

The Psychology of
Computer Programming
(Silver Anniversary Edition)

程序开发心理学



【美】Gerald M. Weinberg 著
韩江 陈玉 译

堪称软件领域开
山之作的本书由美国计算机名
人堂首批成员之一、美国软件界著名
思想家，Weinberg最初于1969年完成的，
40年过去了，本书受欢迎的程度却丝毫未减，
这在计算机程序开发这个日新月异，新技术、
新产品层出不穷的领域无疑是个惊人的奇迹！
此次翻译的是本书的《银周年纪念版》，即25周
周年纪念版。

中英文
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电子工业出版社
PUBLISHING HOUSE OF ELECTRONICS INDUSTRY
<http://www.phei.com.cn>

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TP311.52
W 616.2

电子工业出版社
Publishing House of Electronics Industry
北京•BEIJING

内 容 简 介

本书出自软件领域著名思想家,美国计算机名人堂首批成员之一的温伯格(Gerald M. Weinberg)之手。本书关注的是程序开发过程中人的因素,堪称这一领域的开山之作。本书的初稿完成于整整40年前,作者当时慧眼独具,前瞻性地提出了将程序开发作为一种人类行为来考察的观点。在书中,作者从人类行为、社会行为、个人行为等角度,分析了人在计算机程序开发过程中所表现出的行为及其影响,探讨了诸如什么样的程序员才是好的程序员、怎样才能打造出优秀的开发团队、我们在求职或招聘时做的那些智力测验是否真的有用,等等这类问题。作者的行文深入浅出,书中所举例子看似信手拈来,然而却发人深省,值得读者细细品读。几十年来,本书已让无数读者从中受益,时至今日仍然是畅销全球的经典之作。

适合阅读本书的,不仅仅是处在软件行业第一线的程序员;各个软件开发单位的团队领导、项目主管、高层管理人员,以及人力资源经理、文档撰写人员、程序开发工具的设计者、程序开发语言的设计者,甚至所有其工作与程序开发有关的人,都能从本书中得到启发。

Psychology of Computer Programming, Silver Anniversary Edition

Gerald M. Weinberg,

ISBN: 978-0-932633-42-2

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版权贸易合同登记号 图字: 01-2009-0869

图书在版编目(CIP)数据

程序开发心理学: 银周年纪念版 / (美) 温伯格 (Weinberg, G.M.) 著; 韩江, 陈玉译.

北京: 电子工业出版社, 2010.3

书名原文: The Psychology of Computer Programming (Silver Anniversary Edition)

ISBN 978-7-121-10433-6

I. 程… II. ①温… ②韩… ③陈… III. 软件开发—应用心理学 IV. TP311.52-05

中国版本图书馆 CIP 数据核字 (2010) 第 030416 号

责任编辑: 胡辛征

特约编辑: 顾慧芳

印 刷: 北京机工印刷厂

装 订: 三河市鹏成印业有限公司

出版发行: 电子工业出版社

北京市海淀区万寿路 173 信箱 邮编 100036

开 本: 720×1000 1/16 印张: 41.25 字数: 651 千字

印 次: 2010 年 3 月第 1 次印刷

定 价: 69.00 元

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译者序

能够有幸翻译 Weinberg（温伯格）的这部作品，对于我来说实在是荣幸之至。温伯格的大名自不必说，这位软件领域著名的思想家，美国计算机名人堂首批 5 位成员之一，在全球的计算机界都享有极高的声誉。他那独特的视角和高瞻远瞩的预见能力，使他的每部作品都熠熠生辉，不仅令无数读者折服，而且也使他拥有了大量的拥趸。众多忠实的“温伯格迷”们狂热地追逐着温伯格的每部作品，甚至还建立了专门的组织和网站，以交流学习的心得体会。自 20 世纪 70 年代以来，温伯格通过撰写大量的专著、开设培训班、举办研讨会，以及为企业和项目做咨询，已经影响了、且继续影响着一代又一代的程序员，并开辟了一个又一个全新的研究领域。

