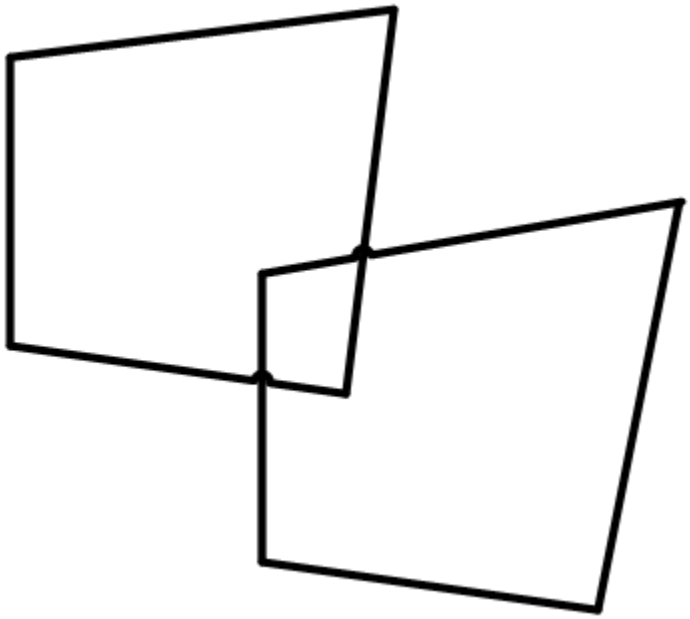
ASYMMETRIC MECHANICS 2



A PRACTICAL GUIDE TO ASYMMETRIC SIGHT CALLING

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Version Notes

Version	Notes
2.01 7/23/2011	Added additional bridge module to section 4.6 map. Modified examples in 4.6.1 and 4.6.5 to use the new bridge. Updated the diagrams in chapter 4.
2.02 7/26/2011	Added section to appendix 1 regarding use of swing thru.
2.03 7/30/2011	Added Appendix 2 showing an integrated map of the Mirror Region
2.04 8/1/2011	Fixed error in diagram in Appendix 2.
2.05 9/1/2011	Numerous grammar fixes. Numbered all the examples, bridges, and normalization modules for easier reference.
2.06 9/4/2011	Added Appendix 3: A Gem in the Swamp.
2.07 9/6/2011	Corrected error in example 15.
2.08 9/12/2011	Added appendix showing the integrated framework.
2.09 9/20/2011	Added recap of mirror normalization modules to appendix 2. Improved the roadmap in section 2.4. Changed the example in appendix 4 to improve the flow.
2.10 10/24/2011	Add information about software by Reinhold Roedig which animates the examples in this paper.

BACKGROUND

I began calling in 1965. In the early 1980s I became interested in asymmetric choreography. In particular, I wanted to be able to sight call to all arrangements of men and women including same-sex formations such as waves and lines. After many years of study, I pulled the material together and self-published a book in 1993 called Asymmetric Mechanics: A Practical Guide to Asymmetric Sight Calling. I sold about 100 copies of the book and met with some callers whom I thought would be interested in the material. I even tried to get interest in a "Birds of a Feather" session at Caller Lab, but no one took much interest in the topic. So I continued to use the material at my dances but made no attempt to promote it much.

I recently attended the Caller Lab convention in Las Vegas (2011) and found some level of interest in the topic including some requests for the book which by now is unavailable since the DOS-based word processor I used is obsolete, leaving me without even an electronic copy. Over the years I recognized that my original packaging could have been better so I decided to re-write the material with better organization. In particular, I have made an attempt to avoid as much theory and new words as possible, saving them for chapters on the theory. However, the ideas for asymmetrics in this paper were all present in the 1993 book. The material in Chapter 4 on mirror formation management is new with this edition. The content in this paper is original. Although I am aware of other callers using asymmetric choreography, I am not aware of what techniques they use.

Please feel free to comment on this material or make me aware of any errors in this paper by sending an email to hbarnes32@comcast.net.

A NOTE ABOUT THE FIGURES IN THIS PAPER

All the figures in the paper were snapshots taken using Callarama software by permission of the developer, Reinhold Roedig. This software animates the dance figures including asymmetric bridge and normalization modules. He worked with me about five years ago and adapted his program to accommodate most asymmetric calls in this paper, much to my amazement. More information about this product can be found at www.**callarama**.com.

GET FREE SOFTWARE TO SEE ALL THE EXAMPLES

Reinhold Roedig, the developer of Callarama call animation software, has developed a viewer version which comes with all the examples in this paper preloaded for viewing . Download this viewer for free at http://www.callarama.com/Files/CallaramaPlayer021.exe. It allows you to select the example and step through one call at a time or run the sequence without stopping. This is a great help to visualize what is happening for the asymmetric arrangements and mirror formations.

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INTRODUCTION

Many experienced callers use some asymmetric figures which they have worked out ahead of time to give the dancers a look at some unusual formations or arrangements. Some of these may feel like gimmicks because the movements are directed at unusual subsets of the square or the movements do not flow together well. On the other hand, there are some very talented callers who can sight call asymmetric choreography by sighting on six dancers. Unfortunately I am not that smart, but I would still like to have those additional arrangements available. The objective of this paper is to bring asymmetric choreography into more common use as an extension of the current symmetric choreography. This will add variety and challenge within a dancer's level without introducing new calls. For asymmetric choreography to be treated as an extension of the normal calling it must satisfy the following points:

- Must be able to transition quickly and smoothly between the symmetric and asymmetric setups.
- Must flow just as smoothly while doing asymmetric material as normal dancing.
- Callers must be able to sight call through the asymmetric material with no more complexity than regular sight calling.

This paper does not address the general asymmetric problem which requires sighting on six dancers to resolve the square. Such calling can sometimes result in "stop and go" dancing while the caller gets his or her bearings. Instead, this paper presents an approach to access all the arrangement variations (anywhere from 0 to 4 men or women in a box, line, or wave) but continue calling just like we do in normal squares. This means that we stick mainly to symmetric formations but get the benefit of all the asymmetric arrangement variations. In exchange for this slight limitation, we meet all of the objectives noted above including sight calling methods which are simpler than the normal symmetric methods. However, asymmetric mechanics works differently, so callers must accept some new concepts and terminology, but they dovetail nicely with existing methods.

This paper uses a step-by-step approach beginning with the most basic version of asymmetric sight calling. In fact the early steps require no sight calling at all. We then add more variations to move between the symmetric and asymmetric regions and show how to relax the constraints without adding complexity. The steps are designed so that a caller can stop on any step and still get improved variety in his or her choreography. This paper contains a lot of material. It is not necessary to master all the steps to see the benefits. However, each step adds more variety and flexibility.

The second major section of this paper (Chapter 4) addresses formation management using mirror formations. An example of a mirror formation is one right hand wave and a parallel left hand wave so that corresponding dancers are either looking at each other or back to back, like looking in a mirror.

The paper concludes with material on the theory of asymmetric and mirror formation choreography. It is included for those who are interested in more precise definitions and explanations of why the methods work.

APPLICABILITY OF ASYMMETRIC CHOREOGRAPHY

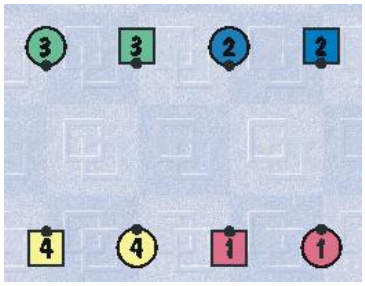
Think of asymmetric choreography as a spicy seasoning on your food: a little goes a long ways. In my opinion, a couple sequences a night would be appropriate at the Plus Level. However, at Plus DBD and above a variety of arrangements is the name of the game. In that case a sequence per patter seems appropriate. But the point is that this material will not be the foundation around which you will build a dance. But, it will add variety and interesting choreography to your dance.

One word of caution. When you first introduce asymmetric arrangements, keep the choreography very "vanilla" because the different arrangements will cause enough challenge without adding additional complexity. Good dancers who are inexperienced with asymmetric choreography may be very familiar with the image dancer concept. When they think they may have made a mistake, they check their image dancer and "fix" themselves. Unfortunately, in this case the "fix" is the mistake, because they will not understand that the normal image dancer is no longer relevant.

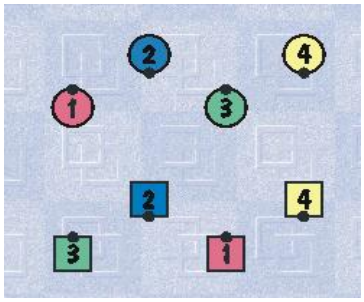
Another use of this material beyond sight calling is in developing set figures. Understanding how the mechanics work will make your set figures much smoother and cleaner. Furthermore, experience with a variety of arrangements and formations in different regions, will help generate more creative ideas for those figures.

The Choreographic World View

Before diving into the methods, we need a view of the "big picture" for choreography. The diagram below shows the different regions addressed in this paper.

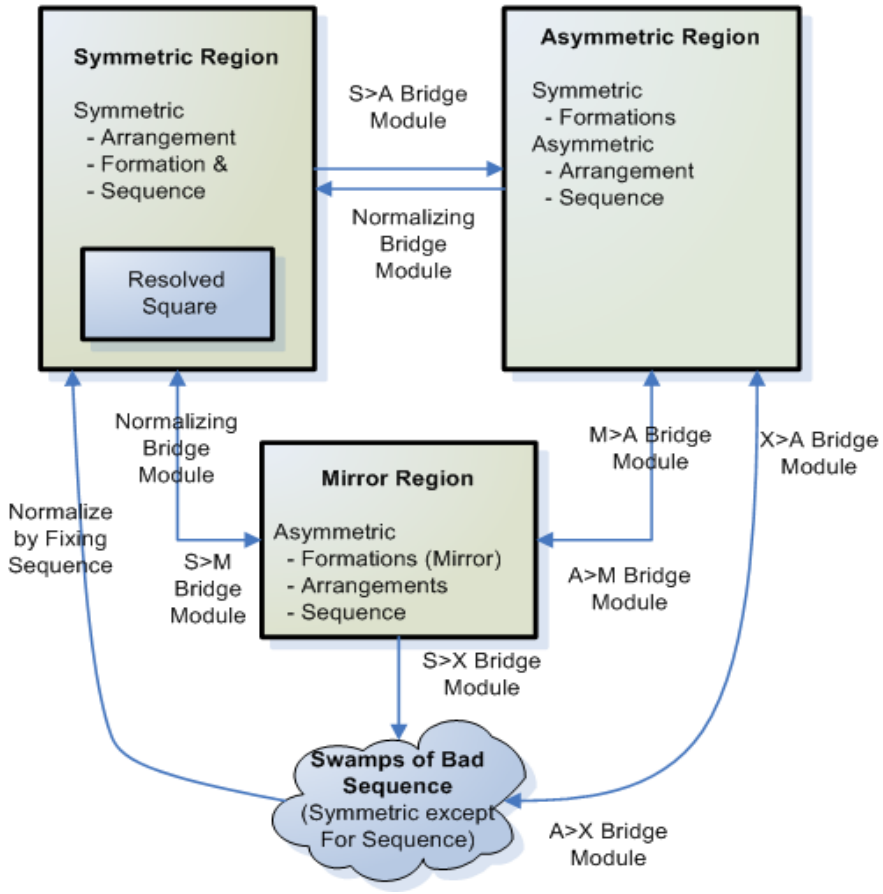


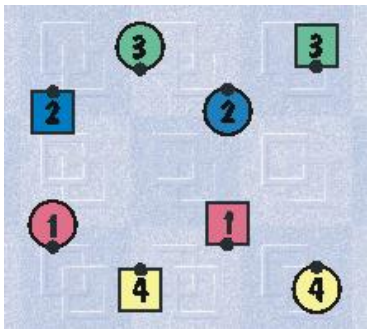
Our "normal" dancing is the Symmetric Region (on left) where the arrangement of men and women is symmetric, the formations are symmetric, and the sequence of both the men and women are symmetric (i.e. 1-2-3-4 or 1-4-3-2). Symmetric sequences always have heads between the sides for both men and women).



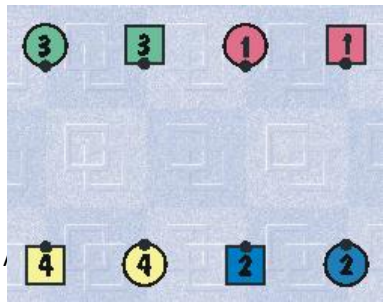
A square is in the Asymmetric Region when two adjacent couple half sashay. This allows a variety of unusual arrangements. The figure on the left shows same-sex waves which can only happen in the Asymmetric Region.

Choreography Regions Summary





The Mirror Region is a special case of an asymmetric formation where dancers across the set are facing each other or back-to-back with each other as shown in the figure at left. The arrangement of men and women may be either symmetric or asymmetric. In this example the arrangement is asymmetric. Note the men are on the ends of one wave and in the center of the other wave.



The Swamps of Bad Sequence is a region shown at the bottom of the Regions Map. The example on the left shows a square where the arrangement is normal, but the men and women are in an asymmetric sequence since sides are not in between the

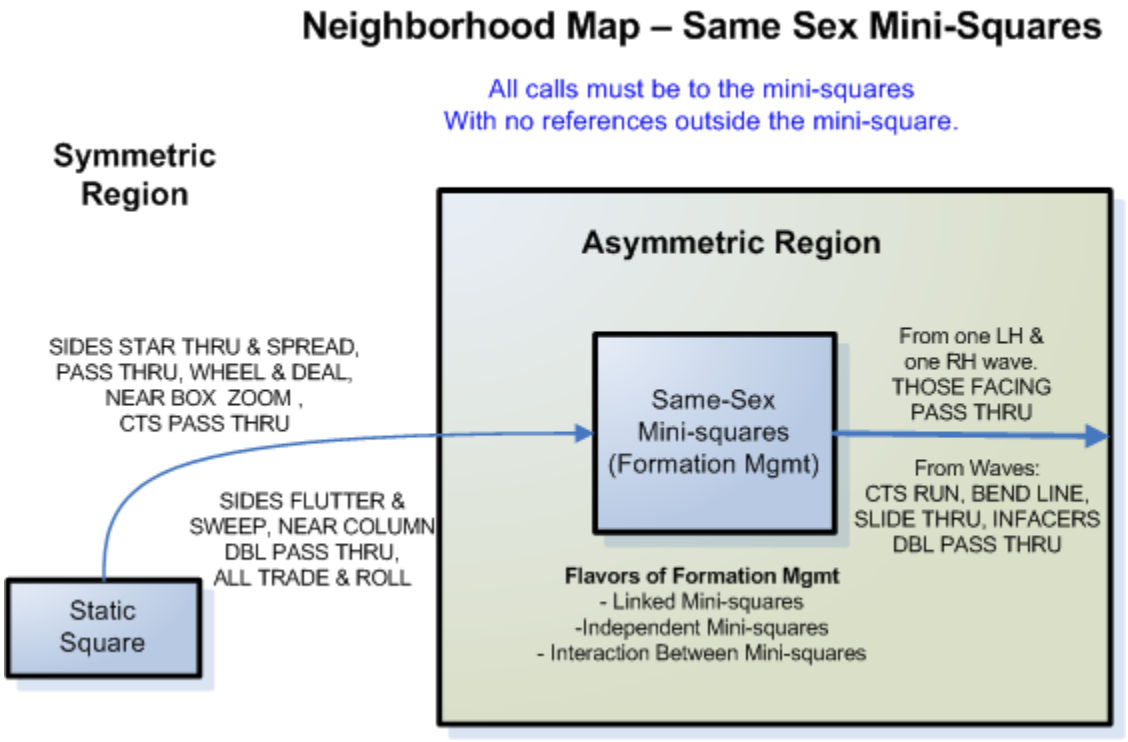
heads. This is a region to avoid since it offers no benefit in terms of dancer variety but takes extra effort to resolve.

We use custom bridge modules designed to move between two specific regions. We say that we are “normalizing” the square when we move back into the symmetric region. When we are in the Symmetric, Asymmetric or Swamp Regions, we cannot leave that region as long as we are doing symmetric calling. Symmetric calling is the kind of calling we normally do when we are calling to heads, sides, ends, centers, or the whole square rather than some unusual subgroup.

This paper explains how to move to the Asymmetric and Mirror Regions for formation management and then return to the Symmetric Region without falling to the Swamps of Bad Sequence.

CHAPTER ONE
SAME-SEX MINI-SQUARES

Same-Sex mini-squares are the most popular example of asymmetric choreography because they are so unusual and so simple to resolve. No sight calling is required. This chapter will focus entirely on same-sex wave choreography. The Neighborhood Map is shown below. It shows the bridge modules and normalizing module for same-sex waves.



Step 1: Basic Same-Sex Mini-Squares (1.1)

We use the bridge module shown on the map:
SIDES STAR THRU & SPREAD, PASS THRU, WHEEL & DEAL,
THOSE WITH BACKS TO THE CALLER ZOOM, CENTERS PASS THRU

We now have same-sex mini-squares. We begin calling formation management as if we were calling to a single stand-alone mini-square. In fact, both mini-squares are doing the same calls so they are linked mini-squares. We have one important constraint: we cannot reference any point outside of the mini-square. For example, we cannot call THOSE FACING THE CALLER DO X because the caller is a point outside the mini-square. We must also avoid directing calls to OUTFACERS if they can only be identified relative to the center of the square as a whole. See Appendix 1 at the end of the paper for a complete description of symmetric calls. The purpose of these constraints is to keep the head men both on the ends or both in the center of

waves without having to resort to sight calling. These constraints are really minimal and allow a broad range of flexibility. Here is an example, formation management sequence starting from the same-sex boxes resulting from the bridge module above.

TOUCH ¼, SCOOT BACK, SINGLE HINGE, CENTERS TRADE, CENTERS RUN, NEW CENTERS HINGE, DIAMOND CIRCULATE, FLIP THE DIAMOND

When we are done with formation management and want to normalize the square, we use the normalization module shown on the map.

- Setup parallel waves.
- Make one of the waves left handed. For example, use TRADE THE WAVE or CENTERS CROSS RUN.
- Call FACING DANCERS PASS THRU

The square is now back in the Symmetric Region and can be resolved using normal sight calling. If the men had the left hand wave, the resulting outfacing line is half sashayed. If the ladies had the left hand wave, the resulting outfacing line is normal. Note that sight calling was not required until resolution after the square was back in the Symmetric Region.

This call sequence is recapped in the box below.

Example 1: Same Sex Mini-Squares	
SIDES STAR THRU & SPREAD, PASS THRU, WHEEL & DEAL, THOSE WITH BACKS TO THE CALLER ZOOM, CENTERS PASS THRU	Bridge to Asymmetric Region, same-sex mini-squares
TOUCH ¼, SCOOT BACK, SINGLE HINGE, CENTERS TRADE, CENTERS RUN, NEW CENTERS HINGE, DIAMOND CIRCULATE, FLIP THE DIAMOND	Formation Management
LADIES TRADE THE WAVE FACING DANCERS PASS THRU	We have parallel waves. Put ladies into left wave. Finish normalizing
ALL BEND THE LINE, ENDS LOAD THE BOAT, CENTERS RIGHT & LEFT THRU (LADY TURNS THE MAN), SAME ONES HALF SASHAY TO HOME	Resolve in Symmetric Region

.

Step 2: Independent, Same-Sex Mini-Squares (1.2)

A very popular and showy technique is to setup same-sex mini-squares. Then call independently to the each mini-square during formation management and finish by normalize the square. This is very easy to do and dancers seem to be very impressed. This method requires no sight calling until after we normalize.

This works just like Step 1 except that we call independently to each mini-square. The same constraints hold. We treat each side as if it were without the context of the square. This example sets up the men and women on different axes and then briefly calls the same calls to both. This is very unusual to the dancers so the calls must be simple. The normalization method is the same as see in the Neighborhood Map.

Example 2: Same-Sex Mini-Squares	
SIDES STAR THRU & SPREAD, PASS THRU, WHEEL & DEAL, THOSE WITH BACKS TO THE CALLER ZOOM, CENTERS PASS THRU, ALL STEP TO A WAVE	Bridge to Asymmetric Region, same-sex mini-squares
MEN SWING THRU, LADIES SPIN THE TOP, ALL CENTERS RUN, HALF TAG, WALK & DODGE, PARTNER TRADE, ONLY THE MEN ROLL	Formation Management Ends in same-sex facing boxes. Start Normalizing.
ALL TOUCH1/4, FOLLOW YOUR NEIGHBOR, ONLY THE MEN SPREAD FACING DANCERS PASS THRU	We have parallel waves with ladies in a left wave. Finish normalizing
ALL WHEEL & DEAL, CENTERS SLIDE THRU AND BACK AWAY TO HOME	Resolve using sight calling.

Note that the square as a whole was in asymmetric formations during this period. This is allowed provided the stand-alone mini-square constraint is honored.

Step 3: Adding Some Variety Getting In and Out (1.3)

The Neighborhood Map at the beginning of this chapter shows an additional bridge to setup same-sex waves and an additional normalizing module. The following example uses these secondary modules.

Example 3: Same-Sex Mini-Squares	
HEADS SLIDE THRU, NEAREST COLUMN DOUBLE PASS THRU, ALL TRADE AND ROLL	Bridge to Asymmetric Region, same-sex mini-squares
PASS THRU, CHASE RIGHT, SCOOT BACK, WALK & DODGE, PARTNER TRADE	Formation Management Ends in same-sex couples facing in lines. Start Normalizing.
ALL SLIDE THRU WITH SAME-SEX INFACING DANCERS DOUBLE PASS THRU	Use alternate normalizing module
LEAD COUPLES PARTNER TRADE, ALLEMANDE LEFT	Resolve using sight calling.

Step 4: Interactions Between the Two Mini-Squares (1.4)

The method described in the previous section has the following steps:

- Cross the asymmetric bridge
- Setup same-sex waves and independently do formation management with each wave
- Normalize the square
- Resolve the normalized square.

Note that once we start calling to each mini-square independently, there is no interaction between the two groups until normalization. In this step we will relax that constraint and show how we can allow some limited interaction between the mini-squares. Like the others, this step does not require any sight calling until after normalization.

While the mini-squares are in parallel waves, they can do calls which interact provided they have a “legal” equivalent in their wave. A simple example would be SCOOT BACK from parallel waves since it is an equivalent for TRADE. At first glance this does not seem like particularly interesting choreography, but the dancers see it differently. They have been totally focused on their own mini-square so calling a call which now shifts the mental frame to the whole square is difficult. We are likely to see a short pause by the dancers while they reset the mental frame. For exactly this reason, such calls are interesting and introduce variety. Here are some additional examples from parallel waves:

- SPLIT CIRCULATE TWICE (equivalent to TRADE)
- CENTERS RUN, BEND THE LINE, LOAD THE BOAT
- RELAY THE DEUCY

We can also work out short modules with special calls and check with our dolls to verify that the head men are both on the ends or in the center of same-sex mini-waves. Modules which do not call uniformly to the men and women must be verified by checking the relationship of both the head men and head women. I developed the following module because I wanted to use SPIN CHAIN THE GEARS from the same-sex waves:

- SPIN CHAIN THE GEARS, CENTERS RUN, COUPLES CIRCULATE, BEND THE LINE

These examples are more dramatic than SCOOT BACK because they move the mini-square to a new physical location where the mini-square action can continue.

This following example uses some of this interaction with the alternate bridge and normalization modules

Example 4: Same-Sex Mini-Squares	
HEADS SLIDE THRU, NEAREST COLUMN DOUBLE PASS THRU, ALL TRADE AND ROLL	Bridge to Asymmetric Region, same-sex mini-squares
LOAD THE BOAT, STEP TO WAVE	Interaction Call
SPIN CHAIN GEARS, CENTERS RUN, COUPLES CIRCULATE, BEND THE LINE	Custom Interaction Module shown above
ALL SLIDE THRU WITH SAME-SEX INFACING DANCERS DOUBLE PASS THRU	Use alternate normalizing module
LEAD COUPLES PARTNER TRADE, ALLEMANDE LEFT, BACK TO HOME	Resolve using sight calling.

Review of Same-Sex Mini-Squares (1.5)

We began modestly showing how to setup same-sex mini-squares, do some formation management, normalize, and resolve. Then we added the ability to call independently to same-sex mini-squares. Next we added some variety in the way we get in and out of the mini-squares. Finally, we relaxed the constraint which prohibited interaction between the two mini-squares. This has provided a great deal of variety to the caller's "bag of tricks" and none of it required sight calling.

See Appendix 4: A Gem in the Swamp to see how the same methods used here for same-sex mini-squares can be extended to give Head/Side mini-squares.

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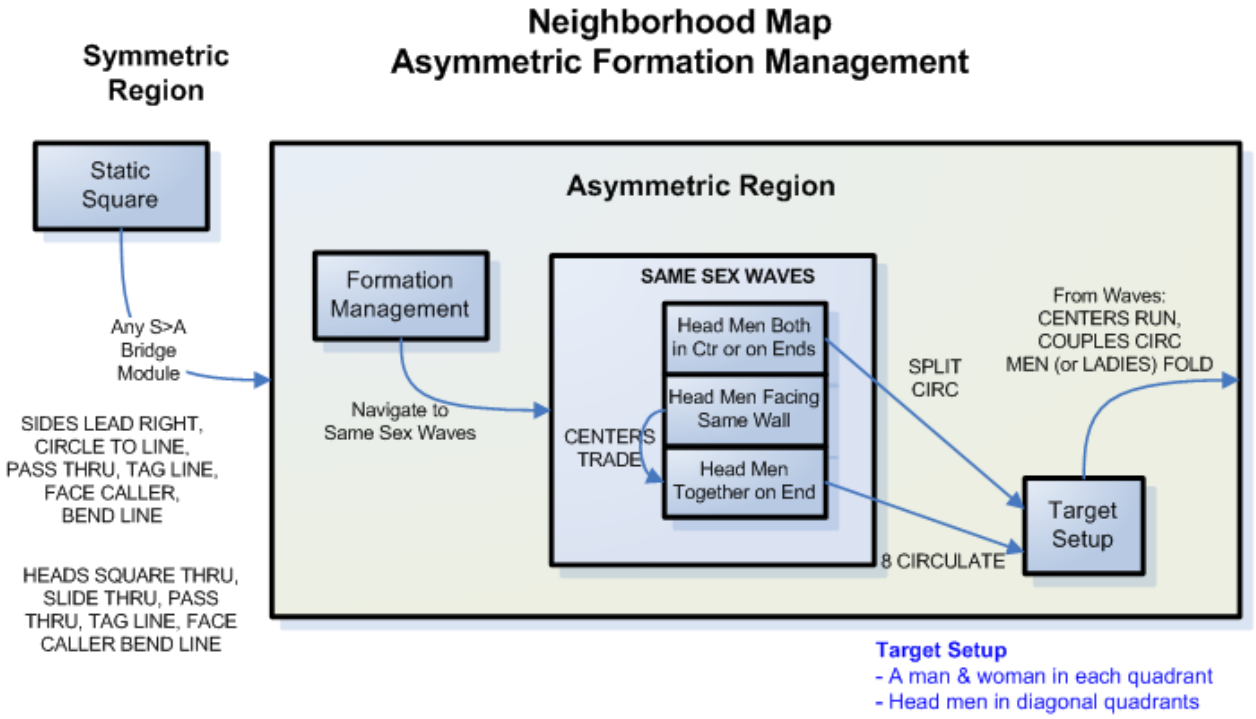
CHAPTER TWO
GENERAL ASYMMETRIC SIGHT CALLING

In the first chapter we were very limited in the interaction between the same-sex mini-squares. In this chapter we are able to call most any call that we normally call in the Symmetric Region. The price we pay for that flexibility is that we must sight call by tracking the head men in order to normalize the square. Since we are familiar with tracking four dancers in the Symmetric Region, tracking two men seems pretty reasonable, but we must be able to recognize man #3 when we get into the Asymmetric Region.

