The nature of understanding has attracted growing interest in both epistemology and philosophy of science. While in the latter, the focal point of the debate is the relationship between (scientific) understanding and explanation, in epistemology, it is the relationship between understanding and knowledge. In my talk, I will be primarily concerned with the former. My conclusion that scientific understanding may come apart from explanation, however, will also essentially depend on premises drawn from the latter. I will proceed as follows: After disambiguating the term understanding and restricting myself to its use in relation to a why-locution (henceforth: understanding-why), I will briefly argue that arguments which seek to identify understanding-why with having an explanation are flawed because of unduly oversimplification. I will then present Michael Strevens' much improved and influential "the simple view", according to which understanding-why P is defined in terms of grasping a correct explanation of P. Importantly, Strevens thinks that "there is no understanding without explanation". Lipton and Wilkenfeld have argued on different grounds argued against this claim. While admittedly ingenious, I will argue that their objections are ultimately not successful. I shall propose a different, more promising route to dissociate understanding why-P from explanation, which becomes apparent once we take on board a number of plausible epistemological considerations.