《程序开发心理学》就是这样一部开山之作。此次翻译的是本书的《银周年纪念版》，即 25 周年纪念版，不过从作者 1969 年在意大利休假时完成本书的初稿时算起，距今已经整整 40 年的时间。然而虽然过去了这么长的时间，本书受欢迎的程度却依然丝毫未减，在计算机程序开发这个日新月异，新技术、新产品层出不穷的领域，这无疑是个惊人的奇迹。而本书之所以成为一个奇迹，恰恰是由于温伯格独具慧眼，抓住了程序开发中普遍适用的规律性的东西，前瞻性地提出了将程序开发作为一种人类行为来考察的观点。在 40 年后的今天，我们已经超越了技术本身，将更多的注意力放在程序开发中人的因素方面，相关的著作也在书架上日渐增多。然而只要我们捧起此书，细细品读，就会愈发惊叹于温伯格早在 40 年前就已对我们今天仍然面对的诸多问题进行过深入的思考和探索，而他的真知灼见，时至今日仍然会让我们受益匪浅。

能从本书中受益的，绝不仅仅是处在软件行业第一线的程序员；各

个软件开发单位的团队领导、项目主管、高层管理人员，以及人力资源经理、文档撰写人员、程序开发工具的设计者、程序开发语言的设计者，甚至所有其工作与程序开发有关的人，都能从本书中得到启发。当然，为了从这个宝藏中能够有所收获，读者必须暂时忘却自己习惯于专注的技术细节，而是像作者那样做一个思考者，更多地思考诸如软件项目有多少不是因为技术、而是因为人的原因而失败，什么样的程序员才是好的程序员，怎样才能打造出优秀的开发团队，我们在求职或招聘时做的那些智力测验是否真的有用等等这类问题。思考得越多，经历越丰富，体会也就会越深。我们通过思考，不仅能更好地领会到作者的深意，更会给自己的职业生涯铺就通往更高层次的阶梯。

在翻译本书的过程中，我们一如既往地得到了博文视点各位编辑的鼎力支持和帮助。作为译者，最惶恐的莫过于不能完美地表达出作者的原意，而使一部伟大的作品受损。幸运的是，这次博文视点推出的是本书的中英文对照版，读者可以随时参考原文，以更真切地体会原作的妙处。当然，这也给了我们很大的压力，由于水平有限，如果有翻译不当之处，还请读者多多谅解。

关于本书的内容，这里不想赘言，还是把探索的乐趣留给读者自己吧。几十年来读者的溢美之辞已经说明：大师就是大师，经典就是经典。这本《程序开发心理学——银周年纪念版》值得我们每个人都将它摆在案头，时时翻阅。让我们静待10年后《金周年纪念版》出版的那一天吧。希望我们每个人，乃至整个中国软件行业，在这期间都能够取得长足的进步。

译者

2009年9月于北京

Preface to the Silver Anniversary Edition

The Psychology of Computer Programming is an astonishing book—astonishing in the sense that a person who lives to be one hundred twenty-five years old is astonishing. We are in a fast-changing business. No other first-edition computer book, as far as I know, has lived to be twenty-five years old—and still counting.

Even more astonishing to me is the fact that at the time I wrote it, I never imagined there was anything special going on. I had been writing code, leading groups of programmers, and training and consulting with programmers for about fifteen years. I thought of writing a novel about the computer programming business (which was then little known to the outside world), but I realized I wasn't a sufficiently skilled fiction writer to make anyone believe it. So, on an inspired eight-week vacation in Italy in 1969, I wrote the first draft of *The Psychology of Computer Programming*.