The Basic Procedure (2.1)

We begin with a Neighborhood Map showing how the process works.



1. Move to the Asymmetric Region using one of the bridge modules shown on the map. Unlike Chapter 1 where we were looking for a particular setup, we do not care about the setup as long as we are in the Asymmetric Region.
2. Call extemporaneous symmetric choreography as desired. This is just regular formation management like we call in the Symmetric Region with some minor constraints which are described below.
3. When we are ready to normalize the square, move the square to a special setup, called the *Target Setup,* which has the following properties: each quadrant has one man and one woman and the head men are in diagonally opposite quadrants. We can get to the target setup easily using the following method.

Target Setup Method

Move the square to same-sex parallel waves. Then check on the relationship between the head men in that wave.

- If the head men are facing the same wall, call CENTERS TRADE and continue to the next option.
- If the head men are together on one end of the wave, call ALL 8 CIRCULATE.
- Otherwise call SPLIT CIRCULATE. (The head men must both be in the center or both on the ends.)

The square is now in the target setup with one man and one woman in each quadrant, the head men are in diagonally opposite quadrants. This step prepares for normalization by fixing the sequence to symmetric and stages the fix for the arrangement which follows.

4. From the Target Setup lock the arrangement to symmetric with the following calls: CENTERS RUN, COUPLES CIRCULATE, MEN (OR LADIES) FOLD. The square is back in the Symmetric Region. You may prefer a STAR THRU here to work from lines.
5. Resolve the square in the regular way using sight calling.

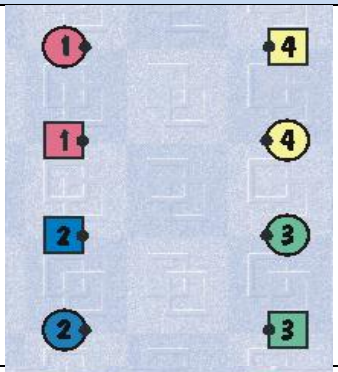
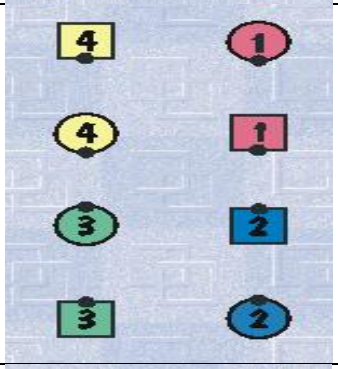
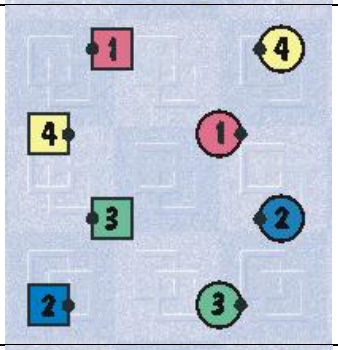
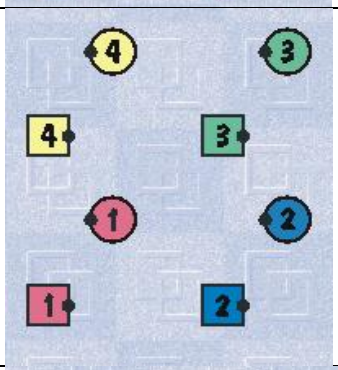
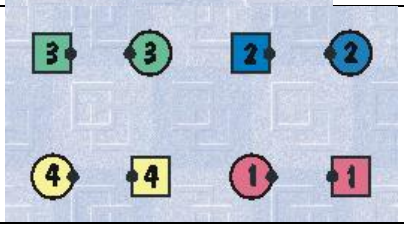
Although this is a new sight calling method to learn, it is easier than the method in the Symmetric Region because it is shorter and requires tracking only two dancers.

Formation Management Constraints (2.1.1)

Formation management is very similar to regular formation management with the following constraints: we cannot address calls to men or women since they are not distributed symmetrically in the set, and we cannot use calls that have men or women built into the definition such as SLIDE THRU and STAR THRU. However, we can direct calls to centers, ends, in-facers and out-facers which accomplishes all of what we usually direct to men and women. The full explanation of symmetric calls in a square is given in Appendix 1 at the end of this paper. The purpose of this constraint is to keep the relative sequence of the men and women consistent so we do not need to separately track the women while sight calling.

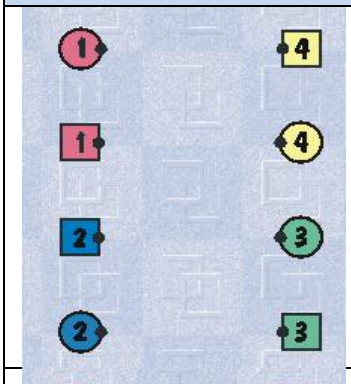
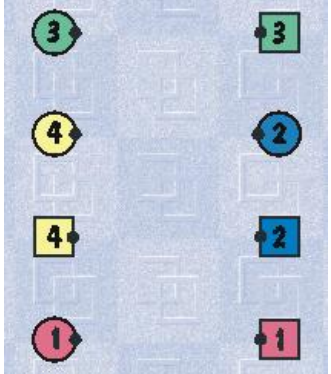
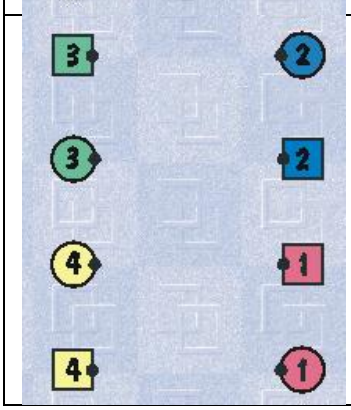
Step 5: Try Asymmetric Formation Management (2.1.2)

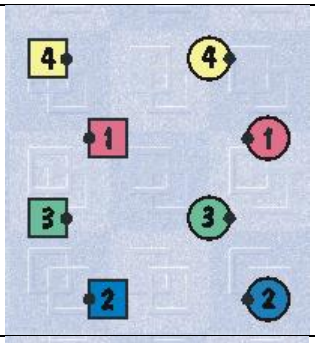
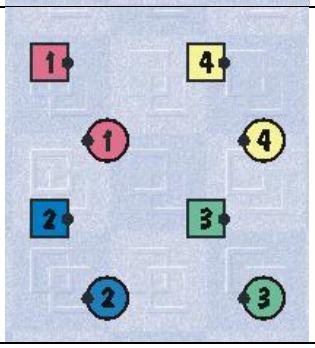
The example below follows the Neighborhood Map above. Key points are illustrated with figures. This is a good place to be convinced that the method works. Replace the formation management in this example with a variety of different sequences and verify that the normalization still works. After normalizing, a different resolution may be required, but the key point is getting confidence in the normalization method. If you have trouble setting up same-sex waves, go to Step 6 for some helpful hints.

	Example 5: General Asymmetric
	From a static square we cross the bridge to Asymmetric Region with SIDES LEAD RIGHT, CIRCLE TO A LINE, PASS THRU, TAG LINE, FACE THE CALLER, BEND THE LINE
	Formation Management – Short but it could be anything. PASS THRU, HALF TAG, SWING THRU, CENTERS RUN, FERRIS WHEEL
	To normalize, we first we move to same-sex waves. The waves can be right or left handed. It doesn't matter. CENTERS SQUARE THRU 3, LEFT TOUCH ¼ Following the method in the map, we see that the head men are facing the same wall. So we call Centers Trade.
	CENTERS TRADE Continuing with the procedure, we note the head men are together on the end of the wave so we call 8 CIRCULATE which leaves the square in the Target Setup shown at left.
	We now lock down the arrangement to end in the Symmetric Region. CENTERS RUN, COUPLES CIRCULATE, MEN FOLD This puts the square in the setup shown. PASS THRU, LEFT ALLEMANDE Resolves the square.

Step 6: Practice in Getting Same-Sex Waves (2.1.3)

When formation management is completed, the first step in the normalization procedure is setting up same-sex waves. To do that we must have an even number of men in each wave. If the waves have an odd number of men, any call that crosses two dancers between waves will shift to an even number. From waves ACEY DEUCY is a useful call to accomplish this. From lines, TOUCH1/4, CIRCULATE accomplishes this. The following example demonstrates this approach. As in Step 5, substitute your own formation management material to build confidence in the normalization method.

	Example 6: General Asymmetric
	From a static square we cross the bridge to Asymmetric Region with SIDES LEAD RIGHT, CIRCLE TO A LINE, PASS THRU, TAG LINE, FACE THE CALLER, BEND THE LINE
	Formation Management PASS THE OCEAN, SPIN CHAIN THRU, ENDS CIRCULATE DOUBLE, LINEAR CYCLE The end setup is shown here. Now we need same-sex waves, but we have an odd number of men on each side. We call a sequence which moves two dancers across the center.
	TOUCH ¼, CIRCULATE, ALL TRADE & ROLL Results in the setup shown. Get same-sex waves by calling CENTERS PASS THRU, CENTERS RUN, BEND THE LINE, PASS THE OCEAN

	The same-sex waves are shown here. We note that the head men are together but not on the end of the wave. So we get to the target setup with SPLIT CIRCULATE
	The Target Setup is shown. We finish normalization with CENTERS RUN, COUPLES CIRCULATE, LADIES FOLD Then we see that the square is actually in sequence so we finish with resolution. BOX THE GNAT, RIGHT & LEFT GRAND

Discovering the Asymmetric Partner (2.2)

Perhaps the examples in steps 5 and 6 seem contrived because in both cases everyone had their original partners at the Target Setup. This was not contrived and it was not a coincidence. The Asymmetric Region has an important free gift: we know in advance who the partners will be when we get to the target setup provided we use symmetric calls. No need to check the women during sight calling. We already know where they will be. This is the heart of Asymmetric Mechanics. See section 5.5.3 to understand how this magic works. Without this discovery, we would need to follow 5 dancers when sight calling in the Asymmetric Region. With this discovery, we can sight call by following two men to normalize and three men to resolve the square, making it easier to sight call than in the symmetric region.

The bridge module we use to get into the Asymmetric Region establishes the partner pairing that we find at the Target Setup. This pairing is called the Asymmetric Partner. The bridge module we have been using from the Neighborhood Map set the Asymmetric Partner to our original partner. This gift is not intuitive. You should repeat some examples from the previous steps using your own formation management to verify that when reaching the Target Setup, the original partners have returned.

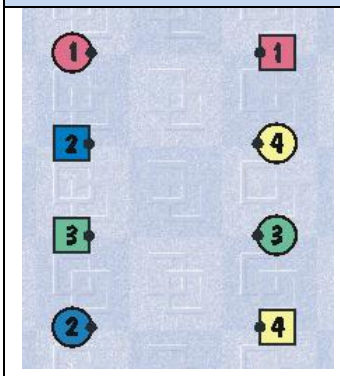
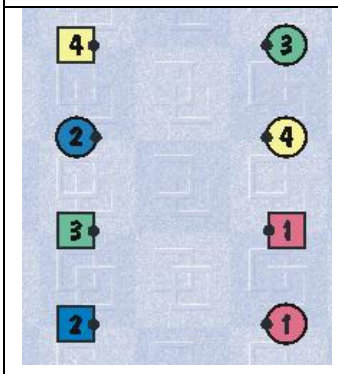
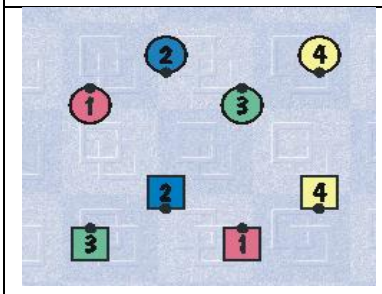
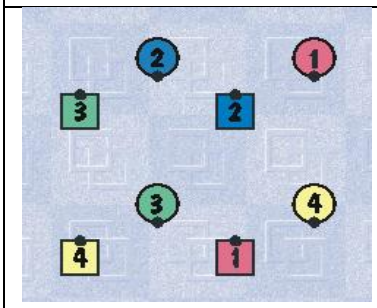
The secondary bridge module on the Neighborhood Map is similar to the one we have been using, but establishes the original corner as the Asymmetric partner:

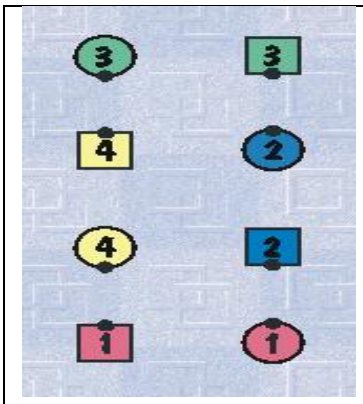
HEADS SQUARE THRU, SLIDE THRU, PASS THRU, TAG THE LINE, FACE THE CALLER, BEND THE LINE

Given that we know the partner pairings at the Target Setup, we can move directly from the Asymmetric Region to square resolution without normalizing first. All we must do is to check the

sequence (IN or OUT) and then use a module which both normalizes and resolves at the same time. This is shown in the following example.

Step 7: Resolving from the Asymmetric Region (2.2.1)

	Example 7: General Asymmetric
	From a static square we cross the bridge to Asymmetric Region with a bridge that sets the Asymmetric Partner as the original corner. HEADS SQUARE THRU, SLIDE THRU, PASS THRU, TAG LINE, FACE THE CALLER, BEND THE LINE
	We continue to do formation management, calling any symmetric call we like. PASS THE OCEAN, SPIN CHAIN THRU, ENDS CIRC DOUBLE, CTS RUN, BEND LINE Note that we have an odd number of men in each line. We now want to normalize so we navigate to same-sex parallel waves.
	Any call which moves two dancers across the set will change the number men in a line from odd to even (or vice versa). Here we use Acey Deucy. PASS THE OCEAN, ACEY DEUCY This gives us same-sex waves to start the normalization method.
	We see that the head men are facing the same wall so our rule says to call the following: CTS TRADE, 8 CIRC The square shown is back in the target setup. Now we want to lock it down. However, we know all have corners, so we check the sequence for a combined normalization and resolution.

	CTS RUN, CPLS CIRC While the couples are circulating we see that the square is IN sequence. So all dancers have corners and are IN sequence. So we can both normalize and resolve with the following. LADIES FOLD, LEFT ALLEMANDE The call LADIES FOLD is the call that normalized the square, locking it into Symmetric region, and it also resolves the square.

The calls ACEY DEUCY, CENTERS TRADE are not the world's best choreography. An alternative would be to use SWING THRU in place of the CENTERS TRADE because it accomplishes the same purpose: getting the head men together on the end of the wave. However, it does change the sequence for resolution.

Try inserting your own formation management section in this example. You will always have the corners paired together at the Target Setup. The only variation is that your calls may result in the square being OUT of sequence with corners. In that case call the following to fix the sequence.

TAG THE LINE, FACE RIGHT, LADIES FOLD, LEFT ALLEMANDE

Adding Some Variety to Our Asymmetric Calling (2.3)

Thus far the methods of crossing the bridge to Asymmetric region and normalizing the square have been pretty limited. We now introduce some additional bridge, normalization, and resolution modules to add variety.

Variety in Bridge Modules (2.3.1)

Since the partner pairing is locked once you cross into Asymmetric region, it is helpful to know who that asymmetric partner will be. The modules we introduced in chapter 1 resulted in the square being in the target setup when we first crossed the bridge, so identifying the asymmetric partner was easy. But many bridge modules are not so obvious. When we memorize a bridge module, we also need to know the asymmetric partner for that module.

Here are some additional bridge modules and the resulting partner pairing. The modules from Chapter 1 and 2 have also been included. Most callers would prefer a corner or partner pairing because the resolution is so simple from the target setup.

Bridge Module	Asymmetric Partner
[Static Square] COUPLES #1 & 2 HALF SASHAY (B1) (Any two adjacent couples will work)	Original Partner
SIDES LEAD RIGHT CIRCLE TO LINE, PASS THRU, TAG THE LINE, FACE THE CALLER, BEND THE LINE (B2)	Original Partner
HEADS SQUARE THRU, SLIDE THRU, PASS THRU, TAG THE LINE, FACE THE CALLER, BEND THE LINE (B3)	Original Corner
SIDE STAR THRU & SPREAD, PASS THRU, WHEEL & DEAL, NEAR BOX (OR THOSE WITH BACK TO CALLER) ZOOM (B4)	Original Corner
SIDES SQUARE THRU 4, TOUCH1/4, NEAR BOX SCOOT BACK (B5)	Original Corner
HEADS SLIDE THRU, NEAR COLUMN DOUBLE PASS THRU, ALL TRADE AND ROLL (B6)	Original RH Lady
HEADS FLUTTERWHEEL, SWEEP, NEAR COLUMN DOUBLE PASS THRU, ALL TRADE AND ROLL (B7)	Original Corner
SIDES LEAD RIGHT, STEP TO A WAVE, NEAR WAVE TRADE THE WAVE, ALL CENTERS TRADE, OUTFACERS RUN (B8)	Original Partner
COUPLE #3 U-TURN-BACK, #1 GO ACROSS SQUARE, CENTERS IN, CAST OFF ¾ , MAKE LINES WITH THE SIDES (B8)	Original Corner

If you invent your own bridge module how can you know the asymmetric partner? Use the module to move to the Asymmetric Region. The use the normalization method to navigate the square to the target setup where you can note the asymmetric partner.

Variety in Modules Which Normalize the Square (2.3.2)

The following modules normalize the square where it can usually be resolved quickly with regular symmetric methods. The starting setup is the target setup in waves. The methods from Chapter 1 are also included.

Setup	Normalization
Target Setup in Waves	CENTERS TRADE, CENTERS RUN, WHEEL & DEAL, STAR THRU, OUTFACERS PARTNER TRADE (N1) CENTERS TRADE, CENTERS RUN, WHEEL & DEAL, STAR THRU, BEND THE LINE (N2)
Target Setup in Waves	CENTERS RUN, COUPLES CIRCULATE, MEN (or LADIES) FOLD (N3) CENTERS RUN, BEND THE LINE, PASS THRU, MEN (or LADIES) FOLD (N4)

Variety in Modules Which Both Normalize and Resolve the Square (2.3.3)

Resolution requires knowing the sequence (IN or OUT). From the waves in the target setup, calling CENTERS RUN, COUPLES CIRCULATE gives us a chance to check the sequence. For the following modules we assume a starting position as the target setup in two-faced lines. In other words, a two faced line with a man and woman in each quadrant and the head men in diagonally opposite quadrants. First we restate the methods introduced in Chapter 2.

Setup	Normalization/Resolution
Original Corner, IN sequence	COUPLES CIRCULATE, LADIES FOLD, LEFT ALLEMANDE (N5)
Original Partner, IN sequence	COUPLES CIRCULATE, MEN FOLD, RIGHT & LEFT GRAND (N6) BEND THE LINE, CIRCLE LEFT, 4 MEN RIGHT HAND STAR TO CORNER, LEFT ALLEMANDE (N7) BEND THE LINE, CIRCLE LEFT, 4 LADIES RIGHT HAND STAR TO PARTNER, COURTESY TURN & PROMENADE (N8)
Original Partner, OUT of sequence	COUPLES CIRCULATE, TAG THE LINE, LADIES GO LEFT, MEN GO RIGHT, LEFT ALLEMANDE (N9)
Original Corner, OUT of sequence	COUPLES CIRCULATE, TAG THE LINE, MEN GO LEFT, LADIES GO RIGHT, RIGHT & LEFT GRAND (N10)

Step 8: Incorporating Variety into Asymmetric Choreography (2.3.4)

Obviously the choices presented above are for your consideration. Pick a couple that you like and incorporate them into the calling. This is a simple extension as we are using the same method as steps 6 and 7 but replacing the bridge and the resolution. An example follows.

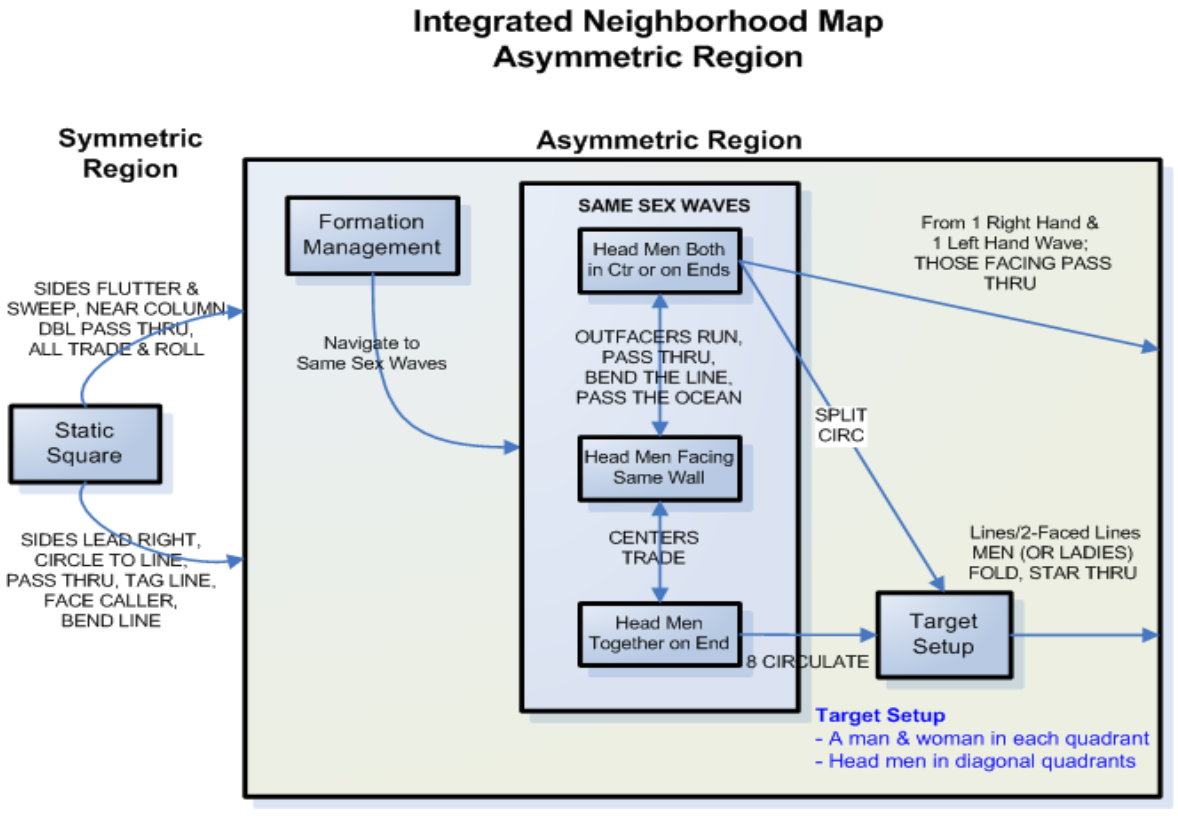
Example 8: General Asymmetric	
COUPLES #1 AND 2 HALF SASHAY	Quickest bridge to the Asymmetric Region. Asymmetric Partner is original partner.
HEADS SQUARE THRU 4, STEP TO WAVE, SPIN THE TOP, GRAND SWING THRU, SINGLE HINGE & ROLL	Formation management. We notice that all same-sexes are facing so this is a good spot to normalize.

PASS THE OCEAN	Makes same-sex waves. Checking head men, they are facing the same wall.
CENTERS TRADE, 8 CIRCULATE	Moves to Target Setup. We know from the initial bridge that all have partners.
CENTERS RUN, COUPLES CIRCULATE	Checking for sequence, I find they are IN sequence. But I wanted to use an OUT of sequence resolution.
AS COUPLES SCOOT BACK	Now they have partners out of sequence.
TAG THE LINE, LADIES GO LEFT, MEN GO RIGHT, LEFT ALLEMANDE	Normalize and Resolve.

Using this example as a model, replace the formation management with your own and try to match the same resolution.

Integrating Same-Sex Mini-Squares and the General Asymmetric Method (2.4)

Chapter 1 was devoted to same-sex mini-squares and chapter 2 to the general asymmetric calling method which features same-sex waves prominently in the normalization method. Each had its own Neighborhood Map. This section shows how the two methods are naturally parts of the broader Asymmetric Region Map.



The common point between the two methods is that same-sex waves with the head men both in the center or both on the ends is the required setup for all the material in chapter 1. The implication of the integrated map is that we can use any general asymmetric calling to bridge into the Asymmetric Region, setup appropriate same-sex waves, and proceed to use methods from chapter 1 to normalize the square. We can just as well go the other route of entering by using same-sex mini-square bridges and resolve using chapter 2 methods.

Note: Once we begin calling to independent same-sex mini-squares as described in chapter 1, the asymmetric partner magic no longer works because we have broken that connection between the men and women. As a result we just normalize as in chapter 1 and resolve there.

Before we proceed with an example, we must introduce one helpful module. What if we are looking for same-sex waves with the head men both on the ends or center to work same-sex mini-squares and find that the head men are not where we want them? The solution is to put the head men facing the same wall (using CENTERS TRADE if necessary) and use one of the following modules to convert the wave to that required for same-sex mini-squares:

1) ALL OUTFACERS RUN, LINES PASS THRU, BEND THE LINE, PASS THE OCEAN
2) CENTERS RUN, TAG THE LINE, FACE OUT, BEND THE LINE, PASS THE OCEAN

An example follows which starts with a general asymmetric bridge and normalizes with chapter 1 methods.

