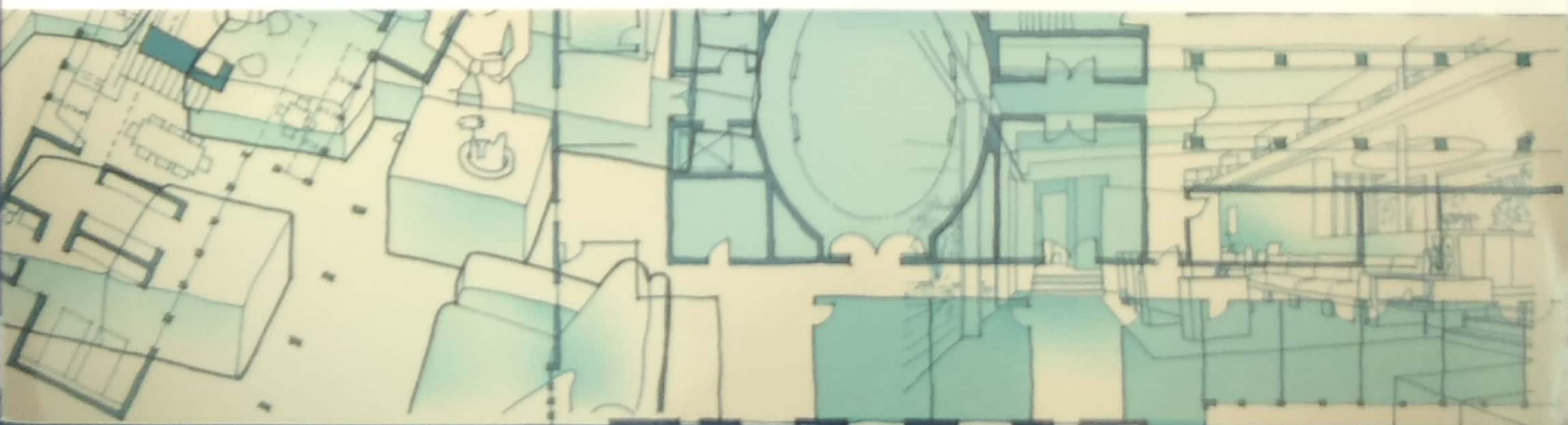


# THE INTERIOR PLAN

concepts and exercises

**ROBERTO J. RENGEL**



# The Interior Plan

CONCEPTS AND EXERCISES

*fb*

# The Interior Plan

## CONCEPTS AND EXERCISES

Roberto J. Rengel

FAIRCHILD BOOKS • NEW YORK

Executive Editor: **Olga T. Kontzias**  
Development Editor: **Joseph Miranda**  
Assistant Art Director: **Sarah Silberg**  
Production Director: **Ginger Hillman**  
Associate Production Editor: **Linda Feldman**  
Copyeditor: **Lisa Vecchione**  
Ancillaries Editor: **Noah Schwartzberg**  
Executive Director & General Manager: **Michael Schluter**  
Associate Director of Sales: **Melanie Sankel**  
Cover Design: **Hayley Powers Thornton-Kennedy**  
Text Design and Page Layout: **Tom Helleberg**  
Illustrations: **Roberto J. Rengel** unless otherwise noted

Copyright © 2012 Fairchild Books, a Division of Condé Nast Publications.

All rights reserved. No part of this book covered by the copyright hereon may be reproduced or used in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or information storage and retrieval systems—without written permission of the publisher.

Library of Congress Catalog Card Number: 2011933637  
ISBN: 978-1-56367-933-9  
GST R 133004424