I had, by that time, written a couple of best-selling technical books on how to program various machines, but *Psychology* was a new venture for me. I had a hard time getting it published—something that hadn't happened with my previous books. McGraw-Hill, my publisher up to that time, got great comments from early reviewers of the manuscript, but said they didn't believe anybody would buy such a book. I offered it to Prentice-Hall, and they said, with reluctance, they would publish it—if I would agree to publish some of my money-making “technical” books with them. I decided I needed a publisher with a bit more

《银周年纪念版》前言

《程序开发心理学》是一本令人称奇的书——就像一位年逾 125 岁而仍健在的老人一样令人称奇。我们所从事的这一行业瞬息万变，据我所知，还没有其他任何一本计算机图书，能够在初次出版后长达 25 年内活力不减——而且依然在继续。

更让我感到惊讶的是，我在编写这本书的时候，居然从未意识到它会有什么不同寻常之处。在写此书之前的 15 年里，我一直在编写代码、领导程序员团队，以及向程序员提供培训和咨询。我曾想写一本关于程序开发行业的小说，这个行业在当时还鲜为人知。但我后来意识到，我还没有足够的技巧来成为一名小说作家，作品很难让人信服。这样，我在 1969 年到意大利休假的八周时间里，灵感涌动，于是就写下了这本《程序开发心理学》的初稿。

那时，我已经出版过几本关于如何为各种计算机编程的畅销的技术书籍，而《心理学》这本书对我来说是一次全新的探险。这本书的出版费了很大的周折——这些是我在此前出版的几本书时所不曾经历过的。出版我之前几本书的出版社 McGraw-Hill，虽然从本书手稿的几位审校那里得到了对这本书的高度评价，但他们却认为没有人会花钱买这样的书。于是我把书拿给了 Prentice-Hall，而他们很不情愿地说，如果我同意让他们出版我的一些赚钱的“技术类”书籍，他们就出版这本书。然而我觉得自己需要找一个更有热情的出版社，所以我将这本书同时给了另外 4

enthusiasm, so I offered it simultaneously to four other publishers. Since two years had elapsed, I decided I would go with the first acceptance. All four publishers accepted it, but the first was Van Nostrand Reinhold—and the book was finally published in 1971. Ironically, the day the book came out, my editor was fired, for “not understanding the computer publishing field.”

In spite of Van Nostrand's opinion of my editor's judgment, *Psychology* quickly became a best-seller among technical books, running through twenty printings and staying in print for more than twenty-five years. Van Nostrand eventually sold the rights to it and all their computer books to another large house—where it sat dormant, out of stock, for months. After what seemed an eternity of negotiation, I reacquired the rights, enabling Dorset House to publish this Silver Anniversary Edition.

I wanted to release a Silver Anniversary Edition for several reasons:

1. to make the original book available to a new generation of software people
2. to offer a historical perspective that is usually lacking in our young field
3. to take advantage of a once-in-a-lifetime opportunity—the chance to comment on an industry's development and to revisit what I thought might have been

I didn't undertake this new edition to update the field of software psychology. For one thing, Ben Shneiderman and others are doing a much better job of that than I could do. For another, as Ben once remarked, the book is really less about software *psychology* and more about software *anthropology*—two topics I've continued to develop in my subsequent books.

Most of all, I think, in reviewing the book and in writing my impressions, I wanted to pause and take stock of how far I and the software industry have come in twenty-five years. Though the first edition may not have been a turning point for the industry, it was a turning point for me. Since that time, I've written far less code and done little managing of groups. On the other hand, I've trained thousands of programmers and team leaders, and consulted on hundreds of software projects. I've done more code reviewing, designing, design reviewing, developing requirements, and reviewing requirements. And, I've especially spent a lot of time training would-be software managers and consulting with them. Yet part of me still wishes I could return to the simpler life of writing code, full time, and not dwell on these other issues. That's a common feeling in the industry, but few of us ever act upon it.