Example 9: General Asymmetric	
COUPLE #3 U-TURN-BACK, #1 GO ACROSS SQUARE, CENTERS IN, CAST OFF ¾ , MAKE LINES WITH THE SIDES	I have chosen an unusual bridge into the Asymmetric Region
PASS THRU, WHEEL & DEAL, CENTERS WHEEL AROUND, TOUCH1/4	We setup same-sex waves quickly.
SCOOT BACK, ALL OUTFACERS RUN, LINES PASS THRU, BEND THE LINE, PASS THE OCEAN	We check the head men and find they are facing the same wall so we use a module from above to fix the head men relationship. I added the SCOOT BACK just to improve the flow.
LADIES TRADE THE WAVE, ALL SWING THRU	Start normalization. Ladies are in left wave. Note this is an unusual SWING THRU since one wave starts in the center and one wave on the ends.
THOSE FACING PASS THRU	Finish normalization
WHEEL & DEAL, LADIES ZOOM, CENTERS PASS THRU, LEFT ALLEMANDE, RIGHT & LEFT GRAND TO HOME	Resolve

General Asymmetric Sight Calling Wrap Up (2.5)

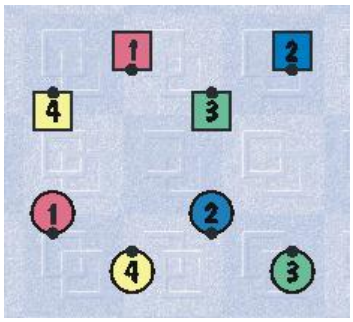
This chapter has explained the big picture of asymmetric mechanics with the road map, explained the basic process including formation management in Asymmetric region and resolving back to a symmetric square. Three sample sequences were included with annotation explaining the major steps and demonstrating how to normalize and resolve simultaneously. We looked at additional bridge and resolution modules to add variety. Finally we showed how the methods in chapter 1 on same-sex mini-squares can be integrated with the general asymmetric method from chapter 2.

CHAPTER THREE
ADVANCED TOPICS IN THE ASYMMETRIC REGION

This chapter looks at three unrelated topics which add more variety and flexibility to the asymmetric choreography:

- Using mirror formations for normalization
- Extending formation management into the Target Setup
- Changing the asymmetric partner in the Asymmetric Region.

Mirror Formation Normalization (3.1)

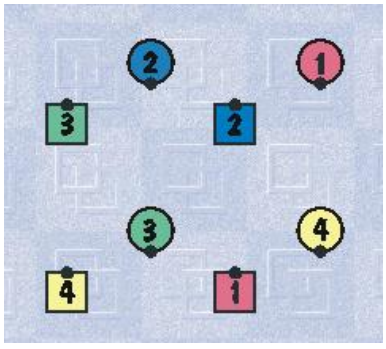


We actually have already used mirror formations as bridges but we didn't make a big deal about it. In section (1.1) we normalized same-sex waves by shifting women to a left hand wave while the men had a right hand wave (mirror waves) and having facing dancers pass thru.

The value of bridging or normalizing via mirror formations is that we have some very subtle options for the transition to the Symmetric Region. The trade-off is that they are rarely the shortest route.

Start from same-sex waves with head men both in the center or both on the ends. This is the setup for same-sex mini-squares. These normalization modules do not maintain the asymmetric partner.

- LADIES (or MEN) TRADE THE WAVE, FACING DANCERS PASS THRU (The original normalization module) (N11)
- LADIES (or MEN) TRADE THE WAVE, CENTERS RUN, FACING COUPLES PASS THRU (N12)
- CENTERS RUN, BEND THE LINE, SLIDE THRU, INFACERS DOUBLE PASS THRU (N13)



Start from the Target Setup with men facing the same wall (see figure). These normalization modules maintain the asymmetric partner. These modules are very smooth although a bit long.

CENTERS RUN, COUPLES CIRCULATE, LADIES RUN, EXPLODE THE WAVE (or LINEAR CYCLE) (N14)

CENTERS RUN, BEND THE LINE, PASS THRU, MEN RUN, CENTERS TRADE, RECYCLE (N15)

The following module ends in normal lines facing the symmetric partner. It is very smooth. Can you tell which call normalizes the square? Note that the SWING THRU is the unusual case of one wave starting in the center and one wave on the ends.

- CENTERS RUN, COUPLES CIRCULATE, LADIES RUN, SWING THRU, CENTERS RUN, BEND THE LINE (N16)

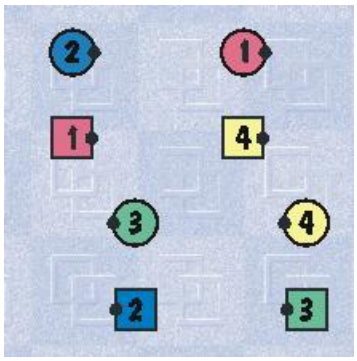
Working in the Target Setup (3.2)

Recall that the Target Setup has a man and woman in each quadrant and the head men are in diagonally opposite quadrants. The obvious question is "Why should we want to work in the target setup?" After all we have finished the asymmetric formation management and are one call away from normalization or resolution. There are three good reasons for spending a little time in the target setup:

- We may want to change the asymmetric partner. Suppose that we use a bridge module which gave us the original right hand lady/left hand man as asymmetric partners but we have decided that having original partners would better serve our purposes. The target setup provides a very simple means of changing asymmetric partners.
- The target setup gives us two interesting arrangements from which to work: interlocking same-sex boxes and interlocking same-sex trapezoids. While we can set these up during formation management, they are a by-product of the target setup and it is too tempting to ignore.
- We callers do not like to be predictable. If our normalization sequences all look alike, they lose their impact. Doing a short sequence after reaching the target setup will make our normalizations and resolutions less obvious and predictable.

Working in the Target Setup: Changing the Asymmetric Partners (3.2.1)

This square is in the target setup with right hand lady/left hand man as symmetric partners. We got to this target setup from same-sex waves and added a CENTERS RUN to get the two-faced lines shown. Note that both the men and women have same-sex boxes. By sighting on one key couple, such as couple #1, we see that a MEN CIRCULATE IN YOUR BOX will result in the asymmetric partner shifting to the original partner. Since all men have their right hand lady, we know that both men and ladies are in the same sequence, so getting the #1 couple paired will automatically get the other three couples paired with their original partners regardless of whether that sequence is IN or OUT of sequence. While this method will always result in another version of the target setup, sighting on a single couple will only work if the bridge module gave everyone the same relative partner (all partners, all corners, etc). Notice that all of the bridge modules given in Chapter 2 have that characteristic. It is a "best practice."



Working in the Target Setup: Limited Formation Management (3.2.2)

The main idea here is to add a short sequence just before normalization or resolution. We can do some simple calls targeted at the same-sex boxes within the target setup to provide an

unusual configuration for the dancers. However, we must package the sequences to maintain the target setup. Referring to the square above, consider the following modules:

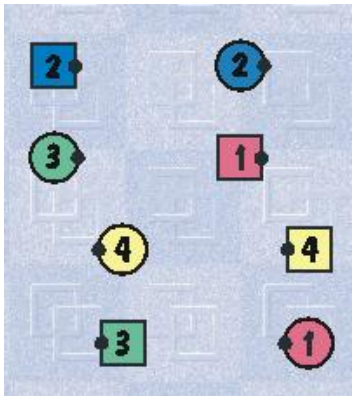
WORKING IN YOUR SAME-SEX BOXES: MEN CIRCULATE, LADIES CIRCULATE

TAG THE LINE, FACE RIGHT (Convenient to change symmetric sequence – IN/OUT.)

WORKING IN YOUR SAME-SEX BOXES: MEN SCOOT BACK, LADIES SCOOT BACK

WORKING IN YOUR SAME-SEX BOXES, EVERYONE SCOOT BACK, EVERYONE CIRCULATE

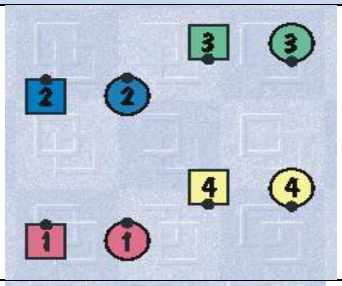
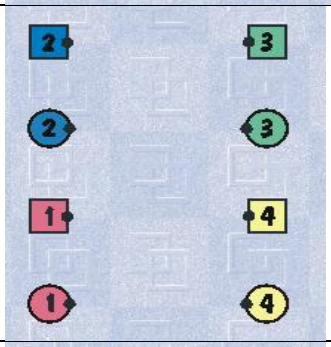
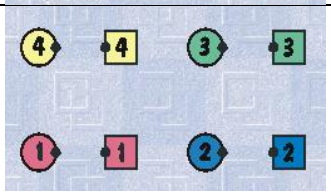
Note that at each point we maintained some version of the target setup. At intermediate points, the asymmetric partners had temporarily changed. Some modules changed the IN or OUT of sequence status of the square. In fact, such short modules can be used precisely because we need to change the sequence for a resolution module.



Occasionally, something in the Asymmetric region will be truly surprising. For example, in regular two-faced lines we expect a COUPLES CIRCULATE to have no effect on the configuration of men and women. The square at left results from the square in the previous section doing a COUPLES CIRCULATE. Just one call has changed the same-sex interlocking boxes to same-sex interlocking trapezoids. Most of the calls we used for boxes also apply, but it is a little more difficult. The dancers on the ends must see that they are going to the far end on a MEN or LADIES SCOOT BACK. The in-facing couples must negotiate a HALF SASHAY to dance ALL CIRCULATE. The ALL SCOOT BACK is probably not practical. But the dancers find a little of this quite interesting. Note that the change in same-sex configuration has not changed the normalization at all because it is not affected by a half sashay. LADIES FOLD still normalizes the square just as it did before the CIRCULATE.

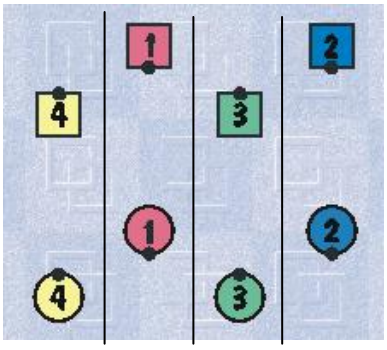
Working in the Target Setup: Less Limited Formation Management (3.2.3)

This section is probably more than is reasonably needed to add that bit of variety before the normalization, but our tendency is to push the limits of our boundaries. In this section we take the same idea of the previous section but allow ourselves more latitude in straying from the target setup. Our new constraint is that we can temporarily leave the target setup in a module provided that we return to a target setup by the end of the module.

	Example 10: Asymmetric Advanced Topics
	Target setup with original partner.
	CROSSFIRE, PEEL THE TOP, RECYCLE results in the target setup show at left. Note that the target setup does not require any particular formation. It only specifies characteristics about a quadrant. So we can do short sequences doing limited sight calling on two dancers in a quadrant to ensure that they end in the same quadrant.
	Again starting from the top setup doing CENTERS CHAIN DOWN THE LINE, PASS THRU, WHEEL & DEAL, CENTERS PASS THRU gives the square on the left. We still have a target setup, this time with facing dancers. To normalize here we can easily, SLIDE THRU, BEND THE LINE.

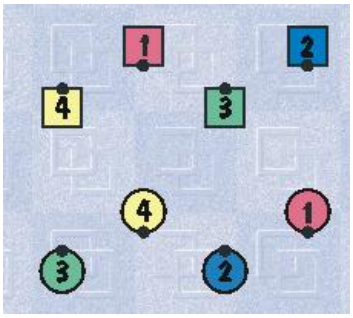
Re-Establishing Asymmetric Partners (3.3)

We noted earlier that calling independently to same-sex waves voids the asymmetric partner we expected based on the initial bridge module. This is not a big problem because we can proceed to resolve the square after normalization. This section shows how to re-establish those asymmetric partners while still in same-sex waves. Setting the original partner as the asymmetric partner is easiest since we know the partner relationships of couples #1 and 4 for symmetric resolution. I never use this method for extemporaneous calling, but it may come in handy for developing fixed sequences.

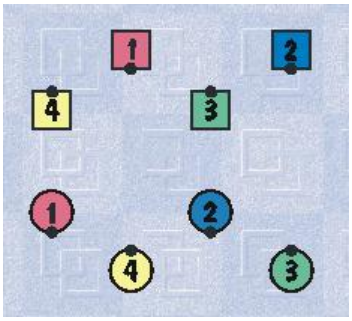


The square at the left is in same-sex waves with the head men in the proper relationship to call independently to each side. Their asymmetric partner is their original partner. Note how the partners are lined up directly across from each other. If we can return to this setup after calling independently to each side, then we will have re-established the partner pairing and can proceed to normalize and resolve simultaneously. In a balanced relationship between the head men, it is certain that either man

#1 or man #4 will be on the end of the men's wave. The best strategy is to line up that end man's partner first. Then either the center key man has partner in line or a CENTER MEN (or LADIES) TRADE will complete the asymmetric partner pairing.



For example, consider the square at left. We see that the #4 man is at the end of the wave, so we first line up his partner. From the position of the #4 lady we see that SWING THRU is one call that will put her at the correct end of the wave. We then check whether the #1 man has his partner lined up and find that she is in the correct spot as well. If she had not been in the correct spot, calling CENTER MEN TRADE would have finished the alignment. Remember that we can move either the center lady or center men. We also want to avoid a period where we work exclusively with the ladies, leaving the men to stand and watch. The result is that the square now looks like the top square, and we can proceed to normalization and resolution.



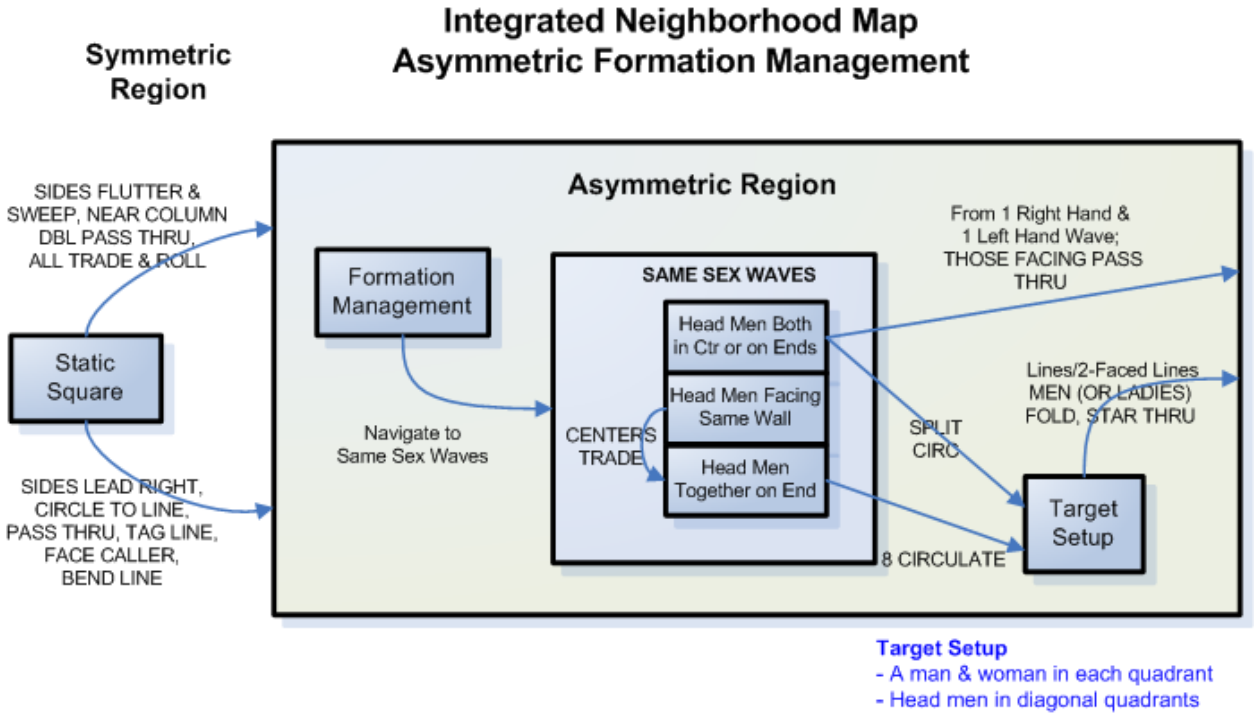
We noted above that a very popular normalization method is to put the men or woman in a left hand wave and call THOSE FACING PASS THRU. If the men have the left handed wave, the resulting lines are half sashayed. If the ladies have the left handed wave, the resulting line will be normal. In general, shifting one wave to a left handed wave will cause us to lose our asymmetric partner. However, a judicious choice of modules to make the left handed wave will allow us to keep this partner. Use one of the following modules to make a left wave and keep the asymmetric partner.

1) CENTER MEN (or LADIES) TRADE, SAME ONES CROSS RUN
2) ALL SINGLE HINGE, FOLLOW YOUR NEIGHBOR BUT ONLY THE MEN (or LADIES) SPREAD

The square above shows the result of using one of these modules. We can easily see that having the facing dancers PASS THRU will result in normal lines with original partner (which was also our asymmetric partner). We quickly see that we are IN sequence so we resolve with PARTNER TRADE & ROLL, RIGHT & LEFT GRAND.

The Big Picture: Putting It All Together (3.4)

We have been mired in detail since Chapter 1. This section attempts to pull all this material into a summary view. We will trace through the method by following the various routes through the Integrated Neighborhood Map first seen in section 2.4 and repeated below.



1. Starting in symmetric square use a bridge module to cross into Asymmetric region. Two bridge modules are shown on the map but many more were given in section 2.3.1. We learned that the bridge module sets the asymmetric partner who reappears in the target setup.
2. One option is to bridge directly to same-sex waves and do formation management there (Chapter 1).
    a. We may decide to call to linked mini-squares where both sides perform the same calls.
    b. We may decide to call to independent mini-squares where we can direct call to just the men or women.
    c. We may choose to allow limited interaction between the mini-squares.
    d. The map shows the normalization method from same-sex mini-squares described in Chapter 1.
3. A second option is to use the full range of arrangements during formation management in the Asymmetric Region (Chapter 2).
    a. Normalize using the Target Setup – Following the rules for getting to the target setup from same-sex waves.
        i. [Option] Change the asymmetric partner in the target setup or re-establish the partner pairing after calling to independent mini-squares.

ii. [Option] Do some short modules while maintaining the target setup for variety.
iii. [Choice 1] Normalize the square using a normalization module and resolve in the symmetric region.

iv. [Choice 2] Resolve and normalize simultaneously – Check men #1 & 4 for IN or OUT of sequence. Use a normalization/resolution module to resolve the square. A number of these modules were described in section 2.3.1.

b. An alternative to normalizing using the Target Setup is to put the square into same sex waves with the head men both on the ends or both in the center and use the normalization methods from Chapter 1. This connects back with step 2b above.

4. The square is now returned to symmetric region. Resolve normally if not already resolved.

This chapter has described how the constraints imposed in Chapters 1 and 2 can be significantly relaxed to add additional variety while not losing the benefit of normalization by sighting on just two men and resolution by sighting on three men. Finally we summarized how all the optional pieces fit into the overall method. This concludes the material on the Asymmetric Region.

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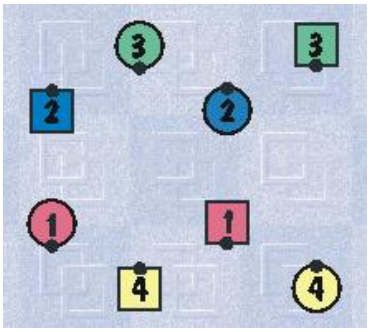
CHAPTER FOUR
WORKING WITH MIRROR FORMATIONS

For years I considered mirror formations were only useful as a bridge between Symmetric and Asymmetric Regions. However, mirror image formations show a unique beauty in the flow of the dance which the dancers find just as interesting as the asymmetric arrangements. A perfectly good approach is to move to the Mirror Region for formation management and return to the Symmetric Region. This chapter is devoted to methods of moving to the Mirror Region, calling formation management to mirror formations, and returning to the Symmetric by normalizing the square.

This chapter is organized into a series of steps which will enable callers to learn the material a piece at a time. Each step gives immediate benefits because they add variety to a caller's bag of tricks. It is not necessary to complete all the steps to get a major benefit from the approach.

What is a Mirror Formation? (4.1)



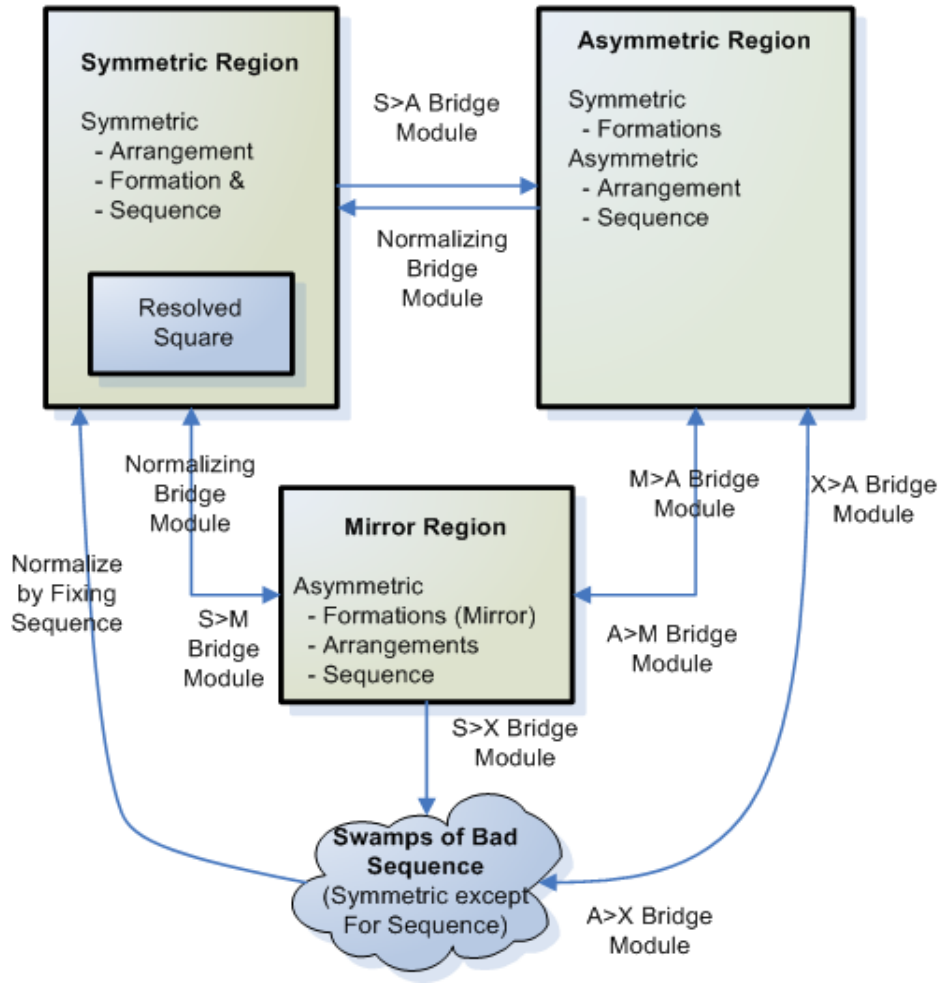
Mirror formations are two mini-squares (4 people) in a "handed" formation where the two sides use opposite hands. Handed formations are waves, two-faced lines, columns or any formation in which at least two dancers in the mini-square have a right or left hand joined. The figure on the left shows mirror waves. Notice that one wave is right handed wave and one left handed. Dancers across the set are either facing or back to back as if there were a mirror down the center of the square.

High Level Roadmap (4.3.2)

The diagram below shows how the Mirror Region fits into the big picture with the Symmetric and Asymmetric Regions. The important point is that the Mirror Region is a hub connecting to all three of the other regions, including the Swamps of Bad Sequence. As soon as a mirror formation loses its "handedness," it lands in one of the other three regions. For example, calling RECYCLE from mirror waves moves from a mirror formation to facing couples. Those facing couples will be in one of the other three regions as determined by their arrangement and sequence. See section (6.5) for a specific example.

Next we will look at some important properties of mirror waves which will drive the choice of a normalizing module.

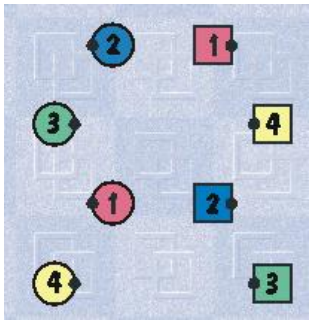
Choreography Regions Summary



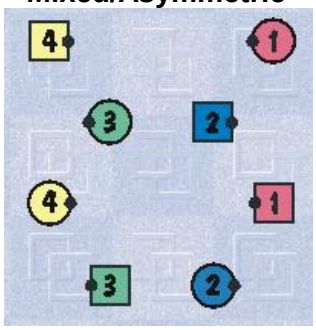
Important Properties of Mirror Formations (4.3)

Although there are many different mirror formations, we have chosen mirror waves as a basis for identifying some important properties. This section introduces a method of naming important properties of mirror waves. It is a bit tedious but important in order to give us a shorthand for the rest of the chapter. The first important property is arrangement of men and women in the wave. Although there are many different arrangements of mirror waves, the three figures below show the most useful arrangements which will be covered in this chapter. The left figure is Same-Sex Waves. The middle figure is Mixed/Asymmetric waves (shortened to Mixed/A) because each wave has both men and women (mixed) and the men are in the center of one wave and on the ends of the other wave. The right wave is Mixed/Symmetric (shortened to Mixed/S) because the men are all on the ends (or all centers) of the waves.

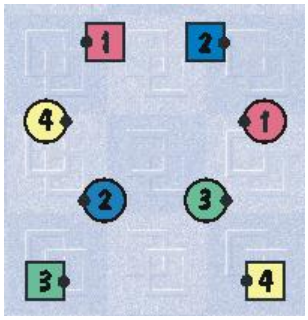
Same-Sex Waves

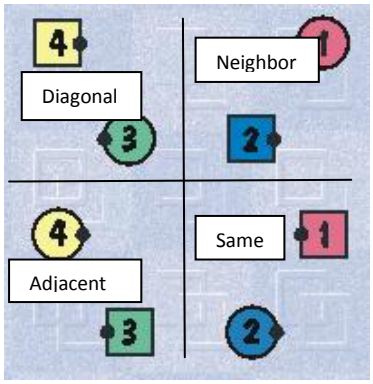


Mixed/Asymmetric



Mixed/Symmetric





The second important property is sequence. The sequence property is the relationship between the head men in terms of the quadrants they occupy *relative to the #1 man*. The figure at left shows the four possibilities. The quadrant in the same wave is the Neighbor quadrant while the quadrant across the street is the Adjacent quadrant. This property is important in determining the normalizing module.

