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978-0-521-64818-9 - The Patterns Handbook: Techniques, Strategies, and Applications

Collected and Introduced by Linda Rising

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# **The Patterns Handbook: Techniques, Strategies, and Applications**

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COLLECTED AND INTRODUCED BY  
LINDA RISING



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32 Avenue of the Americas, New York NY 10013-2473, USA

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Information on this title: [www.cambridge.org/9780521648189](http://www.cambridge.org/9780521648189)

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First published in 1998

*A catalogue record for this publication is available from the British Library*

ISBN 978-0-521-64818-9 Paperback

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Design and composition by Barbara Crawford

Cover design by Mark Needleman

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*For all the patterns fans at AG Communication Systems.  
This is your story.*

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## About the Editor

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Linda Rising ([risingl@agcs.com](mailto:risingl@agcs.com)) is a member of the Technical Resource Center at AG Communication Systems. She has a Ph.D. from Arizona State University in the area of object-based design metrics. Her background includes university teaching experience as well as work in industry in the areas of telecommunications, avionics, and strategic weapons systems. She has been working with object technologies since 1983. Some of her publications including “A Training Experience with Patterns” in the October 1996 issue of Communications of the ACM, “Patterns: Spreading the Word” in the December 1996 issue of *Object Magazine*, and “The Road, Christopher Alexander, and Good Software Design” in the March 1997 issue of *Object Magazine*.

Linda and her husband, Karl Rehmer, are avid cyclists. They commute to work (a 20-mile round trip), even in temperatures of 100+ degrees. Linda is the director of the Utopia Road Recorder Consort, a group of software-developer Renaissance wannabes who gather to sing and play just for fun and to perform at AG Communication Systems a couple of times a year.

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## Foreword

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As someone prone to choosing cute titles (which my editors never allow), I would have called this book “The Patterns Storybook.”

Everybody loves a story. Bob Hanmer notes that good patterns are like a story: they engage the reader’s interest early or they develop intrigue and conflict through their forces and catharsis in their solution, and they echo the relaxed discussion of the postproduction coffeehouse discussion in their rationales and in the resulting context sections. Of course, not all stories are patterns, but that makes them no less powerful as sources of wisdom. And there are many stories to be told about the pattern community: stories about its history and even stories about its dark side. This is a book of those stories, stories that were in the form of conference papers, journal articles, essays, book chapters, patterns, and all the other forms that engineers and scientists use to disguise the stories they write. This collection weaves several story lines together. It is, at one level, the story of one organization’s quest or, really, of its multiple quests, for patterns. The storyteller, Linda Rising, is a big-picture person in that organization. She tells how the organization—AGCS—both had to grow into the pattern community and then grow *with* the pattern community. The story has replayed itself in several companies and in several cultures, which all have wrestled with the pattern value system. If you’ve lived such a story, you’ll find comfort and perhaps will learn something in this telling.

In his book *Haroun and the Sea of Stories*,<sup>1</sup> Salman Rushdie paints a beautiful image of stories that intertwine like multicolored streams of water from a common spring. The AGCS story in this book intertwines with many stories from outside AGCS, stories that influenced the work and direction inside the company. Some of these stories bear retelling; among these are the seeds of the folklore and the classics of a community or culture. Many of the chapters that follow are like that: they have appeared before, perhaps to a different audience, or perhaps in a different age, as judged by the time scales of rapidly evolving technology. Some among them are frequently cited today; others should be.

Just as these stories challenged, guided, and intrigued the AGCS folks on their journey, they remain good prods for introspection today. That, I

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think, is the major value of this volume. Read about others' perspectives and contrast them with your own. You won't agree with everything that appears on the pages that follow. The authors don't agree with each other on everything. But they share a dialogue, a thought process, and an evasive but discernible set of values and principles that define the pattern community. By reading their works, you will gain new insights into this dialogue, these processes, and these values, regardless of your level of experience with patterns. And the dissonance between the diverse views will resonate anew through you, the reader, in the forums you participate in.

There are fresh stories, too, many of them less than a year old at this writing. Some are hot-off-the-press pattern stories, some are new distillations and tutorials for readers who are pattern novices. And among both the old and the new stories are detailed accounts of pattern history and application. These stories offer practical food for thought for the practitioner or manager wondering how patterns would, could, or should play out in your own enterprise.

Of course, there are patterns here, too—groupings that form little stories in their own right. This is the stuff of patterns, the living literature of our disciplines. As living literature, I wish these pages were in a loose-leaf section. Polish your introspection again; think how you would contribute your experiences to the pattern, how you would have the authors improve the pattern, how you would adapt the pattern to your situation. You might even write the authors with your suggestions and become part of the community of colleagues supporting each other by sharing important design knowledge across our disciplines.

George Platts attends most of the PLoP conferences (the main pattern conference series) as a Lateral Thinking Coordinator. He muses that PLoP isn't really about patterns, it's about people. This book is, too. It reflects the thoughts of more contributors than I can easily count, and distills the expert knowledge of thousands more. It tells their stories. After you're done with this book, think what you're going to do with the results of your own introspection and where you fit into this large network of people. I'll be looking for your patterns and for your stories about how you found, refined, shared, and used them.

—JAMES COPLIEN

## REFERENCE

1. Rushdie, Salman. *Haroun and the Sea of Stories*. New York: Viking Penguin, 1991.

# Preface

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You are about to read an extraordinary book. It is extraordinary because it is a collection of stories by a group of people who work for the same company and share not only their place of employment, but a focused interest in patterns. If you don't know much about patterns, this is a good place to begin. If you're an experienced patterns person, I hope you'll find some new information and insight that will increase your understanding and appreciation of this exciting new technology.