Printed in the United States of America  
TP09

## CONTENTS

Extended Contents vi

Preface x

Acknowledgments xi

**1** Introduction to Interior Planning 1

**2** The Room 31

**3** Beyond the Room 59

**4** The Project 93

**5** Design Process 133

**6** Projects for People:  
Health, Safety, and Welfare 183

**7** Residential Design 219

**8** Nonresidential Design 273

Basic Metric Conversion Table 332

Art/Design Credits 333

Index 335

## EXTENDED CONTENTS

Preface x

Acknowledgments xi

### 1 Introduction to Interior Planning 1

*Interiors: Content and Organization* 2

*Concepts of Accommodation* 4

*Lessons from Primitive Settlements* 6

*Interiors: The Microscale* 8

*Lessons from Transit Environments* 10

*Interiors: The Macroscale* 12

*Nature of Interior Planning* 14

*Anatomy of a Space Plan* 16

*The Spare Plan in Context* 18

*Drawing as Design Tool* 20

*Diagramming as Design Tool* 22

*Solving Design Problems I* 24

EXERCISE 1 24

EXERCISE 2 25

*Solving Design Problems II* 26

EXERCISE 1 26

EXERCISE 2 27

*The Rest of This Book* 28

### 2 The Room 31

*The Good Room* 32

*Shapes and Proportions* 34

*Basic Plan Elements* 36

*Furniture Groups* 38

EXERCISE 39

*Grouping* 40

EXERCISE 41

*Zones and Regions* 42

*Centering and Alignment* 44

*The Center* 47

*Grounding* 48

EXERCISE 49

*Windows* 50

EXERCISE 51

*Circulation* 52

*Thick Walls* 54

*Thick Walls: Practical Applications* 56

EXERCISE 57

### 3 Beyond the Room 59

*Beyond the Room* 60

*Large Single Spaces* 62

*Spatial Affinities* 64

*Dividing Space* 66

EXERCISE 67

*Dividing Space: Plan Views* 68

*Combining Spaces* 70

*Layered Space* 72

*Formal Sequences* 74

*Informal Sequences* 76

*Innovative Dividers* 78

EXERCISE 79

*Flow in Spatial Sequences* 80

*Grounding in Open Spaces* 82

EXERCISE 1 83

EXERCISE 2 84

*Thresholds and Prospect* 86

*Joining Enclosed Rooms* 88

*Dividing Spaces* 89

EXERCISE 1 89

EXERCISE 2 90

EXERCISE 3 91



## 4 The Project 93

The Project	94
Project Qualities	96
Project Parts	98
Open Space and Rooms	100
EXERCISE 101	
Repetitive Parts	102
Development of the Plan	104
Programmatic Particularities	106
Base Building	108
Solids and Voids I	110
EXERCISE 111	
Solids and Voids II	113
Growing the Core I	114
EXERCISE 115	
Growing the Core II	116
EXERCISE 117	
Growing the Core III	118
EXERCISE 119	
Rooms and Machines I	120
Rooms and Machines II	122
EXERCISE 1 122	

## 5 Design Process 133

EXERCISE 2	122
EXERCISE 3	122
EXERCISE 4	123
EXERCISE 5	123
Rooms and Machines III	124
Circulation: Clarity, Flow, and Efficiency	126
EXERCISE 126	
Circulation: Schemes	128
Circulation: Enrichment	130
Design Process I	134
Design Process II	136
Programming I	138
Programming II: User Needs	140
Programming III: From Requirements to Diagrams	142
From Diagrams to Plan	144
Allocating Spaces	146
Adjacencies: The Matrix Diagram	148
Adjacencies: The Bubble Diagram	150
Diagram Graphics	152
Contextual Factors: The Site	154
Organization: Circulation	156
EXERCISE 157	
Organization: Solids and Voids	158
EXERCISE 159	
From Bubbles to Plan: A Transitional Home	160
From Bubbles to Plan: A Restaurant	162
From Bubbles to Plan: An Office	164
Essence of a Scheme I	166
Essence of a Scheme II	168
Generating Alternatives	170
The Patient Search	172
Thinking Three-Dimensionally	174
Practicing Bubble Diagramming and Block Planning	176
EXERCISE 1	176
EXERCISE 2	177
EXERCISE 3	178
EXERCISE 4	179
EXERCISE 5	180
EXERCISE 6	181