Each of the figures above has between one and three sequence variations. For example Same-Sex Waves can only have a Neighbor relationship while Mixed/Asymmetric waves can have a Neighbor, Adjacent, or Diagonal relationship. We will add a sequence code (S, A, N, D) to the arrangement name when we need to specify a particular head man relationship as well as arrangement. For example, the square in the middle above is Mixed/A-A since arrangement is Mixed/Asymmetric and the #3 man is in the adjacent (A) quadrant to the #1 man. The square on the right above is labeled Mixed/S-N since the #3 man is in the neighbor quadrant to the #1 man. These properties are important because they determine which normalization module to use.

Normalizing Groups (4.4)

Before we begin calling to mirror formations, we must know how to normalize back to the Symmetric Region. When we begin developing modules to normalize mirror waves, we find that they fall into one of a few groups which roughly correspond to the sequence property. Any new normalization routine which we may develop will fall into one of these groups.

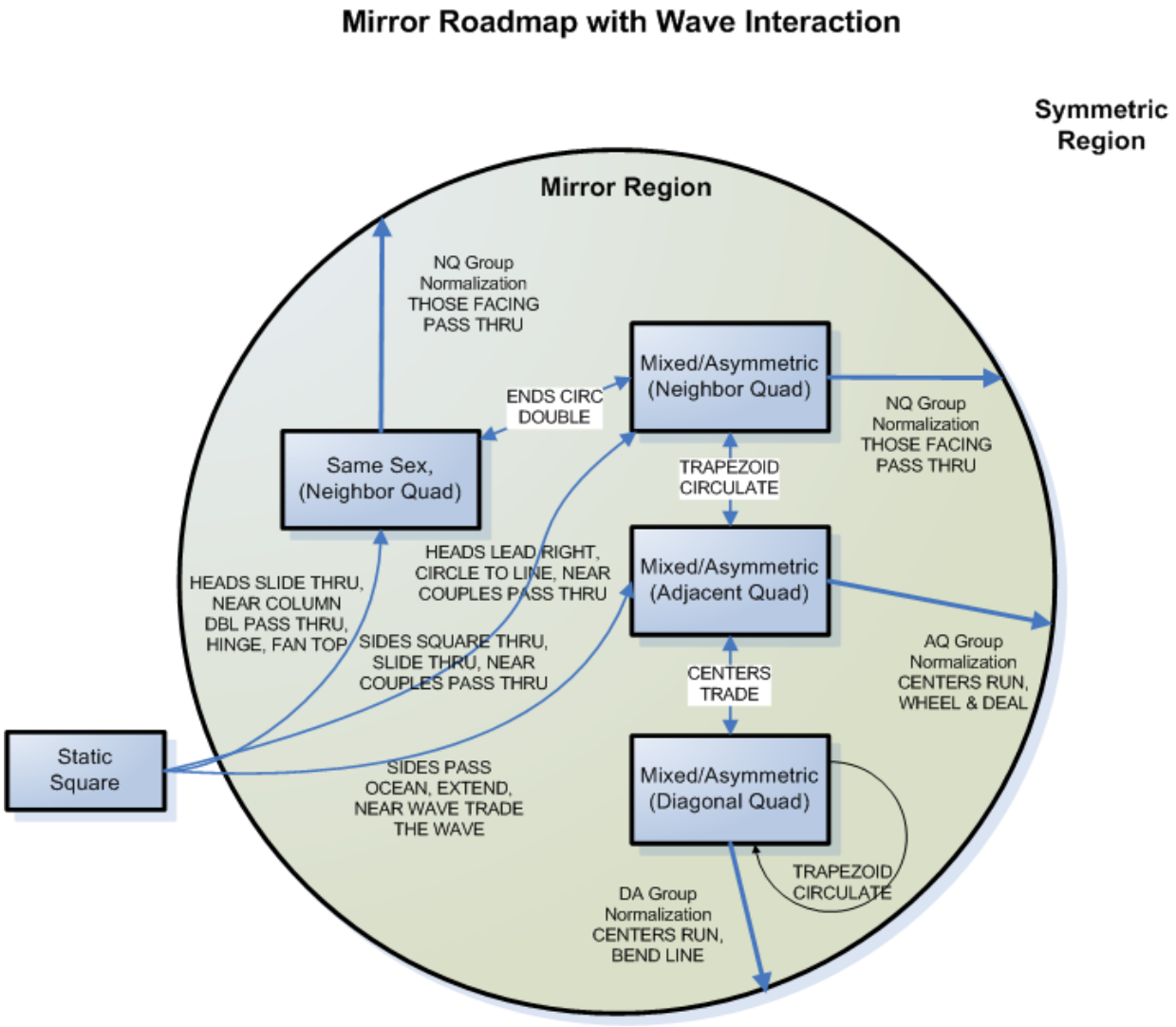
HALF BREED THRU must be treated separately due to its conditional, gender-based definition which forces a normalized arrangement, even though the sequence may be asymmetric. HALF BREED THRU can only be called from facing lines when we have a man and woman in each quadrant. If the head men are in diagonal quadrants, the square lands in the Symmetric Region. Otherwise it lands in the Swamp.

The table below shows some normalization modules for each group from mirror waves. This table is for reference in later sections, not to be studied now.

Neighbor Quadrant (NQ) Group	- FACING DANCERS PASS THRU - CENTERS RUN, FACING COUPLES PASS THRU - SPIN THE TOP, HINGE (Any mirror column), THOSE FACING IN DOUBLE PASS THRU - (Same-Sex waves only) CENTERS RUN, BEND THE LINE, SLIDE THRU, THOSE FACEING IN DOUBLE PASS THRU - SINGLE HINGE, ENDS TRADE, BEND THE LINE
Adjacent Quadrant (AQ) Group	- CENTERS RUN, WHEEL & DEAL - RECYCLE - CENTERS RUN, ALL 8 CIRCULATE (Ends in right hand waves)
Diagonal Quadrant For Asymmetric Arrangements (DA) Group	- CENTERS RUN, BEND THE LINE - EXPLODE THE WAVE - OUTFACERS FOLD - LINEAR CYCLE
Diagonal Quadrant For Symmetric Arrangements (DS) Group	- OUTFACERS RUN - HINGE, CENTERS RUN, BEND THE LINE
Half Breed Thru (HB) Group	- OUTFACERS RUN, HALF BREED THRU (From head men in diagonal quadrants with man and woman in each quadrant)

The Step By Step Approach (4.5)

The remainder of this chapter is organized into incremental steps which allow callers to begin calling to mirror formations without being required to master the whole package. These steps are organized around two different neighborhoods – a group of arrangements that integrate well together. The first five steps will be based on the neighborhood shown below.



Step 1: Same-Sex Mirror Waves (4.5.1)

The first step requires no sight calling at all. From a static square we setup same-sex mirror waves using the bridge module shown in the upper path on the neighborhood map above. From this point we call as if we are calling to a stand-alone mini-square but both waves are doing the calls. See Appendix 1 to review the details regarding symmetric calls to same-sex mini-squares. Remember that during formation management we must maintain the mirror "handedness" at all times to prevent inadvertently dropping out of the Mirror Region. This

requirement constrains our calling significantly. For example, from mirror two-face lines, we would like to call HALF TAG THE LINE. However, TAG THE LINE is defined as a right shoulder move which would turn both waves into right hand waves and drop us out of the Mirror Region. At this point in the Asymmetric Region we also introduced calling independently to same-sex mini-squares. Trying this with mirror formations is significantly more difficult than regular same-sex mini-squares because each side must maintain the "handedness" to stay in the Mirror Region. But a better reason to avoid calling separately to each side is that it hides the unique beauty of the mirror formations, so the benefit is just not there.

A simple example sequence from the mirror waves (upper path) follows:

Example 11: Mirror Formations	
HEADS SLIDE THRU, NEAR COLUMN DOUBLE PASS THRU, SAME-SEXES HINGE, FAN THE TOP	From square use bridge module to mirror waves
CENTERS RUN, NEW CENTERS HINGE, DIAMOND CIRCULATE, FLIP THE DIAMOND	Formation Management ending in Mirror Waves
FACING DANCERS PASS THRU	Normalize to Symmetric Region (NQ Group)
BEND THE LINE, SLIDE THRU, CENTERS ROLL & BACK OUT TO HOME	Resolve

A more aggressive example starting from the mirror columns follows:

Example 12: Mirror Formations	
HEADS SLIDE THRU, NEAR COLUMN DOUBLE PASS THRU	From square use bridge module to mirror waves
SAME-SEXES HINGE, FAN TOP & SPREAD, CENTERS HINGE, (Facing) DIAMOND CIRCULATE, CUT THE DIAMOND, LINEAR CYCLE & ROLL	Formation Management ending in Mirror Columns
THOSE FACING IN DOUBLE PASS THRU	Normalize to Symmetric Region (NQ Group)
ALL PARTER TRADE, DIXIE GRAND, ALLEMANDE LEFT TO HOME	Resolve

The second example used a different normalization module chosen from the Neighbor Quadrant Group. See section (4.3.3) above for the list. Keep in mind that even sequences that we normally would consider simple are more difficult for two reasons:

- The dancers are distracted by watching the unusual mirror action in the other wave
- The calls are being done right handed on one side of the square and left handed on the other, such as FOLLOW YOUR NEIGHBOR. This is inherently DBD dancing.

When we are ready to normalize the square and return to the Symmetric Region, just have the facing dancers across the set PASS THRU or use any other module from the Neighbor Quadrant Group. From this point the square can be resolved in the normal way. While the square was in the Mirror Region, no sight calling was required.

Step 2: Mixed Asymmetric Waves (4.5.2)

Everyone who calls any asymmetric arrangements uses Same-Sex Waves. Step 2 works just like Same-Sex Waves, but uses Mixed Asymmetric Waves. Very few callers use this setup. Like in Step 1, no sight calling is required. We are following middle path in the neighborhood map above. From a static square two bridge modules are shown to get to mixed waves.

Proceed to call mirror formation management from here. The calling constraints are the same as calling to same-sex mini-squares. The purpose of these constraints is to ensure that the head men stay in diagonal quadrants without having the inconvenience of tracking them with sight calling. If you are in doubt about whether a particular sequence works then try it with dolls and check if the head men are still in diagonal quadrants. If so, then the sequence is OK.

Normalizing is done using the Neighbor Quadrant Group just as in Step 1. An example is shown below for each of the bridge modules.

Example 13: Mirror Formations	
HEADS LEAD RIGHT, CIRCLE TO A LINE, NEAR COUPLES PASS THRU	From static square use the bridge shown to mixed mirror waves.
CENTERS HINGE, DIAMOND, CIRCULATE, FLIP THE DIAMOND	Formation Management
THOSE FACING PASS THRU	Normalize
ALL BEND THE LINE, CENTERS SQUARE THRU 2, ENDS SLIDE THRU, ALL BOX GNAT, RIGHT & LEFT GRAND	Resolve

Example 14: Mirror Formations	
SIDES SQUARE THRU, SLIDE THRU, NEAR COUPLES PASS THRU	From static square use the bridge shown to mixed mirror waves.
CENTERS HINGE, DIAMOND, CIRCULATE, FLIP THE DIAMOND	Formation Management
THOSE FACING PASS THRU	Normalize
ALL BEND THE LINE, SLIDE THRU, CENTERS PASS THRU, LEFT ALLEMANDE TO HOME	Resolve

Step 3: Wave Interactions – Ends Circulate Double (4.5.3)

In this step we move between Same-Sex Waves (Step 1) and Mixed Asymmetric (Step 2) without ever leaving the Mirror Region. From the Neighborhood Map we see that this can be done using ENDS CIRCULATE DOUBLE. Due to the mirror waves, this in an unconventional circulate with each side passing the other right shoulders. Note that stopping at a single circulate results in a very asymmetric formation which is no longer in any region. While CIRCULATE DOUBLE maintains the mirror formation, it shifts the arrangement family between Same-Sex to Mixed Asymmetric waves. It also changes the formation from waves to two-faced

lines if the centers do not move. Like Steps 1 and 2, no sight calling is required. However, the same constraints spelled out in Step 2 apply.

From a flow perspective we don't want to leave the centers standing while the ends are circulating double. Two good choices are

- CENTERS TRADE AND U-TURN-BACK (or ROLL TWICE) ending in mirror waves
- CENTERS CAST ¾ ending in mirror diamonds

In either case the "handedness" of each side is reversed.

We now have some alternatives in navigating the neighborhood map. For example, we could first move to Same-Sex waves, then move to Mixed Asymmetric waves, and normalize from there. An example of this path is developed here:

Example 15: Mirror Formations	
HEADS FLUTTERWHEEL & SWEEP 1/4, NEAR COLUMN DOUBLE PASS THRU (Mirror Columns), SAME-SEXES HINGE, FAN TOP & SPREAD	From static square bridge to same-sex mirror waves.
ENDS CIRCULATE DOUBLE WHILE CENTERS CAST ¾	Navigate to Mixed Symmetric
DIAMOND CIRCULATE, CUT THE DIAMOND	Short formation management ending in mirror two faced lines.
COUPLES FACING PASS THRU	Normalize
ALL PARTNER TRADE & ROLL, LEFT ALLEMENDE TO HOME	Resolve

This sequence used a third alternative normalization module from the Neighbor Quadrant (NQ) Group. The surprising aspect of this multi-arrangement sequence is that no sight calling is required until the square is normalized. At any point if we want to normalize, we just use one of the choices from the NQ group and resolve in the normal way in the Symmetric Region.

Step 4: More Mixed Asymmetric Waves (4.5.4)

Step 2 was limited to Mixed Asymmetric Waves with the head men in the same wave. This step adds the sequences with the head men in opposite waves – the Diagonal and Adjacent sequences. However, we must sight call in this step by following the head men. In addition, the two new sequences each have their own normalization group. But the benefits are considerable:

- The mirror waves are very easy to setup
- The normalization modules are very subtle, unlike the rather obvious modules used in the first three steps.

On the Neighbor Map we are following the lower route. Setting up mirror waves is very easy. From any waves across the heads, NEAR WAVE TO CALLER TRADE THE WAVE. This sets Mixed Asymmetric/(Adjacent) waves. But note on the map that a CENTERS TRADE shifts to

Mixed Asymmetric/(Diagonal) waves. The method is then to call mirror formation management. When we are ready to normalize, check whether the head men are in diagonal quadrants or adjacent quadrants:

- If adjacent quadrants, normalize with CENTERS RUN, WHEEL & DEAL (AQ Group).
- If diagonal quadrants, normalize with CENTERS RUN, BEND THE LINE (DA Group).

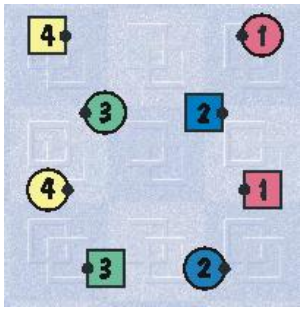
Be sure to follow the Neighborhood Map. For example, do not have ends circulate double from the Adjacent or Diagonal sequence waves since the map does not show that route. An example sequence is shown below using the lowest path on the map. This example normalizes from the head men in diagonal quadrants.

Example 16: Mirror Formations	
SIDES PASS THE OCEAN, EXTEND, NEAR WAVE TRADE THE WAVE	Bridge to Mixed/Asymmetric-A
SWING THRU, CENTERS TRADE	Short Formation Mgmt. Check head men. They are in diagonal quadrants (bottom box on the map).
CENTERS RUN, BEND THE LINE	Normalize
SQUARE THRU 2, TRADE BY, LEFT ALLEMANDE To Home	Resolve

This second example normalizes from the head men in adjacent quadrants.

Example 17: Mirror Formations	
SIDES PASS THE OCEAN, EXTEND, NEAR WAVE TRADE THE WAVE	Bridge to Mixed/Asymmetric-A
ALL SINGLE HINGE, SCOOT BACK, SPLIT CIRCULATE, CAST ¾, CENTERS CROSS RUN	Formation Mgmt. Check head men. They are in adjacent quadrants (middle box on the map).
RECYCLE	Normalize
PASS TO THE CENTER, CENTERS SWING THRU, TURN THRU TO OUTSIDES, SLIDE THRU & ROLL, RIGHT & LEFT GRAND	Resolve

Step 5: Trapezoid Circulates (4.5.5)



This step finishes up the Neighbor Map above since it covers the path between the top two Mixed/Asymmetric boxes. The Mixed, Asymmetric arrangement is the only one which sets up interlocking trapezoids. The men and women both have trapezoids. Doing a trapezoid circulate does not change the arrangement family, but it does change from head men in adjacent quadrants (A) to neighbor quadrants (N) which changes the normalization module. This is clearly seen in the map. Trapezoid circulates must be done in pairs: one for

the women and one for the men, or the sequence between the men and women will become inconsistent. The following example will follow a long route through the map:

- Setup a Mixed, Asymmetric/A Wave
- Use trapezoid circulates to move to a Diagonal sequence
- Use an ENDS CIRCULATE DOUBLE to move to same-sex waves,
- Normalize using an NQ group module.

Example 18: Mirror Formations	
SIDES PASS THE OCEAN, EXTEND, NEAR WAVE TRADE THE WAVE	Bridge to Mixed/A-A
ALL SWING THRU (note one wave starts in the center, the other on the ends)	Micro formation management
MEN TRAPEZOID CIRCULATE, LADIES TRAPEZOID CIRCULATE	Navigate to head men in neighbor quadrant. Sight verification. (See Map)
ENDS CIRCULATE DOUBLE WHILE CENTERS TRADE & U-TURN-BACK	Navigate to same-sex waves (See map)
FACING DANCERS PASS THRU	Normalize
PARTNER TRADE, ENDS ROLL & SLIDE TOGETHER WITH PARTNER AT HOME	Resolve

This sequence covered an unusual amount of ground on the map, but it demonstrates how to navigate among arrangement and sequence families. Notice that there was only a single sight calling checkpoint to verify that the trapezoid circulate put the head men in the same wave.

Step 6: Faking an Exit (4.5.6)

This is an “extra credit” section which adds a bit of drama. We have made a big deal about maintaining the “handedness” of the formation to stay in the Mirror Region. As soon as the formation is not handed we have landed in one of the other Regions. This is all true, but there are a couple of methods where we land briefly in the Asymmetric Region and immediately bounce back to the Mirror Region. This is “faking an exit.”

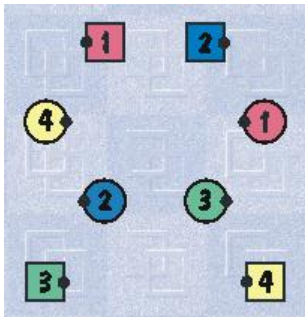
From any mirror wave: SINGLE HINGE, WALK & DODGE, WALKERS RUN (B9)

After the WALK & DODGE the square was briefly in the Asymmetric Region but the next call returned to the Mirror Region.

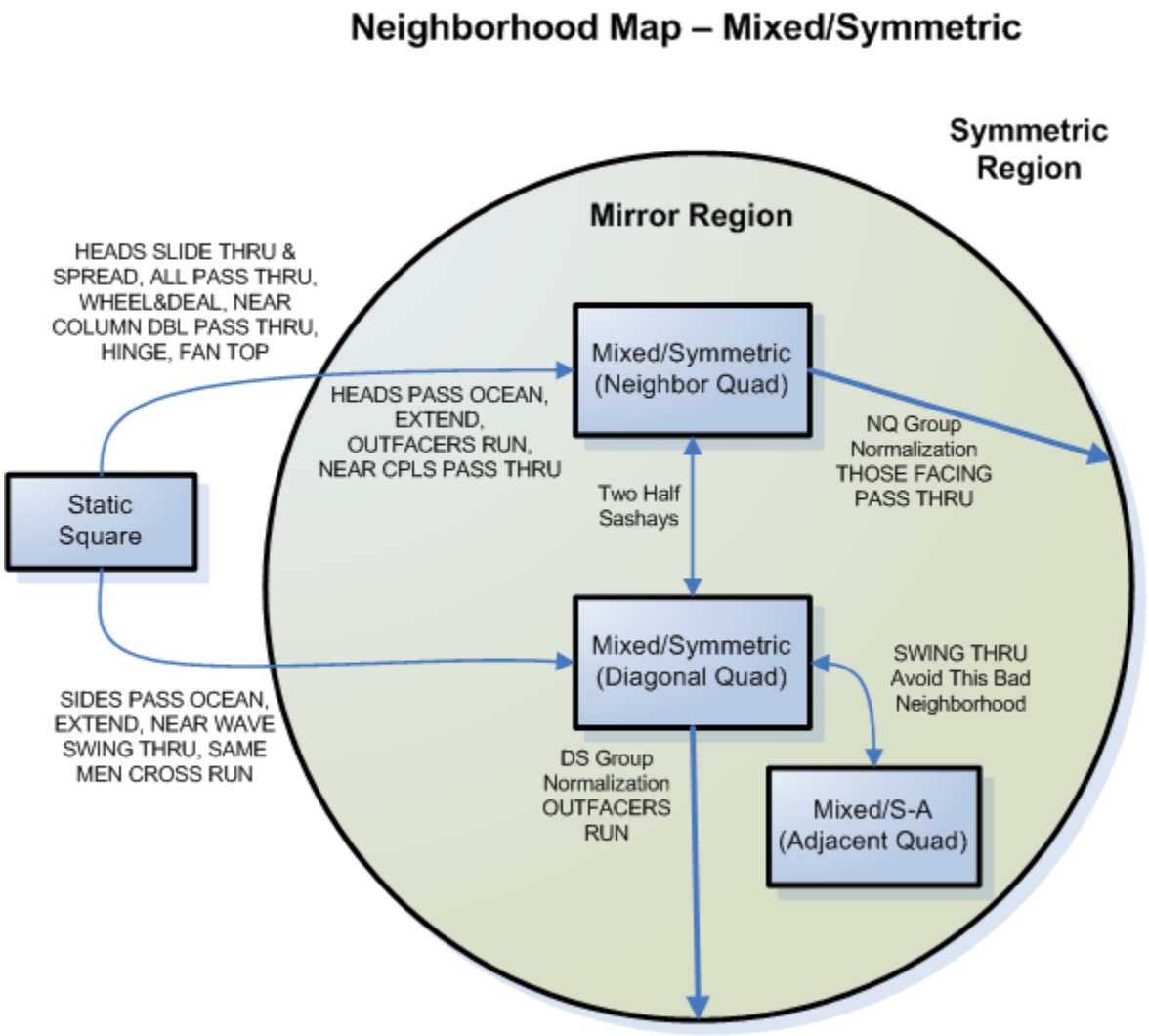
From Same-Sex mirror waves: CENTERS RUN, BEND THE LINE, SLIDE THRU (B10)

After the BEND THE LINE the square was briefly in the Asymmetric Region. This is particularly convenient because the SLIDE THRU sets up mirror columns which is the starting setup for a normalization module. Just continue with THOSE FACING IN DOUBLE PASS THRU and the square is normalized.

Exploring a New Neighborhood (4.6)



The previous neighborhood included Mixed, Asymmetric arrangements. This second neighborhood is Mixed, Symmetric arrangements. Note in the figure at left that the men are all on the ends. The bad news is that this arrangement uses an additional normalization module. The good news is the stability of this arrangement. In the work above, interactions between waves such as ENDS CIRCULATE DOUBLE caused a change to a different arrangement. But in this Mixed, Symmetric neighborhood such interactions do not change the arrangement. This arrangement stability is really good for the more interesting choreography as well as the basic material in the earlier section.



Step 7: Mixed/Symmetric - Neighbor Quadrant [Mixed/S-N] (4.6.1)

We are following the upper path on the neighborhood map above. No sight calling is required while in the Mirror Region. We return to sight calling to resolve the square after normalizing. Simply setup the mirror waves using the bridge module indicated, call some formation management, then use one of the Neighbor Quadrant Group modules to normalize the square just as we did in the first neighborhood. We will use the same examples from Step 1 above. These work the same here through normalization, but the resolution must change. First we repeat the simple example.

Example 19: Mirror Formations	
HEADS PASS THE OCEAN, EXTEND THE TAG, OUTFACERS RUN, NEAR TWO COUPLES PASS THRU,	From a square used bridge module to Mixed/S-N mirror waves
CENTERS HINGE, DIAMOND CIRCULATE, FLIP THE DIAMOND	Formation Management ending in Mirror Waves
FACING DANCERS PASS THRU	Normalize to Symmetric Region (NQ Group)
HALF TAG THE LINE, FACE RIGHT, LEFT ALLEMANDE	Resolve to Home

Then the aggressive example starting from the mirror columns follows:

Example 20: Mirror Formations	
HEADS SLIDE THRU & SPREAD, PASS THRU, WHEEL & DEAL, NEAR COLUMN DOUBLE PASS THRU,	From a square used bridge module to mirror waves
SINGLE HINGE, FAN TOP & SPREAD, CENTERS HINGE, (Facing) DIAMOND CIRCULATE, CUT THE DIAMOND, LINEAR CYCLE & ROLL	Formation Management ending in Mirror Columns
THOSE FACING IN DOUBLE PASS THRU	Normalize to Symmetric Region (NQ Group)
CENTERS IN, CAST OFF ¾, ALL CIRCLE LEFT, ONLY THE MEN WITH LADY ON LEFT ALLEMANDE LEFT, OTHERS ROLL AWAY, ALL RIGHT & LEFT GRAND	Resolve

Note that this is the third arrangement that we have normalized using the Neighbor Quadrant (NQ) group: Same-Sex-N, Mixed/A-N, and Mixed/S-N. This is very convenient as the same formation management and the same normalization can be applied. None of these required sight calling.

Step 8: Mixed/Symmetric-Diagonal Quadrant [Mixed/S-D] (4.6.2)

Referring to the Neighborhood Map above, we now take the low road. No sight calling is required while in the Mirror Region. We return to sight calling to resolve the square after normalizing. We use module from the Diagonal Symmetric Group to normalize as shown on the map.

Example 21: Mirror Formations	
SIDES PASS THE OCEAN, EXTEND, NEAR WAVE SWING THRU, SAME MEN CROSS RUN	Bridge Module
ALL CENTERS TRADE, CENTERS RUN, NEW CENTERS HINGE, DIAMOND CIRCULATE, FLIP THE DIAMOND	Formation Management
OUTFACERS RUN	Normalize
PASS THRU, WHEEL & DEAL, ZOOM, PARTNER WRONG WAY RIGHT & LEFT GRAND, MEET PARTNER SLIDE THRU AT HOME	Resolve

From the Neighborhood Map we see that calling SWING THRU moves to a different Head Men Adjacent Relationship which is a dead end since it requires additional tracking but brings no particular benefit. As a result for this step, avoid calling a SWING THRU during formation management which will keep us in the Diagonal relationship.