One thing I can see clearly now is that the first edition of *Psychology* was a prescription for my own studies, such as the study of teams, of leadership, of problem solving, and of problem defining. I've spent more than two decades filling in details of those topics that seemed both important and insufficiently under-

家出版社。由于已经耽误了 2 年，我决定谁先接受出版，就选同谁合作。最后这 4 家出版社都表示愿意出版，但第一家是 Van Nostrand Reinhold——1971 年，这本书终于出版了。具有讽刺意味的是，就在这本书面世的当天，负责此书的编辑却被解雇了，理由是“不理解计算机出版业”。

尽管 Van Nostrand 出版社对我这本书的编辑的判断力有如此的看法，但《心理学》这本书还是迅速成为了技术类书籍中的畅销书，前后共印刷了 20 次，在超过 25 年的时间内一直在印刷。后来 Van Nostrand 将这本书以及他们所有的计算机图书的版权都卖给了另一家大出版社——而这本书因为印刷中断，连续几个月缺货。在与这家出版社经过几乎是没有尽头的谈判之后，我重新获得了这本书的版权，并请 Dorset House 出版社来出版这本书的银周年纪念版。

我之所以要出版这本银周年纪念版，是出于以下几个原因：

1. 让新一代软件人能够读到这本书的原版；
2. 提供一个从历史的视角来审视这个年轻领域的机会；
3. 利用这一生只有一次的机会，对软件行业的发展做一个评述，并对我以前的想法做一次反思。

在这个新版本中，我并未对软件心理学方面进行更新。其中的一个原因是，Ben Shneiderman 和其他人在这方面做得比我强多了。另外一个原因是，正如 Ben 曾经评价的，这本书确实与其说是谈论软件心理学的，倒不如说是谈论软件人类学的——这两个主题在我后续撰写的书里都做了进一步的讨论。

最重要的是，我想通过重新审校这本书并记录我的想法，来停下脚看看这 25 年以来我和软件业已经走了多远。尽管本书第一版也许不能称之为这个行业的转折点，但它的确是我自己的一个转折点。从那时起，我便很少编写代码，很少做团队管理工作了。从另一方面来看，我却培训了成千上万的程序员和团队领导，并为几百个软件项目提供了咨询。我把更多的精力用于代码评审、设计方案、设计方案评审、了解需求和评审需求等工作。除此之外，我还特别倾注了大量时间来培训那些可能成为软件主管的人，并为他们提供咨询。然而，我有时仍然想回到以前那种全职程序员的简单生活中去，而不需要考虑这么多其他事务。这种想法在软件行业中很普遍，但是很少有人会这样做。

现在，我清楚地看到，这本《心理学》第一版实际上是我自己所做研究（例如对团队、领导能力、问题解决方法，以及问题定义等的研究）的一个路线图。这些主题非常重要，但又没有被很好地理解。我用了 20 多年的时间来丰富这些主题的细节内容。回顾那些我在《心理学》之后

stood. Looking at the books I've written since *Psychology*, I see that I was filling the "holes." Taking the books chronologically,

1973: *Structured Programming in PL/C, An Abecedarian*, was the outcome of an experiment in new ways of teaching programming and of writing programming texts.¹

1975: *An Introduction to General Systems Thinking* was a direct exploration of the thought processes that go into thinking about systems.² (This book is still in print after more than twenty years.)

1975: *Structured Programming*.³ Dennis Geller, Tom Plum, and I produced this award-winning structured programming film series, again exploring new ways of thinking about and teaching programming.

1976: *High-Level COBOL Programming* was produced in an attempt to transform the thinking of COBOL programmers into new patterns.⁴ It probably didn't work.

1977: *The Ethnotechnical Review Handbook*. Daniel Freedman and I self-published the first edition of this handbook, attempting to motivate and teach the reading of programs in all their stages of development. At the time, no commercial publisher wanted to handle the topic of technical reviews. (The latest edition of this book is still in print.⁵)

1977: *Humanized Input: Techniques for Reliable Keyed Input* was an early foray into human interface design.⁶

1979: *The Ethnotechnical Review Handbook* was revised to add the myriad things we were learning about reading and analyzing programs.

