NOTES ON SESSION 13, XIV

$$\frac{a}{1} = \frac{1}{1 + a}$$

Figure 1

Namely, what constitutes the true *mean and extreme ratio*, which is not simply the relation of one segment to another, in so far as it can be defined in two ways, in a way that is internal or external to their conjunction, but the relation which posits, at the start, the equality of the relation of the smaller to the larger - the equality, I am saying, of this relation - to the relation of the larger to the sum of the two.

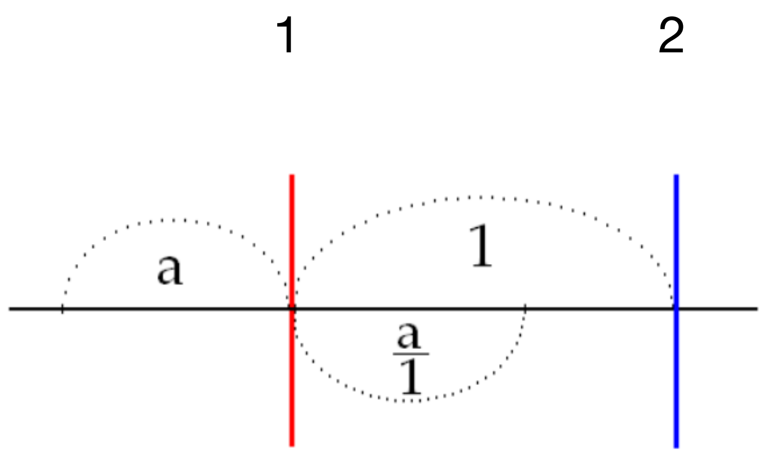

Figure 2

On the single condition of giving to its correspondent, that you see here, from this point to this point (I do not want to give names of letters to these points in order not to risk confusion, in order not to make your ears spin when they are stated) I designate from here (1 [red line]) to here (2 [blue line]), we have the value 1.

$$\frac{a}{1} = \frac{1}{1+a}$$

Figure 3

On condition of giving this value 1 to this segment, we can be content, in what we are dealing with, namely, the relation described as that of the mean and extreme ratio, to give it purely and simply the value *o*, which means, on this occasion *o*/*1*. We have posited that the relation *o*/*1* is the same as the relation of *1*/*1*+*o*.

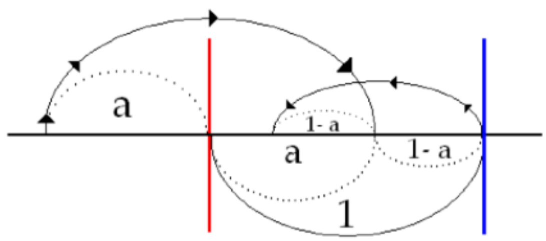

Figure 4

For the remainder, which is here, which is obviously *1-o*, we will proceed in the same way. We will reduce it within the larger one. And so on to infinity, I mean, without ever being able to arrive at the end of this process. It is in this that there consists precisely the incommensurability of a relation that is nevertheless so simple.

$$1 + a = \frac{1}{a}$$

$$a = \frac{1}{1 + a}$$

Figure 5

Let us see now some of the remarkable properties of this *small o*. I wrote them in black on the left. You can see already that the fact that *1+o* is equal to the inverse of *o*, namely, to *1/o*, was already sufficiently guaranteed in the premises given by the definition of this relation. Because the notion that it consists in the relation of the smaller to the greater, in so far as equal to that of the greater to the sum, already gives us this formula, which is the same as this fundamental one:

$$1/2+a = a = 1/1+a$$

Figure 6

And, on the other hand, that *two plus small o* which is here, and you can see - from the simple consideration of *one plus small o over one minus o* - how this *two minus small o* can be easily deduced. Which represents the following. Namely, what happens, when instead of involuting onto itself the reduction of segments, one develops them on the contrary towards the outside. Namely, that the *one over 2 plus small o* – namely, what corresponded earlier to our external segment in the anharmonic relation (it is equal to *one*, being obtained by the outside development of the *one* that the greater length represents) - the *one over two o* has the same value as this initial value that we started from, namely, *small o,* namely, *one over one plus o*.