<b>6</b>	<b>Projects for People:</b>	
	<b>Health, Safety, and Welfare</b>	<b>183</b>
	<i>Basic Human Needs</i>	<b>184</b>
	<i>Humans in Buildings</i>	<b>186</b>
	<i>Humans in Action</i>	<b>188</b>
	<i>Comfort</i>	<b>190</b>
	<i>Light and Sound</i>	<b>192</b>
	<i>Anthropometrics</i>	<b>194</b>
	<i>Cast of Users</i>	<b>196</b>
	<i>Universal Design</i>	<b>198</b>
	<i>Wheelchairs</i>	<b>201</b>
	<i>Accessibility: Navigating Space</i>	<b>202</b>
	<i>Accessibility: Door Clearances</i>	<b>204</b>
	<i>Accessibility: Restrooms and Drinking Fountains</i>	<b>206</b>
	<i>Accessibility Application: Master Bedroom Suite Project</i>	<b>208</b>
	<i>Life Safety: Egress Concepts</i>	<b>210</b>
	<i>Egress: Exit and Door Requirements</i>	<b>212</b>
	<i>Egress: Good Practices for Egress Corridors</i>	<b>214</b>
	<i>Multitenant Corridors</i>	<b>216</b>
	<b>EXERCISE</b>	<b>217</b>

<b>7</b>	<b>Residential Design</b>	<b>219</b>
	<i>Residential Planning I</i>	<b>220</b>
	<i>Residential Planning II</i>	<b>222</b>
	<i>Entry Spaces</i>	<b>224</b>
	<i>Living Rooms I</i>	<b>226</b>
	<i>Living Rooms II</i>	<b>228</b>
	<b>EXERCISE</b>	<b>229</b>
	<i>Dining Rooms I</i>	<b>230</b>
	<b>EXERCISE</b>	<b>231</b>
	<i>Dining Rooms II</i>	<b>232</b>
	<b>EXERCISE 1</b>	<b>233</b>
	<b>EXERCISE 2</b>	<b>233</b>
	<b>EXERCISE 3</b>	<b>233</b>
	<i>Bedrooms I</i>	<b>234</b>
	<i>Bedrooms II: Master Suites</i>	<b>236</b>
	<i>Bedroom Groups</i>	<b>238</b>
	<i>Kitchens I</i>	<b>240</b>
	<i>Kitchens II</i>	<b>242</b>
	<i>Bathrooms I</i>	<b>244</b>
	<i>Bathrooms II</i>	<b>246</b>
	<i>Storage</i>	<b>248</b>
	<i>Special Elements</i>	<b>250</b>
	<i>Apartments: Analysis</i>	<b>252</b>

<i>Small Homes: Analysis</i>	<b>254</b>
<i>Style Influence</i>	<b>256</b>
<i>Adaptability</i>	<b>258</b>
<b>EXERCISE</b>	<b>259</b>
<i>Assisted Living</i>	<b>260</b>
<i>Bubbles to Block Plan to Loose Plan</i>	<b>262</b>
<b>EXERCISE 1</b>	<b>262</b>
<b>EXERCISE 2</b>	<b>263</b>
<i>Block Plan Configurations</i>	<b>264</b>
<b>EXERCISE 1</b>	<b>264</b>
<b>EXERCISE 2</b>	<b>265</b>
<i>Plan Development</i>	<b>266</b>
<b>EXERCISE 1</b>	<b>266</b>
<b>EXERCISE 2</b>	<b>267</b>
<b>EXERCISE 3</b>	<b>267</b>
<i>Furnishing Spaces</i>	<b>268</b>
<b>EXERCISE 1</b>	<b>268</b>
<b>EXERCISE 2</b>	<b>268</b>
<b>EXERCISE 3</b>	<b>268</b>
<b>EXERCISE 4</b>	<b>269</b>
<i>Efficiency Apartment</i>	<b>270</b>
<b>EXERCISE 1</b>	<b>270</b>
<b>EXERCISE 2</b>	<b>271</b>



## 8 Nonresidential Design 273

Offices: Anatomy and Issues I 274

Offices: Anatomy and Issues II 276

Office Types 278

Office Furnishings I 280

Office Furnishings II 282

Office Furnishings III 284

EXERCISE 285

Offices: Reception Area 286

EXERCISE 287

Offices: Open Areas 288

EXERCISE 289

Offices: Private Offices 290

Offices: Conference Rooms 292

Office Analysis 294

Offices: Process 296

Office Layouts 298

EXERCISE 1 298

EXERCISE 2 298

EXERCISE 3 299

Retail: Anatomy and Issues 300

Retail: Store Types 302

Retail: Circulation 304

Retail Anthropometrics 306

Retail: Fixtures 308

Retail Examples I 310

Retail Examples II 312

Gourmet Food and Wine Shop 296

EXERCISE 314

Restaurants: Anatomy and Issues 316

Restaurant Types 318

Restaurants: Furnishings 320

Restaurants: Dining Areas 322

Restaurants: The Bar 324

Restaurant Examples:

Four Small Bistros 326

Restaurant Analysis 328

Restaurant Layouts 328

EXERCISE 1 330

EXERCISE 2 330

EXERCISE 3 331

Basic Metric Conversion Table 332

Art/Design Credits 333

Index 335

## Preface

This is an introductory-level text about the planning of interior environments. It addresses both the contents of interior environments and the process of interior planning. The book covers topics such as laying out rooms, designing effective spatial sequences, relating project parts, arranging furniture, planning effective circulation systems, creating spaces that are accessible, and designing safe environments for people.

My goal has been to produce a user-friendly book with much useful information for the beginning design student. In presenting information, I have favored a simple and direct approach over the complex and abstract approach often used in the world of design. In terms of language, the book consciously uses the basic language of design—the drawing—as its principal language. It also consciously uses a loose drawing technique and avoids the overly rigid look of finished drawings, in part as a reminder that design problem solving is a fluid process. The looseness of the style is also a way of encouraging students to use manual sketching and diagramming during the early design stages, a practice that has been affected by the prevalence of computer drafting.

The basic unit of the text is the “example.” Through the inclusion of abundant examples of what to do and what to avoid, I hope to help students become

better designers. The book presents many examples, from individual rooms to entire projects, and includes both good and not-so-good design solutions to help students understand the differences. The examples shown come from real executed projects as well as student work. Many of the projects chosen to illustrate ideas are from the past, some from the modern tradition of the twentieth century, and some even from classical architecture. These were chosen because of their straightforward approach, which results in clarity for the student. Numerous exercises throughout the book are meant to facilitate learning by encouraging students to apply ideas and concepts immediately after reading about them.

The book contents progress sequentially, from the room (the basic unit of a project) to the entire project. The text includes numerous examples of both residential and nonresidential design. In choosing topics and examples, I have made an effort to address the “nitty-gritty” of design—all those issues that come up in the process of planning real projects that are seldom discussed in books and that generally are only talked about when they come up in the design studio.

Dimensions are provided in both English and metric units. Metric units are given in parentheses beside or underneath the English units. Unless otherwise noted, all metric units are given in centimeters.

**“My goal has been to produce a user-friendly book with much useful information for the beginning design student.”**

**The contents** of the book are organized into eight chapters. **Chapter 1** addresses basic concepts of habitation and design at various scales and in various settings. It introduces the process of design problem solving, using graphic drawings as a means of representation, and reviews basic concepts and terms helpful for designers. **Chapter 2** is devoted to the basic unit of a project, the room, covering various tasks and useful principles related to the planning of interior rooms.

**Chapter 3** goes beyond the room and addresses the way rooms and spaces are divided, combined, and added to in order to produce effective living environments. By progressing through the various scales used in design, from that of the individual room to more complex assemblies of rooms and open spaces, the student is gradually exposed to all the kinds of design problems that have to be addressed in the process of designing a full project. These range from furnishing a single room to combining multiple parts into a cohesive whole for the entire project.

**Chapter 4** zooms out and presents entire projects, illustrating how they work as systems of individual rooms, groups of rooms, large open spaces, corridors, and so on, all assembled cohesively into a total entity. Chapter 4 completes the sequential presentation of interior planning from parts to whole.

**Chapter 5** explains the design process in simple terms, presenting strategies used successfully by the author and his students for the last 30 years. The process emphasizes analytical thinking, the recording of ideas through diagramming, and the practice of solving design problems using a systematic and hierarchical decision making process.

**Chapter 6** addresses the users of interior environments and covers topics such as basic human needs in buildings, anthropometrics, universal design, and accessibility and life safety issues that affect the planning of projects.

**Chapters 7 and 8** are devoted to specific coverage of various project types. Chapter 7 is devoted entirely to residential design and includes information for the design of apartments, single-family residences, and adaptable residential environments. Chapter 8 is devoted to nonresidential design and focuses on office design, retail design, and restaurant design. Though there are many types of nonresidential design, these three are the most commonly practiced by interior design firms.