1979: *The Principles of Specification Design: Film Series and Workbook*, produced with Bob Marcus, represented our first crack at improving problem definition.⁷

¹ Gerald M. Weinberg, Norie Yasukawa Freedman, and Robert Marcus, *Structured Programming in PL/C: An Abecedarian* (New York: John Wiley & Sons, 1973).

² Gerald M. Weinberg, *An Introduction to General Systems Thinking* (New York: Wiley-Interscience, 1975).

³ Dennis P. Geller, Naomi Kleid, Thomas W-S. Plum, and Gerald M. Weinberg, *Structured Programming: A Film Series and Workbook* (Kansas City, Mo.: Edutronics Systems, 1975).

⁴ Gerald M. Weinberg et al., *High-Level COBOL Programming* (Cambridge, Mass.: Winthrop, 1977).

⁵ This book ultimately evolved into Daniel P. Freedman and Gerald M. Weinberg's *Handbook of Walkthroughs, Inspections, and Technical Reviews*, 3rd ed. (New York: Dorset House Publishing, 1990).

⁶ Tom Gilb and Gerald M. Weinberg, *Humanized Input: Techniques for Reliable Keyed Input* (Cambridge, Mass.: Winthrop, 1977).

⁷ Robert Marcus and Gerald M. Weinberg, *The Principles of Specification Design: Film Series and Workbook* (Bowie, Md.: Brady Publishers, 1979).

写过的书，我发现自己确实在填补这些“空洞”。请允许我以时间顺序列出这些书：

1973: *Structured Programming in PL/C, An Abecedarian* 是尝试以一种全新的方法教授程序开发和编写程序文本的实验成果。¹

1975: *An Introduction to General Systems Thinking* 直接探讨了深入思考系统的思考过程²（这本书在随后的 20 多年中一直不断地重印）。

1975: *Structured Programming*³。Dennis Geller、Tom Plum 和我一同编写了这套获奖的结构化程序设计系列丛书，它再次探讨了一些关于思考和教授程序开发的一些新方法。

1976: *High-Level COBOL Programming* 试图将 COBOL 程序员的思维过程转换为新的模式。⁴也许此书没有收到效果。

1977: *The Ethnotechnical Review Handbook*。Daniel Freedman 和我自己出版了这本手册的第一版，试图激励并教授人们在开发的各个阶段阅读程序。在当时，没有一家商业出版社愿意出版关于技术评审这类话题的书。（这本书的最新版本仍在重印发行。⁵）

1977: *Humanized Input: Techniques for Reliable Keyed Input* 是一本较早研究人机交互设计的先驱之作。⁶

1979: *The Ethnotechnical Review Handbook* 进行了改版，加入了大量我们在阅读和分析程序的过程中学习到的东西。

1979: *The Principles of Specification Design: Film Series and Workbook* 是我与 Bob Marcus 一同编写的，代表了我们在改善问题定义方面所做的首次尝试。⁷

1 · Gerald M. Weinberg, Norie Yasukawa Freedman, and Robert Marcus, *Structured Programming in PL/C: An Abecedarian* (New York: John Wiley & Sons, 1973).

2 Gerald M. Weinberg, *An Introduction to General Systems Thinking* (New York: Wiley-Interscience, 1975).

3 Dennis P. Geller, Naomi Kleid, Thomas W-S. Plum, and Gerald M. Weinberg, *Structured Programming: A Film Series and Workbook* (Kansas City, Mo.: Edutronics Systems, 1975).

4 Gerald M. Weinberg et al., *High-Level COBOL Programming* (Cambridge, Mass.: Winthrop, 1977).

5 This book ultimately evolved into Daniel P. Freedman and Gerald M. Weinberg's *Handbook of Walkthroughs, Inspections, and Technical Reviews*, 3rd ed. (New York: Dorset House Publishing, 1990)

6 Tom Gilb and Gerald M. Weinberg, *Humanized, Input: Techniques for Reliable Keyed Input* (Cambridge, Mass: Winthrop, 1977).

