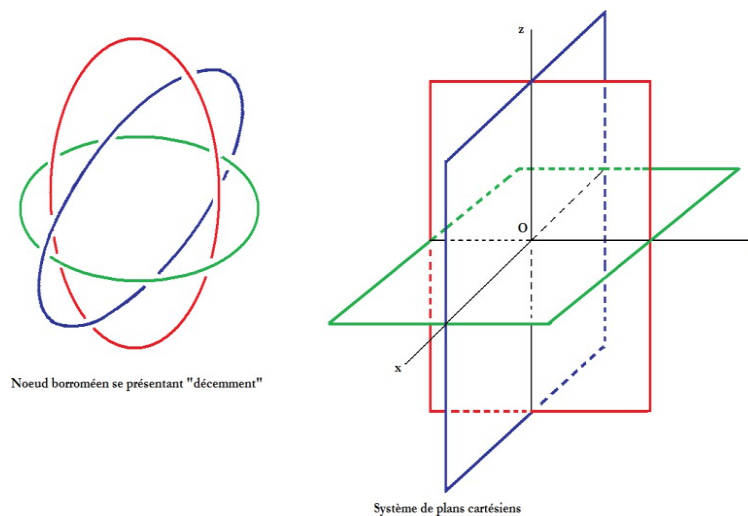


To introduce the
tetrahedron

To introduce the tetrahedron of sexuation formulas (Lesson XIII of the seminar "Les Non-dupes errent")

Here is a Borromean knot "presenting itself decently," that is, in 3D space: the red circle is in a vertical plane seen from the front, the blue circle is in a vertical plane seen from the front to the back, and the green circle is in a horizontal plane. The Cartesian planes on the right are only there to help understand the arrangement of the three circles.

In this arrangement, the node organizes space into 8 sectors, 8 quadrants, 8 points of view from which the node can be viewed. Each of these 8 points of view can be characterized by a choice between three directions: up-down, right-left, front-back.

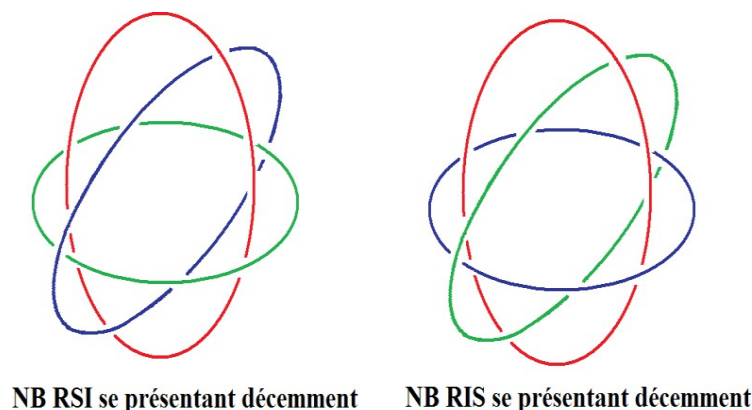


In what follows, we adopt the following convention: The red circle represents the real, the blue circle represents the symbolic, and the green circle represents the imaginary.

The figure below illustrates the fact that there are two distinct Borromean knots in space.

In fact, we can arrange for the red to surround the blue, which itself surrounds the green, or vice versa. The two knots cannot be superimposed by simple translation. The knot in space therefore has a characteristic that can be called "order," provided that it is specified that this "order" in no way implies the prevalence of one circle over the others, nor any ordination that would place one of the circles "first." It is simply the difference that exists between

On the one hand: RSI, which is equivalent to IRS or SIR On the other hand: RIS, equivalent to ISR or SRI