This text was conceived as a studio companion to teach students good design planning practices and strategies in general, regardless of project type. Specific project types were included to address the kinds of project-specific issues pertaining to them. The projects and especially the exercises, have been kept simple to instruct, and not overwhelm, students in beginning-level studios.

## Acknowledgments

A number of people have helped make this book possible. First is Olga Kontzias from Fairchild Books, who initially approached me with the idea of the book. The entire Fairchild team was instrumental in the development of the book project and the whole process of review, editing, layout, and production: Joseph Miranda, Amanda Breccia, Lisa Vecchione, Sarah Silberg, Tom Helleberg, NaNá Stoelzle, Linda Feldman, Elizabeth Marotta, and Ginger Hillman.

Special thanks go to the book reviewers who so kindly took the time to review the proposal and the manuscript and give valuable feedback: Beth Stokes, The Art Institute of Portland; Christiana Lafazani, Virginia Commonwealth University; Shelly Duff, California State University, Sacramento; Janet Biddick, University of Oklahoma; and Carolyn Gibbs, California State University, Sacramento.

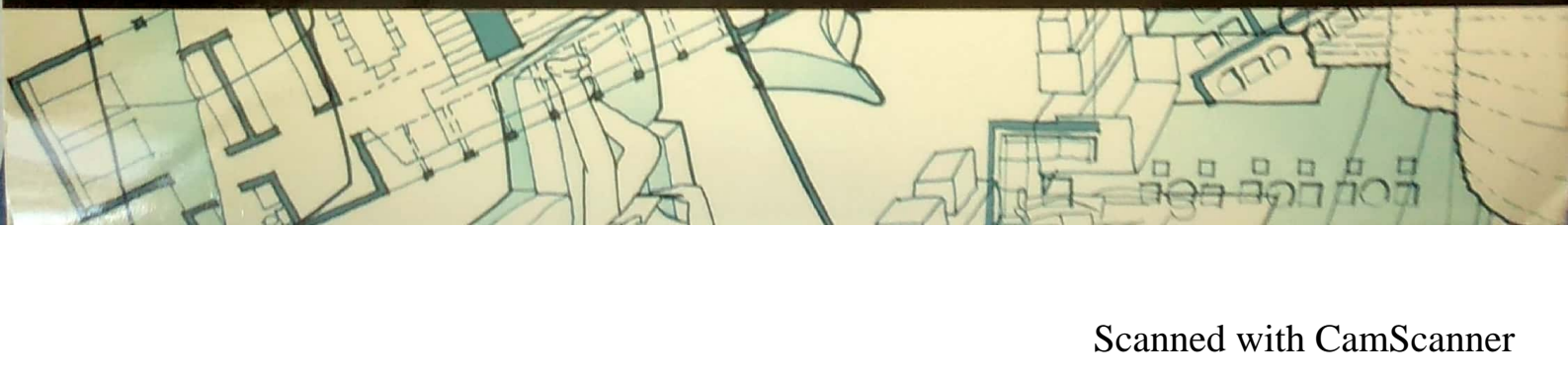
Very special thanks go to Julie Foote, a former student, who became my right-hand person during production and provided immeasurable help with the artwork and layout of the book pages. A thank-you also goes to Brooke Godfrey who helped us with the drawings down the stretch.

Finally, a big thank-you to my wife, Patricia, who provided enthusiastic support all along.



This introductory-level text introduces students to the planning of interior environments, addressing both the contents of interior environments and the process of interior space planning. Topics covered include the making of rooms, the design of effective spatial sequences, functional relationships among project parts, arrangement of furniture, planning effective circulation systems, making spaces accessible, and designing safe environments with efficient emergency egress systems. Numerous exercises throughout the book facilitate learning by encouraging students to apply ideas and concepts immediately after reading about them.

## Features

- Clearly details space planning as used in both residential and commercial design (including retail, hospitality, health care, and corporate offices)
  - Extensively uses annotated drawings with concise text to highlight features on plans
  - Includes page spreads that present one issue, concept, exercise, or mini project in a straightforward and brief manner
  - Contains journal space for students to work out exercises and projects
  - Demonstrates application of adjacency studies, circulation analysis, bubble diagrams, and zoning techniques
- 

FAIRCHILD  
books  
ISBN: 978-1-56367-933-9  
9 00000  
781563 679339