7 Robert Marcus and Gerald M Weinberg, *The Principles of Specification Design: Film Series and Workbook* (Bowie, Md.: Brady Publishers, 1979)

- 1979: *On the Design of Stable Systems*, written with my partner, Dani Weinberg, extrapolated thinking patterns into how systems are designed to survive. (This book's second edition is still in print, entitled *General Principles of Systems Design*.⁸)
- 1982: *Are Your Lights On? How to Figure Out What the Problem Really Is*. Don Gause and I continued the work in problem definition with this work, which is still a popular introduction to the subject.⁹
- 1982: *Rethinking Systems Analysis & Design* looked at how systems analysts think, or ought to think.¹⁰
- 1982: *Understanding the Professional Programmer* looked at how programmers think, or ought to think.¹¹
- 1985: *Computer Information Systems: An Introduction to Data Processing*. Dennis Geller and I continued our explorations into teaching methods and thought processes for software work.¹²
- 1985: *The Secrets of Consulting* addressed the consultative relationship between software developers (and others) and their clients. This innovative book remains a strong seller today, demonstrating that there are universal principles of consulting.¹³
- 1986: *Becoming a Technical Leader* expanded on the topic of leadership and teams, and is also still very much in demand.¹⁴
- 1989: *Exploring Requirements: Quality Before Design*, written by Don Gause and myself, carried problem definition to a deeper level.¹⁵

⁸ The current edition is: Gerald M. Weinberg and Daniela Weinberg, *General Principles of Systems Design* (New York: Dorset House Publishing, 1988).

⁹ The current edition is: Donald C. Gause and Gerald M. Weinberg, *Are Your Lights On? How to Figure Out What the Problem Really Is* (New York: Dorset House Publishing, 1990).

¹⁰ The current edition is: Gerald M. Weinberg, *Rethinking Systems Analysis & Design* (New York: Dorset House Publishing, 1988).

¹¹ The current edition is: Gerald M. Weinberg, *Understanding the Professional Programmer* (New York: Dorset House Publishing, 1988).

¹² Gerald M. Weinberg and Dennis P. Geller, *Computer Information Systems: An Introduction to Data Processing* (Boston: Little, Brown, 1985).

¹³ Gerald M. Weinberg, *The Secrets of Consulting* (New York: Dorset House Publishing, 1985).

¹⁴ Gerald M. Weinberg, *Becoming a Technical Leader* (New York: Dorset House Publishing, 1986).

¹⁵ Donald C. Gause and Gerald M. Weinberg, *Exploring Requirements: Quality Before Design* (New York: Dorset House Publishing, 1989).

1979: *On the Design of Stable Systems* 是我与搭档 Dani Weinberg 一同编写的, 此书将思维模式延伸到如何设计有生命力的系统中。(这本书的第二版仍在印刷, 书名为 *General Principles of Systems Design*。⁸⁾

1982: *Are Your Lights on? How to Figure Out What the Problem Really Is*。Don Gause 和我在此书中继续进行了问题定义方面的研究。这本书在这个领域中仍然是一本很受欢迎的入门读物。⁹

1982: *Rethinking Systems Analysis & Design* 讨论了系统分析师们如何思考, 或应该如何思考。¹⁰

1982: *Understanding the Professional Programmer* 讨论了程序员们如何思考, 或应该如何思考。¹¹

1985: *Computer Information Systems: An Introduction to Data Processing*。Dennis Geller 和我在本书中, 对软件工作的教授方法以及思考过程做了进一步的探索研究。¹²

1985: *The Secrets of Consulting* 讲述了软件开发人员 (以及其他) 和他们的客户之间的咨询关系。这本首创新颖的书直到今天仍然销售火爆, 说明了咨询业有一定的普遍规律。¹³

1986: *Becoming a Technical Leader* 继续深入探讨了领导和团队的话题, 而且至今仍然销量可观。¹⁴

1989: *Exploring Requirements: Quality Before Design*。Don Gause 和我一同编写, 在更深的层次上探讨了问题定义这一主题。¹⁵

8 The current edition is: Gerald M. Weinberg and Daniela Weinberg, *General Principles of Systems Design* (New York: Dorset House Publishing, 1988).

