Grothendieck's contribution to K-theory and some consequences for the ontology of mathematics

K-theory started as a discipline in topology through the work of Sir Michael Atiyah and Friedrich Hirzebruch. Their work is based on contributions of Alexander Grothendieck who introduced the first K-group. The K-group is introduced in connection with a generalisation of the theorem of Riemann-Roch. I sketch part of this story and present some details on why and how Grothendieck defined the K-group. One aim of the talk is to illustrate how objects are introduced in mathematical practice. I intend to compare this picture with the anti-realist position fictionalism that holds that mathematical objects are introduced, or postulated, by human beings. I will argue that, even though there seem to be likenesses between mathematics and fiction, when one scratches the surface there are fundamental differences between the two. I emphasise that the way mathematical objects are introduced is quite different and point to the multifaceted role that relations and interconnections play in this regard.