# Bridges Walkthrough

Part Zero: First Impressions

The main themes of this puzzle are apparent at a glance. We know bridges will be involved, as we can see the physical "bridges" connecting the four crosswords. We also can surmise from the flavortext and the appearance of standard suit symbols in the grids that the card game bridge will feature in the puzzle. In fact, the phrasing of the flavortext implies that the puzzle is in some way communicating a game of bridge.

Astute solvers will make some additional observations: The four crosswords are referred to throughout the puzzle as North, South, East, and West, which are the labels used for the four players in bridge. Each crossword is 13x13 and contains one suit symbol per row, making 52 suit symbols in total. Each of the four suits appears 13 times in total throughout all four grids. With this information, it's reasonable to guess that each grid corresponds to a single hand of cards, and the goal is to determine what cards they hold and how they are played during the game.

Part One: The Hands

For many solvers, the endgame will not immediately become obvious, but none of these additional deductions are necessary to begin solving the four crosswords. The full grids for all four can be found below:
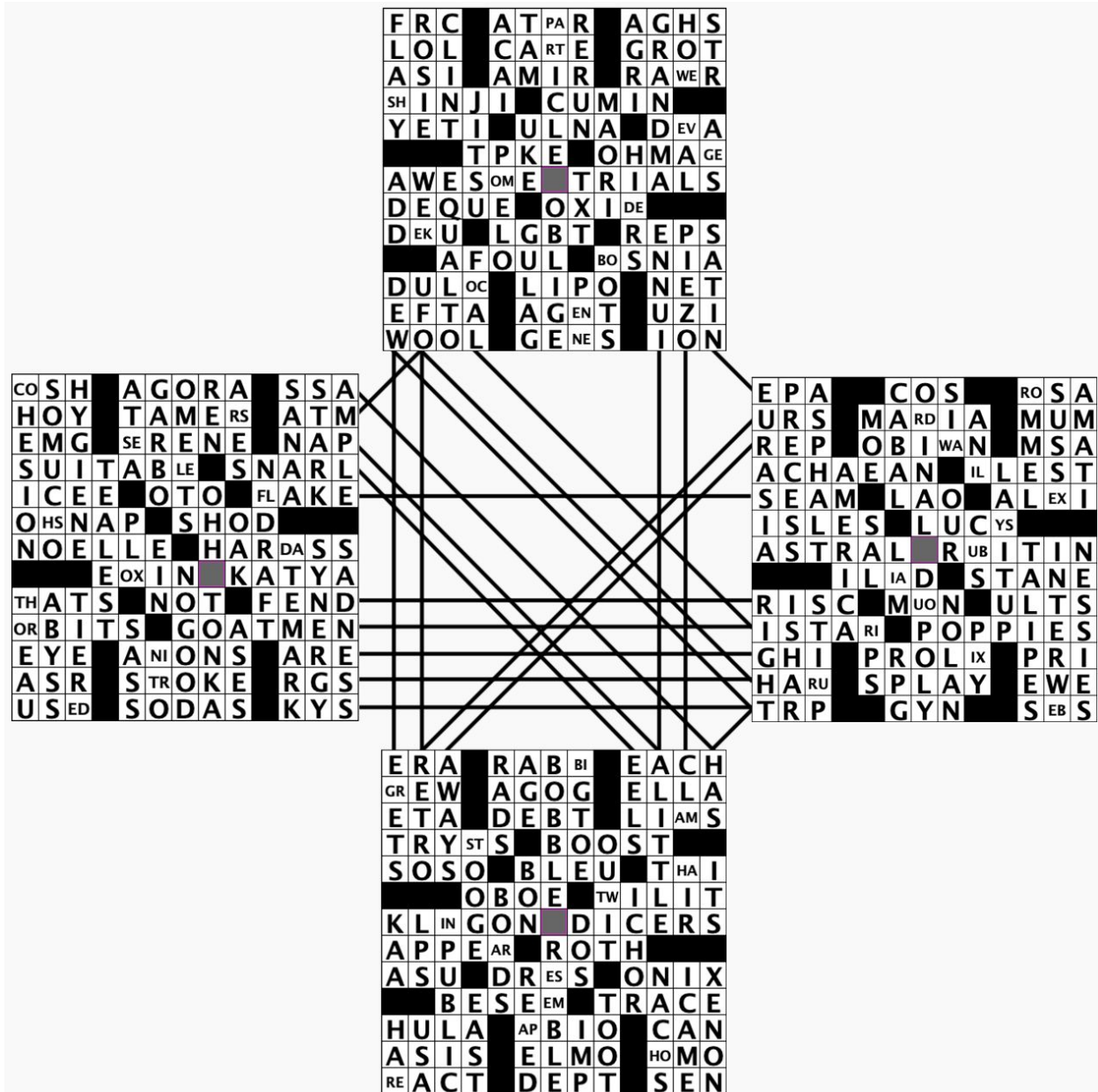
It quickly becomes clear that all four are rebus crosswords, with a seemingly random bigram placed wherever a suit symbol appears in a grid. Every bigram is unique. Given our earlier observations, a logical assumption is that each bigram represents a specific card in a 52-card deck, with each of the crosswords representing a hand of thirteen cards (corresponding to the 13 bigrams contained in its grid).