9 The current edition is: Donald C. Gause and Gerald M. Weinberg, *Are Your Lights On? How to Figure Out What the Problem Really Is* (New York: Dorset House Publishing, 1990).

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12 Gerald M. Weinberg and Dennis P Geller, *Computer Information Systems: An Introduction to Data Processing* (Boston: Little, Brown, 1985).

13 Gerald M. Weinberg, *the Secrets of Consulting* (New York: Dorset House Publishing, 1985).

14 Gerald M. Weinberg, *Becoming a Technical Leader* (New York: Dorset House Publishing, 1986).

15 Donald C. Gause and Gerald M. Weinberg, *Exploring Requirements Quality Before Design* (New York: Dorset House Publishing, 1989).

1991: *What Did You Say? The Art of Giving and Receiving Feedback*, written with Edie and Charlie Seashore, summarized what is known about the human interaction of passing information back and forth.¹⁶

1991-1997: *Quality Software Management*, a four-volume series, wrapped up all I knew about the management of software efforts and software people. The series takes up the psychological subjects of systems thinking, measurement, action, and change.¹⁷

With the *Quality Software Management* series, I felt I had concluded the subject that I started to explore a quarter-century earlier. Looking back over these years, especially with the perspective of the first edition of *Psychology*, I see that I turned out to be a worse prognosticator than I thought; but to my credit, I thought I would be a worse prognosticator than I thought. Actually, it was just like any technical review—worse than I hoped, but not as bad as I feared.

For this Silver Anniversary Edition, I decided to take my own advice to people whose work is reviewed in technical reviews: I would not try to hide my errors, for they may be the source of the most learning for my readers. I have left the original text as it was—antiques and all—for your illumination, and have simply added some “wisdom of hindsight” remarks whenever the spirit moved me. I hope you find the perspective brought by this time-capsule contrast as useful to you as it was enlightening to me.

¹⁶Charles N. Seashore, Edith Whitfield Seashore, and Gerald M. Weinberg, *What Did You Say? The Art of Giving and Receiving Feedback* (Columbia, Md.: Bingham House Books, 1991). For copies of this book, contact Bingham House at 1001 Windstream Drive, Suite 900, Columbia, MD 21044.

¹⁷Gerald M. Weinberg, *Quality Software Management*, Vol. 1: *Systems Thinking* (New York: Dorset House Publishing, 1992); *Quality Software Management*, Vol. 2: *First-Order Measurement* (New York: Dorset House Publishing, 1993); *Quality Software Management*, Vol. 3: *Congruent Action* (New York: Dorset House Publishing, 1994); *Quality Software Management*, Vol. 4: *Anticipating Change* (New York: Dorset House Publishing, 1997).

1991: *What Did You Say? The Art of Giving and Receiving Feedback*. 与 Edie 和 Charlie Seashore 一同编写,总结了人们在来回传递信息时是如何互动的。¹⁶

1991—1997: *Quality Software Management* 系列书籍,共 4 册,囊括了我所掌握的关于软件开发和软件人员管理的所有知识。这套系列丛书对系统的思考、测量、行为和变化等方面进行了心理学方面的探索。¹⁷

直到完成 *Quality Software Management* 系列丛书之后,我才感觉到对自己在四分之一世纪前开始探索的问题有了一个结论。回顾这些年,尤其是从《心理学》第一版的角度回顾,我发现自己最终成为了一名比自己预料的还要蹩脚的预言家。但是值得表扬的是,我已料到自己将会是一个比自己预料的还要蹩脚的预言家。事实上,这正如任何一次技术评审一样——比我希望得差劲,但还是比我担心的情况要好一些。

