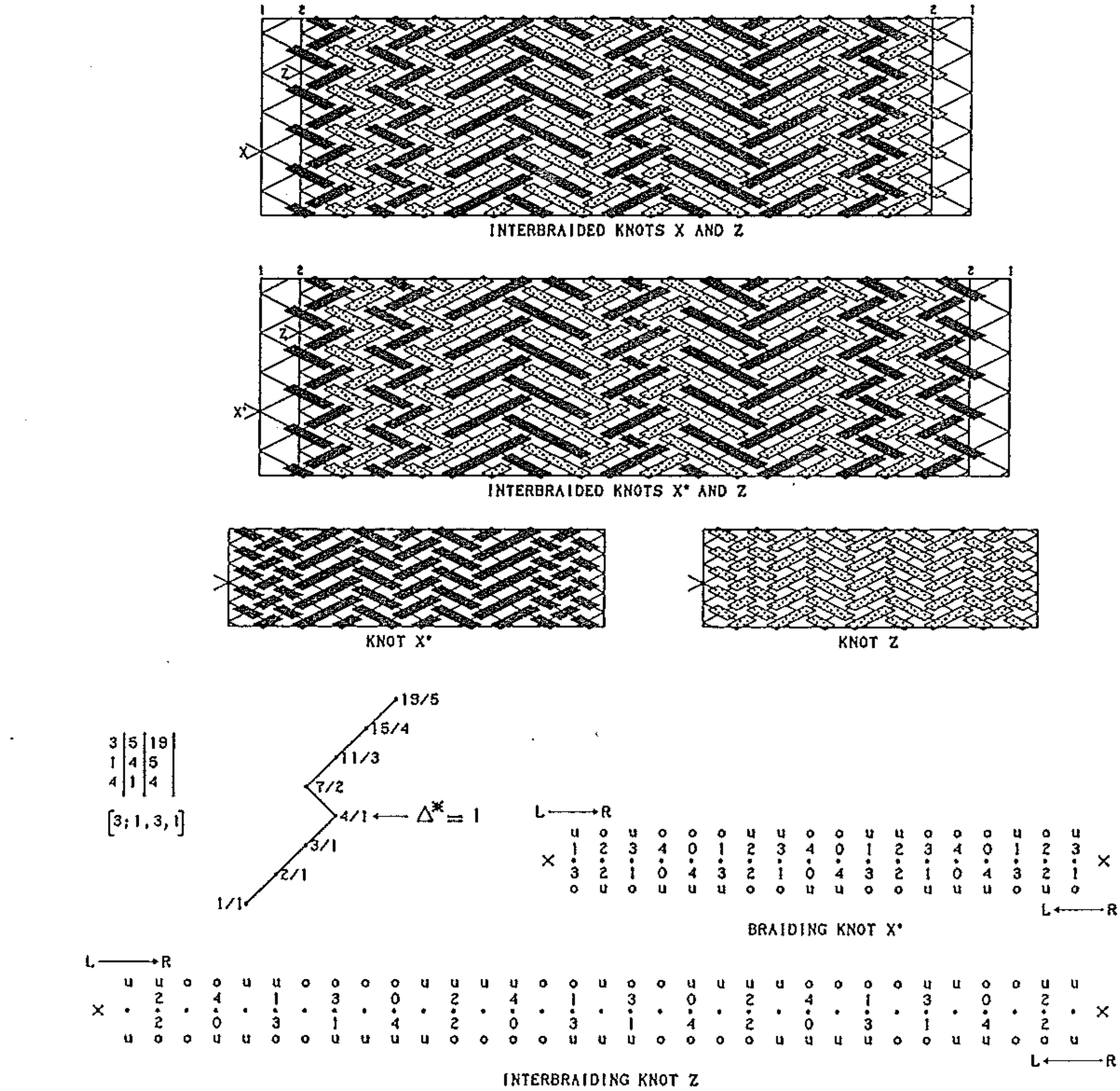

Fig. 599 — The Regular Nested interbraids of knots X^* and Z.

Two further Regular Nested interbraids of knots X^* and Z are depicted in Fig. 600. The half-cycle braiding algorithms for knot X^* are for both interbraids in Fig. 600 the half-cycle braiding algorithms for knot X^* on pg. 751.

The half-cycle braiding algorithms for interbraiding knot Z as in the uppermost interbraid of Fig. 600 are read from the uppermost algorithm diagram in Fig. 600.