Below is a table of the bigrams contained in each crossword, numbered by the row they appear in.

	NORTH		EAST		SOUTH		WEST	
1	PA	♣	RO	♣	BI	♣	CO	♣
2	RT	♦	RD	♦	GR	♦	RS	♦
3	WE	♣	WA	♥	AM	♥	SE	♥
4	SH	♦	IL	♦	ST	♦	LE	♦
5	EV	♣	EX	♥	HA	♣	FL	♣
6	GE	♣	YS	♠	TW	♣	HS	♠
7	OM	♣	UB	♥	IN	♣	DA	♥
8	DE	♠	IA	♠	AR	♠	OX	♠
9	EK	♦	UO	♦	ES	♠	TH	♦
10	BO	♠	RI	♥	EM	♥	OR	♥
11	OC	♦	IX	♠	AP	♥	NI	♦
12	EN	♠	RU	♥	HO	♣	TR	♥
13	NE	♠	EB	♥	RE	♠	ED	♠

We are told in the flavortext that West leads, making South the declarer and North the dummy (assuming a traditional clockwise play order). We are also told that the dummy's partner (South) knows more than the rest, and we can see that South's bigrams spell a message: BIGRAMS THAT WIN ARE SEMAPHORE. This confirms that our goal is to determine a game of bridge, specifically the winning cards for each trick, and that bigrams correspond to cards. We now need to determine which bigram wins each trick and then figure out how to convert those winning bigrams to semaphore.

Part Two: The Deck

Our next step is to determine which bigram corresponds to which card. We know the suit of each bigram, but not the rank. Fortunately, the flavortext tells us that a copy of the deck exists on the last page, and we can see 13 cryptic clues at the end of the document. Each one can be answered with an 8-letter word:

Clue	Answer	Explanation
Duochromatic networks are notorious in hip hop, spit verses before high school	BIGRAPHS	BIG + RAP + HS
Email contains article that's still unopened	INTHEBOX	THE in INBOX
Gifted child hears fuel burn	COLESEAR	(COLE sounds like "Coal") + SEAR
Half of Asia follows holy man to Sinnoh city	PASTORIA	IA after PASTOR
Hilarious! Tolkienian creatures lose vs. tools	HARDWARE	HAR + (DWARVES - VS)
Non-white women in London transit begin describing mathematical expression	TWOCUBED	WOC in TUBE + D
Pilgrim's foes reverse gender and start electioneering on air	EVILEXES	SEX + E + LIVE backwards
Sick actor Robert loses head, flips out. F.	FLUORINE	FLU + (DENIRO - D reversed)
Singer Trudeau has given name	GERTRUDE	sinGERT RUDEau
Stallone character goes around safety agency, ignoring a game of chance	ROSHAMBO	RAMBO around (OSHA - A)
The cavalry distorted her omens	HORSEMEN	Anagram of HER OMENS
Watch all cereal for kids	OMNITRIX	OMNI + TRIX
Working time sounds like an insipid stupor	WEEKDAYS	Sounds like "weak daze"

Every answer is composed of four of the 52 bigrams, and the bigrams that make them up are in ascending bridge suit order: clubs, diamonds, hearts, spades. This makes finding the last few answers relatively easy even if we get stumped by the clues. Once we have our thirteen words, we can assign them to the 13 ranks of cards.