In the Mixed/Asymmetric neighborhood we could not direct calls to the men or women because they were not distributed symmetrically in the square. However, in this Mixed/Symmetric neighborhood the men and women are symmetrically distributed so we can direct calls to them as seen in the following example which is more challenging.

Example 22: Mirror Formations	
SIDES PASS THE OCEAN, EXTEND, NEAR WAVE SWING THRU, SAME MEN CROSS RUN	Bridge Module to Mixed/S-D
ALL CENTERS RUN, BEND THE LINE & ROLL, SPLIT CIRCULATE, LADIES PEEL OFF, MEN EXTEND & TRADE (Waves)	Formation Management
OUTFACERS RUN	Normalize
LADIES PASS THE OCEAN, LADIES SWING THRU & TURN THRU, MEN PASS THRU & COURTESY TURN PARTNER, PROMENADE HOME	Resolve

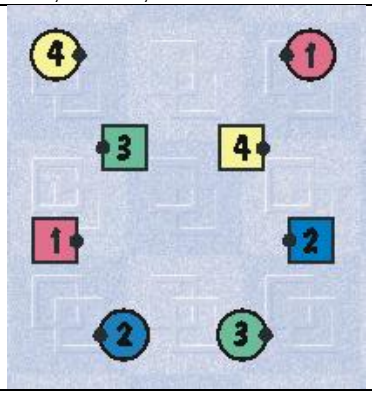
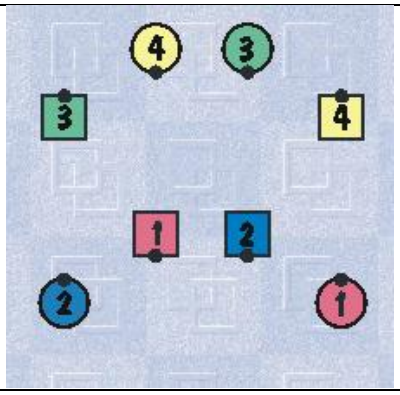
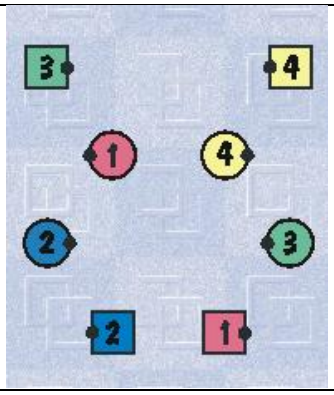
Step 9: Wave Interaction – Ends Circulate Double (4.6.3)

Previously ENDS CIRCULATE DOUBLE changed the arrangement but in Mixed/Symmetric it does not. So what is the point of using it? Our choreography is somewhat constrained due to maintaining the “handedness” so having an additional option is worthwhile. Also, calling ENDS CIRCULATE DOUBLE does not change the head men relationship (Neighbor or Diagonal) so we stay on the path we began. No sight calling is required while in the Mirror Region. We return to sight calling to resolve the square after normalizing. See section 6.6.5 for further discussion of circulates from mirror waves. The example below uses the lower path, like in Step 2 and includes a CIRCULATE DOUBLE.

Example 23: Mirror Formations	
SIDES PASS THE OCEAN, EXTEND, NEAR WAVE SWING THRU, SAME MEN CROSS RUN	Bridge Module to Mixed/S-D
ENDS CIRCULATE DOUBLE WHILE CENTERS CAST ¾ TO A DIAMOND, DIAMOND CIRCULATE, FLIP DIAMOND	Formation Management
OUTFACERS RUN	Normalize
PASS THRU, WHEEL & DEAL, CENTERS SQUARE THRU 3, OUTSIDES ½ SASHAY, LEFT ALLEMANDE, PROMENADE	Resolve

Step 10: Wave Interaction – Half Sashay from Mirror Inverted Lines (4.6.4)

In the first three steps we worked in the Mixed/Symmetric using either the Neighbor or Diagonal relationship between the head men. The setups were very stable and did not change even using CIRCULATE DOUBLE. In this step we learn how to move between those two setups by using HALF SASHAY to move dancers between the two mirror waves. The left diagram has a Neighbor relationship between the head men. SINGLE HINGE leads to the middle figure. Seen from the original waves, these are mirror boxes, but we also have inverted lines across the set (even though they are distorted in the figure). The result on the right is a diagonal relationship between the head men. See section 6.6.6 for further discussion of half sashay from mirror waves. We have travelled the path between the two setups on the diagram above. From there we can use OUTFACERS RUN to normalize.

Bridge to Mixed/S-N HEADS SLIDE THRU & SPREAD, PASS THRU, WHEEL & DEAL, NEAR COLUMN DOUBLE PASS THRU, HINGE, FAN THE TOP	SINGLE HINGE to Parallel Inverted Lines	CENTERS HALF SASHAY, ALL HINGE
		

No sight calling is required while in the Mirror Region. We return to sight calling to resolve the square after normalizing. We could use sight calling by watching the head men to verify that they shifted from Neighbor to Diagonal, but we know that without sight calling because we used the HALF SASHAY bridge. The example below uses this bridge.

Example 24: Mirror Formations	
HEADS SLIDE THRU & SPREAD, PASS THRU, WHEEL & DEAL, NEAR COLUMN DOUBLE PASS THRU, HINGE, FAN THE TOP	From a square used bridge module to Mixed/S-N mirror waves
ALL CAST ¾, CENTERS HALF SASHAY	Bridge to Mixed/S-D mirror waves
SPLIT CIRCULATE, FOLLOW NEIGHBOR & SPREAD	Formation Management
OUTFACERS RUN	Normalize to Symmetric Region (DQ Group)
PASS THRU, TAG THE LINE, CLOVERLEAF, ZOOM, MEN SQUARE THRU 3, 2 LADIES HALF SASHAY, LEFT ALLEMANDE, RIGHT & LEFT GRAND TO HOME	Resolve to Home

The following example travels the bridge in the opposite direction from the Diagonal setup to the Neighbor setup.

Example 25: Mirror Formations	
SIDES LEAD RIGHT, STEP TO WAVE, NEAR WAVE SWING THRU, SAME MEN CROSS RUN	Bridge Module to Mixed/S-D
ALL SINGLE HINGE, CENTERS HALF SASHAY,	Bridge to Mixed/S-N
SPLIT CIRCULATE, FOLLOW YOUR NEIGHBOR & SPREAD	Formation Management ending in Mirror Waves
FACING DANCERS PASS THRU	Normalize to Symmetric Region (NQ Group)
ALL TAG THE LINE, 2 MEN TRADE, SLIDE THRU WITH LADIES, COUPLES CIRCULATE 1+1/2, BEND LINE AT HOME	Resolve

Step 11: Wave Interaction – Half Sashay from a Center Inverted Line (4.6.5)

In the previous step we did two half sashays at the same time to travel between the two setups. In this step we have only a single inverted line down the center so we must do a series of two half sashays to accomplish the move between setups. Calling a single half sashay does not maintain the arrangement and sequence consistency between the men and women. It is a good practice to call the two half sashays close together to ensure that the same two dancers don't move back to their original wave which obviously would not accomplish the change. There are a variety of ways to get a single inverted line down the center: diamonds, SPIN CHAIN THRU, and SPIN CHAIN THE GEARS. See section 6.6.6 for further discussion of half sashay from mirror waves. The example below starts from the Neighbor setup and uses diamonds to move to the Diagonal setup.

Example 26: Mirror Formations	
HEADS PASS THE OCEAN, EXTEND THE TAG, OUTFACERS RUN, NEAR TWO COUPLES PASS THRU,	From a square used bridge module to Mixed/S-N mirror waves
CENTERS CAST 3/4, VERY CENTERS HALF SASHAY	Formation Management into the crossing module with the first HALF SASHAY

DIAMOND CIRCULATE, VERY CENTERS HALF SASHAY, FLIP THE DIAMOND	Continue crossing with second HALF SASHAY
OUTFACERS RUN	Moved to Mixed/S-D so Normalize (DS Group)
LOAD THE BOAT, LEFT ALLEMANDE, LOOK FOR PARTNER, ALL PROMENADE	Resolve

A slightly modified SPIN CHAIN THE GEARS is a perfect call because it contains two center HALF SASHAYS. The following example stars from a Diagonal setup and uses GEARS to end in a Neighbor setup for normalization.

Example 27: Mirror Formations	
SIDES PASS THE OCEAN, EXTEND, NEAR WAVE SWING THRU, SAME MEN CROSS RUN	Bridge Module to Mixed/S-D
ALL SPIN CHAIN THE GEARS BUT VERY CENTER MEN HALF SASHAY AND CONTINUE THE CALL THEN CENTER LADIES DO THE SAME	Formation Management
THOSE FACING PASS THRU	Moved to Mixed/S-N as expected. Normalize there.
WHEEL & DEAL, CENTERS TURN THRU, LEFT ALLEMANDE, PROMENADE	Resolve

Writing Set Figures (4.7)

Set figures are those that we write ahead of time and memorize or write down. A good set figure is

- Clean. It feels like normal dancing, not contrived. We've seen callers setup an asymmetric figure with COUPLES 1 & 2 LADIES CHAIN, 1 & 4 RIGHT & LEFT THRU. This is not clean or normal. It is painful.
- Compact. We don't like figures any longer than necessary. Every call has a purpose, whether to improve the flow or setup the resolution.
- Satisfying resolution. We don't write a custom figure with a getout like FERRIS WHEEL, CENTERS PASS THRU, LEFT ALLEMANDE. It needs to be surprising, interesting, or unusual.

If extemporaneous calling is like square dance prose, then set figures are like square dance poetry.

Writing set figures for Asymmetric or Mirror Regions takes some special considerations. The first important concept is that the bridge modules can be generalized, even though they are presented from a static square. For example, any normal lines across the heads can PASS THRU, TAG THE LINE, FACE CALLER, BEND THE LINE to the Asymmetric Region. Note that the arrangement is important. Not any line, but any boy-girl-boy-girl line can be used (normal or half sashayed). Also, since many of these bridge modules rely on a "near" wave, line, or couple, the orientation must be appropriate to execute the module.

Asymmetric Figures (4.7.1)

Chances are really good that we want to resolve and normalize simultaneously because it is classy. We should get one call or maybe two to resolve after normalizing, otherwise why bother with the asymmetrics?

The implication is that we must have the right partner in hand when we normalize. Hopefully, the asymmetric partner feature from Chapter 2 is still fresh. So we must use a bridge into the Asymmetric Region which results in the right asymmetric partner. Even if we use a custom normalizing approach without the target setup, the ability to change partners in the Asymmetric Region is very limited.

The whole figure is driven by a single key idea: a clever module or the getout. I think the normalization/resolution module ending in CIRCLE LEFT, 4 MEN STAR RIGHT TO THE CORNER is very surprising to dancers but simple. But let's try to get to the right target formation without using the same-sex waves to get there. This will be more compact and will look different from the extemporaneous calling. I know that at the end we need original partners paired, so I will use a bridge which makes the original partner as the asymmetric partner. From there I try to quickly navigate to the target setup without using the same-sex waves procedure.

Example 28: Mirror Formations	
COUPLES #1 & 2 HALF SASHAY,	Bridge to Asymmetric Region with original partner as asymmetric partner.
HEADS PASS THE OCEAN, EXTEND, ACEY DEUCY, CENTERS RUN,	Acey Deucy gets 2 men in each wave, but head men are adjacent.
COUPLES CIRCULATE,	The circulate gets the head men in different waves.
CENTERS CHAIN DOWN THE LINE,	A Centers Trade gets to the target setup, but Chain down the line is more interesting with mixed sexes.
CIRCLE LEFT, MEN STAR RIGHT TO CORNER, LEFT ALLEMANDE	As expected original partners restored. They are IN sequence. Normalize and Resolve

Here is a nice compact set figure in the Asymmetric Region base on the idea of having same-sex stars for SPIN CHAIN & EXCHANGE THE GEARS.

Example 29: Mirror Formations	
COUPLES #1 & 2 HALF SASHAY,	Bridge to Asymmetric Region with original partner as asymmetric partner.
HEADS SQUARE THRU, STEP TO A WAVE SPIN CHAIN & EXCHANGE THE GEARS	Key idea of the figure
CENTERS TRADE, 8 CIRCULATE	Standard asymmetric normalization method
CENTERS RUN, COUPLES CIRCULATE, TAG THE LINE, LADIES GO LEFT, MEN GO RIGHT, LEFT ALLEMANDE	Simultaneous Normalization & Resolution

Mirror Figures (4.7.2)

Mirror figures are a lot more fun for set figures due to the variety of the normalizing options. But we have some distinct disadvantages:

- Unlike the Asymmetric Region, we can't set asymmetric partners
- We have very little wriggle room in terms of moving people around in the Mirror Region because moving dancers between waves is very specialized.
- It is more difficult to normalize and resolve simultaneously.

As a result the setup for both partner pairing and sequence usually must be done before we bridge to the mirror region. The general strategy is to try the sequence from its most convenient place and check the resulting sequence and partner pairing. Then adjust the partner pairing and sequence as required before crossing the bridge. Another good approach is to base a new figure off of an existing figure. Let's start with a simple, quickie set figure using the Mixed/Asymmetric setup.

Example 30: Mirror Formations	
HEADS LEAD RIGHT, CIRCLE TO A LINE, RIGHT & LEFT THRU,	Setup for resolution. The RIGHT & LEFT THRU fixes the sequence for the later resolution.
NEAR COUPLES PASS THRU	Bridge to Mixed/Asymmetric-N.
ALL CROSSFIRE	Fun is over. Let's resolve
FAR COLUMN DOUBLE PASS THRU	Normalize
PEEL OFF AND CENTERS ROLL, LEFT ALLEMANDE	Resolve

Another good figure would be to modify this to end with PEEL OFF, CENTERS ROLL, RIGHT & LEFT GRAND. So we need to set the partner pairing with the original corner and swap the men and women.

Example 31: Mirror Formations	
HEADS SQUARE THRU, SLIDE THRU, PASS THRU, BEND THE LINE, NEAR COUPLES, PASS THRU	Bridge to Mixed/Asymmetric-N. Line is now with corner, not partner. The PASS THRU, BEND LINE fixes the sequence for the later resolution.
ALL CROSSFIRE, ALL TRADE	The TRADE swaps the men and ladies roles. Let's resolve
FAR COLUMN DOUBLE PASS THRU	Normalize
PEEL OFF AND CENTERS ROLL, ALL RIGHT & LEFT GRAND	Resolve

Here is another twist on the same idea. This is a resolve-to-home figure. It was challenging to get the positioning to end at home while keeping the lines at the sides.

Example 32: Mirror Formations	
HEADS BOX THE GNAT & SQUARE THRU WHILE SIDES WHEEL AROUND, CENTERS IN, CAST OFF HALF, RIGHT & LEFT THRU	Once I found the required setup positions, it took some thought to get there quickly before the bridge module. It's longer than I would like, but it is a bit unusual in itself.
NEAR COUPLES PASS THRU,	Bridge to Mirror
ALL CROSSFIRE	
FAR COLUMN DOUBLE PASS THRU	Normalize
PEEL OFF, ALL SLIDE THRU, CENTERS ROLL AND BACK OUT TO HOME	Resolve

Custom Normalization Modules (4.7.4)

The normalization modules given in this paper do not represent an exhaustive list. Frankly, they are the simple ones that were obvious to me. This set figure contains a custom normalization module which also makes it different and interesting.

Example 33: Mirror Formations	
SIDES SQUARE THRU, SLIDE THRU, NEAR COUPLES PASS THRU,	Bridge
CENTERS HINGE, DIAMOND CIRCULATE,	Setup diamonds needed for the normalization module
THE FACING POINTS PASS THRU ACROSS THE SET, ALL FLIP THE DIAMOND, FACING 6 PASS THRU	Custom normalization. After points pass thru we have funny diamonds
ALL WHEEL & DEAL, LADIES SQUARE THRU 3 WHILE MEN HALF SASHAY, ALL LEFT TOUCH1/4	Setup the getout
[8 CIRCULATE, LEFT ALLEMANDE TO HOME] or [ALL HALF CIRCULATE, EXPLODE & BACK OUT TO HOME]	Choice of two getouts shown

My Favorite Normalization Bridge (4.7.3)

The Mixed/Symmetric-Adjacent setup has one normalization module (AQ Group) which is great. From mirror two-face lines ALL CIRCULATE to end in waves in the Symmetric Region. This is cool because it uses the right shoulder rule twice: the couples who are facing pass right shoulders to cross the set and then step right shoulders with the original outfacing couple who want to be in the same place, thus ending in parallel waves. It is tempting to call COUPLES CIRCULATE from the mirror two-faced lines, but in COUPLES CIRCULATE the couple is a unit. But I need individuals to pass right shoulders, so CIRCULATE is a better call. I thought it would be cool to do this normalization module directly into a RIGHT & LEFT GRAND. This is a simultaneous normalization and resolution figure.

Example 34: Mirror Formations	
4 LADIES CHAIN, SIDES LEAD LEFT, STEP TO A WAVE, SCOOT BACK,	Setup for Resolution. The Scoot Back sets up the men on the inside for the right & left grand.
NEAR WAVE TRADE THE WAVE,	Bridge module
ALL SPIN THE TOP, EACH SIDE CENTERS RUN, COUPLES HINGE,	The Hinge into the all circulate to the right & left grand was the core starting sequence – it flows.
ALL CIRCULATE, RIGHT & LEFT GRAND	

Once the dancers can do that call, here is my fantasy call on the same subject. It takes the same circulate idea but goes once and a half to SLIDE THRU at home. So this is a simultaneous normalize and resolve-to-home figure. The key challenge here is that the second "half" after the circulate cannot be seen by the dancers until they complete the first circulate and see the parallel waves. I recommend calling the circulate as CIRCULATE…(wait 2 beats)…AND A HALF to improve the success rate.

Example 35: Mirror Formations	
SIDES PASS THE OCEAN, PING PONG CIRCULATE, EXTEND, LADIES TRADE,	Setup for normalization
NEAR WAVE TRADE THE WAVE,	Bridge
SPIN THE TOP, EACH SIDE CENTERS RUN, COUPLES HINGE,	Core resolution sequence
ALL CIRCULATE ONCE..AND A HALF, SLIDE THRU WITH PARTNER, BACK OUT TO HOME	Normalization & Resolution

Mirror Formation Recap (4.8)

We have looked at three different setups which use the Neighbor Quadrant Group to normalize:

- Same-Sex – Neighbor Quadrant
- Mixed/Asymmetric – Neighbor Quadrant
- Mixed/Symmetric – Neighbor Quadrant.

None of these required any sight calling while in the Mirror Region. So the general rule is that any Neighbor Quadrant relationship between the head men can be normalized using FACING DANCERS PASS THRU.

While the Mixed/Asymmetric Adjacent and Diagonal setups required two person sight calling (head men) they also had two strong advantages:

- Trapezoid Circulates
- The smoothest normalization with CENTERS RUN, BEND THE LINE from the Diagonal setup and RECYCLE from the Adjacent setup.

The Mixed/Symmetric required a new normalization module with the Diagonal Symmetric setup, but its arrangement stability allowed very interesting choreography with the HALF SASHAYs between waves. It also did not require any sight calling.

Although we presented this chapter from the perspective of extemporaneous calling, knowing the mechanics of the Mirror Region allows us to develop some very smooth set figures to memorize and use as well. The final section gave some guidance on developing set figures. Then I showed some of my favorite figures.

See Appendix 2 for an integrated map of the Mirror Region and some final observations.

The key point of this chapter is that the Mirror Region has value on its own for producing some interesting choreography with beautiful geometry. As such I consider it a peer to the Asymmetric Region, not just a bridge to get to and from the Asymmetric Region.

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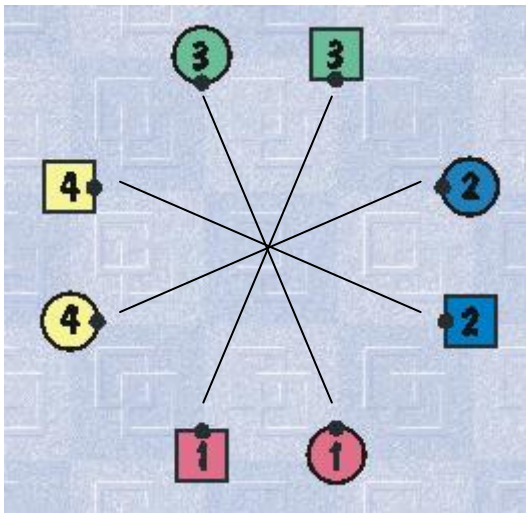
CHAPTER FIVE
THEORY OF THE ASYMMETRIC REGION

I have made every attempt to keep the explanations in the first four chapters free of theory and specialized jargon. A few terms such as the Target Setup and the asymmetric partner concept were unavoidable. This chapter is devoted to those who are interested in more precise definitions and have a curiosity as to why the method works. This chapter may be skipped as it is not necessary to understand this chapter to use the methods described above.

Basic Terminology (5.1)

These terms are generally understood in the caller community, but they provide an important foundation for explaining the theory. It's dry, but hang in there.

- Geometry of the square is determined by the location of the dancers without regard to facing direction. Examples are parallel lines, square, circle, star, and diamond.
- Formation is the geometry plus facing direction. Parallel line geometry includes facing lines, outfacing lines, two-faced lines, columns, boxes, double pass thru, and wave formations depending on the facing direction. Star geometry includes allemande thar and star promenade formations.
- Arrangement is the placement of men and women in the formation. For example, we refer to normal lines (each man with woman on right) or boy-boy-girl-girl lines as statements about arrangement.
- Sequence is sequence of dancers going counter clockwise around the square, men and women specified separately. In the symmetric region the sequence is said to be IN sequence (1-2-3-4) or OUT of sequence (1-4-3-2). Any other sequence is considered an asymmetric or OFF sequence.
- Relationship, which I also call partner pairing, is combination of how men and women may be paired as partners. There are eight possibilities in the symmetric region: four with both men and women IN sequence and four with one being IN sequence and the other OUT of sequence.

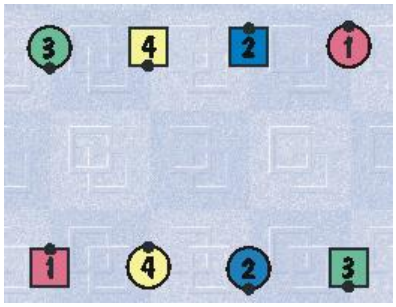


A very important concept is the image dancer. Image dancers are directly across the center of the square, an equal distance from the center. We expand on the definitions above in terms of the image dancers.

In the symmetric arrangements image dancers are the same gender. In asymmetric arrangements all image dancers are the opposite gender. That setup is easily seen by having couples #1 & 2 HALF SASHAY. (While the arrangement is considered asymmetric when only one couple does a HALF SASHAY, that condition lacks many benefits of the two couple HALF SASHAY and is ignored in this

work.)

In symmetric geometry all dancers have an identifiable image dancer (facing direction not relevant). For example, #1 COUPLE LEAD right leaves both head couples without a defined image dancer, so it is an asymmetric geometry. If the geometry is asymmetric, the other characteristics (sequence, formation, arrangement) are undefined.



In symmetric formations all dancers have an image dancer, and the two dancers face opposite walls. Asymmetric formations may have identifiable image dancers but they are not all facing opposite walls. Consider the square at left. The arrangement is asymmetric because each dancer's image dancer is the opposite gender. The geometry is symmetric. However, image dancers do not face opposite walls so the formation is asymmetric. This is a special case of asymmetric formation called a mirror formation – an asymmetric formation in which image dancers are facing the same wall. Mirror formations provide convenient navigation between symmetric and asymmetric regions (Chapter 3) and also can be used in formation management without ever going to the Asymmetric Region (Chapter 4).

Symmetric and Asymmetric Calls (5.2)

The term "symmetric calls" or "symmetric calling" is used frequently in this paper. Symmetric calls are just the calls we normally use, but more precisely, they are calls in which image dancers are doing the same action relative to the center of the square. In calling HEADS LEAD RIGHT the head men and women have identical actions as their image dancer. In calling #1 COUPLE LEAD RIGHT image dancers do not have the same action. It is easier to identify what makes a call asymmetric and then just avoid those when we are constrained to symmetric calls.

It takes an asymmetric call to leave the symmetric region and it takes another asymmetric call to return. There are two methods of developing an asymmetric call:

- Direct a single dancer, couple or adjacent couples to do a call, such as COUPLES #1 & 2 HALF SASHAY.
- Refer to a point outside the square. For example, we used TAG THE LINE, FACE THE CALLER. The caller is an external reference point. References to "near" and "far" also reference the caller's position to define these terms. For example, NEAR COLUMN DOUBLE PASS THRU. These are all asymmetric calls.

Similarly in a mini-square context (four dancers), referencing any point outside the bounds of the mini-square will result in an asymmetric call. Appendix 1 contains an extensive discussion of symmetric calling. Sometimes we need to avoid asymmetric calls, but when crossing a bridge we need asymmetric calls, so it is important to understand the difference.

Please note that asymmetric calls and the Asymmetric Region are totally different ideas. The Asymmetric Region tells us that the image dancers are the opposite gender which unlocks the arrangements. Asymmetric calls refer to the effect that the call has on image dancers, no matter the region. So we can use symmetric calls or symmetric choreography in the Asymmetric Region as well as the Symmetric Region.

Image Dancers Rule! (5.3)

The selection of image dancers creates a powerful constraint on both the arrangement and the sequence. If each dancer has an image dancer of the same gender (Symmetric Region), then the head men must always be in diagonally opposite positions. This fact constrains the sequence to always be IN or OUT of sequence (never OFF sequence) as long as we use symmetric calls. For the same reason, all four men cannot be in the same line. So same gender image dancers lock the sequence and arrangements. Furthermore, we cannot leave the symmetric region without using an asymmetric call which changes the image dancer to opposite genders.

On the other hand both the arrangement and the sequence are unlocked in the Asymmetric Region where the image dancers are opposite genders. So in the normal flow of symmetric calling, any sequence may be found and any arrangement of men and women may be found including all four men in one half of the square and the four women in the other half. As long as we continue to call symmetric calls in the Asymmetric Region, we cannot leave that region. It again takes an asymmetric call to normalize the square back to the Symmetric Region by setting the image dancers to the same gender.

The modules which cause the square to leave the Symmetric Region are called bridge modules. Modules which return the square to the Symmetric Region are call normalizing modules. Chapters 1 and 2 gave many examples of these bridge and normalization modules.

