Debugging is a very time-consuming activity for programmers. Although the number of proposed debugging tools is large, the number of tools that are actually adopted by practitioners and used during development of software is less than one may expect. Many believe that one reason for the situation is that it is hard to estimate whether the implementation efforts of proposed debugging tools or approaches are worth the gain.

The first goal of this thesis is to propose a methodology for the evaluation of usefulness of debugging tools. To provide an exemplary usage of the methodology, a study of usefulness of typical debugging tools for development of operating systems is conducted. Secondly, the thesis also explores and documents further aspects of how programmers debug software.