# TOPOLOGICAL GAMES

They are games in which you have to loosen two joined pieces by means of hoops or knots, to undo a crossing... In most of these games, to get what we try, it seems, at first sight, as if we should do something impossible, like passing an object through a hole smaller than it is. For that reason, the game *apparently* does not have a solution.

Of course, it is possible to find the solution of the proposed tasks, but to achieve it we have to go beyond what it seems more direct at first sight. An example near you will be very helpful. Imagine that you must take out the shirt you are wearing under your jersey, but you want to keep your jersey on. The first thing you will think of, surely, will be to take your jersey out, then your shirt and, finally, to put your jersey on again. But, would you be able to take your shirt out without taking out your jersey? Of course you would. You only must consider one thing: it cannot be your arms the ones that move for 'leaving' your shirt (the jersey is going to hamper your movements), but it must be the shirt the one that moves in a suitable way to leave your body. Possibly you have already done it in any occasion. If not, I encourage you to try it if you can.

In a very simple way, although enigmatic, the principle that governs these problems could be stated this way:

> **.... If the mountain won't come to Mohamed**
>
> **.... Mohamed will go to the mountain.**

When you face one of these problems, almost with complete certainty you will have worked it out as soon as you are able to interpret this statement in the particular situation that appears to you: **Who is Mohamed**? **And the mountain**? Which is the obstacle that hinders the mountain to come to Mohammed? The obstacle does not allow the mountain to come to Mohammed, but can Mohammed go to the mountain?

Before setting you some problems we are going to analyze an example that will surely clarify things to you. We want to loosen two P letters that

1-SO-E-4,5