

Mathematical Socratic dialogue in Helsinki report for SFCP

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by

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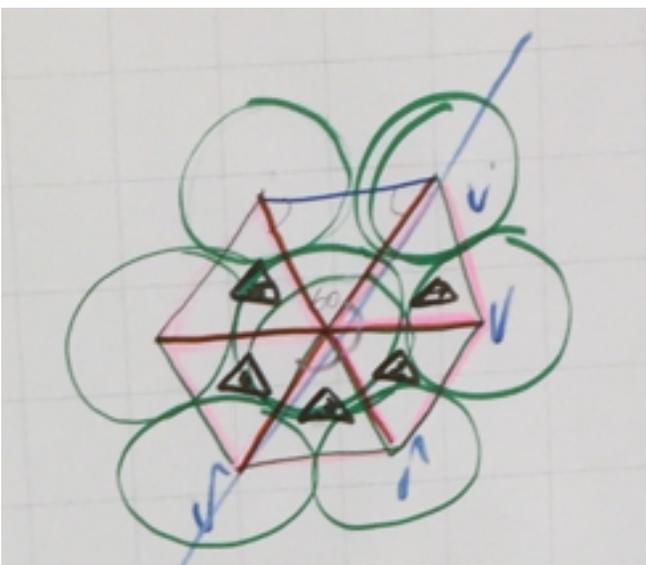
What would be a better way to spend a weekend than investigating circles around a circle? That was the topic of the mathematical Socratic dialogue in Helsinki 27.-29.5. The dialogue was organized together with British SFCP and Finnish FIVE. We had an experienced facilitator Ralf Brocker supporting us and Dieter Krohn offering assistance.

We were six participants altogether and we all were participating mathematical SD for the first time, although five of us had previous experience of SDs on different topics. We all had a background in the field of education or philosophical practices of some sort. In the introduction round we shared our experiences and background in mathematics. For most of us mathematics was something you had learned in school and then forgotten or then it was present in the current life f. ex. as numbers in the budget. However, one of us was a grammar teacher in mathematics and he turned out to be our guiding light!

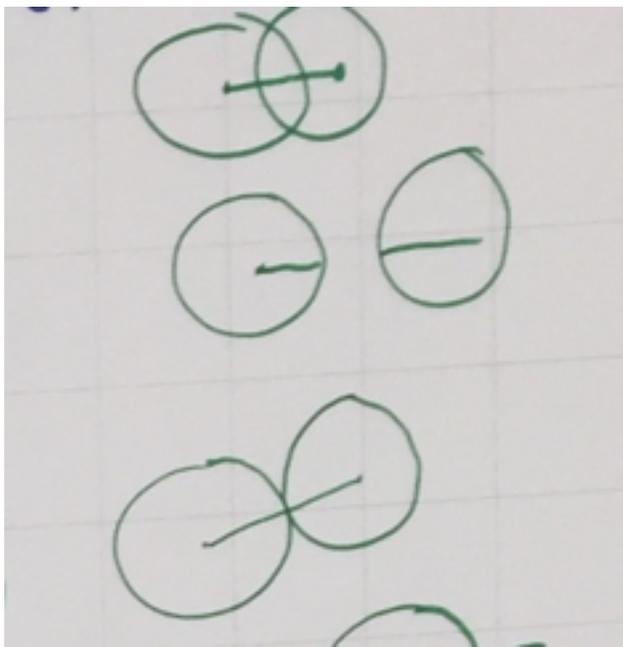
This is how we wrote down our mathematical task based on Ralf's demonstration:

Place one circle in the middle. Place another circle of the same size to touch the original circle in one point. Then take a third circle of the same size and place it so that it touches both the original and the second circle in one point of each. Repeat this in the same manner for the fourth, fifth and sixth circle of the same size. Place the seventh circle of the same size as the third, fourth, fifth and the sixth. Question: Does the seventh circle touch the second circle in one point?

The picture below shows the original task and some of the following steps we took in the dialogue:



The demonstration left us puzzled. It seemed so obvious that the seventh circle would fit just perfectly to the space left for it around the original circle, but on what grounds? How would we justify our assumption “that the seventh circle of the same size touches the second circle in one point”? However, the situation between the seventh and the second circle could be any of the three presented in the picture below:



At the end of the dialogue, we shared what was on our mind after the dialogue. As I understood it, everyone had learned something during our Socratic weekend together. Some had learned more by listening to others and some by taking a more active role in suggesting ways to proceed. These different ways to participate were partly due to the different levels in mathematical understanding we had. This difference was experienced both as supporting and hindering learning. The participant who was a math teacher had a wonderfully Socratic way of explaining the problems we investigated, and he really helped us to deepen our understanding. On the other hand, his guiding role was also experienced as narrowing down the possibilities for others to find out their own solutions to the problems.

Altogether, the dialogue offered a place for slowing things down and carefully investigating the question together face to face. Hence the dialogue was a refreshing change after the isolated everyday life during the COVID. The dialogue also managed to rekindle my interest in mathematics. Even I could learn to understand it!