Answer	Rank	Explanation
BIGRAPHS	2	Bigraphs = bipartite graphs, whose nodes can be divided into **two** sets where no connection is made between nodes in the same set
ROSHAMBO	3	There are **three** possible things to throw in roshambo
HORSEMEN	4	There are **four** horsemen of the apocalypse
WEEKDAYS	5	There are **five** weekdays
COLESEAR	6	Cole Sear is the name of the child in The **Six**th Sense
EVILEXES	7	Scott Pilgrim fights **seven** evil exes
TWOCUBED	8	Two cubed is **eight**
FLUORINE	9	Fluorine's atomic number is **nine**
OMNITRIX	10	The Omnitrix is a special watch in Ben **10**
INTHEBOX	J	As in "**jack**-in-the-box"
GERTRUDE	Q	Gertrude is the **Queen** of Denmark in Hamlet
PASTORIA	K	Pastoria is the (former) **King** of Oz
HARDWARE	A	As in **Ace** Hardware

With the words assigned to ranks, we now have mapped every bigram to a single card (suit and rank). The correspondence is as so:

Rank	♣	♦	♥	♠
2	BI	GR	AP	HS
3	RO	SH	AM	BO
4	HO	RS	EM	EN
5	WE	EK	DA	YS
6	CO	LE	SE	AR
7	EV	IL	EX	ES
8	TW	OC	UB	ED
9	FL	UO	RI	NE
10	OM	NI	TR	IX
J	IN	TH	EB	OX
Q		GE	RT	RU	DE
K	PA	ST	OR	IA
A	HA	RD	WA	RE

Such that BI is the 2 of clubs, EX is the 7 of hearts, etc.

Part Three: The Game

With the hands and the deck established, it's time to play the game. The first thing to do is to take out the bigrams contained in each grid and substitute in the corresponding cards to get the player's hands.

	NORTH	EAST	SOUTH	WEST
1	K ♣	3 ♣	2 ♣	6 ♣
2	Q ♦	A ♦	2 ♦	4 ♦
3	5 ♣	A ♥	3 ♥	6 ♥
4	3 ♦	7 ♦	K ♦	6 ♦
5	7 ♣	7 ♥	A ♣	9 ♣
6	Q ♣	5 ♠	8 ♣	2 ♠
7	10 ♣	8 ♥	J ♣	5 ♥
8	Q ♠	K ♠	6 ♠	J ♠
9	5 ♦	9 ♦	7 ♠	J ♦
10	3 ♠	9 ♥	4 ♥	K ♥
11	8 ♦	10 ♠	2 ♥	10 ♦
12	4 ♠	Q ♥	4 ♣	10 ♥
13	9 ♠	J ♥	A ♠	8 ♠

Next, we figure out the tricks. We assume that each row represents a single trick, which is reasonable since several rows have the same suit across the board (or close to it), and the important fact that there is one bigram per row in every grid has not yet been relevant. We are told in the flavortext that West leads and clubs are trump, so we have all the information we need to determine the full game.

The winning cards are highlighted below.

