Praise for Drumming Patterns:

Magazines:
“The approach is broad based, integrating rhythm, styles and techniques into a unified, comprehensive system. The commitment, both in time and thought, that Mr. Braman has made to this book will be obvious to anyone who studies its contents. Drumming Patterns is an impressive publication”
—Percussive Notes

“… a systematic presentation of practice materials that can be used in much the same way that other instrumentalists use scale and arpeggio systems.”
—Kansas Music Review

“An outstanding book for developing stick and limb control.”
—Downbeat Magazine

“Chuck Braman did a fantastic job with Drumming Patterns, and I heavily recommend this book for everyone who wants to work seriously on the drumset.”
—Rimshot Magazine

“Extremely clear and very well notated… the fold-out pages are an excellent idea that works well… the appendixes include a lot of good conceptual ideas on drumming… an excellent book.”
—Modern Drummer

“Drumming Patterns explores every area of drumming. This creative, valuable book is for every drummer’s library.”
—Louie Bellson

“All drummers, regardless of their level of ability, will profit from studying this book. Drumming Patterns’ unique approach is to be applauded.”
—John Beck, Former president of the Percussive Arts Society, Chairman of Percussion at the Eastman School of Music

“Extremely valuable… shows great insight into the mechanics of drum technique.”
—Jim Chapin, author, “Advanced Techniques for the Modern Drummer.”

A wonderful resource for stretching the technical and musical imagination!”
—Ed Soph

Readers
“I am currently borrowing Drumming Patterns from my local library, which I find fantastic! I am a beginning drummer who finds this book so accessible and approachable to use. I love the format. It invites the reader, and takes him/her by the hand, carefully and slowly strolling through the concepts. There is no room for confusion. Your book is great!”
—Joanna Tu, Redondo Beach, CA

“Your book is extremely helpful. I highly appreciate the kind of exhaustive analysis that you have taken on here. Do you have any recordings available? I would love to hear what you have been able to unleash with the kind of background you appear to have.”
—James Musser, Lomita, CA

“Drumming Patterns is very thorough, very comprehensive and beautifully produced. I have seen several books on the subject and yours appears to be the best.”
—David Cole, New Carrollton

Celebrities:
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—David Cole, New Carrollton
ABOUT DRUMMING PATTERNS

Drumming Patterns is an encyclopedia of technique. Its approach is broad; the material it presents ranges from basic stick technique to advanced drumset techniques in a variety of styles. It is not intended to be a method book to be practiced strictly from beginning to end, but rather a reference book to be practiced selectively according to each reader’s interests and level of ability. Because of the breadth of its content, it may be approached in several different time frames throughout the reader's life, rather than worked through and completed in any particular time span.

Because Drumming Patterns illustrates a system with a theoretical foundation, this foundation is described in the Preface, the Introduction, and in Appendixes I and II. It is the author’s belief that a conscious understanding of the theory behind Drumming Patterns, as well as a theoretical understanding of drum technique and rhythm in general, will enhance the reader’s comprehension of the material and further his musicianship as well. However, not all drummers are oriented towards theory; some prefer instead to learn through direct application. These readers are advised to skip both the introduction and appendixes and proceed with the text beginning on page 16.
DEDICATION:
This book is dedicated to Paul Motian, whose music has provided some of my life’s greatest pleasures.

ACKNOWLEDGMENTS:
I would like to express my sincere gratitude to Dr. Peter Webster, Troy Sartain, and the students and faculty of the Case Western Reserve University Music and Technology Lab for the generous use of their equipment during the production of this book; Chip Stephens, Bob Fraser, Ray Parker, Bill Braman, Glen Schaft, Mike Wahl, Mark Gridley, John Richmond, Audrey Braman, Gary Aprile, Henry Avellone, Dave Brewer, Bob McKee, Tom Fries, Val Kent, Don Friedman, Ed Bobick, George Judy, Skip Hadden, Jenifer Stepien, Ron Godale, Kyp Volans, Maureen Sickler, Scott Kenya, Joe Brigandi, Andy Green, and especially Troy Sartain, Dave Norris, Barbara Samuels, and Gary Baker for their editing and re-writing suggestions; and Mike Wahl for introducing me to the philosophy of Ayn Rand and Rand’s novel “The Fountainhead,” which helped provide me with the will and the confidence to pursue this project.
CONTENTS

About Drumming Patterns 3
  Preface 6
  Introduction 8

PART I: SNARE DRUM PATTERNS 13
  Sticking Patterns 16
  Embellishment Patterns 40
    Accent Patterns 46
    Flam Patterns 52
  Single Stroke Patterns 66
  Double/Buzz Stroke Patterns 72
  Roll Patterns Introduction 86
    Roll Patterns 88
    Alternating Roll Patterns 92

PART II: DRUM SET PATTERNS 99
  Notation Key 100
  Patterns with Single and Triple Strokes 106
    Rock/Funk Patterns 112
      Jazz Patterns 120
    Brazilian Patterns 136
  Non-Independent Patterns 142
    Solo Patterns 148

APPENDIXES 163
  APPENDIX I: Organization of Patterns/Labeling System 164
  APPENDIX II: Determining a Pattern’s Utility 168
  APPENDIX III: Listening/Practicing/Playing 172
  APPENDIX IV: Listening And Transcribing: Learning From Others While Thinking For Yourself 174
ORDERING INFORMATION 176
PREFACE

Through the years people have created systems in every discipline, from science to mathematics and music. In music, the system of musical harmony provides a theoretical basis for musical creation. It also provides tools, such as scales and arpeggios, which form the basis of most non-drummer’s technical studies.

Without such a system, harmonic music as we know it would not exist. In addition, the level of technical development now commonly attained on melodic and harmonic instruments could not have been achieved. It is odd, then, that in these centuries of development no such system has emerged to define rhythmic theory and drum technique.