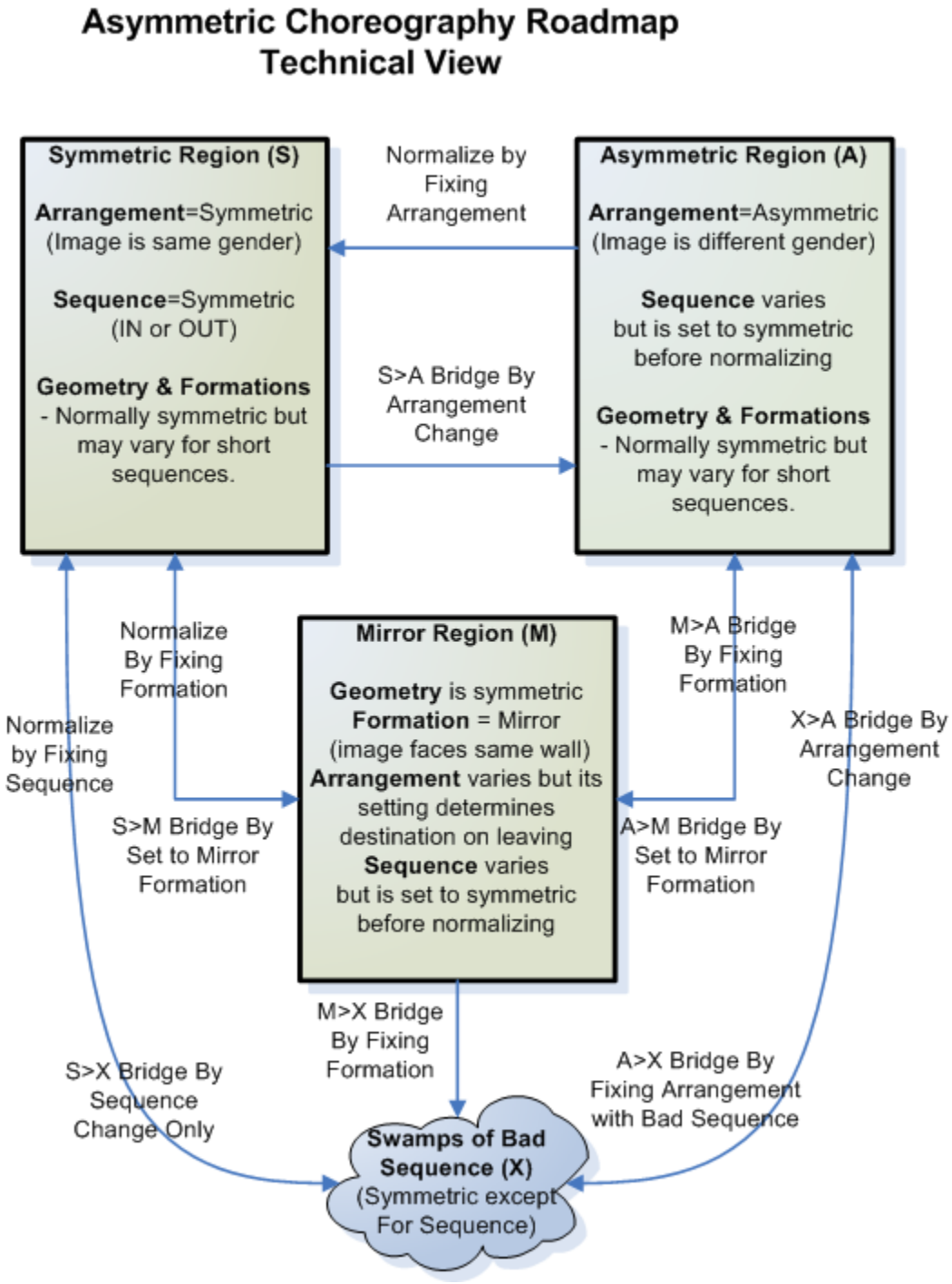
The Asymmetric Road Map (5.4)

The diagram on the next page is a technical view of the Asymmetric Road Map. It is a technical view because the annotations in each box focus on the properties such as arrangement, sequence, and formation for each region. This section will walk through the map.

The Symmetric Region (S) has symmetric sequence and arrangements. Short term deviations from symmetric geometry and formation based on memorized modules are incidental and considered within the region.

Let deal next with the Swamps of Bad Sequence (X). The region looks just like the Symmetric Region from all appearances because the arrangement is symmetric, but the sequence is asymmetric. To get into these swamps make normal lines at the sides and call NEAREST 2 COUPLES RIGHT & LEFT THRU. Now the caller cannot resolve the square using symmetric calls yet there is absolutely no benefit to the dancers because all arrangements look normal. This region has high cost and zero benefit. We want to take care avoiding this region. However, we sometimes make a mistake and end up here. The bridge module to return to the symmetric region is to setup the head couples in the same line at the sides of the square and

call NEAREST 2 COUPLES RIGHT & LEFT THRU. The square is now symmetric, but getting out was awkward. Note that the "fix" is to fix the sequence.



We have already discussed the Asymmetric Region at some length but to review

- The image dancers are the opposite gender
- The formations are symmetric.
- The arrangement is asymmetric and can include any number of men (or women) in the same half of the square.
- The sequence varies with each call but either men or women can be IN, OUT, or OFF sequence. So the sequence is considered asymmetric.

To normalize the square back to the symmetric region we must re-establish a symmetric sequence (IN or OUT) and then provide a means of switching the image dancers back to the same gender which will re-lock the sequence and arrangement. This is the Normalizing arrow shown on the diagram. If we should accidently re-lock the arrangement when the square is OFF sequence, then we will be taking the A>X bridge south into the Swamps of Bad Sequence. Note that when we normalize from the Asymmetric Region, the last step is to normalize the arrangement.

A mirror formation is an asymmetric formation which has image dancers facing the same wall. The name comes from the waves and two-faced lines in the mirror region. (See the figure in section 5.1.) This region is like the wild west. Nothing is stable: sequence, arrangement, or formation. But it has the following benefits:

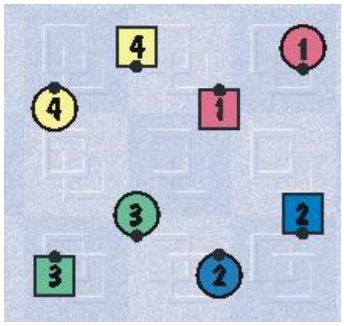
- Dancers find the mirror formations very interesting to dance and are quite amazed when everything resolves easily.
- The mirror region allows quick, easy access to any of the other three regions, but the danger is the accidental quick, easy access to the Swamps of Bad Sequence.
- Dancers cannot always tell when they have left or re-entered the symmetric region because the bridges are so well disguised. This is a definite plus as one key objective is to provide low profile transitions between regions.

To normalize from the Mirror Region we must setup both the sequence and arrangement to ensure that we will be crossing the bridge to the Symmetric Region. Then we normalize the formation as the last step. The last section of Chapter 6 discusses the theory of mirror formations. Chapter 4 is devoted using this region effectively in choreography.

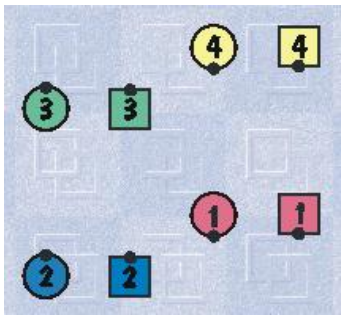
In summary, we see from the roadmap that we can get to the Asymmetric Region and return either directly or via the Mirror Region. The first example in section 1.1 showed a route to the symmetric region via a mirror formation but we didn't make a big deal about it at that time. We also note that each of the regions fixes a different property as the last step to normalizing the square:

- The Asymmetric Region fixes the arrangement last.
- The Mirror Region fixes the formation last.
- The Swamps of Bad Sequence fixes the sequence last.

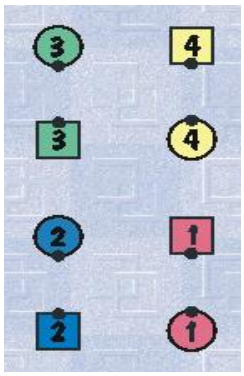
Asymmetric Region - The Target Setup (5.5.1)



The target setup figured prominently in the first three chapters. This section describes what it does for us. To normalize from the Asymmetric Region, we first must re-establish a symmetric sequence (either IN or OUT). Then we must provide a way to normalize the arrangement by shifting back to same gender image dancers which locks the square back into the Symmetric Region. The target setup has a man and woman in each quadrant and the head men are in diagonally opposite quadrants. The formation does not matter (waves, lines, two-faced lines). By putting the head men in diagonally opposite quadrants, we have re-established symmetric sequence. By putting a man and woman in each quadrant we have provided easy access to calls which will normalize the arrangement by returning to same gender image dancers. In other words the target setup stages the arrangement fix.



The first figure shows the square in the target setup. The second is the result of calling CENTERS RUN, COUPLES CIRCULATE. Note that the square is still asymmetric as each dancer has the opposite gender as image dancer. To fix the arrangement we can call LADIES FOLD resulting in the last figure which is now symmetric. Note image dancers are the same gender. Why does the call LADIES FOLD take the square back to the symmetric region when it could not get us out of that region? The answer is that in the symmetric region LADIES FOLD is symmetric call (image dancers moving the same). But in the Asymmetric Region any call directed to men or women is an asymmetric call because the men and women are not distributed symmetrically in the square. For the same reason, any call with gender built into the definition, such as SLIDE THRU, is also an asymmetric call. The middle figure above shows that the women on the left are the outside dancer while the women on the right are inside dancers. Since the call LADIES FOLD is so familiar to the dancers they think of it as not being different even though it is, thus disguising the normalization.



Asymmetric Region - Getting to the Target Setup (5.5.2)

If the target setup is so great, how do we get the dancers there? The answer is that any way is a good way. If we have been doing formation management and find that we, by chance, are in a target setup, that is great. But having a set method would be better. This method was described in section 2.1 and is repeated here.

Move the square to a setup with all four men in one wave and all four women in the other. Then check on the relationship between the head men in that wave.

- If the head men are both on the ends or both in the center of the wave, this is called a balanced relationship. Call SPLIT CIRCULATE,
- If the head men are facing the same wall, this is called a split relationship. Call CENTERS RUN, COUPLES CIRCULATE, CENTERS TRADE or call CENTERS TRADE and continue to the next option,
- If the head men are adjacent in the wave, this is called an unbalanced relationship. Call ALL 8 CIRCULATE.

This method guarantees that the resulting sequence will be symmetric. This "head men relationship" is more properly the Image Dancer Relationship (IDR). We are making sure that image dancers from the symmetric region end in diagonally opposite quadrants. Technically we need to also check the IDR of the women, but since only symmetric calls are used we know that the women are symmetric if the men are symmetric. This allows us to sight call using only two dancers, the head men. To review, the three possible states for the Image Dancer Relationship are balanced, unbalanced, and split as described above.

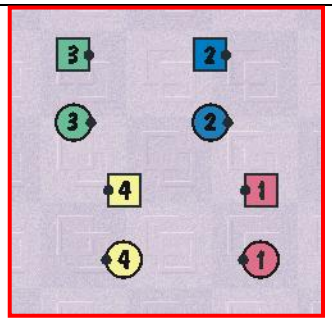
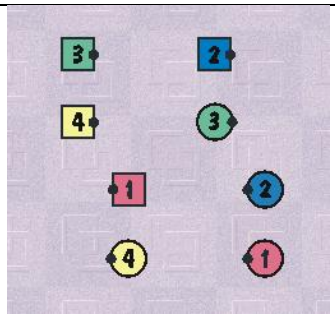
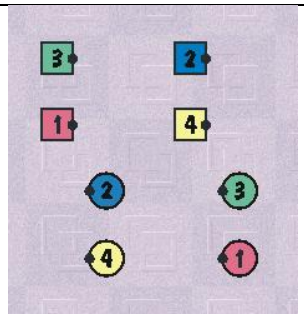
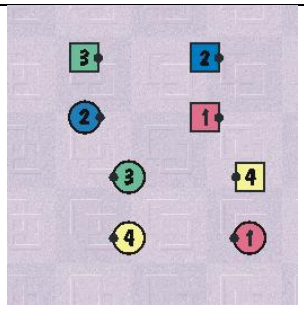
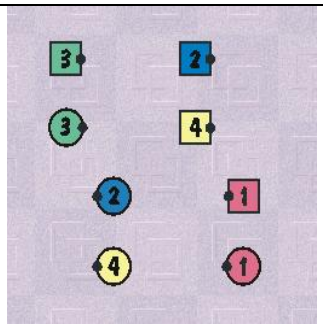
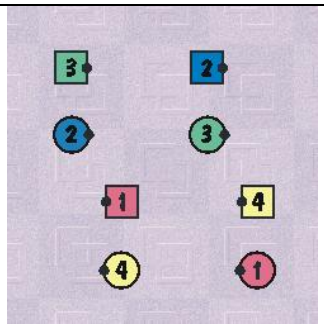
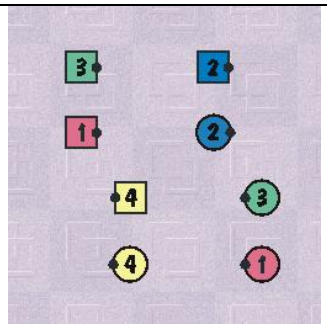
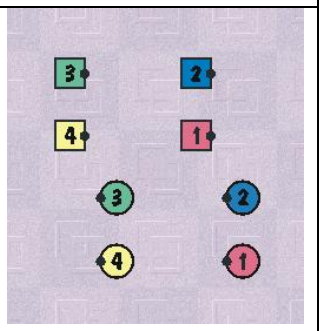
Asymmetric Region - The Partner Pairing Lock (5.5.3)

The Asymmetric Region has an important free gift: we know in advance who the partners will be when we get to the target setup provide we use symmetric calls. No need to check the women during sight calling. We already know where they will be. This is the heart of Asymmetric Mechanics. Without this discovery, we would need to follow 5 dancers when sight calling in the Asymmetric Region. With this discovery, we can sight call by following two men to normalize and three men to resolve the square, making it easier to sight call than in the symmetric region.

[A personal aside. The material in this section took me about a year to discover even though I was looking for it. I figured that if the sequence and arrangement are locked in the Symmetric Region and are unlocked in the Asymmetric Region, then something else must be locked. I discovered this property in 1990 and then took some additional months to understand why it works. And like many "light bulb" experiences, I felt silly that I had not seen it sooner.]

In the Symmetric Region there are eight possible partner pairing combinations: four with the men and women in the same sequence (IN or OUT) and four with the men and women in different sequences. Of course this assumes symmetric calling. There are also eight possible partner pairings in the Asymmetric Region, but the pairings are not between men and women, but between beaus (left dancer) and belles (right dancer). The figures below show the eight pairings from a two-faced line formation.

Eight Possible Partner Pairings in the Asymmetric Region

	A	B	C	D
1				
2				

The figure in A1 is our target setup: a man and woman in each quadrant and head men in diagonally opposite quadrants. When we examine the other figures we conclude that only A1 satisfies this criteria. Most do not have a man and woman in each quadrant. B2 satisfies that criteria but has the head men in adjacent quadrants. This means that whenever we return to the target setup, the same partner pairing will be repeated. In other words, in the Asymmetric Region the partners are locked when the square is in the target setup. We call this partner the asymmetric partner. In this example, the asymmetric partner is the original partner but this pairing is determined at the time the square crosses the bridge to the Asymmetric Region. With some modules the pairing is obvious, with others it is not. For those, we discover the asymmetric partner by going to the target setup, observe the partner, and then note it with that bridge module. Section 2.3.1 listed a number of bridge modules with associated asymmetric partner pairing. Remember this partner lock only works when we limit ourselves to symmetric calls and use the target setup method for normalization.

Asymmetric Region Summary (5.5.4)

Although the target setup is not the only path to normalization, it is very attractive because it fixes the sequence, stages the arrangement for simple normalization, and locks in the asymmetric partner. Normalizing via the target setup allows us to normalize by following only the head men and resolve by following, in addition, the #4 man to check IN or OUT of sequence.

CHAPTER SIX
THEORY OF THE MIRROR FORMATIONS REGION

Mirror formations are so named because the waves and two-faced lines have one right handed and one left handed so it is like looking into a mirror. These formations can be used as bridges between the Symmetric and Asymmetric Regions, but they provide a unique experience of their own. There are many arrangements of mirror formations. The purpose of this theory chapter is to look at the import properties of mirror formations and determine which ones are best suited for casual use as specialized material in a tip. This allows us to pick only the most useful arrangements to present in Chapter 4.

I will readily admit that this material will be interesting to only a very few square dance theorists, but it lays out an undeveloped body of work. I started this analysis with the following questions:

- How many different mirror waves are there?
- What are the properties that are important for callers?
- What is a good scheme for classifying mirror formations?
- Does each one have its own normalization module or are a common set of modules shared across different arrangements? How many normalization module groups are there?
- When we try to do formation management in these mirror formations, do we just keep moving endlessly between these different mirror arrangements or do some have arrangement stability (i.e. I can do most calls without leaving the arrangement)?
- Do some mirror arrangements package well together, like families of arrangements?

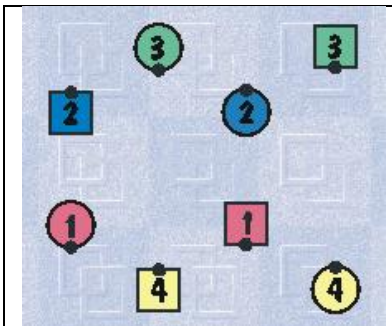
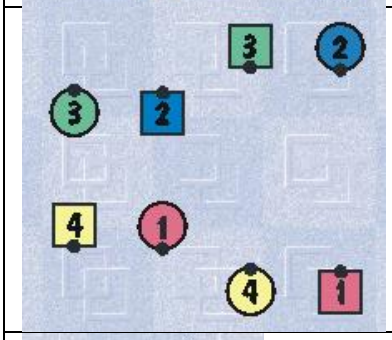
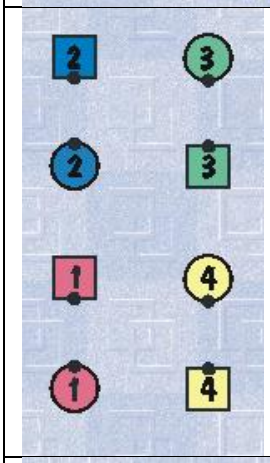
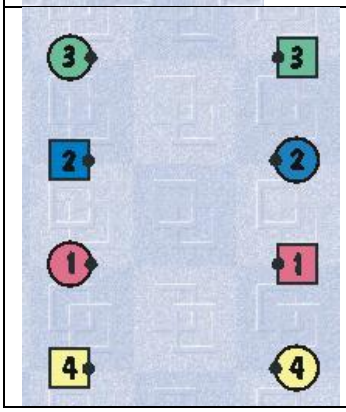
I did not know the answer to any of these questions, but these needed to be answered as a prerequisite to writing Chapter 4. The work is tedious but, in the end, all these questions are answered.

Mirror Formation Defined (6.1)

A mirror formation is a special kind of asymmetric formation in which

- The geometry is symmetric
- Image dancers face the same wall. (Normally they face the opposite wall.)
- The formation is a handed formation. This means at least 2 dancers in each half of the square have right hands joined or left hands joined. Examples are waves, two-faced lines, inverted lines, columns. and diamonds.
- Half of the square will be right handed. The other half will be left handed.

As soon as the formation is not handed, the square has left the Mirror Region and has landed in one of the other three regions. The following example shows how the Mirror Region resolves to either the Symmetric Region or the Swamps of Bad Sequence.

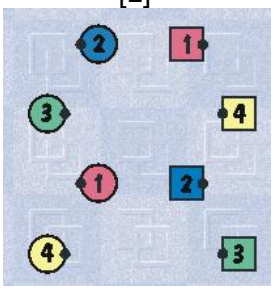
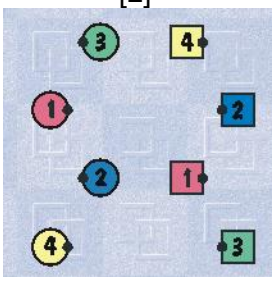
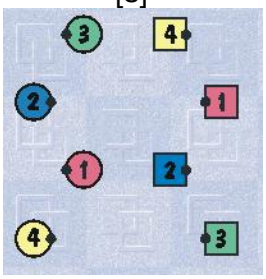
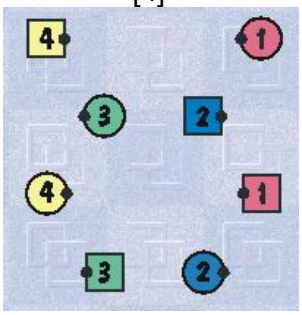
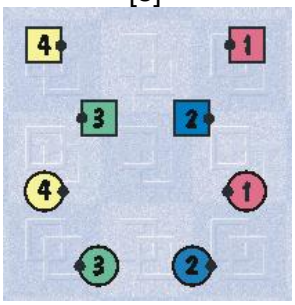
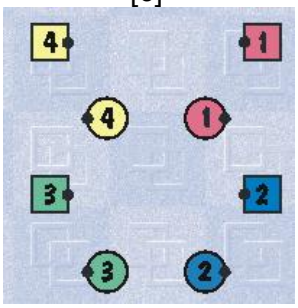
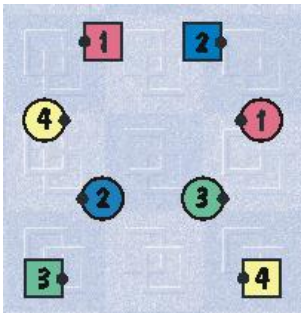
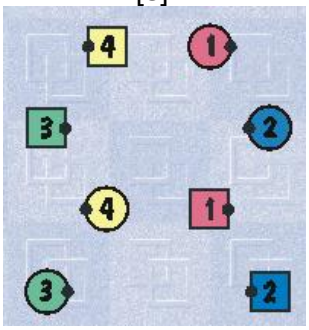
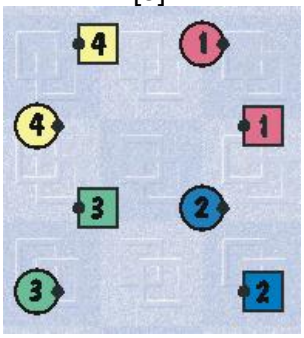
	**Figure 1 -** The mirror waves at left were developed by the following calls. SIDES LEAD RIGHT, STEP TO WAVE, NEAREST WAVE TRADE THE WAVE Note that dancers are either facing across the set or back to back.
	**Figure 2** – The call CENTERS RUN puts the square in mirror two-faced lines.
	**Figure 3** – Adds WHEEL & DEAL to Figure 2. Note that the square is no longer in the Mirror Region but has landed in the Symmetric Region. Everyone has the correct same gender image dancer.
	**Figure 4** – Also starts from Figure 2 but does a BEND THE LINE. Everyone has same gender image dancers, but note that the sequence is not correct (1-3-2-4) so the square fell into the Swamps of Bad Sequence. See the Roadmap in section 5.4. This demonstrates the danger of mirror formations. We end in the swamp if we are not careful when we drop out of the mirror formation.

Properties of Mirror Formations - Arrangement (6.2)

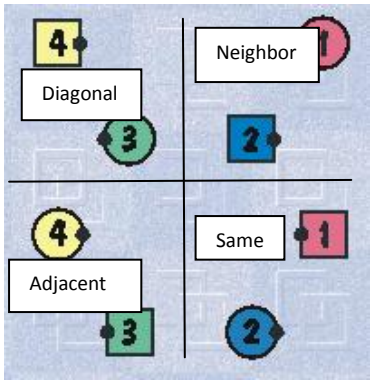
Let's agree to use the mirror waves as the standard formation in the Mirror Region. The first two properties address the arrangement of men (and women) in the waves. First, are the waves same-sex mirror waves or mixed mirror waves (two men and two women)? The second property is the arrangement of men and women in mixed waves. I will use the balanced, unbalanced, split idea from Chapter 5 as a means of systematically looking at the arrangement options. The Unbalanced and Split relationships are siblings because calling CENTERS TRADE will move between these two. This takes on the following meaning for mixed waves:

- Balanced means having the men on the ends or centers
- Unbalanced means having the men together on one end
- Mixed means having the men facing the same wall.

Arrangements of Mirror Waves Significant for Normalization

	Balanced	Unbalanced	Split
Same-Sex Waves, Asymmetric Arrangement	[1] 	[2] 	[3] 
Mixed Waves, Asymmetric Arrangement	[4] 	[5] 	[6] 
Mixed Waves, Symmetric Arrangement	[7] 	[8] 	[9] 

Properties of Mirror Formations - Sequence (6.3)



The sequence property is the relationship between the head men in terms of the quadrants they occupy relative to the #1 man. The figure at left shows the four possibilities. The quadrant in the same wave is the Neighbor quadrant while the quadrant across the street is the Adjacent quadrant. This property is important in determining the normalizing module.

Each of the figures above has between one and three sequence variations. For example figure [1] can only have a Neighbor relationship while figure [4] can have a Neighbor, Adjacent, or Diagonal relationship. The choices are constrained by the arrangement. We will add a sequence code (S, A, N, D) to the arrangement name when we need to specify a particular sequence as well as arrangement. For example, the square on the left matches the [4] figure from the matrix above. Since the #3 man is in the adjacent quadrant to the #1 man, this setup is classified as [4-A].

Normalizing Groups (6.4)

Before we begin calling to mirror formations, we must know how to normalize back to the Symmetric Region. When we begin developing modules to normalize mirror waves, we find that they fall into one of a few groups which roughly correspond to the sequence property. Any new normalization routine which we may develop will fall into one of these groups.

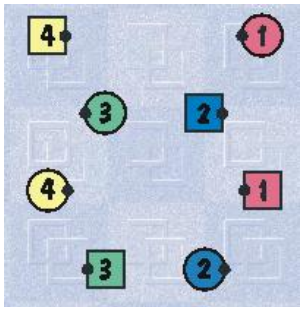
HALF BREED THRU must be treated separately due to its conditional, gender-based definition which forces a normalized arrangement, even though the sequence may be asymmetric. HALF BREED THRU can only be called from facing lines when we have a man and woman in each quadrant. If the head men are in diagonal quadrants, the square lands in the Symmetric Region. Otherwise it lands in the Swamp.

The table below shows some normalization modules for each group.