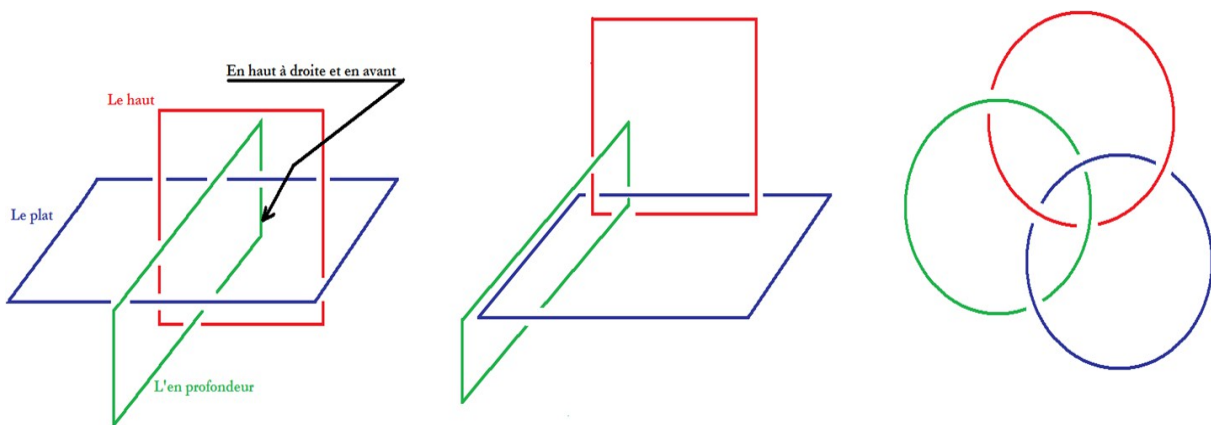


To introduce the tetrahedron

The figure below illustrates the fact that a Borromean knot in space can be flattened. The flattening can be "pulled" from any of the eight viewpoints defined above. (Here, the circles have been transformed into squares, which are topologically equivalent, to make the figure easier to understand.)

The figure illustrates the specific case of flattening in the "up, forward, right" direction. This is done by pushing the red circle backward and upward, the green circle to the left, and then "arranging" the result, without any other topologically significant modifications.

In this case, we obtain a particular flattening of the Borromean knot: an RSI-D.



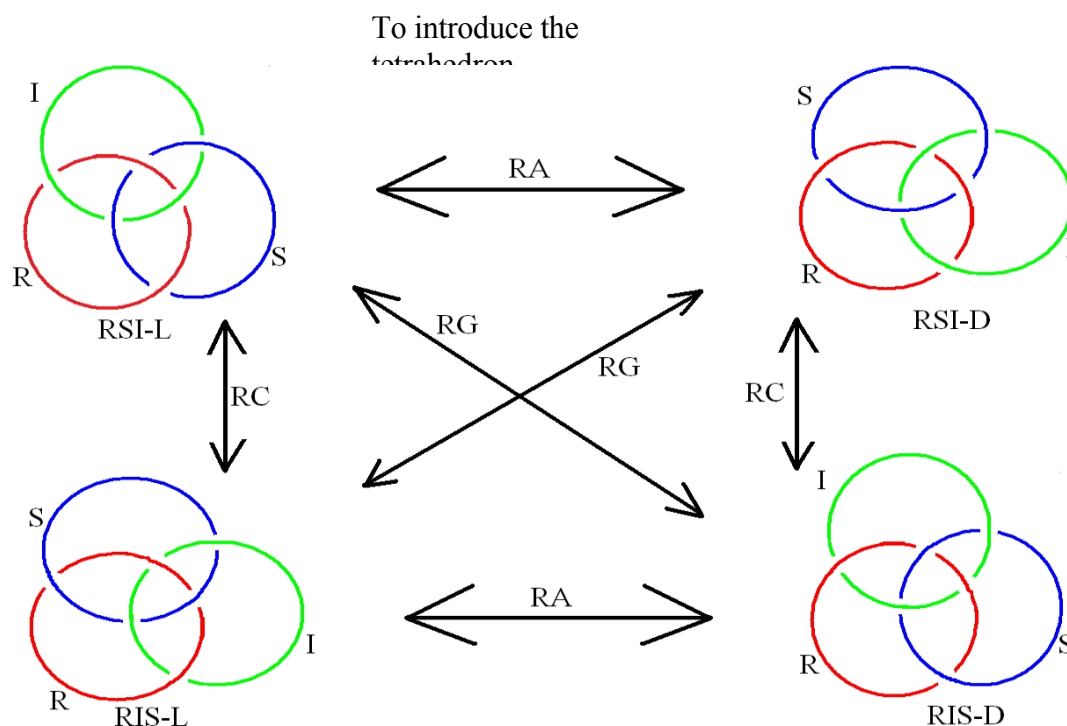
Le noeud de droite est la mise à plat selon le quadrant "en haut à droite en avant" : on déplace le rond rouge vers le haut, et le vert vers la gauche.
La mise à plat obtenue est dextrogyre.