	NORTH	EAST	SOUTH	WEST	Led suit
1	K ♣	3 ♣	2 ♣	6 ♣	♣
2	Q ♦	A ♦	2 ♦	4 ♦	♦
3	5 ♣	A ♥	3 ♥	6 ♥	♥
4	3 ♦	7 ♦	K ♦	6 ♦	♦
5	7 ♣	7 ♥	A ♣	9 ♣	♣
6	Q ♣	5 ♠	8 ♣	2 ♠	♣
7	10 ♣	8 ♥	J ♣	5 ♥	♣
8	Q ♠	K ♠	6 ♠	J ♠	♠
9	5 ♦	9 ♦	7 ♠	J ♦	♦
10	3 ♠	9 ♥	4 ♥	K ♥	♥
11	8 ♦	10 ♠	2 ♥	10 ♦	♦
12	4 ♠	Q ♥	4 ♣	10 ♥	♥
13	9 ♠	J ♥	A ♠	8 ♠	♠
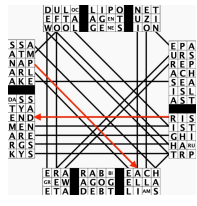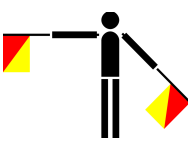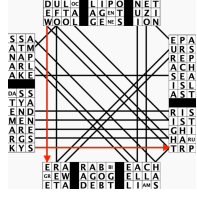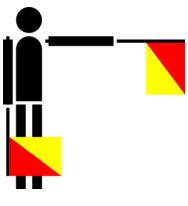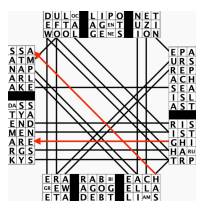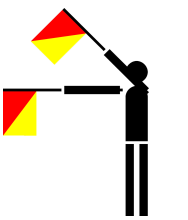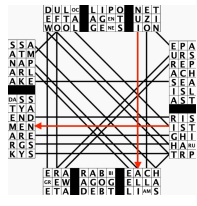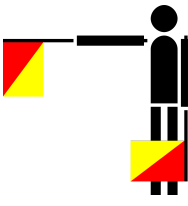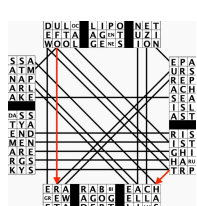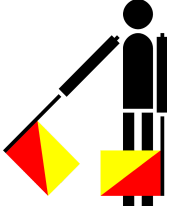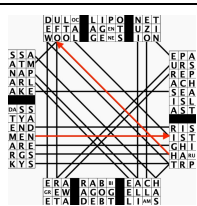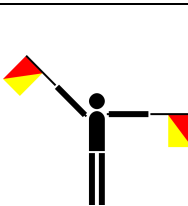
Part Four: Extraction

We have the winning cards from each trick, however, the message specified bigrams, so we convert the winners back to their bigrams:

	NORTH	EAST	SOUTH	WEST	Led suit
1	PA ♣	3 ♣	2 ♣	6 ♣	♣
2	Q ♦	RD ♦	2 ♦	4 ♦	♦
3	WE ♣	A ♥	3 ♥	6 ♥	♥
4	3 ♦	7 ♦	ST ♦	6 ♦	♦
5	7 ♣	7 ♥	HA ♣	9 ♣	♣
6	GE ♣	5 ♠	8 ♣	2 ♠	♣
7	10 ♣	8 ♥	IN ♣	5 ♥	♣
8	Q ♠	IA ♠	6 ♠	J ♠	♠
9	5 ♦	9 ♦	7 ♠	TH ♦	♦
10	3 ♠	9 ♥	4 ♥	OR ♥	♥
11	8 ♦	10 ♠	2 ♥	NI ♦	♦
12	4 ♠	Q ♥	HO ♣	10 ♥	♥
13	9 ♠	J ♥	RE ♠	8 ♠	♠

This doesn't give us anything yet, but following the earlier instructions, we now need to figure out how to convert the bigrams into semaphore. Looking at the bridges between

the four crosswords, the only major puzzle component still unused, we notice that every bridge connects two letters. By listing an ordered pair of letters, a direction can be extracted by traveling over the bridge connecting those two letters from the first to the second. Since all of the bridges are in one of the 8 directions used for semaphore, two ordered pairs will garner a single semaphore letter. Doing this with our winning tricks* gets us:

Tricks	Bigrams	Bridges	Flags	Letter
1, 2	PA, RD			S
3, 4	WE, ST			F
5, 6	HA, GE			O
7, 8	IN, IA			B
9, 10	TH, OR			A
11, 12	NI, HO			Y

The semaphore letters spell out SFO BAY, which is an abbreviated version of the final answer, SAN FRANCISCO BAY

* The answer is determined after the 12th trick, as clued by the flavortext, so the 13th winner is unused