Drumming Patterns represents the discovery, identification, and organization of this system. It integrates the fundamental patterns of rhythm with the fundamental technical patterns used in drumming, since the underlying patterns for each are the same. It is based partially on elements which for years have been used, in a non-systematic fashion, in the drum rudiments and in previously published drumming textbooks.

Drumming Patterns represents:

• The identification of the fundamental patterns of technique used in previous materials
• The elimination of the non-essential patterns of technique used in previous materials
• The progressive arrangement of the fundamental patterns
• The filling in of the gaps between known fundamental patterns with previously unpublished fundamental patterns
• The elimination of all non-essential elements of presentation
• A method for converting technical patterns into rhythmic patterns, and vice versa

Drum technique is traditionally taught as consisting of several unrelated branches. Some approaches are limited to only snare drum technique. Others may deal with the whole drumset but focus only on rock music or jazz. Still others focus on particular aspects of playing, such as soloing or “filling.” Drumming Patterns is the first presentation of a comprehensive system that isolates the underlying patterns common to all branches, then links the branches via these patterns thereby clarifying and integrating both rhythm and technique. By virtue of this approach, it provides a single, straight, unbroken path in place of many smaller, crooked, and broken ones.

Drumming Patterns is an encyclopedia of technique and rhythm, rather than a method book to be practiced from beginning to end. Because it identifies the basic building blocks of rhythm and drum technique, Drumming Patterns is intended for all drummers, from beginning students to advanced professionals.
The components of rhythm and the components of drum technique are not random or arbitrary, but specific and objective. They are based on a progression of patterns which for both technique and rhythm are the same.

Drum technique may be divided into two categories: stick technique and drum set technique. Although the components of both are similar, stick technique is more basic since it involves only two limbs (hands) at a time, as opposed to the four limbs (hands and feet) required to play a full drum set. Therefore, let us define the fundamental components of stick technique.\footnote{For a discussion of the essentials of drumset technique, refer to “Introduction to Part II,” on page 101.}

Stick technique is comprised of \textit{strokes}, in which a drumstick strikes a drum head. There are two basic kinds of strokes: \textit{single} strokes, in which the stick rebounds \textit{once} off the drumhead; and \textit{double} strokes, in which the stick rebounds \textit{twice} off the drumhead.

Single or double strokes may be executed with either the right stick or the left stick. This means that there are four fundamental units of stick technique:

1) a right-handed single stroke (R)
2) a left-handed single stroke (L)
3) a right-handed double stroke (RR)
4) a left-handed double stroke (LL)

Once these four fundamental units of stick technique have been identified, it is possible to identify all their possible combinations, as well as to create a mathematical progression organizing all the combinations from shortest to longest (up to nine digits in length). This is illustrated on the facing page.
LENGTH | COMBINATIONS
---|---
TWO DIGITS | R+L
THREE DIGITS | R+LL
 | L+RR
FOUR DIGITS | RR+LL
FIVE DIGITS | R+LL+RR
 | L+RR+LL
SIX DIGITS | R+L+RR+LL
 | L+R+LL+RR
SEVEN DIGITS | R+L+R+L+R+LL
 | L+R+L+R+L+RR
 | R+LL+RR+LL
 | L+RR+LL+RR
EIGHT DIGITS | R+L+RR+L+R+LL
 | R+L+R+L+RR+LL
 | L+R+L+R+LL+RR
 | R+L+R+LL+R+LL
 | L+R+L+RR+L+RR
NINE DIGITS | R+L+R+L+R+L+R+LL
 | L+R+L+R+L+R+L+RR
 | R+L+R+L+LL+RR+LL
 | L+R+L+RR+LL+RR
 | R+L+RR+L+RR+LL
 | L+R+LL+RR+L+RR
 | R+L+RR+L+RR+LL
 | L+R+LL+R+LL+RR
In addition to these, there are four longer combinations which are also fundamental:
TEN DIGITS | R+LL+RR+L+RR+LL
TWELVE DIGITS | R+L+R+L+RR+L+R+L+LL
 | R+L+R+L+RR+L+R+L+LL
 | L+R+L+R+LL+R+L+LL
Together, these patterns comprise all the fundamental units of technique available to drummers, arranged from shortest to longest, simplest to most complex, most practical to most esoteric.\(^1\) Part I of *Drumming Patterns* is based on the systematic presentation of these patterns and their embellishments.

---
\(^1\) Can you think of more patterns within each given length than the ones listed? These are not actually different patterns, but rather are *inversions* of the patterns listed above. For more information, refer to item three, “Inversions,” in Appendix I, page166.
Like technique, rhythm can also be broken down into its most fundamental components. These components are based on the same progression of patterns which underlie the stickings illustrated on the previous page, converted into rhythmic notations.

To do this, simply substitute a *note* for each “R,” and a *rest* for each “L.” (We will now also add repeat signs since patterns tend to be repeated.)