Neighbor Quadrant (NQ) Group	- FACING DANCERS PASS THRU - CENTERS RUN, FACING COUPLES PASS THRU - SPIN THE TOP, THOSE FACING IN DOUBLE PASS THRU - SINGLE HINGE, CENTERS TRADE, CAST OFF ¾ - SINGLE HINGE, ENDS TRADE, BEND THE LINE
Adjacent Quadrant (AQ) Group	- CENTERS RUN, WHEEL & DEAL - RECYCLE - ALL 8 CIRCULATE (Ends in right hand waves)
Diagonal Quadrant For Asymmetric (DA) Group	- CENTERS RUN, BEND THE LINE - EXPLODE THE WAVE - OUTFACERS FOLD - LINEAR CYCLE
Diagonal Quadrant For Symmetric (DS) Group	- OUTFACERS RUN - HINGE, CENTERS RUN, BEND THE LINE
Split Neighbor Quadrant (SNG) Group	- SINGLE HINGE, OUTFACERS TRADE
Half Breed Thru Group (HBG)	- OUTFACERS RUN, HALF BREED THRU

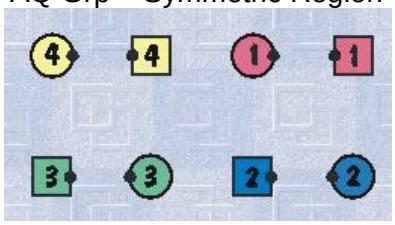
Three Possible Destinations from a Mirror Formation (6.5)

Each mirror setup will have only one of the normalization groups which will normalize the square (besides the Half Breed Thru Group which is a wild card). Using other groups will land the square in either the Asymmetric Region or the Swamp. The following example demonstrates this point.

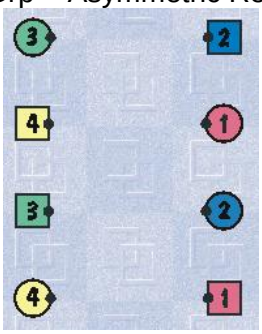


The setup on the left is the well known figure [4-A] which is the starting place. The lower left figure below lands in the Symmetric Region from CENTERS RUN, WHEEL & DEAL (AQ Group). The center figure lands in the Asymmetric Region from OUTFACERS RUN (DS Group). The lower right lands in the SWAMP from THOSE FACING PASS THRU (NQ Group).

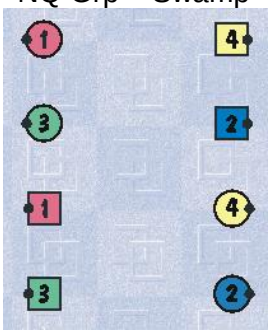
AQ Grp > Symmetric Region



DS Grp > Asymmetric Region



NQ Grp > Swamp



The Normalization/Bridge Matrix (6.5.1)

The table below is for reference purposes. It gives modules to move between the Symmetric, Asymmetric, and Mirror Regions. The left column show each possible sequence for the nine arrangements shown in section 6.2. The second column (S>M Bridge) shows a bridge module to move from the Symmetric Region to the Mirror Region setup. There are undoubtedly more possibilities, but the most convenient ones are shown. The third column (Normalize Group) shows the normalization modules from the list above which will return back to the Symmetric Region. The fourth column (M>A Bridge) shows a module to move from the Mirror Formation to the Asymmetric Formation. The fifth column (A>M Bridge) shows a module to move from the Asymmetric Region back to the Mirror Region. These bridge modules are just one example, not the only possibility.

Adjacent rows which are shaded are grouped because they differ only by a CENTERS TRADE. The “+ CENTERS TRADE” notation in the table means to use the adjacent row’s module and add CENTERS TRADE.

The first section of the table deals with Same-Sex and Asymmetric setups (figures 1 – 6) while the table on the following page shows the Symmetric setups (figures 7-9).

Mirror Wave Properties - Arrangement & Sequence	S>M Bridge	Normalize Group	M>A Bridge	A>M Bridge
Same-Sex, Balanced, Neighbor Quad [1-N]	HEADS SLIDE THRU, NEAR COLUMN DBL PASS THRU, HINGE, FAN THE TOP	NQG	OUTFACERS RUN	From Balanced SS Waves: MEN TRADE THE WAVE
Same-Sex, Unbalanced, Same Quad [2-S]	HEADS SLIDE THRU, NEAR COLUMN DBL PASS THRU WHILE THE OTHERS ZOOM, HINGE, FAN THE TOP	X	OUTFACERS RUN	From Unbalanced SS Waves: MEN TRADE THE WAVE
Same-Sex, Split, Neighbor Quad [3-N]	+ CENTERS TRADE	SNG	OUTFACERS RUN	From Split SS Waves: MEN TRADE THE WAVE
Asym, Mixed, Balanced, Neighbor Quad [4-N]	SIDES SQUARE THRU, SLIDE THRU, NEAR COUPLES PASS THRU	NQG	OUTFACERS RUN	
Asym, Mixed, Balanced, Adjacent Quad [4-A]	SIDES LEAD RIGHT, STEP TO WAVE, NEAR WAVE TRADE THE WAVE	AQG	OUTFACERS RUN	
Asym, Mixed, Balanced, Diagonal Quad [4-D]	+ CENTERS TRADE	DAG, HBG	OUTFACERS RUN	From Target Setup: CENTERS RUN, CPLS CIRC, MEN RUN
Asym, Mixed, Split, Adjacent Quad [6-A]		AQG	OUTFACERS RUN	
Asym, Mixed, Split, Diagonal Quad [6-D]	+ CENTERS TRADE	DAG, HBG	OUTFACERS RUN	From Target Setup: CTS RUN, BEND LINE, PASS THRU, MEN RUN
Asym, Mixed, Unbalanced, Adjacent Quad [5-A]	SIDES PASS OCEAN, SWING THRU, EXTEND, NEAR WAVE TRADE THE WAVE	AQG	OUTFACERS RUN	
Asym, Mixed, Split, Neighbor Quad [6-N]		SNG	OUTFACERS RUN	
Asym, Mixed, Unbalanced, Same Quad [5-S]		X	OUTFACERS RUN	

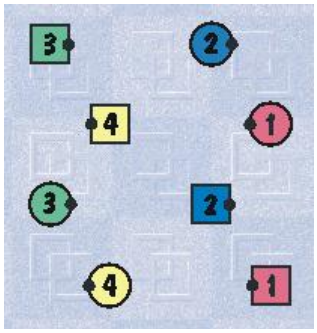
Let's try an example of how we might use this table. We are looking for a quick way to move from a square to the Asymmetric Region via the Mirror Region. The first row above shows that we can get a same-sex mirror wave from a square using the following S>M Bridge.

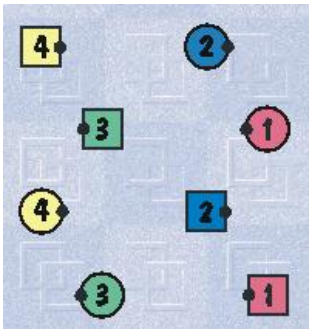
HEADS SLIDE THRU, NEAR COLUMN DBL PASS THRU, HINGE, FAN THE TOP

Then we immediately follow with the M>A Bridge OUTFACERS RUN which end in facing same-sex lines in the Asymmetric Region.

The table continues with the Symmetric Mirror setups below.

Mirror Wave Properties - Arrangement & Sequence	S>M Bridge	Normalize Group	M>A Bridge	A>M Bridge
Sym, Mixed, Balanced, Adjacent Quad [7-A]	SIDES PASS THE OCEAN, EXTEND, NEAR WAVE SWING THRU, FAR WAVE LADIES CROSS RUN	?	CTS RUN, BEND LINE	
Sym, Mixed, Balanced, Neighbor Quad [7-N]	HEADS SLIDE THRU & SPREAD, PASS THRU, WHEEL&DEAL, NEAR WAVE DBL PASS THRU, HINGE, FAN TOP	NQG	CTS RUN, BEND LINE	
Sym, Mixed, Balanced, Diagonal Quad [7-D]	SIDES PASS THE OCEAN, EXTEND, NEAR WAVE SWING THRU, SAME MEN CROSS RUN	DSG, HBG	CTS RUN, BEND LINE	From Target Setup: CTS RUN, CPLS CIRC, BEND LINE, PASS THRU, MEN RUN, HINGE
Sym, Mixed, Split, Neighbor Quad [9-N]		SNG	CTS RUN, BEND LINE	
Sym, Mixed, Unbalanced, Same Quad [8-S]		X	CTS RUN, WHEEL&DEAL	
Sym, Mixed, Split, Adjacent Quad [9-A]		AQG	CTS RUN, BEND LINE	
Sym, Mixed, Unbalanced, Diagonal Quad [8-D] Asymmetric Seq		DSG	CTS RUN, WHEEL&DEAL	
Sym, Mixed, Split, Diagonal Quad [9-D]	SIDES LEAD RIGHT, CIRCLE TO LINE, PASS THRU, TAG LINE, FACE CALLER, MEN RUN	DSG, HBG	CTS RUN, BEND LINE	
Sym, Mixed, Unbalanced, Diagonal Quad [8-D] Symmetric Seq	+ CENTERS TRADE	DSG	CTS RUN, WHEEL&DEAL	





There are two different versions of setup [8-D] in the table above and shown in figures to the left. Both have head men in diagonal quadrants, but the left figure has the men in a symmetric sequence while the right figure has the men in an asymmetric sequence.

Mirror Formation Management (6.6)

For years I considered mirror formations were only useful as a bridge between Symmetric and Asymmetric Regions. However, dancers find the mirror formations just as interesting as the Asymmetric arrangements. A perfectly good approach is to move to the Mirror Region for formation management and return to the Symmetric Region. In the following sections we will discuss a number of characteristics which are important to formation management. These ultimately will be decision criteria in selecting which version of mirror waves we favor. These characteristics are

- Accessibility: How quickly and easily can we get in and out of these mirror formations? What is the relative risk of different mirror wave choices if we make a mistake?
- Sequence Stability: A fundamental principle of this approach is that of the sequence consistency between the men and women. If we make sure the men are in symmetric sequence, we are guaranteed that the women will also be in symmetric sequence. Any mirror arrange which breaks this consistency during normal formation management is unsuitable for formation management.
- Arrangement Stability: Formation management in the Mirror Region will mainly consist of calling to a mini-square with the provision that all formations must be handed. But wouldn't it be more interesting is we could also move dancers between the mirror waves during formation management? We look at three methods for doing this. How is the arrangement affected by interactions between waves?

Accessibility (6.6.1)

Not every setup in the table above has a bridge module from a static square. More bridges and normalization modules could undoubtedly be developed, but when a bridge module takes more than four or five calls, it is cumbersome and more difficult to remember. So setups that have quick, easy access from a static square are more accessible that the others.

Sequence Stability (6.6.2)

One property we really value in thinking about mirror formation management is the stability of the waves against sequence incompatibilities between the men and women. The test for this is calling a SWING THRU since in the mirror waves, one side starts in the center and one on the ends. The table below shows whether a SWING THRU maintains a consistent sequence between the men and women. If it does not, then the wave is unsuitable for formation management.

Wave Properties	Sequence Stability?
Same-Sex, Balanced [1]	Yes
Same-Sex, Unbalanced [2]	No
Same-Sex, Split [3]	No
Asymmetric, Mixed, Balanced [4]	Yes
Asymmetric, Mixed, Unbalanced [5]	Yes
Asymmetric, Mixed, Split [6]	Yes
Symmetric, Mixed, Balanced [7]	Yes
Symmetric, Mixed, Unbalanced [8]	Yes
Symmetric, Mixed, Split [9]	Yes

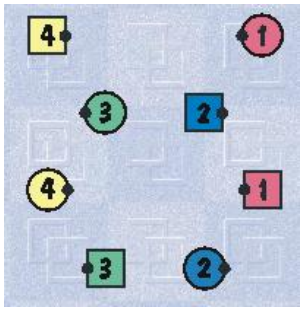
Interactions Between Mirror Waves (6.6.3)

Thus far formation management in the Mirror Region has involved calling figures with a mini-square with both sides dancing the calls. There has been no interaction or exchange of dancers between the two sides. This section looks at three different methods for exchanging dancers between the two sides while maintaining the "handed" formations which define the Mirror Region. These three methods are

- Circulating in Same-Sex Trapezoids
- Ends Circulate Double
- Centers Half Sashay.

One difficulty with using these methods is that it may result in a changed arrangement and/or sequence which may require a different normalization method. So our focus becomes how to get the benefit of this choreography without paying too high a price in complexity and effort to memorizing many normalization rules.

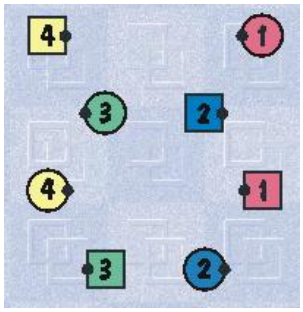
Wave Interactions – Circulating in Same-Sex Trapezoids (6.6.4)



The figure at the left is Asymmetric, Mixed, Balanced with head men in adjacent quadrants [4-A]. Both the men and women define overlapping trapezoids. So we can do simple calls within this formation just as we do with boxes. For example, men could SCOOT BACK or CIRCULATE. SCOOT BACK is not a big deal because it keeps everyone on the same side, but CIRCULATE moves dancers to a different wave while maintaining the mirror formation. In doing so, it also changes the relationship between the head men. The notation changes from [4-A] (adjacent quadrants) to [4-N] (neighbor quadrants) causing the normalization module to change. We note that <u>any circulates must be done in pairs</u> – both men and women- to maintain a consistent sequence between them. However, CIRCULATES do not change the basic arrangement family.

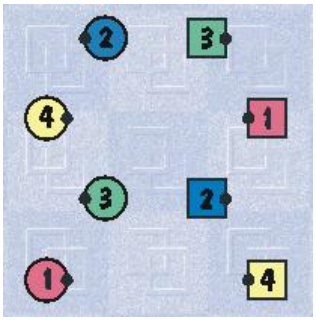
Wave Interactions – Ends Circulate Double (6.6.5)

Calling ENDS CIRCULATE DOUBLE in mirror waves is interesting because they are moving in opposite directions and must pass two other dancers right shoulder. Another interesting twist is that this circulate changes the formation from waves to mirror two-faced lines. The call shown here also includes some action for the centers just to keep them from being bored. In addition this sequence changes the handing of both waves. The left figure is the starting setup. The figure on the right is the ending setup after the call sequence shown.



ENDS CIRCULATE DOUBLE,
CENTERS TRADE AND U-TURN-BACK

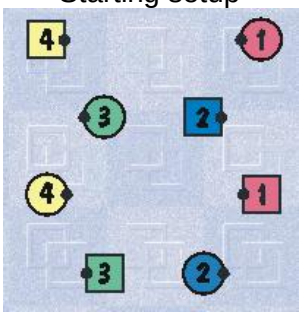
Notice that the basic arrangement family of the waves has changed from Mixed, Balanced [4-A] to Same-Sex, Unbalanced/Split [2/3] which may change the normalization group.



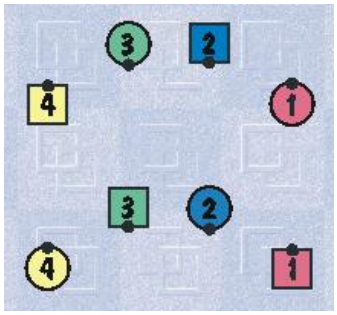
Wave Interactions – Centers Half Sashay (6.6.6)

Another interesting method of moving dancers between mirror waves is to use CENTERS HALF SASHAY. The left figure below again shows the Asymmetric, Mixed, Balanced [4-A] setup. The center figure shows the setup after CAST ¾. The center dancers are all facing the same wall so they can HALF SASHAY to the other wave. Then SINGLE HINGE establishes the wave again (right figure). It is important to note that HALF SASHAYS between waves must be done in pairs in order to maintain arrangement and sequence integrity. In this example, two HALF SASHAYs were done.

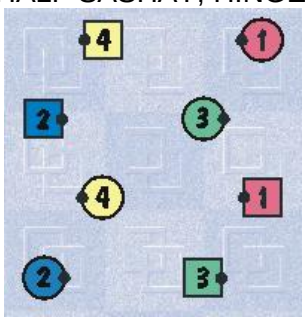
Starting setup



CAST 3/4



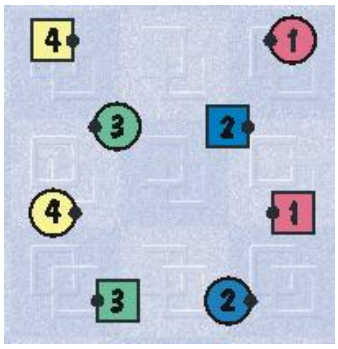
HALF SASHAY, HINGE



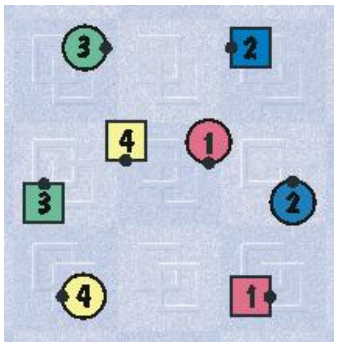
Another setup which puts center dancers facing the same wall is diamonds. The left figure below shows the same starting setup. The center figure sets up mirror diamonds. The right figure is the result of the calls shown above the figure. Unlike the example above, each HALF SASHAY was done by a single pair of dancers, so we had to call the sequence twice to maintain arrangement and sequence symmetry. The shift in arrangement families is even more dramatic than the first example. The initial setup is Asymmetric, Mixed, Balanced [4-A] and the resulting setup is Symmetric, Mixed, Split [9-A]. So this sequence converted the arrangement from Asymmetric to Symmetric. Other calls that can use the same "single centers" HALF SASHAY are SPIN CHAIN THRU and SPIN CHAIN THE GEARS. The GEARS is particularly useful because it has two HALF SASHAYs built into it. The call would take the form

SPIN CHAIN THE GEARS BUT THE VERY CENTERS HALF SASHAY AND CONTINUE THE CALL.

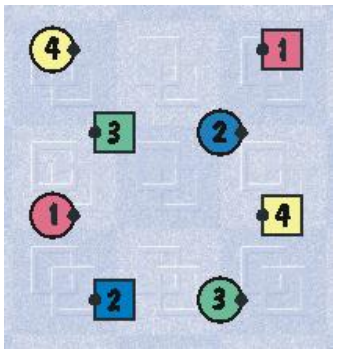
Starting Setup



CENTERS RUN,
CENTERS HINGE



CENTERS HALF SASHAY,
DIAMOND CIRCULATE, CENTERS
HALF SASHAY, FLIP DIAMOND



Wave Interaction – Summary (6.6.7)

As callers we certainly want to know the ending formation and arrangement at the time we say the call, so if we are to use CENTERS HALF SASHAY we need to know where we come to rest. The Wave Interaction Table below shows the results of these three wave interaction methods between the six mirror arrangement families. For example, the diamond circulate example

above starts from the row marked [4]. Read across to the far right column for HALF SASHAY actions and see that the resulting family is marked [8,9] at the top of the row.

Mirror Wave Interaction Table

To Group → **From Group**	Normalization Modules	Same-Sex Balanced [1]	Same-Sex Unbal/Split [2,3]	Asymmetric, Mixed, Balanced [4]	Asymmetric, Mixed, Unbal/Split [5,6]	Symmetric, Mixed, Balanced [7]	Symmetric, Mixed, Unbal/Split [8,9]
Same-Sex Balanced [1]	NQD			Ends Circ Double			Half Sashay
Same-Sex Unbal/Split [2,3]	SNG				Ends Circ Double		Half Sashay
Asymmetric, Mixed, Balanced [4]	NQG AQG DAG	Ends Circ Double			Trapezoid Circulate		Half Sashay
Asymmetric, Mixed, Unbal/Split [5,6]	SNG AQG DAG		Ends Circ Double	Trapezoid Circulate	Ends Circ Dbl Half Sashay Trap. Circ		
Symmetric, Mixed, Balanced [7]	NQG DSG					Ends Circ Dbl Half Sashay	
Symmetric, Mixed, Unbal/Split [8,9]	SNG AQG DSG	Half Sashay [9-D]	Half Sashay [9-A,N]	Half Sashay [8-D,S]			Ends Circ Dbl

The Beauty Contest (6.7)

Describing the Mirror Formation properties has been long and tedious. The purpose as stated when we started was to determine which arrangement family was the best choice to present in Chapter 4. Here are the criteria:

- Variety: Everyone does same-sex waves. We must cover that and have one mixed arrangement as well.
- Accessibility: Just a few calls to setup the wave from a static square.
- Sequence Stability: The relative sequence between men and women does not change when a SWING THRU is called.
- Ease of Normalization: All the sequences in the arrangement family have a normalization method. Otherwise, we may inadvertently land in the Asymmetric Region or the Swamp.
- Arrangement Stability: Does the arrangement family change under interactions between waves?
    - Staying in the same family is the best.
    - Moving to another family with similar normalization methods is OK.

- Moving to another family which has no normalization method or does not have sequence stability is unacceptable.

Arrangement Family	Accessibility	Sequence Stability?	Arrangement Stability?	Comments
Same-Sex Balanced [1]	Excellent	Yes	Good	Same-Sex Mirror Waves are very popular. They are accessible and well behaved.
Same-Sex Unbal/Split [2,3]	Fair	No	Good	Unacceptable due to sequence instability.
Asymmetric, Mixed, Balanced [4]	Excellent	Yes	Good Trapezoids	Packages well with same-sex waves and gives variety. The only choice which allows Trapezoid Circulates.
Asymmetric, Mixed, Unbal/Split [5,6]	Good	Yes	Circ Risky	Risky wave interactions make others a better choice.
Symmetric, Mixed, Balanced [7]	Fair	Yes	Excellent	The only family which does not alter arrangements for wave interactions. Very well behaved.
Symmetric, Mixed, Unbal/Split [8,9]	Fair	Yes	Sashay Risky	Risky wave interactions make others a better choice.

We must include same-sex waves because they are so popular. We must also include a mixed arrangement because nobody else does. There are two good choices:

- Use a mix of [1] and [4] because they integrate well and provide both same-sex and mixed waves with similar normalization rules. Family [4] is the only one which supports Trapezoids. This group is even well behaved with Circulates. Unfortunately they both jump to [8,9] on half sashays. This is a great solution if we avoid half sashays.
- Family [7] is rock stable, never changing arrangements even with any wave interactions. This is the best choice for the higher end callers who want to experiment with HALF SASHAYs.

I preferred to present one integrated set of arrangements, but given the outcome of the beauty contest, I must include the integrated family [1] and [4], but must also present Family [7] in order to show the HALF SASHAY material. So Chapter 4 will have two separate families, which became two neighborhoods.

APPENDIX 1: USING SYMMETRIC CALLS

A number sections in this paper require that we use only symmetric calls. We are limited to symmetric calls because they maintain consistent sequences between the men and women. This is a constraint that allows us to sight call by following at most two dancers and sometimes no dancers at all. It is more practical to just treat this topic once in this appendix rather than many times throughout the paper. We will look at two cases: symmetric calls in a square and symmetric calls in a mini-square.

Symmetric Calls in a Square

First, symmetric calls are what we usually do when call to a square. Symmetric calls leave the square in symmetric formations, arrangements, and sequence. For example calling HEADS LEAD RIGHT results in normal looking boxes while COUPLE #1 LEAD RIGHT results in an asymmetric formation. In fact, it is easier to say what causes a call not to be symmetric and then avoid those types of calls.

- Avoid directing calls to a single dancer (#1 man do something), a single couple (#1 couple do something) or any two adjacent couples (couples 1 & 2 do something).
- Avoid any reference to a point outside the square. For example, calling TAG THE LINE, FACE THE CALLER references the caller who is outside the square. The call NEAR COLUMN DOUBLE PASS THRU references the caller to define which column is NEAR.
- Avoid any call directed to the MEN or LADIES when the arrangement is asymmetric because the MEN and LADIES are not distributed symmetrically in the square. Usually calling to ENDS, CENTERS, IN-FACERS, and OUT-FACERS will cover any call which we normally address to the men or women.
- Avoid any calls with the gender built into the definition of the call for the same reason as above. Examples are STAR THRU, SLIDE THRU, HALF BREED THRU.

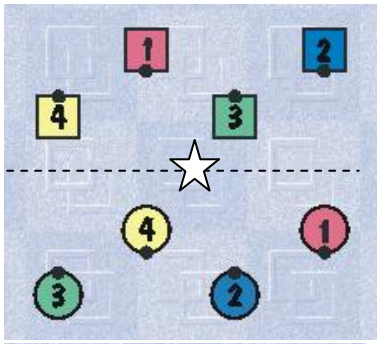
We note that many of these calls which must be avoided are found in the bridge modules that move between Regions. This is because it takes an asymmetric call to change regions. They are very useful provided we know how to use them, but we can get in trouble quickly if we are just playing around.

Symmetric Calls in a Mini-Square

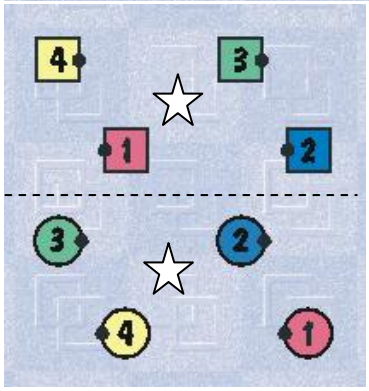
A mini-square is half of a square; four dancers working together. Most of the same principles described above also apply here. But there is one major difference. We should call to the mini-square as if were by itself, not in the context of the square. The second point above when applied to a mini-square becomes

- Avoid any reference to a point outside the mini-square. For example, calling TAG THE LINE, FACE THE CALLER references the caller who is outside the square. The call NEAR COLUMN DOUBLE PASS THRU references the caller to define which column is NEAR.

- Avoid directing a call to IN-FACERS or OUT-FACERS when IN and OUT can only be defined by the center of the whole square, not the mini-square. The example below demonstrates this point.



This figure shows same-sex mini-squares. The call OUTFACERS RUN is not a symmetric call in the mini-square because it depends on using the center of the whole square (shown by the star) as the reference for outfaces. This is an external reference because it is not contained within the mini-square. From another perspective, if we were calling to one side as if it were stand-alone, we would never refer to "outfaces" because "out" has no context.



The square above has now done a single hinge. We can now call OUTFACERS RUN because the context for OUTFACERS is the center of each mini-square (shown by the stars) so the reference is contained within the mini-square.

In a mini-square the purpose of these constraints is to keep the head men both on the ends of a wave or both in the center of a wave. If you have a doubt about a particular call or sequence, try it with dolls and then check to see if the head men are in the correct positions. If so, then the call is symmetric.

