

# The Art of the Metaobject Protocol

*By Gregor Kiczales, Jim des Rivieres, Daniel G. Bobrow*

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The CLOS metaobject protocol is an elegant, high-performance extension to the CommonLisp Object System. The authors, who developed the metaobject protocol and who were among the group that developed CLOS, introduce this new approach to programming language design, describe its evolution and design principles, and present a formal specification of a metaobject protocol for CLOS.

Kiczales, des Rivières, and Bobrow show that the "art of metaobject protocol design" lies in creating a synthetic combination of object-oriented and reflective techniques that can be applied under existing software engineering considerations to yield a new approach to programming language design that meets a broad set of design criteria.

One of the major benefits of including the metaobject protocol in programming languages is that it allows users to adjust the language to better suit their needs. Metaobject protocols also disprove the adage that adding more flexibility to a programming language reduces its performance. In presenting the principles of metaobject protocols, the authors work with actual code for a simplified implementation of CLOS and its metaobject protocol, providing an opportunity for the reader to gain hands-on experience with the design process. They also include a number of exercises that address important concerns and open issues.

Gregor Kiczales and Jim des Rivières, are Members of the Research Staff, and Daniel Bobrow is a Research Fellow, in the System Sciences Laboratory at Xerox Palo Alto Research Center.

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## **Editorial Review**

### **Amazon.com Review**

This book details the meta-object protocol, the framework on which the Common Lisp object system (CLOS) is based. The philosophy behind the meta-object protocol is that different applications may require different kinds of object models, and so the object model itself should be subject to program control. *The Art of the Meta-Object Protocol* provides a wonderful working example of how Lisp can be extended and how it can evolve to incorporate new language constructs. First, the book describes how CLOS is actually implemented by working through a subset. Then it goes on to develop the meta- object protocol in great detail. *The Art of the Meta-Object Protocol* is useful for the advanced CLOS user as well as for anyone interested in object-oriented programming and language design.

### **From the Back Cover**

This book presents a new approach to programming language design, which resolves fundamental tensions between elegance and efficiency.

### **About the Author**

Gregor Kiczales is a Member of the Research Staff in the System Sciences Laboratory at Xerox Palo Alto Research Center.

Daniel G. Bobrow is a Research Fellow in the Intelligent Systems Laboratory, Xerox Palo Alto Research Center, editor-in-chief of the Journal of Artificial Intelligence, and Chair of the Governing Board of the Cognitive Science Society.

Jim des Rivières is a Member of the Research Staff in the System Sciences Laboratory at Xerox Palo Alto Research Center.

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#### **Janet Magnuson:**

The actual book The Art of the Metaobject Protocol will bring someone to the new experience of reading a book. The author style to clarify the idea is very unique. In the event you try to find new book to read, this book very ideal to you. The book The Art of the Metaobject Protocol is much recommended to you to see. You can also get the e-book in the official web site, so you can easier to read the book.

**Sergio Espinoza:**

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**Joe Dix:**

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