<table>
<thead>
<tr>
<th>STICKING</th>
<th>RHYTHM</th>
</tr>
</thead>
<tbody>
<tr>
<td>R L</td>
<td>potrà:</td>
</tr>
<tr>
<td>R L L</td>
<td>potrà:</td>
</tr>
<tr>
<td>L R R</td>
<td>potrà:</td>
</tr>
<tr>
<td>R R L L</td>
<td>potrà:</td>
</tr>
<tr>
<td>R L R L L</td>
<td>potrà:</td>
</tr>
<tr>
<td>L R L R R</td>
<td>poderá:</td>
</tr>
<tr>
<td>R L R R L R R</td>
<td>poderá:</td>
</tr>
<tr>
<td>L R L L R R</td>
<td>poderá:</td>
</tr>
<tr>
<td>R L R L R L L</td>
<td>poderá:</td>
</tr>
<tr>
<td>R R R L L R R</td>
<td>poderá:</td>
</tr>
<tr>
<td>L R R L R R</td>
<td>poderá:</td>
</tr>
<tr>
<td>R L L R L R L L</td>
<td>poderá:</td>
</tr>
<tr>
<td>R R L R L R R</td>
<td>poderá:</td>
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<tr>
<td>L R L L R L L</td>
<td>poderá:</td>
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<td>R L R R R L L</td>
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<td>R L R L R R</td>
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<tr>
<td>R R R L L</td>
<td>poderá:</td>
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<tr>
<td>L R R L R R</td>
<td>poderá:</td>
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<tr>
<td>R L R R L L</td>
<td>poderá:</td>
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<tr>
<td>R R L R R L R R</td>
<td>poderá:</td>
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<tr>
<td>R L L R L R L L</td>
<td>poderá:</td>
</tr>
<tr>
<td>R R L R L R R</td>
<td>poderá:</td>
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<tr>
<td>R L R L R L L</td>
<td>poderá:</td>
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<tr>
<td>R R L R R L R R</td>
<td>poderá:</td>
</tr>
<tr>
<td>R L L R L R L L</td>
<td>poderá:</td>
</tr>
<tr>
<td>R R L R L R R</td>
<td>poderá:</td>
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<tr>
<td>R L R R R L L</td>
<td>poderá:</td>
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<tr>
<td>R R R L L R R</td>
<td>poderá:</td>
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<tr>
<td>R L L R L R L L</td>
<td>poderá:</td>
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<tr>
<td>R R R R L R R</td>
<td>poderá:</td>
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<tr>
<td>R L R R R R L R R</td>
<td>poderá:</td>
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<tr>
<td>R R L R L R L L</td>
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<td>R L R L R R</td>
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<td>R R L R R L L</td>
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<tr>
<td>R L L R L R L L</td>
<td>poderá:</td>
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<tr>
<td>R R R R L R R</td>
<td>poderá:</td>
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<tr>
<td>R L R R R R L R R</td>
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<tr>
<td>R R L R L R L L</td>
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<tr>
<td>R R L R L R R</td>
<td>poderá:</td>
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<tr>
<td>R L L R L R L L</td>
<td>poderá:</td>
</tr>
<tr>
<td>R R R R R L R R</td>
<td>poderá:</td>
</tr>
</tbody>
</table>
The preceding diagram illustrates the fact that the fundamental patterns underlying both stickings and rhythms are the same.¹

These patterns represent all the basic components of stick technique, drumset technique, and rhythm. In one form or another and throughout history, every drummer in every part of the world dealt with some of these patterns every time they played. These patterns and their applications underlie all the material in Drumming Patterns.

The advantage of thinking in terms of fundamental patterns is that all our information becomes interrelated, reduced and simplified. We no longer need to separately compartmentalize playing snare drum versus playing rock versus playing jazz versus playing solo versus playing accompaniment etc. We learn that all of these areas use the same fundamental patterns and thus are fundamentally related. As a result, they become easier to learn and easier to comprehend.²

The first section of Part I of Drumming Patterns, “Sticking Patterns,” presents these patterns as stickings. After the sticking pattern section are several sections consisting of the same sticking patterns systematically embellished by flams, accents etc. The whole of Part I presents the progressive arrangement of all the primary components of stick technique.

Part II of Drumming Patterns converts these patterns into rhythms and shows how these rhythmic patterns may be applied to various styles performed on the drum set in both solo and accompaniment.

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¹ It is the abstract concept of these underlying patterns that is essential to grasp, not their concrete form. These same underlying patterns could be illustrated in any number of concrete forms, including, but not limited to, stickings, notes and rests, and the boxes and circles illustrating the front cover. Thus, the preceding diagram should not be interpreted as being a concrete instruction for how to play the stickings, but rather, as an illustration of the abstract correlation between the most fundamental sticking patterns and the most fundamental rhythmic patterns.

² This is parallel to the advantages of understanding language in terms of grasping a finite number of grammatical principles as opposed to memorizing an infinity of concrete instances of usage.
PART I:
SNARE DRUM PATTERNS
PART I: 
SNARE DRUM PATTERNS

Note: Throughout this text, “R” is a symbol for a right-handed stroke, “L” is a symbol for a left-handed stroke. All quarter notes are equal to one beat.

PRACTICE METHOD

1) Each pattern should be practiced by repeating it continuously, proceeding to the fastest tempo at which it can be executed precisely and in a relaxed manner.
2) At a given tempo, each pattern should be practiced at soft, medium, and loud dynamic levels.\(^1\) The use of a metronome is recommended.
3) Each pattern should first be practiced in the Sticking Pattern section before attempting the embellished versions of those patterns introduced in subsequent sections.

BUDGETING PRACTICE TIME

Drumming Patterns is an encyclopedia of technique and rhythm, rather than a method book to be practiced strictly from beginning to end. Therefore, depending on the amount of practice time available, the reader may want to select only some of the patterns for practice, rather than attempting to practice them all. The shorter, simpler, and more symmetrical patterns are more useful than some of the more elaborate patterns.\(^2\) Therefore, you should concentrate on learning these patterns before considering the more elaborate ones. In Part I, the most important patterns to practice are:

I. Sticking Patterns (pages 16-39)
   A) All two, three, four, six, nine, and twelve digit patterns
   B) Eight digit patterns phrased in double subdivisions (eighth notes and sixteenth notes)
   C) Nine digit patterns

II. Embellishment, Accent, Flam, Single, and Double/Buzz Patterns (pages 40-85)
   A) All two, three, and four digit patterns.

---

1. In addition to developing dynamic (volume level) control, at a given tempo when the patterns are practiced from soft to loud each increase in dynamic level will increase the height that the stick will rise. Correspondingly, the speed at which the stick will travel will also increase, thereby easing the transition to the next faster tempo.

