Statistical physics has, since the second half of the last century, been established as a tool for the study of the diffusion of cultural traits [12][33]. The way opinions, traditions, values and symbols cross borders, influence each other and compete for

survival can be seen as part of a bigger picture, the behaviour of information.

The analysis of minimal models with statistical physics is used to understand the universal characteristics of any given phenomenon that spawns from the interaction of a large number of parts. Specifically, in the realm of classical physics, these analyses have shed light on the rules of a class of phenomena whose behaviour is similar to that of thermodynamic gases, whose phase depends on the value of some parameter [24].

The study of these phase transitions has revealed that the behaviour of these systems, when approaching the transition, is described by power laws with the same exponents that depend on a structural property of the system’s (for example the number of dimensions) [19]. The properties of gasses and magnets may seem to have nothing in common with the spreading of an opinion, or the polarisation of the population on some particular vote, but if we describe them in terms of the minimal system, i.e. a system with only the rules necessary to produce the most basic of its behaviours, they become mathematically comparable.

One of the main differences we see between classical physics and social studies is the fact that physical phenomena seem to have no memory of their past. For example a particle with a certain position and speed will follow a certain trajectory, no

matter how it came to have those specific properties. However, the theory of statistical physics has investigated the interaction of minimal models with disorder and the way disorder modifies their basic behaviour is such that it is no longer easy to

identify their equilibrium state, indeed there may be more than one. This frustration of the system means the it acquires a memory of how it came to be what it is [29], thus history acquires a role in the system’s future.

In this work we take into consideration one of these minimal models in the field of linguistics, the Naming Game. This model is an attempt to describe the birth of effective communication between previously non-communicating individuals.

Using this model it is possible to understand the minimal requirements a system must have in order to negotiate an effective convention on the symbols the individuals must associate with their meaning in order to communicate [35]. In this work we focus on the introduction into this model of disorder, investigating the properties of the simple rules of the model when interactin with a complex and unevenenvironment. Specifically we focus on the effects of the topographic features of the Italian territory on the dynamics of language, through the introduction of physical barriers.