Why RSI-D?

- On the one hand, because the red circle (R) is above the blue circle (S), which is itself above the green circle (I), hence RSI.
- On the other hand, because when we follow this order of circles defined by "x above y above z" in the plane, we turn clockwise, hence the D.

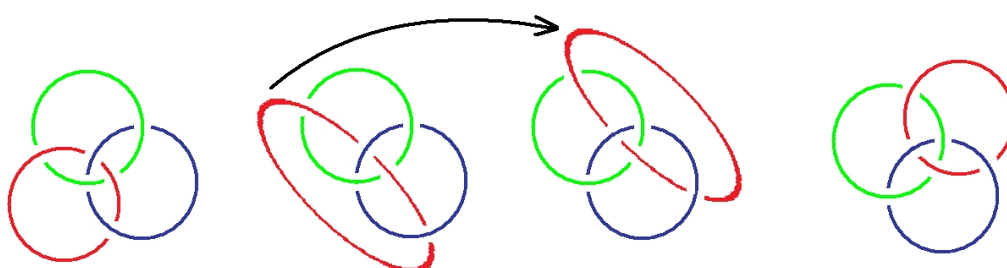
It should be noted that what Lacan calls the gyration (L or D) of the knot, and what we call here the "order" (RSI or RIS) of the knot, are two independent characteristics, each of which can be modified without changing the other.

It follows that there are a total of four distinct flattenings of the colored Borromean knot, which are shown in the following figure:

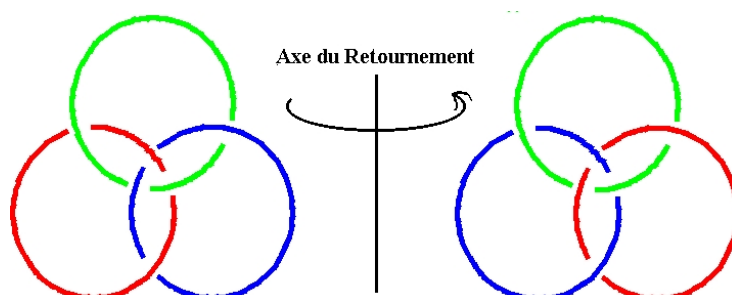


The transformations that allow us to move from one flattening to another are:

- on the one hand, the "ring reversal" (or folding) (RA), which reverses the gyration but not the order: here, the left knot is dextrorotatory and the right knot is levorotatory, both being RIS.