2. For a more detailed discussion of this subject, see “Appendix II: Determining A Pattern's Utility,” page 168.
ORGANIZATION OF PART I

Part I is divided into nine sections of four types:

1) The **Sticking Patterns** section presents various unembellished combinations of the four fundamental units of snare drum technique: R, L, RR, LL.

2) The **Embellishment Patterns** section superimposes accent, flam, single, double, and buzz stroke embellishments over single stroke (RL, RLRL etc.) sticking patterns.

3) The **Accent Patterns, Flam Patterns, Single Stoke Patterns, and Double/Buzz Stroke Patterns** sections superimpose these same embellishments over more complex (RLL, RRLL etc.) sticking patterns.

4) The **Roll Patterns and Alternating Roll Patterns** sections present roll pattern notations to which the above patterns may be applied.

**STICKING PATTERNS SECTION VS. SUBSEQUENT SECTIONS**

In the **Sticking Patterns** section each sticking pattern is presented phrased in four different ways: as eighth notes, sixteenth notes, eighth note triplets, and sixteenth note triplets. As a guide to clarify the beginning and end of each sticking pattern, the first digit of each sticking pattern is underlined.

Upon learning the pattern in the Sticking Patterns section, you will have acquired the ability to phrase each pattern in these four ways. Therefore, in subsequent sections each pattern is presented only once, without any musical notations. However, each pattern should still be practiced as eighth notes, sixteenth notes, eighth note triplets, and sixteenth note triplets. In contrast to the sticking patterns section, in subsequent sections underlined digits indicate embellishments, such as accents, flams, etc.
STICKING PATTERNS

Sticking patterns are the basic patterns of drum technique upon which other patterns are built, and are the basis for all the material in this book. Of the sticking patterns themselves, those two to four digits in length are the most basic, and are the basis for all subsequent sticking patterns.

Each pattern is presented in four different ways: as eighth notes, eighth note triplets, sixteenth notes, and sixteenth note triplets. The *inversions* of each sticking pattern are shown in vertical columns (a definition of this term is found on page 164). To clarify the beginning of each pattern, its first digit is underlined. (In this section the underlining of digits does not signify embellishments.)

Each exercise should be practiced by repeating continuously. “R” is a symbol for the right stick; “L” is a symbol for the left stick. In this and all subsequent sections, each quarter note is equal to one beat. For detailed practicing guidelines, see “Part I: Snare Drum Patterns” on page 14.

The most important patterns to practice in this section are:

A) All two, three, four, six, and twelve digit patterns
B) Eight digit patterns phrased in double subdivisions (eighth notes and sixteenth notes)
C) Nine digit patterns phrased as eighth note triplets

TWO DIGIT PATTERNS

Sticking 2A: RL

<table>
<thead>
<tr>
<th>[ \text{RL} ]</th>
<th>[ \text{RLRL} ]</th>
<th>[ \text{RLR LRL} ]</th>
<th>[ \text{RLRLRL} ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) RL</td>
<td>1) RLRL</td>
<td>1) RLR LRL</td>
<td>1) RLRLRL</td>
</tr>
<tr>
<td>2) LR</td>
<td>2) LRLR</td>
<td>2) LRL RLR</td>
<td>2) LRLRLR</td>
</tr>
</tbody>
</table>
THREE DIGIT PATTERNS

Sticking 3A: RLL

1) RLL
2) LRL
3) LLR

Sticking 3B: LRR

1) LRR
2) RLR
3) RRL

FOUR DIGIT PATTERNS

Sticking 4A: RRLL

1) RR LL
2) LR RL
3) LL RR
4) RL LR

1) RRLL
2) LRLR
3) LLRR
4) RLLL

1) RRL  LLL  LRL
2) LRR  LLR  RLL  RRL
3) LLR  RLL  RRL  LRR
4) RLL  RRL  LRR  LLR
FIVE DIGIT PATTERNS

Sticking 5A: RLRLL

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Notation</th>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RL RL LR LR LL</td>
<td>RLR LLR LRL RLL RLR LRL</td>
</tr>
<tr>
<td>2</td>
<td>LR LR LL RL RL</td>
<td>LRLR LRLR RLLR LRLR LRLR</td>
</tr>
<tr>
<td>3</td>
<td>LL RL RL LR LR</td>
<td>LLRL RLLR LRLL RLRL LRLR</td>
</tr>
<tr>
<td>4</td>
<td>RL LR LL LL RL</td>
<td>RLLR LRLL RLRL LRLR LLRL</td>
</tr>
<tr>
<td>5</td>
<td>LR LL RL RL LR</td>
<td>LRLL RLRL LRLR LLRL RLLR</td>
</tr>
</tbody>
</table>

Sticking 5B: LRLRR

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Notation</th>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LR LR RL RL RR</td>
<td>LRLR RRLR RLLR LRLR RLRR</td>
</tr>
<tr>
<td>2</td>
<td>RL RL RR LR LR</td>
<td>RLRL RRLR LRLL RLLRL LRLR</td>
</tr>
<tr>
<td>3</td>
<td>RR LR LR RL RL</td>
<td>RRLR LRRL LRLR LLRL RLLR</td>
</tr>
<tr>
<td>4</td>
<td>LR RL RL RR LR</td>
<td>LRRL RRLR LRRL RLRL RRLR</td>
</tr>
<tr>
<td>5</td>
<td>RL RR LR LR RL</td>
<td>RLRR LRLR RLRL RRLR LRRL</td>
</tr>
</tbody>
</table>
Sticking Patterns

1) LRL  RRL  RLR  RLR  LRR
2) RLR  LRR  LRL  RRL  RLR
3) RRL  RLR  RLR  LRR  LRL
4) LRR  LRL  RRL  RLR  RLR
5) RLR  RLR  LRR  LRL  RRL