至于这本银周年纪念版,我决定采纳自己常在技术评审时给别人的建议:我不会试图掩藏我的错误,因为这些错误对我的读者而言可能是最有价值的收获来源。我对原始版本未做任何改动——原汁原味,全盘保留——以供您参考,我只是在思想受到触动的地方加入了一些“事后诸葛亮”式的评注。我希望通过这个时间穿梭式的前后对比,能带给您一些启示,只要能够对您有些许帮助,我就会感到莫大的宽慰。

16 Charles N. Seashore, Edith Whitfield Seashore, and Gerald M. Weinberg, *What Did You Say? The Art of Giving and Receiving Feedback* (Columbia, Md.: Bingham House Books, 1991). For copies of this book, contact Bingham House at 1001 Windstream Drive, Suite 900, Columbia, MD 21044.

17 Gerald M Weinberg, *Quality Software Management*, Vol. 1: *Systems Thinking* (New York: Dorset House Publishing, 1992); *Quality Software Management* Vol. 2: *First-Order Measurement* (New York: Dorset House Publishing, 1993); *Quality Software Management* Vol. 3: *Congruent Action* (New York: Dorset House Publishing, 1994); *Quality Software Management* Vol. 4: *Anticipating Change* (New York: Dorset House Publishing, 1997)

Original Preface

This book has only one major purpose—to trigger the beginning of a new field of study: computer programming as a human activity, or, in short, the psychology of computer programming. All other goals are subservient to that one. For instance, I have tried to make the book interesting and nontechnical, insofar as is possible, so as to encourage the greatest number of people to read it: not just programmers, but programming managers and others connected with programming in the many ways we are connected with programming these days. What I am trying to accomplish is to have the reader say, upon finishing the book, “Yes, programming is not just a matter of hardware and software. I shall have to look at things in a new way from now on.”

Because this is a new field—a new way of looking at familiar things—it has not always been possible to support certain ideas with “scientific” evidence. Indeed, many of the views in the book are merely the author’s opinions—often strong opinions, but not based on anything better than personal observation over many years. No doubt, many of these opinions are just plain wrong, as are many of the ideas supported by more evidence. But there is a world of difference between a wrong idea and a sterile one. If any reader takes issue with something expressed here, my fondest hope is that he will set up an experiment and prove me wrong.

As I hope the text demonstrates with numerous examples, our profession suffers under an enormous burden of myths and half-truths, many of which my students and I have been able to challenge with extremely simple experiments. But our resources are limited and the problem is great. There are, by various esti-

第一版序言

这本书的主要目的只有一个——引发大家对一个全新领域的研究，这个新领域就是作为人类活动的计算机程序开发，或者简而言之，就是程序开发心理学。所有的其他目标都从属于这个主要目的。例如，我尽力让这本书看起来生动有趣，而不是那么太强调技术，以便让更多的人愿意阅读这本书，让读者不是只有程序员，还有程序开发的主管，以及那些如今以各种方式与编程相关联的人们。我努力实现的目标，就是让读者在读过这本书后会说：“是啊，程序开发不仅仅是一件只与硬件和软件有关的事。从现在起，我要换个角度看待这些事情了。”

因为这是一个全新的领域——用全新的方法看待我们熟悉的事物——所以不可能总有“科学的”证据来支持某些观点。事实上，本书中的许多观点仅仅是作者的意见——常常是很坚定的意见，这些意见除了我多年的个人观察之外，并没有其他什么更好的理论基础。毫无疑问，这些观点中有很多显然存在错误，就如同证据更多的许多观点也会有错误一样。但是，错误的观点与无用的观点之间存在着天壤之别。如果哪位读者对我在书中表达的观点有疑问，我诚恳地希望他能够用实验证明我的谬误。

正如我希望在文中用众多实例证明的那样，大量的偏见和误解阻碍着我们这个行业的发展。我和我的学生们已通过极其简单的实验，对这些偏见和误解发起了挑战。然而我们的资源非常有限，而问题却是如此巨大。据各种方法估计，当今从事程序员工作的人已达数十万。如果我