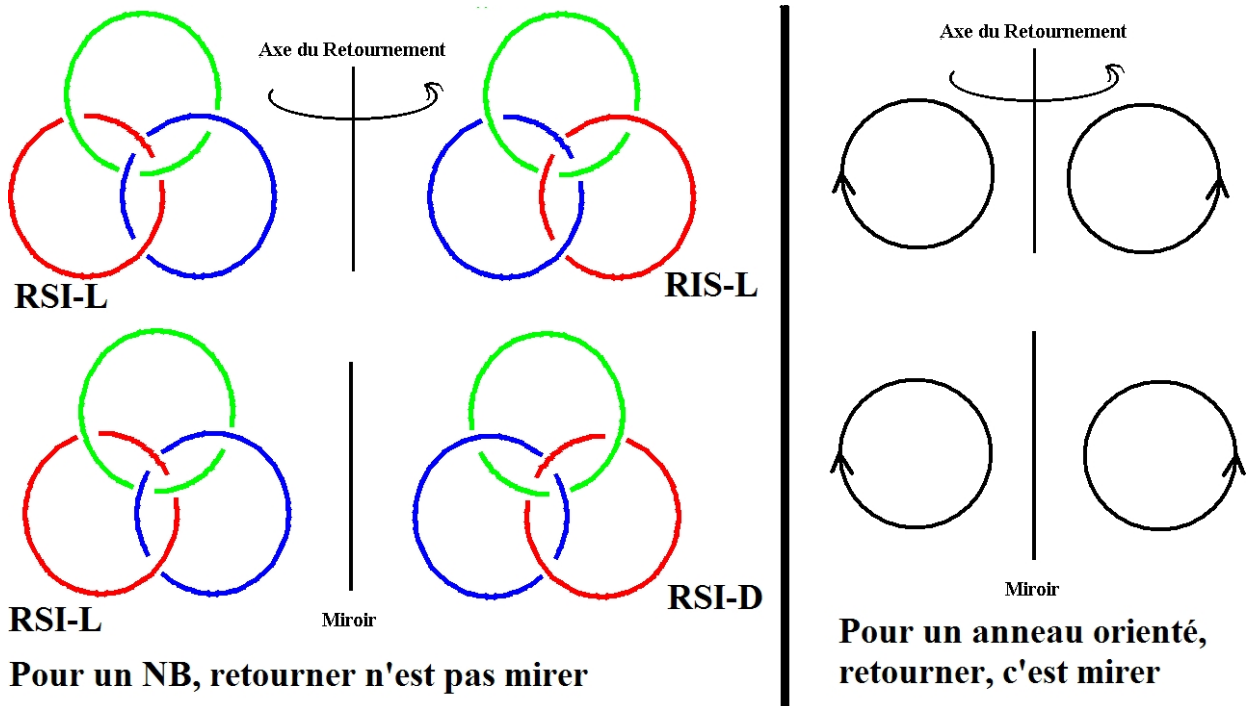


- On the other hand, the "crepe" reversal (RC), which reverses the order but not the gyration: here, the left knot is RSI, the right knot is RIS, both being levorotatory.



This last transformation is surprising in that the reversal of an oriented ring (the face of a watch, for example) has accustomed us to thinking that the reversal of an oriented object gives the same result as the reflection of that object in a mirror: a reversal of the direction of rotation. However, this is not the case for a Borromean knot laid flat: turning it over does not reverse its gyration but its order, unlike what results from its reflection in a mirror. This, it seems to me, is one of the reasons that allows us, following Lacan, to describe the Borromean knot as real writing. This is illustrated in the figure below.

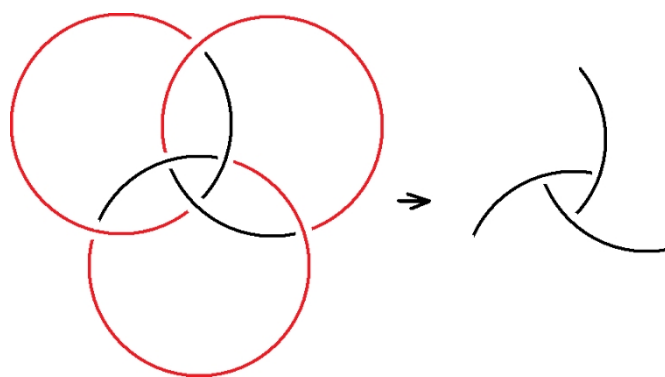
To introduce the tetrahedron



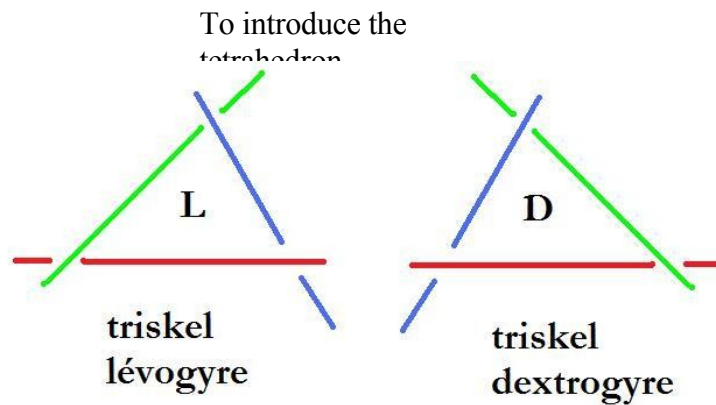
- A third transformation, combining the previous two, which we have called "global reversal," will not be discussed here.