Interbraiding knot Z:

1. $:$ $u - o - u - 2o - 2u - 3o - 2u - 2o - u - o - u\,.$
2. $i = 0:$ $u - o - u - o - 3u - 2o - u - 3o - 2u - o - 2u - o - u\,.$

3. $i = 0:$ $u - o - u - 3o - 2u - 3o - 3u - 2o - u - 2o - u\,.$
4. $i \leq 1:$ $u - o - u - 2o - 3u - 2o - 2u - 3o - 3u - o - 2u - o - u\,.$
5. $i \leq 1:$ $u - o - 2u - 3o - 2u - 4o - 3u - 3o - u - 2o - u\,.$
6. $i \leq 2:$ $u - 2o - u - 2o - 3u - 3o - 2u - 4o - 3u - o - 2u - 2o - u\,.$
7. $i \leq 2:$ $2u - o - 2u - 3o - 3u - 4o - 4u - 3o - u - 2o - 2u\,.$
8. $i \leq 3:$ $u - 2o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u\,.$
9. $i \leq 3:$ $2u - o - 2u - 4o - 3u - 5o - 4u - 3o - 2u - 2o - 2u\,.$
10. $i \leq 4:$ $u - 2o - 2u - 2o - 4u - 4o - 3u - 4o - 4u - 2o - 2u - 2o - u\,.$

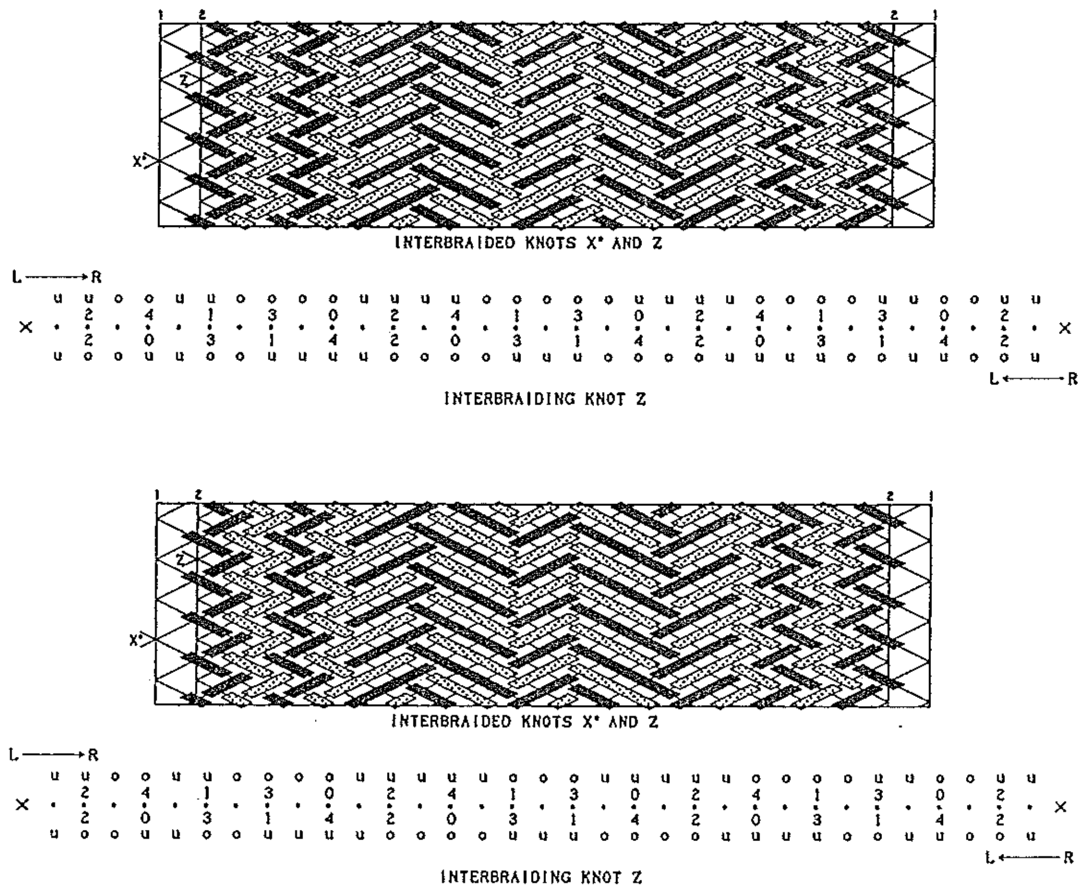

Fig. 600 — Two further Regular Nested interbraids of knots X^* and Z.

The half-cycle braiding algorithms for interbraiding knot Z as in the lowermost interbraid of Fig. 600 are read from the lowermost algorithm diagram in Fig. 600.

Interbraiding knot Z:

1. $:$ $u - o - u - 2o - 3u - o - 3u - 2o - u - o - u\,.$
2. $i = 0:$ $u - o - u - o - 3u - 2o - u - 3o - 2u - o - 2u - o - u\,.$
3. $i = 0:$ $u - o - u - 3o - 3u - o - 4u - 2o - u - 2o - u\,.$
4. $i \leq 1:$ $u - o - u - 2o - 3u - 2o - 2u - 3o - 3u - o - 2u - o - u\,.$
5. $i \leq 1:$ $u - o - 2u - 3o - 3u - 2o - 4u - 3o - u - 2o - u\,.$
6. $i \leq 2:$ $u - 2o - u - 2o - 3u - 3o - 2u - 4o - 3u - o - 2u - 2o - u\,.$
7. $i \leq 2:$ $2u - o - 2u - 3o - 4u - 2o - 5u - 3o - u - 2o - 2u\,.$
8. $i \leq 3:$ $u - 2o - u - 2o - 4u - 3o - 3u - 4o - 3u - 2o - 2u - 2o - u\,.$
9. $i \leq 3:$ $2u - o - 2u - 4o - 4u - 3o - 5u - 3o - 2u - 2o - 2u\,.$
10. $i \leq 4:$ $u - 2o - 2u - 2o - 4u - 4o - 3u - 4o - 4u - 2o - 2u - 2o - u\,.$