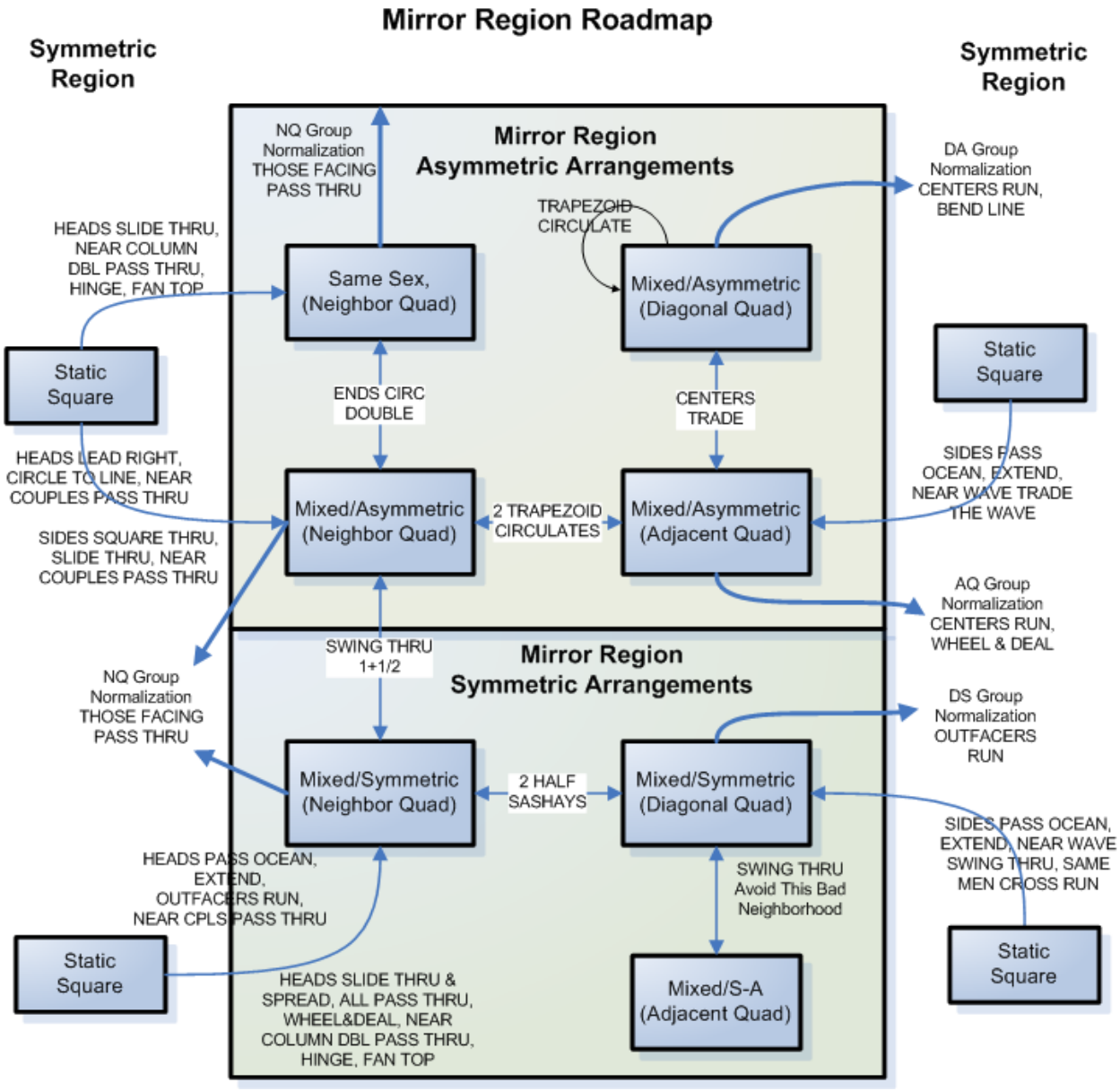
A Note About SWING THRU in the Mirror Region

SWING THRU is inherently an asymmetric call in the Mirror Region because one wave starts right hand in the center while the other starts right hand on the ends. SWING THRU works perfectly well in all the neighborhoods discussed in this chapter. The map in section 4.6 shows that a SWING THRU from mixed/symmetric-diagonal setup takes the square to the adjacent setup from which there is no normalizing module, but a second SWING THRU will return to a better place.

However, SWING THRU ONCE AND A HALF has bad results almost everywhere. In setups with the head men in the same mini-square (neighbor relationship) this call switches the square to a different neighborhood (symmetric to asymmetric or vice versa). In other relationships (adjacent and diagonal) this call causes an inconsistent sequence between the men and women, causing the normalization module to fail. So, in general, use SWING THRU freely, but avoid SWING THRU ONCE AND A HALF.

APPENDIX 2: Mirror Region Integrated Roadmap

The roadmap below is the integration of the Mirror Asymmetric and Mirror Symmetric maps found in Chapter 4. It is pretty intimidating which is why we addressed each part separately in Chapter 4. However, seeing the big picture graphically shows some interesting facts. Note that the call SWING THRU ONCE AND A HALF is the bridge module that links the two halves. Remember that this SWING THRU begins in the center of one wave and on the ends of the other.



Note that the left column of three boxes is the “interstate” that ties it all together. They represent three different arrangements but all have the head men in the same mini-square (Neighbor Quadrant). As a result the normalization module is the same (NQ Group) for all three and no sight calling is required for any of the three. We just need to know the bridge modules that move the square from box to box and the single normalization module.

The boxes in the right column are like the local streets off the main highway. They each have their own normalization module which brings a different look. On the top right we must sight call by tracking the head men.

Recap of Mirror Wave Normalization

Note: Mirror boxes result from having mirror waves single hinge.

Setup	Normalization
Any mirror setup with head men in neighbor quadrants. Includes - same sex mini-squares (with head men both in center or both on the ends), - head/side mini-squares (see appendix 4), - mixed asymmetric arrangements, - mixed symmetric arrangements.	From mirror waves – in-facers pass thru From mirror boxes – ends trade, bend the line From mirror two-faced lines – facing cpls pass thru From mirror columns – in-facers double pass thru
Mixed asymmetric arrangement, head men in adjacent quadrants.	From mirror waves - recycle, - spin the top, all trade & roll From mirror boxes - walk & dodge From mirror two-faced lines – wheel & deal
Mixed asymmetric arrangement, head men in diagonal quadrants.	From mirror waves - explode the wave, - recycle & sweep ¼ , - linear cycle - out-facers fold - out-facers run, half breed thru From mirror two-faced lines – bend the line
Mixed symmetric arrangement, head men in diagonal quadrants.	From mirror waves - out-facers run - 8 circulate (ending in parallel right hand waves) From mirror boxes – centers run, bend the line

This example starts at the bottom left box and works up to the top left box for normalization.

Example 36: Mirror Integrated Roadmap	
HEADS PASS THE OCEAN, EXTEND, OUTFACERS RUN, NEAR COUPLES PASS THRU	Bridge to Mixed/Symmetric at the bottom left
CENTERS HINGE, FLIP THE DIAMOND	Short formation management
SWING THRU 1 + ½	Bridge to the middle box: Mixed/Asymmetric
ENDS CIRCULATE DOUBLE, WHILE CENTERS TRADE AND U-TURN-BACK	Bridge to top box: Same-sex waves
SPIN THE TOP, SINGLE HINGE	Setup the normalization
INFACERS DOUBLE PASS THRU	Normalize
LEADERS PARTNER TRADE, SWING THRU, 8 CIRCULATE, RIGHT & LEFT GRAND	Resolve

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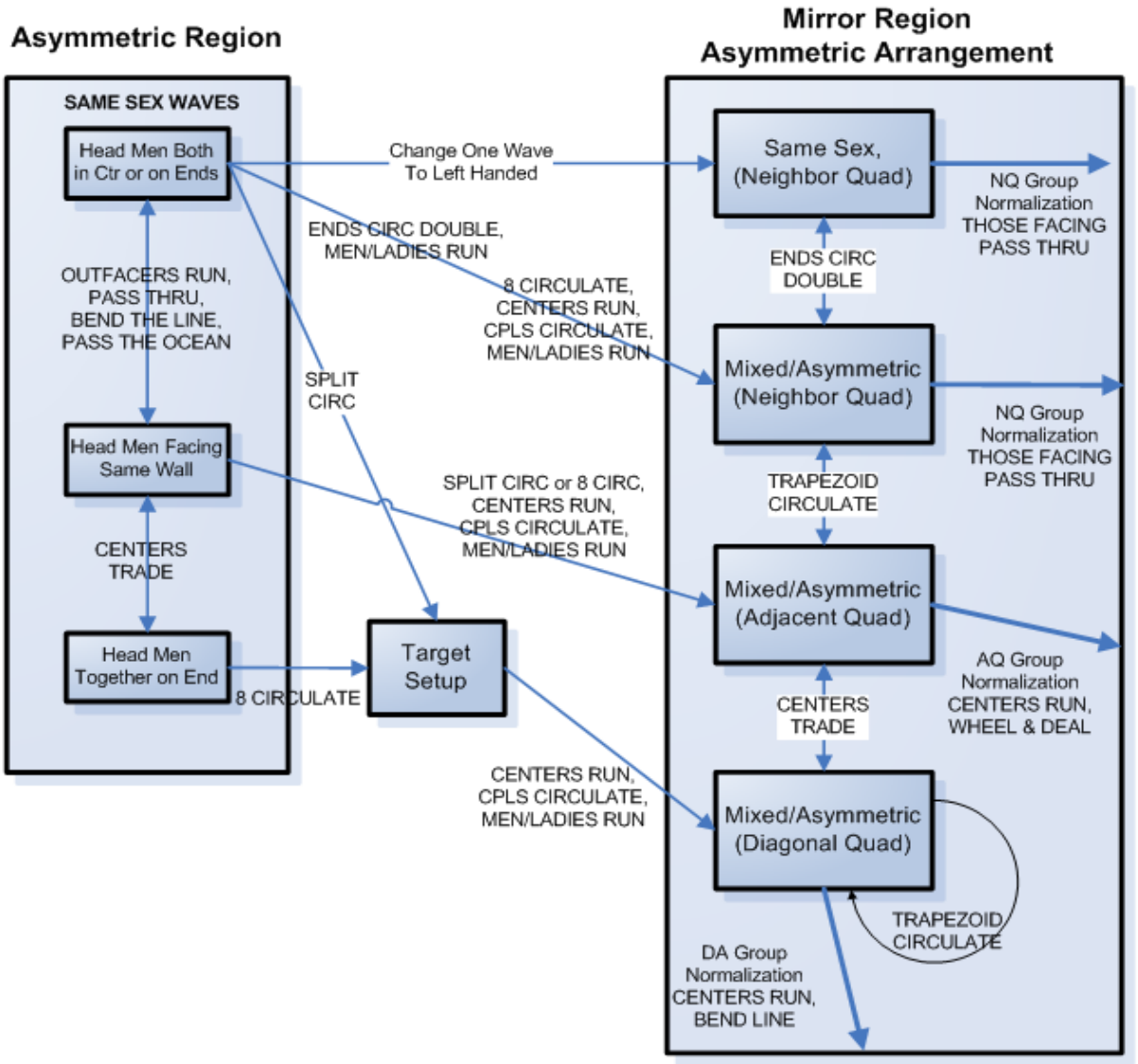
APPENDIX 3: Finding the Big Picture

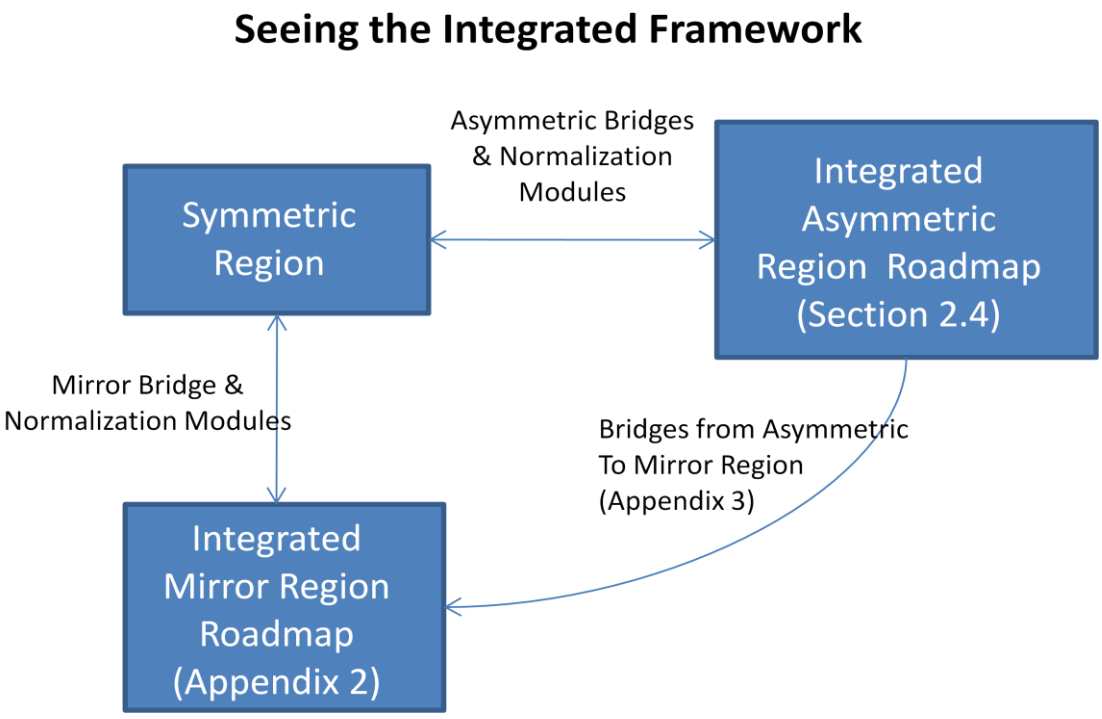
This paper has treated the Asymmetric Region and the Mirror Region as two separate, unrelated regions. Yet we use mirror normalization modules in section 3.1 to return to the Symmetric Region so there are clearly bridge modules between the Asymmetric Region and the Mirror Region. I avoided this topic in the chapter on the Asymmetric Region because we did not have the foundation on the Mirror Region to properly understand it at that point. The roadmap below shows those bridge modules. These modules are evident in the mirror normalization modules in Section 3.1.

Roadmap Showing
Asymmetric to Mirror Region Bridges

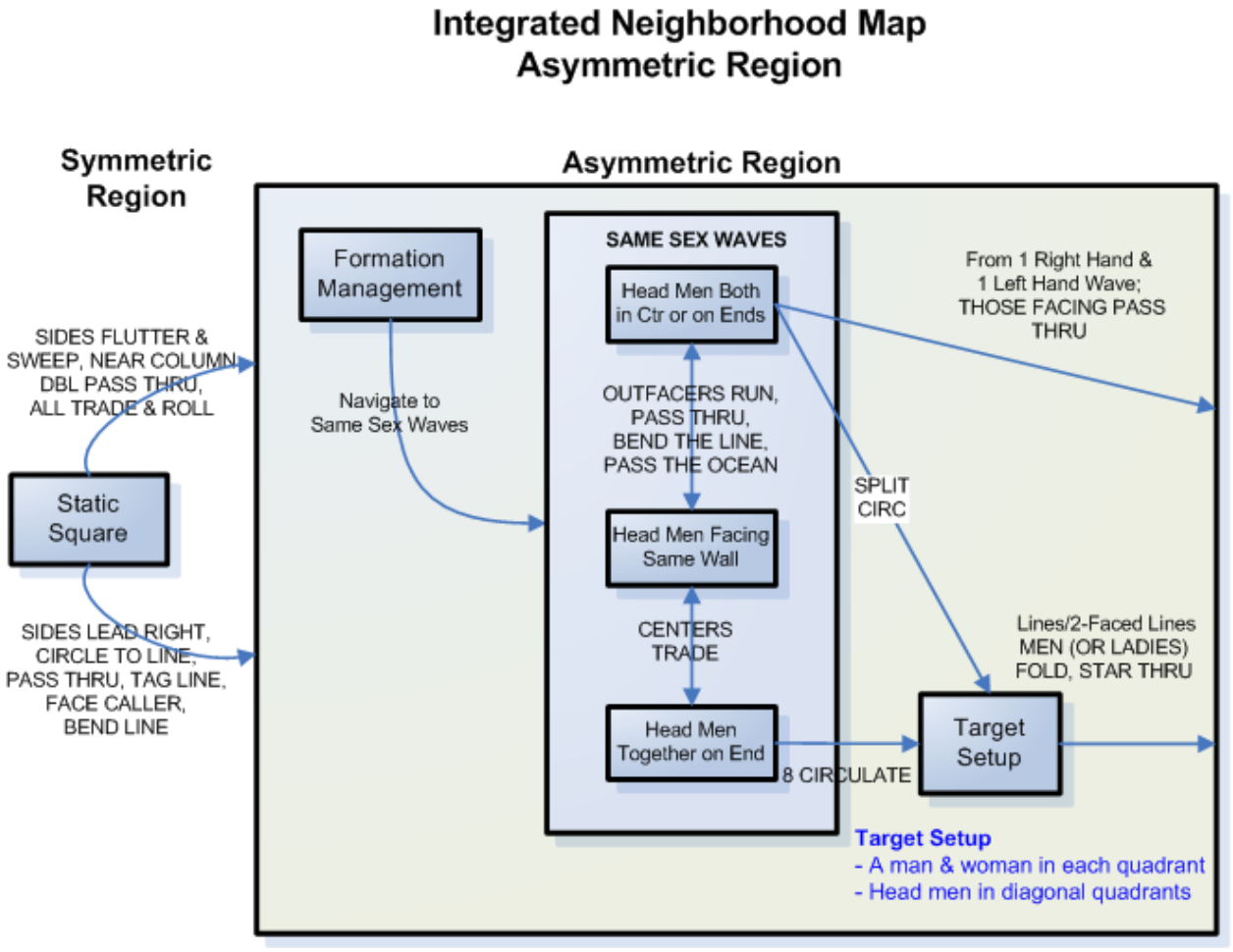


The three alternatives in same-sex waves and the target setup are the four identifiable setups we covered in Chapter 2 on the Asymmetric Region so they become the convenient starting points for bridge modules to the Mirror Region. From the roadmap we can see the great flexibility of the same-sex waves with head men both in the center or both on the ends since we can move to three different mirror formations from there. That is the same setup that we used extensively in Chapter 2 for same-sex mini-squares, so it is clearly a powerful and versatile setup.

This roadmap together with the Integrated Asymmetric Region Map from section 2.4 (shown below) and the Mirror Integrated Roadmap in Appendix 2 form a complete integrated framework covering all the setups in this paper. This relationship is shown in the figure below.



The following roadmap has been copied from section 2.4 for convenience.



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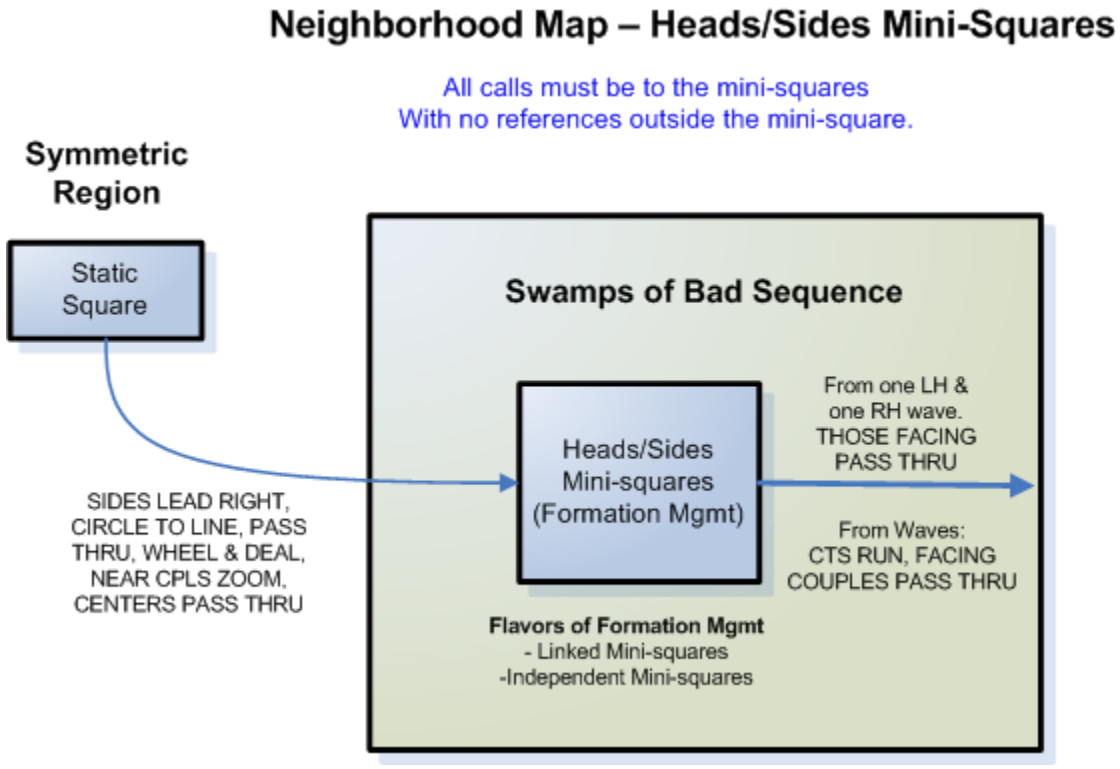
APPENDIX 4: *A Gem in the Swamp*

The first chapter introduced same-sex mini-squares which allowed us to call independently to each mini-square and normalize back to the symmetric region. After I made this paper available on my web site and others began looking at it, Mike Callahan wrote a note to me showing how the same-sex mini-squares could also be applied to Heads/Sides mini-squares. This appendix addresses that extension with Mike's permission.



This Neighborhood Map looks just like the same-sex mini-square map except that the initial bridge puts both head couples in one box and both side couples in the other box. The normalization module is identical to same-sex mini-squares. Note that in this case the arrangement is symmetric but the sequence is asymmetric. Therefore, this setup is in the Swamps of Bad Sequence Region. Previously I had thought that nothing of value could be found in the Swamps Region so this paper contains numerous warnings to avoid the Swamps. However, Mike has found a gem in the Swamps.

Because the arrangement is symmetric, calling exactly the same to both mini-squares (linked mini-squares) is not very interesting because dancers cannot distinguish that dancing from dancing in the Symmetric Region. So the interesting choreography is calling independently to each side. The following example shows independent mini-squares.

Example 37: Heads/Sides Mini-Squares	
SIDES LEAD RIGHT, CIRCLE TO A LINE, PASS THRU, WHEEL & DEAL, NEAR TWO COUPLES ZOOM, CENTERS PASS THRU (HEADS IDENTIFY)	Bridge to Swamps Region (see roadmap above)
HEADS SQUARE THRU, SIDES SWING THRU & SPIN THE TOP HEADS PARTNER TRADE, ALL RIGHT & LEFT THRU, HEADS DIXIE STYLE, SIDES PASS THE OCEAN	Formation management in Heads/Sides mini-squares
THOSE FACING ACROSS THE SET PASS THRU	Normalization to Symmetric Region
ALL WHEEL & DEAL, LADIES SQUARE THRU 3, MEN COURTESY TURN CORNER, ROLL HER AWAY, FIND PARTNER RIGHT & LEFT GRAND	Resolution

One great benefit of Head/Side mini-squares is that the arrangement is symmetric. Earlier in this paper I noted that asymmetric dancing is inherently DBD dancing and therefore, not very applicable at the Mainstream level. This particular setup provides a welcome exception because the normal arrangement of the mini-squares makes this material accessible to mainstream dancers. I have used Mainstream examples to emphasize that point.

I find it challenging to maintain a reasonable flow for the dancers while alternating calls to the heads and sides. I have tried to be sensitive to flow in the example above. If our enthusiasm to show dancers a new look results in too much stop-and-go dancing, we probably have not made a great choice. This is universally true, not just for this section.

The next example shows an alternative approach which I would call semi-linked mini-squares. The strategy is to put one mini-square axis 90 degrees off from the other and then call the same calls to both. The right angle orientation provides a different look to the dancers while the flow is easy to maintain as the mini-squares are linked most of the time.

Example 38: Heads/Sides Mini-Squares	
SIDES LEAD RIGHT, CIRCLE TO A LINE, PASS THRU, WHEEL & DEAL, NEAR TWO COUPLES ZOOM, CENTERS PASS THRU (HEADS IDENTIFY)	Bridge to Swamps Region (see roadmap above)
HEADS SLIDE THRU	This puts the Heads on a different axis than the Sides.
ALL PASS THE OCEAN, SWING THRU, MEN RUN, HALF TAG, WALK & DODGE, PARTNER TRADE & HEADS ROLL, ALL STEP TO A WAVE	Formation management. The different axis is apparent when they make waves.
MEN RUN, FACING COUPLES PASS THRU ACROSS THE SET,	Normalization to Symmetric Region
TAG THE LINE, FACE RIGHT, LADIES RUN, ALL STEP AHEAD, LEFT ALLEMANDE	Resolution

There are some interesting points in this example worth discussing.

(1) Note that the material is really simple mainstream. This is by design as the value added here is in the mini-squares working at right angles to each other. We want a high success rate, and we want the dancers to have a chance to look at the other mini-square. If they are so intent on getting through their own dancing, they may miss what is different about this sequence.
(2) After the call HEADS SLIDE THRU the two mini-squares are operating on different axes. However, the dancers may not appreciate that fact until they PASS THE OCEAN and see the perpendicular waves. That is the dramatic point of this sequence. Use formations that show off the uniqueness, not formations that will hide it.
(3) We have linked mini-squares (same calls to both sides) during the formation management section, so we can deliver a good flow.
(4) The normalization setup requires parallel waves, one right handed and one left handed. So we must do something to get the two mini-squares on the same axis to normalize. In this example, using ONLY HEADS ROLL after the PARTNER TRADE is a quick and unobtrusive method to put both sides on the same axis.
(5) But in doing so we have shifted to an asymmetric arrangement which we will use to our advantage. Note that the alternate normalization routine on the roadmap uses a sequence to setup mirror two-faced lines and then has the facing couples PASS THRU. When we call STEP TO A WAVE we see that having the MEN RUN gives us an alternate path to those mirror two-faced lines. We then proceed with FACING COUPLES PASS THRU to normalize. In summary we saw an opportunity to use a variation on the alternate normalization module and took it.

We conclude by reviewing the key points of the Head/Sides mini-squares.

- They are an obvious extension of the same-sex mini-squares, using a different bridge module, but exactly the same normalization method.
- This is the best we have to offer in terms of material that is appropriate to a Mainstream floor due to the use of common positions for the calls.
- The uniqueness of this neighborhood is in the independence of the two mini-squares, either in terms of independent calls or axis orientation. We should use material that gives the dancers enough “slack” to enjoy those differences.

Thanks again to Mike Callahan for bringing this gem in the swamp to my attention.