This is a book you will enjoy if you are a developer looking for a basic understanding of patterns and pointers to more detailed knowledge. This book will also be useful if you are in a managerial role. There is information on process and organizational patterns that you will find useful. Finally, there are suggestions for those of you who do technical training, to help you in your vital role in bringing patterns to an organization.

The book comprises three parts. The first two parts contain work by AG Communication Systems authors. Part One contains a collection of articles that provide an introduction to patterns. In Part Two, there are articles that describe our patterns experiences. Part Three is a collection of articles that function as resources. The appendixes consist of an annotated bibliography and a list of useful Web sites for more information.

This book combines resources not found anywhere else. It is not only an organizational success story, but it also provides you with the means to begin your own journey to patterns accomplishments! How can I be so sure that what worked for us will work for you? I guess my feeling is that success, like patterns themselves, is infectious. There's nothing more interesting to members in a corporate setting than stories of what others are doing to improve their business. I've found two interesting references that have helped me understand this. The first is *Tell Me a Story* by Roger Schank,<sup>1</sup> which describes how we learn from each other by sharing stories. I'll tell you more about this intriguing book in an article on writing patterns in Part Two. *Managing by Storying Around: A New Method of Leadership*<sup>2</sup> is a collection

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of stories by David Armstrong, the fourth generation of his family to lead Armstrong International. These two books don't talk about patterns—not directly—but they reinforce the underlying theme of this collection of stories; the effectiveness of shared experience.

Let me introduce you to our company. AG Communication Systems is based in Phoenix, Arizona, my home. The company is a joint venture of Lucent Technologies and GTE and is a leading developer and manufacturer of advanced telecommunications products and services, including switching, intelligent network, access, and wireless products. The company's core product, the GTD-5 digital central-office switching system, has an installed base of more than 17 million lines serving business, government, and industry, as well as residential subscribers serviced by the public telephone network. AG Communication Systems employs 2,000 people, about 700 of them in software development.

My role at this company is an unusual one. I'm the patterns "champion" or the self-proclaimed patterns "princess." I "do" patterns all day long! Sometimes I'll make a trip to another company to give a noontime presentation for a resident group of OO developers to help them answer the question, "What are patterns all about?" I see this book as something I would like to have had for all the trips I've made so far and will certainly use for all those I will make in the future. If I leave this book behind at another company, it will help "grow" the seeds I've planted and explain what we've been doing at AG Communication Systems. It's a handbook of our pattern adventures, complete with a collection of references.

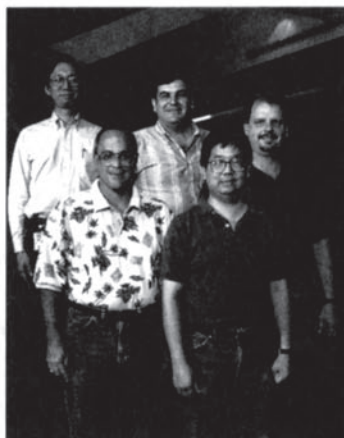
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1. Schank, R. C. (1990). *Tell Me A Story*. New York: Charles Scribner's Sons.
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 Back row, left to right:  
 Jim Kurth. Front row:  
 Ed Nuerenberg, Carl Gilmour



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 Counterclockwise from the  
 top: Ray Fu, Bob Nations,  
 Weldon Wong, Mike Sapcoe,  
 Bob Bianca.



SYSTEM TESTERS  
 Left to right: Jim Peterson,  
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VP AND COACHES  
 Top to bottom: Bill Curtis;  
 Charles Schulz, Vice-President;  
 Tom Snelten.



WRITERS  
 Back row, left to right:  
 Norm Janoff. Middle row:  
 Ben Richards, Paul Bramble.  
 Front Row: Linda Rising,  
 Roger Tomas.



WRITERS  
 Back row, left to right:  
 Bill Haney, Don Olson.  
 Middle row: Patty Genualdi,  
 David DeLano. Front row:  
 Russell Corfman,  
 Mike Duell

# Acknowledgments

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This book has been one of the most exciting challenges of my long and mostly happy life. I want to thank Bill Curtis, my first “coach” at AG, who recognized something special about patterns and started this incredible happening. Thanks to my current coach, Tom Snelten, for his encouragement and support. Thanks to Alan Brown, Jodi Carr, and George Jester for releasing me from important quality duties so I could put the final touches on the writing. Thanks to Luci Crackau and Sue Bobbitt for their superb technical support. Special thanks to Charlie Schulz, our Vice President of Product Development. Charlie has been a believer in patterns from the start. It is his leadership that has enabled all this to become a reality. Finally, thanks to all my colleagues at AG Communication Systems. Some of them have contributed directly to this book but many more just provided encouragement, an essential ingredient for any undertaking. It is the open-hearted, open-minded approach that is the watchword of the people I work with every day that has made this the most successful, the most enjoyable work I have ever undertaken.

Thanks to all the good folks at SIGS, especially Don Jackson. Though he is no longer at SIGS, this book began as a gleam in his eye. He cheered me on every step of the way and held my hand, figuratively, when I wasn’t sure where I was going. Special thanks to Peter Arnold. I know this book would never have been completed without him.

Finally, thanks to my husband, Karl—patient, understanding, loving, the best friend this writer ever had!



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