The three transformations above, completed by identity, form a Klein group.

Let us return to the gyrie: until now, what we have called a gyrie characterized a flattened Borromean knot, but in fact all the information about the gyrie of a Borromean knot is contained in the central triskel, as shown in the figure below.

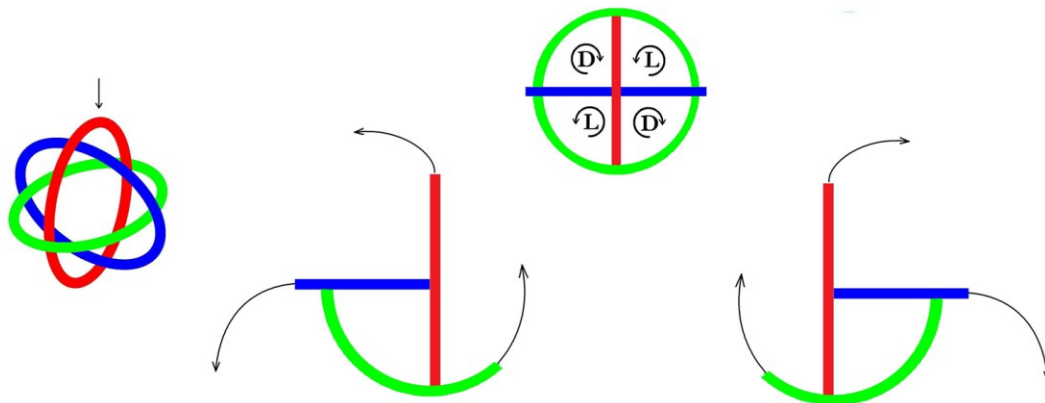


We can therefore distinguish between levorotatory and dextrorotatory triskels, independently of the knot to which they belong.

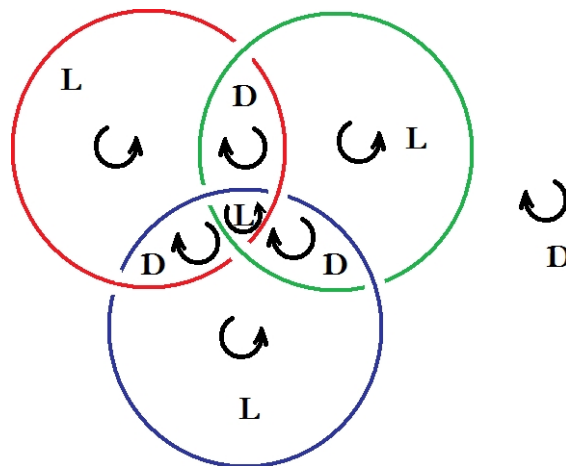


To determine the gyration of a triskelion, simply trace any of its sides "upwards," i.e., from the end that is "below" to the end that is "above." If the inside of the triskelion is on the left, the triskelion is levorotatory.

If we return to our Borromean knot at the beginning in space (whether it is RSI or RIS is irrelevant here), we can now assign a gyre to each of the triskeles visible from any point of view. Thus, if we observe the knot in the figure below from above (arrow), we will see four triskels in the foreground, whose gyries are indicated in the figure, with an explanatory enlargement for the two lower triskels.

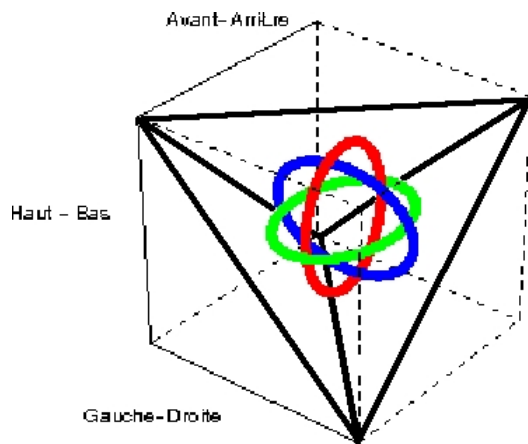


The gyries of all eight triskels of the node can easily be completed in space. They are alternately L or D. This can also be represented on any flattened version of the knot: each of the eight triskels has its own gyration, inverse to its three neighbors, as illustrated in the figure below, where we can see that the "outside" of the knot is a triskel in its own right, like the others.

