The Society of Jesus, more than any other order missionizing in the New World, put a special value upon learning the indigenous languages, and if Jesuits wrote grammars of them, they were often quite perceptive and rigorous. Furthermore, Jesuits with non-Spanish language backgrounds brought a variety of analytical skills with them. Although it has been claimed that the education of Jesuits was so international that their native language background would have mattered little (Zwartjes 2010), I will argue that native language background and nationality mattered to some extent. Illustrations will be provided from the Chacoan languages Abipon as described by the Austrian Dobrizhoffer (1782), and Lule, as described by the Sardinian Machoni (1732). For example, while most authors, regardless of what language they were native speakers of, did their best to write indigenous languages with orthographic systems based on Spanish, they sometimes implicitly used conventions from other languages. So Machoni (1732) uses, in a few Lule words, the digraph <sc> with an Italian value of [ʃ]. Analytical shortcomings include the non-recognition of important morphological categories, when these did not exist in any other languages the Jesuit was familiar with. A striking example is Machoni’s non-recognition of instrumental prefixes in Lule verbs, which were recognized only in the nineteenth century. This non-recognition is probably not due to the lack of such prefixes in grammars of European languages, but rather because other indigenous languages Machoni might have been familiar with do not have anything comparable. A few comparisons with early work by other religious orders in Latin America will also be made.