SIX DIGIT PATTERNS

Sticking 6A: RLRRLL

1) RLR  RLL
2) LRL  RRL
3) LLR  LRR
4) RLL  RLR
5) RRL  LRL
6) LRR  LLR

Sticking 6B: LRLLRR

1) LRL  LRR
2) RLR  LLR
3) RRL  RLL
4) LRR  LRL
5) LLR  RLR
6) RLL  RRL

1) RLRRLL  RRLLR  LRLRL  RRLRL  RLRLR  LRLRR
2) RLRLLR  LRRRL  LLRLR  LRRLR  RLLRL  RLLRR
3) RRLRLL  RLRRL  LRLRR  RRLRL  LRRLR  LRLRR
4) LRRLLR  RRLLR  RRRRL  LRRLR  LRLRR  RRRLR
5) RLLRLR  RRLRR  RRRRL  LRRLR  LRLRR  RRRLR
6) RRLRLR  RRRRL  RRLRR  RRRRL  LRRLR  RRLRR

1) RLRR  LLRL  RRLL
2) RLLR  RLLR  LRRL
3) LLRL  RLRR  LLRR
4) LRLR  RRRR  LRLR
5) LLRL  LRLL  RRLR
6) LRRL  LRLR  RRLR

1) LRLL  RLLL  LLRR
2) RLLR  LLRL  LRLR
3) LLRL  LRRL  RLLR
4) LLRR  LRLR  RRLL
5) RRLL  LLRR  LLRR
6) LRLR  LLLR  RRLR

1) LRR  LLR
2) RLL  LRL
3) RLL  RRLL
4) LRR  RLR
5) LRL  RRL
6) RRLL  LRRL

1) LLRR  LRLL  RLLL
2) RRLL  LLRR  LLRR
3) LRLR  RRRL  LRRL
4) LLLR  RLRR  LRLR
5) RLLR  LRRL  RRLL
6) RLLR  RRLR  LLRR

1) LRLL  RLLR  LLRR
2) RLLL  LRLR  RRLL
3) LRLR  RLR  LLRR
4) LLRL  RRRR  LRRL
5) RLLR  RRLL  LLRR
6) LRLR  RRLR  LLRR

1) RRLL  LLRR  LLRR
2) LRLR  RRLL  LLRR
3) LLRL  RRRR  LRRL
4) RLLR  LRLR  RRLL
5) LRLR  RRLL  LLRR
6) RLLR  RRLR  LLRR
SEVEN DIGIT PATTERNS

Note: Because seven does not divide easily into eighth note, sixteenth note, eighth note triplet, and sixteenth note triplet groupings, all but the first inversions of the seven stroke patterns are omitted, as these patterns have relatively limited utility.¹

Sticking 7A: RLRLRLL

1) RL RL RL LR LR LL

1) RLRL RLLR LRLR LLRL RLRL LRLR LRLL

1) RLR LRL LRL RLR LLR LRL RLL

1) RLRLRL LRLRLR LLRLRL LRLRLR LRLRRL RLRLLR LRLRLL

Sticking 7B: LRLRLRR

1) LR LR LR RL RL RR

1) LRLR LRRL RLRL RRLR LRLR RLRL RLRR

1) LRL RLR RLR LRL RRL RLR LRR

1) LRLRLR RLRLRL RRLRLR LRRLRL RLRRLR LRLRRL RLRLRR

¹ For a definition of the term “inversion”, see Appendix I, Item 3 on page 166. For an explanation of the concept of utility, see Appendix II on page 168.
Sticking Patterns

Sticking 7C: RLLRRLR

1) RL LR RL LR LL RR LL
1) RLLR RLLR LLRR LLRL LRRL LRLL RRLR

1) RLL RRL LRL LRR LL LR LL RLL

1) RLLRRL LRLLRR LLRLRR RLLRRL RRLRLR LRRLLR LLRRLR

Sticking 7D: LRRLLRR

1) LR RL LR RL RR LL RR
1) LRRL LRRL RLLL RLLR RLLR RLRR LLRR

1) LRR LLR RLR RLL RRL RRL LRR

1) LRRLLR RLRLRR RLRRLR LRRLRR LLRLRR LRRLRL RLLRLL RLLRRL
EIGHT DIGIT PATTERNS

Sticking 8A: RLRRLRLL

1) RLR RLR LL R L 1) RLR RLR LL R L
2) LRR LRL LRL RRL RLL RLR RLR RLR 2) LRRL RLLR
3) RRL RLL RLR RLR LRL RLR LRL LRL 3) RRLR LLRL
4) RLR LLR LRR LRL LRL RLR LRL RLR 4) RLRL LRLR
5) LRL RRL LL RL RR 5) LRLR LLRR
6) RL LR LL RL RR 6) RLLR LRRL
7) LL RL LL LR 7) LLRL RRLR
8) LR LR RL LR 8) LRLR RLRL

1) RLR RLR LL R L RRL LRL RLR
2) LRR LRL LRL RRL RLL RLR RLR
3) RRL RLL RLR RLR LRL LRL RRL
4) RLR LLR LRR LRL LRL RRL RLL RLR
5) LRL LRL RRL RLL RLR LLR RLR
6) RLL RLR RLR LLR LRL LRL RRL
7) LLR LRR LRL LRL RRL RLL RLR
8) LRL RRL RLL RLR RLR LLR LRL
Sticking Patterns

1) RLRRLR LLRLRR LRLRLR RRLRRL
2) LRRLLR LLRLRR LRLRRL RRLRRR
3) RRRLLR RLLRRL LRLRLR LRLRRL
4) RRRLLR LRRRRL LRLRLR RRLRRL
5) RRRLLR LRRRRL LRRRLR LRLRRL
6) LRRRLR RLLRLR LRLRRL LRLRRL
7) LLRLRR LRLRLR RRLRLR LRLRRL
8) LRLRRL RLLRLR RRLRLR LRLRRL

