

1096-G1-2034 **Ruggero Ferro*** (ruggero.ferro@univr.it), via Gabelli 57, 35121 Padova, PD, Italy. *No surprise for the effectiveness of mathematics in the natural sciences.*

There are views of mathematics for which it is obvious that pure and abstract mathematics has to be efficient in application. I claim that mathematics is a human attempt to tame the complication of multiplicity. Complication is the main limit to understanding. Thus we abstract, from the available data, those that we deem relevant. We also idealize (introducing aspects not present in the data) and generalize. These three mental operations lead us to build, on experienced data, a sufficiently manageable model of the situation (reality) differing from the situation analyzed, but approximating it well enough, even though introducing complexity. This is true not only of mathematics, but also of physics and of each of the other natural sciences: they develop theories describing models. Since models may become very complex, ingenuity is needed to understand them, making models object of scrutiny, comparisons and evaluations. It should be no surprise that advanced mathematical results are useful, because, since the beginning, they were meant to tame the complication of multiplicity, possibly even the kind of multiplicity present in a specific application. The presentation will try to justify the claims proposed and to answer more directly to the theme of this meeting. (Received September 17, 2013)