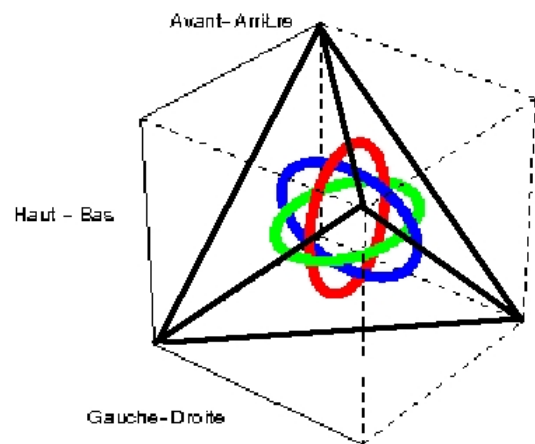


To introduce the tetrahedron

These considerations led Lacan to introduce the two tetrahedrons associated with the Borromean knot: there is the tetrahedron of left-handed triskels and that of right-handed triskels, as shown in the figure below.

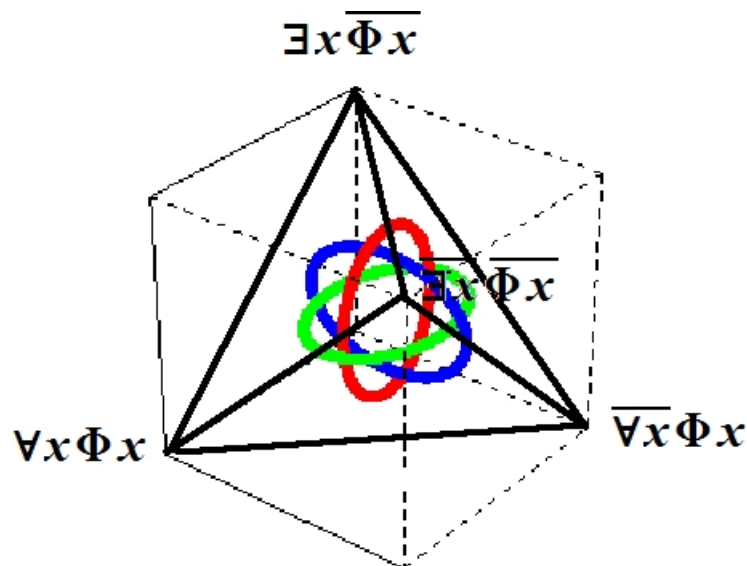


Le tétraèdre des lévogyres



Le tétraèdre des dextrogyres

Thus, 4 emerges quite naturally from the 3 of the Node, without any recourse to natural numbers and their sequence. We do not have $4 = 3+1$, but rather $4 = 23/2$. It is on this 4, the 4 vertices of either of the two tetrahedrons, that Lacan projects the 4 formulas of sexuation, as indicated below.



It should be emphasized here that Lacan gives us no indication as to what would specify

- on which tetrahedron the four formulas should be placed,
- or on which vertex each of the four formulas should be placed.

The above example is therefore one possibility among many that we have chosen arbitrarily. It is not impossible that introducing an orientation for each of the consistencies (a problem

To introduce the
tetrahedron
raised by Lacan in the same chapter, a little earlier) could remove this indeterminacy. But he does not say so anywhere.

What is certain, however, is that to move from one peak to another, two different ring reversals (RA) and two distinct folds are necessary if we consider a flattening (see above the figure of the Klein group of transformations of the four possible flattenings).

None of the dichotomies identified during our journey (left-right, RSI-RIS, left-hand tetrahedron-right-hand tetrahedron) were retained by Lacan to specify what could be considered a feminine or masculine position. It is no longer possible to identify a right side or a left side of the table. A simple circulation between four formulas on the six edges of a tetrahedron.