Sticking 8B: RLRLRRLL

1) RL RL RR LL 1) RLRL RRLL
2) LR LR LR RL 2) LRLR LRRL
3) LL RL RL RR 3) LLRL RLRR
4) RL LR LR LR 4) RLLR LRLR
5) RR LL RL RL 5) RRLL RRLR
6) LR RL LR LR 6) LRRL LRLR
7) RL RR LL RL 7) RLRR LLRL
8) LR LR RL LR 8) LRLR RLLR
Sticking 8B: RLRLRRLL
(continued from previous page)

1) RLR LRR LLR LRL RRL LRL RLR RLL
2) LRL RLR RLL RLR LRR LRL LRL RRL
3) LLR LRL RRL LRL RLR RLL RLR LRR
4) RLL RLR LRR LLR LRL RRL LRL RLR
5) RRL LRL RLR RLL RLR LRR LLR LRL
6) LRR LLR LRL RRL LRL RLR RLL RLR
7) RLR RLL RLR LRR LLR LRL RRL LRL
8) LRL RRL LRL RLL RLL RLR LRR LLR

1) RLRLRR LLRLRL RLLRLR LLRLRL
2) LRLRLR RLLRLR LLRLRL LRLRLR
3) LLRLRL RLLRLR RLLRLR RLRLRR
4) RLLRLR LRRLLR LRRRLR LRLRLR
5) RRLRLR RLLRLR RLRLRR LRLRLR
6) LRRLLR LRLRLR LRLRLR RLLRLR
7) RLRRLR RLLRLR LRLRLR RLLRLR
8) LRLRRL LRLRLR RLLRLR LRLRLR
Sticking Patterns

1) LRL RRL RRL RLR RLR RLRL LRR LRR
2) RLR LRR LRR LRL RRL RRL RLR RLR
3) RRL RLR RLR RLR LRR LRL LRL RRL
4) LRR LRL RRL RRL RLR RLR RLRL LRR
5) RLR RLR LRR LRL RRL RRL RRL RLR
6) RRL RRL RLR RLR RLR LRR LRL LRL
7) LRR LRR LRL RRL RRL RLR RLR RLR
8) RLR RLR RLR LRR LRL LRL RRL RRL

Sticking 8C: LRLRLRR

1) LR LR LL RR 1) LRLR LLRR
2) RL RL RL LR 2) RLRL RLLR
3) RR LR LR LL 3) RRLR LRLL
4) LR RL RL RL 4) LRRL RLRL
5) LL RR LR LR 5) LLRR LRLR
6) RL LR RL RL 6) RLLR RLRL
7) LR LL RR LR 7) LRLL RRLR
8) RL RL LR RL 8) RLRL LRRL
Sticking 8C: LRLRLLRR
(continued from previous page)

1) LRL RLL RRL RLR LLR RLR LRL LRR
2) RLR LRL LRR LRL RLL RLR RLL RLR
3) RRL RLR LLR RLR LRL LRR LRL RLL
4) LRR LRL RLL RLR LRL RRR LRL LRL
5) LRR RLR LRL RRR LRL RRL RRL RRR
6) RLL RRL RLR LRR LRL LRR LRL LRR
7) LRL LRR LRL RRL RLR LRR LRL LRL
8) RLR LRR RLR LRL RRR LRL LRL RRL

1) LRLRLL RRLRLR LLRRLR LRLLLRR
2) RLRLLR LRRRLR RLLRLR RLRLLR
3) RRLRLR LLRRLR LRRLLR LRRRRR
4) LRRLRL RLLRLR LRLRLL RLRRLR
5) LRRLRL LRLRLR LRLRLL RRLRLR
6) RLRLLR RLRLRL RLLRLR LRRLRL
7) LRLRLL RLRRLR RLRLRL LLRRLR
8) RLRLLR RLRLRL LRRRLR LRRRLR
Sticking Patterns

Sticking 8D: RLRLLRLL

1) RL RL LR LL
2) LR LR LL RL
3) LL RL RL LR
4) RL LR LR LL
5) LR LL RL RL
6) LL RL LR LR
7) RL LR LL RL
8) LR LL RL LR

1) RLL LRR LLL
2) LRL LRL LRR
3) LRL RLL LRR
4) RLL RRR LRL
5) LRL RRL LLL
6) LLR LRR LLL
7) RLL LRL LRR
8) LRL LRR LRL

1) RLR LLR LLC LRL LRL LRL RRR
2) LRL RLL RLL RLR LRL LRL RRR
3) LRL RLL RLL LRL LRL LRL RRR
4) RLL RLL LRL LRL LRL LRL RRR
5) LRL RRL RLL RLR LRL LRL LRL
6) LRL LRR LRL LRL RLL RLL RRR
7) RLL RLL RLL LRL LRL LRL LRL LRL
8) LRL LRL LRR RLL RLL RRR LRL LRL
1) RLRLLR LRLR LRLLRL RLLRLL
2) LRLRLL RLLR LRLLLR LRLRLL
3) LLRLRL LRLRRL RLLRLL RLRLLL
4) RLLRLR LRLRLL LRLLRL LRLLLL
5) LLRLRL RRLLR RRLLLL LRLLLL
6) LRLRLL LRLRLL LRLLRL RLLRLL
7) RLLRLR LRLRLL LRLLRL LRLLLL
8) LRLRLL LRLRLL RLLRLL LRLLLL

Sticking 8E: LRLRRLRR

1) LR LR RL RR 1) LRLR RLRR
2) RL RL RR LR 2) RLRL RRLR
3) RR LR LR RL 3) RRLR LRRL
4) LR RL RL RR 4) LRRL RRLR
5) RL RR LR LR 5) RLRR LRLR
6) RR LR RL RL 6) RRLR RLRL
7) LR RL RR LR 7) LRRL RRLR
8) RL RR LR RL 8) RLRR LRRL
Sticking Patterns