We can of course also derive useful Regular Cylindrical interbraids from the Regular Nested Cylindrical interbraids. For example, from the Regular Nested Cylindrical interbraids in Figs. 599 & 600 we readily derive the Regular Cylindrical interbraids of Fig. 601. The half-cycle braiding algorithm for knot X^{**} are read from its algorithm diagram. Note that the respective algorithm diagrams for interbraiding knot Z do not change, hence their respective associated half-cycle braiding algorithms don't change.

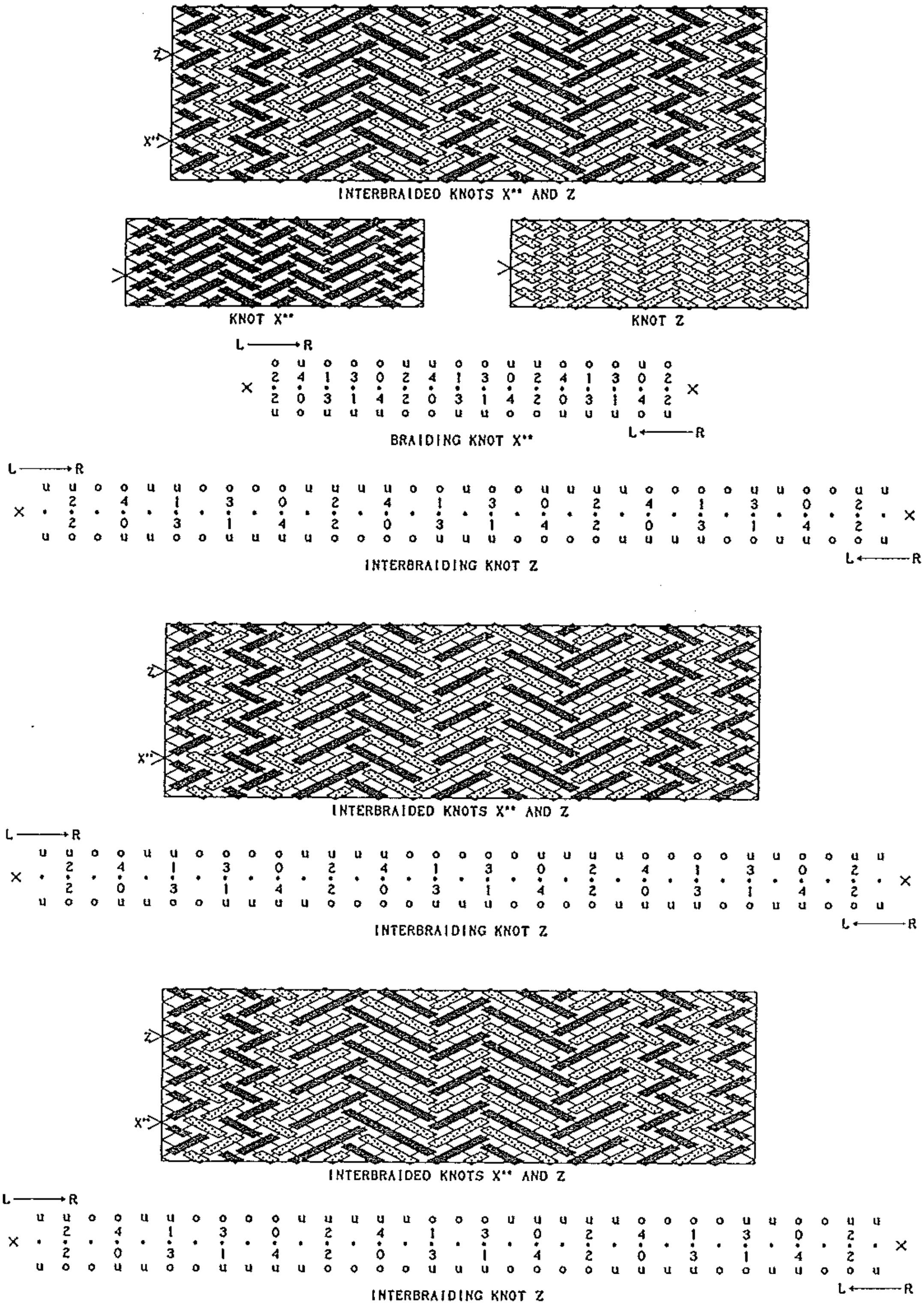

Fig. 601 — Interbraided Regular Knots derived from the interbraids in Figs. 599 & 600.