1) LRL  RRL  RRL  RLR  RLR  RLR  LRR  LRR
2) RLR  LRR  LRR  LRL  RRL  RRL  RLR  RLR
3) RRL  RLR  RLR  RLR  LRR  LRR  LRL  RRL
4) LRR  LRL  RRL  RRL  RLR  RLR  RLR  LRR
5) RLR  RLR  LRR  LRR  LRL  RRL  RRL  RLR
6) RRL  RRL  RLR  RLR  RLR  LRR  LRR  LRL
7) LRR  LRR  LRL  RRL  RRL  RLR  RLR  RLR
8) RLR  RLR  RLR  LRR  LRR  LRL  RRL  RRL

1) LRLRRL  RRLRLR  RLRLRR  LRLLRR
2) RLRLRR  LRRLRL  RRLRRL  RLRRLR
3) RRLRLR  RLRLRR  LRRLRL  LRLRRL
4) LRRLRL  RRLRRL  RLRRLR  RLRLRR
5) RLRRLR  LRRLRR  LRLRRL  RRLRLR
6) RRLRRL  RLRLRR  RLRLRR  LRRLRL
7) LRRLRR  LRLRRL  RRLRRL  RLRRLR
8) RLRLRR  RLRLRR  LRLRRL  RRLRRL
NINE STROKE PATTERNS

Note: Because nine does not divide easily into eighth note and sixteenth note groupings, those groupings are omitted.

Sticking 9A: RLRLRLRLL

1) RLR LRL RLL
2) LRL RLR LRL
3) LLR LRL RLR
4) RLL RLR LRL
5) LRL LRL RLR
6) RLR LLL LRL
7) LRL RLL RLR
8) RLR RLL LRL
9) LRL RLR LRR

Sticking 9B: LRLRLRLRR

1) LRL RLR LRR
2) RLR LRL RLR
3) RRL RLR LRL
4) LRR LRL RLR
5) RLR RLR LRL
6) LRL RRL RLR
7) RLR LRR LRL
8) LRL RLR RLR
9) RLR LRL RRL
Sticking Patterns

Sticking 9C: RLRLLRRLL

1) RLR LLR RLL  
2) LRL RLL RRL  
3) LLR LRL LRR  
4) RLL RLR LLR  
5) RRL LRL RLL  
6) LRR LLR LRL  
7) LRR RLL RLR  
8) RLL RRL LRL  
9) LRL LRR LLR

Sticking 9D: LRLRLRRRR

1) LRL RRL LRR  
2) RLR LRR LLR  
3) RRL RLR RLL  
4) LRR LRL RRL  
5) LLR RRL LRR  
6) RLL RRL RLR  
7) RRL LRR LRL  
8) LRR LRL RLR  
9) LRR RLL RRL
Sticking 9E: RLRRLRLL

1) RLR RLR RLR
2) LRL RRL RRL
3) LRR LRR LRR
4) RLL RLR RLR
5) LRL RLR RRL
6) LLR LLR LRR
7) RLL RLR LRR
8) RRL LRL RLR
9) LRR LLR LRR

Sticking 9F: LRLLRRLRR

1) LRL LRR LRR
2) LRL LRR LRL
3) RRL RLL RRL
4) LRR LRL LRR
5) RLR RLR LRR
6) RRL RRL RRL
7) LRR LRR LRL
8) LLR LRR RLR
9) RLL RRL RRL
Sticking Patterns

Sticking 9G: RLRRLRRLL

1) RLR RLR RLL
2) LRL RRL RRL
3) LLR LRR LRR
4) RLL RLR RLR
5) RRL LRL RRL
6) LRR LRL LRR
7) RLR RLL RLR
8) RRL RRL LRL
9) LRR LRR LRR

Sticking 9H: LRLLRLLRR

1) LRL LRL LRR
2) RLR LLR LLR
3) RRL RLL RLL
4) LRR LRL LRL
5) LLL RLR LLR
6) RLL RRL RLL
7) LRL LRR LRL
8) LLR LLR LRL
9) RLL RLL RRL
TEN STROKE PATTERNS

Note: For practical reasons, non-symmetrical ten digits patterns are omitted.

Sticking 10A: RLLRRLRRLL

1) RL LR RL RR LL
2) LR LL RR LR RL
3) LL RL LR RL RR
4) RL LR LL RR LR
5) RR LL RL LR RL
6) LR RL LR LL RR
7) RL RR LL RL LR
8) RR LR RL LR LL
9) LR RL RR LL RL
10) LL RR LR RL LR

1) RLLR RLRR LLRL LRRR LRRR
2) LRLR LRRR LLRL LRRR LRRR
3) LLRL LRRL RRRR LLLR LLRR
4) RRLR LLRR LRLR LAAL LRRR RRRR
5) RLLR RLLR LRLR LAAL LLLR LLLR
6) LRRL LRLR RRLR LRLR LRLR
7) RRRR LRLR LLLR LRRR RRRR
8) RRLR LLRL LRLR LRLR LRLR
9) LLRL RLLR LRLR LRLR LRLR
10) LLRR LRLR LRLR LRLR LRLR

1) RLR LRL RLR LRL LRL LRL RLR RLR
2) LRL RRR LRL LRL LRL LRL LRR RRR RRL
3) LLRL LRRL RRR RRL RRL RRL LRL LRL
4) RRL RRL RRL RRL RRL RRL LRL LRL
5) RRL LRL LRL LRL LRL LRL LRL LRL
6) LRR LRL LRL RLR LRL LRL RRL LRL
7) RRR RRL LRL LRL LRL LRL LRL LRL
8) RRL RRL LRL LRL LRL LRL LRL LRL
9) LRR LRR LRL LRL RLR LRL RRL RRL LRL
10) LRL RLR RLL LL LRL RRL RRL RRL LRL
Sticking Patterns

1) RLLRRL  RLLRRL  LRLRRR  LLRLRR  RRRLRL
2) LRLRRR  LRLRRL  LRLRRL  RRLRLR  RRLRRL
3) LRLRRL  RLRRLR  RLRRLR  RLRRLR  LRLRRL
4) RLLRLR  RLRRLR  LRLRRR  LRLRRR  LRLRRL
5) RLLRLR  LRLRRR  LRLRRR  LRLRRR  LRLRRL
6) LRLRRL  LRLRRL  RRLRRL  RRLRRL  LRLRRL
7) RLRRLR  RLRRLR  RLRRLR  RLRRLR  LRLRRL
8) RRLRRL  RLRRLR  LRLRRL  LRLRRL  LRLRRL
9) LRLRRL  LRLRRL  RLRRLR  LRLRRL  LRLRRL
10) LRLRRL  RLRRLR  LRLRRL  LRLRRL  LRLRRL

**Note:** Because eleven does not divide easily into eighth note, sixteenth note, eighth note triplet, and sixteenth note triplet groupings, all eleven stroke patterns are omitted, as they have less utility than the other patterns presented in this section.¹

¹ For an explanation of the concept of utility, see Appendix II on page 168.
TWELVE STROKE PATTERNS

Note: Because of the long length of twelve digit patterns, and the large quantity of twelve digit patterns available, only the three twelve digit patterns with the highest utility are presented.\(^1\)

Sticking 12A: RLRLRRLRLRLLL

<table>
<thead>
<tr>
<th>Sticking 12A: RLRLRRLRLRLLL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) RLR LRLRRL RLRRL</td>
</tr>
<tr>
<td>2) LRL RLRRLRR RRRRL</td>
</tr>
<tr>
<td>3) LRR RRLR LRLRRL</td>
</tr>
<tr>
<td>4) RLR LRLLR LRLRL</td>
</tr>
<tr>
<td>5) LRL RLR RLLRRL</td>
</tr>
<tr>
<td>6) RLR LRLRR LRLRL</td>
</tr>
<tr>
<td>7) LRL RLLR LRLRL</td>
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<tr>
<td>8) RLR LRL RLRLRL</td>
</tr>
<tr>
<td>9) RRL RLR LRLRLRL</td>
</tr>
<tr>
<td>10) LRR LRL RLLRRL</td>
</tr>
<tr>
<td>11) RLR RLR LRL LLRL</td>
</tr>
<tr>
<td>12) LRL RRL RLR LLRL</td>
</tr>
</tbody>
</table>

\(^1\) For an explanation of the concept of utility, see Appendix II on page 168.
Sticking Patterns

1) RL  RL  RR  LR  LR  LL
2) LR  LR  LR  RL  RL  RL
3) LL  RL  RL  RR  LR  LR
4) RL  LR  LR  LR  RL  RL
5) LR  LL  RL  RL  RR  LR
6) RL  RL  LR  LR  LR  RL
7) LR  LR  LL  RL  RL  RR
8) RL  RL  RL  LR  LR  LR
9) RR  LR  LR  LL  RL  RL
10) LR  RL  RL  RL  LR  LR
11) RL  RR  LR  LR  LL  RL
12) LR  LR  RL  RL  RL  LR

1) RLRL  RRLR  LRLL
2) LRLR  LRRL  RRLL
3) LRLR  RLRR  LRLR
4) RLLR  LRLR  RLRL
5) LRLR  RLRL  RRLR
6) RLRL  LRLR  LRRL
7) LRLR  LLRL  RLRR
8) RLRL  RLLR  LRLR
9) RRLR  LRLL  RLRL
10) LRRL  RLRL  LRLR
11) RLRR  LRLR  LLRL
12) LRRL  RLRL  RLLR
Sticking 12B: RLRLRLRLRLL

1) RLR LRL LRL RLL
2) LRL RLR LLR LRL
3) LRL RLR LRL RLR
4) RLL RLR LRL LRL
5) LRL LRL RLR LRR
6) RLR LLR LRL RLL
7) LRL RLL RLR LRL
8) LLR LRL LRL RLR
9) RLL RLR LRR LRL
10) LRL LRL RLL RLR
11) RLR LLR LRL LRL
12) LRL RLL RLR LRR
Sticking Patterns

Sticking 12C: LRLRRLRLRLRR

1) LRL RLR RLR LRR
2) RLR LRL RRL RLR
3) RRL RLR LRR LRL
4) LRR LRL RLR RLR
5) RLR RLR LRL RRL
6) LRL RRL RLR LRR
7) RLR LRR LRL RLR
8) RRL RLR RLR LRL
9) LRR LRL RRL RLR
10) RLR RLR LRR LRL
11) LRL RRL RLR RLR
12) RLR LRR LRL RRL

1) LRLRL RRLRLRR
2) RLRLRL RRLRLR
3) RRLRLR LRRLRL
4) LRRRLR LRRRLR
5) RLRLRL RLRRLR
6) LRRRLR RLRLRR
7) RLRLRR LRLRLR
8) RRLRLR RLRLRL
9) LRRRLR LRRLRL
10) RLRLRL LRRLRL
11) LRRRLR LRRLRL
12) RLRLRR LRRLRL

1) LR LR LR RL RL RR
2) RL RL RL RR LR LR
3) RR LR LR LR RL RL
4) LR RL RL RL RR LR
5) RL RR LR LR LR RL
6) LR LR RL RL RL RR
7) RL RL RR LR LR LR
8) RR LR LR RL RL RL
9) LR RL RL RR LR LR
10) RL RR LR LR RL RL
11) LR LR RL RL RR LR
12) RL RL RR LR LR RL

1) LRL LR RL RR LR
2) RL RL RL RR LR LR
3) RR LR LR LR RL RL
4) LR RL RL RL RR LR
5) RL RR LR LR LR RL
6) LR LR RL RL RL RR
7) RL RL RR LR LR LR
8) RR LR LR RL RL RL
9) LR RL RL RR LR LR
10) RL RR LR LR RL RL
11) LR LR RL RL RR LR
12) RL RL RR LR LR RL