Who's Right, La Russa or Gant?

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Introduction

- Cards pitchers batted 8th after All-Star G.
  - La Russa: men on for McGwire, fewer walks
  - Gant: good for McGwire, bad for team
- Should McGwire bat 4th(as Gant implied)?
- Analytical Tools
  - Situational statistics and probabilities
  - Markov model

1) PITCHER BATTED 8 EVEN WHEN MAC DID NOT START

2) GANT AFTER GOING TO PHILLIES IN NOV: CARDS WERE “LAUGHINGSTOCK” OF NL

McGwire Situational Stats

- Before and after All-Star Game
- Runners:
  - bases empty
  - 1st occupied
  - runners on, 1st open

McGwire Plate Apps. In 1998

	Before ASG	After ASG	Total
Empty	187	181	368
1st occ.	111	91	202
1st open	64	47	111
Total	362	319	681

1) SITUATIONAL STATS CAN MISLEAD DUE TO SMALL NUMBERS:

A) 187 PA AT 4+/G --> 45 GAMES, < 2 MONTHS

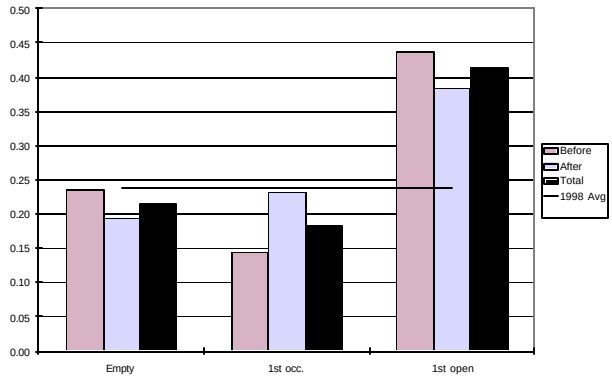
B) DON'T TAKE BA SERIOUSLY AT END OF MAY

2) NOT SPLITTING BY NUMBER OUTS DUE TO EVEN SMALLER NUMBERS, DIFFERENCES NOT GREAT AS A RULE

3) EMPTY ABOUT SAME, BUT MANY FEWER MEN ON SITS AFTER (P BAT 8) -- DISCUSS MORE LATER

4) SEVERAL GRAPHS FOLLOW WITH SOME OF MAC'S SITUATIONAL PERFORMANCE

Walks per Plate Appearance



1) GRAPHS WILL BE SIMILAR:

A) THREE GROUPINGS BY RUNNERS

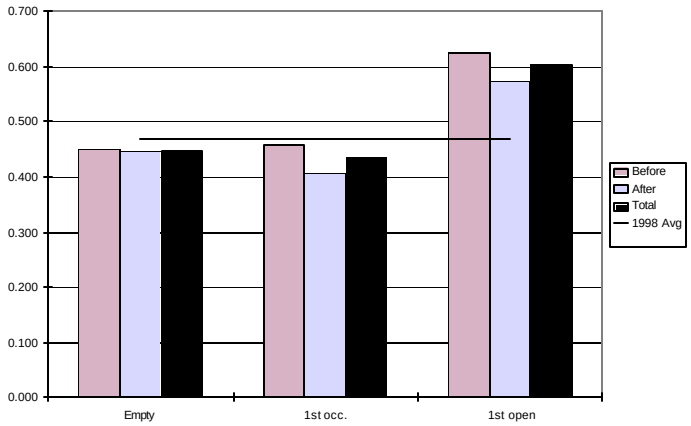
B) THREE BARS--BEFORE ASG, AFTER, TOTAL SEASON FOR SITUATION--IN EACH GROUP

C) HORIZONTAL LINE IS SEASON AVERAGE FOR ALL SITUATIONS

2) MORE WITH 1ST OPEN (NO SURPRISE)

3) BASES EMPTY vs. 1ST OCC. FOR BEFORE MAY BE WHAT LA RUSSA WAS THINKING ABOUT (BUT REVERSED AFTER ASG)

On-Base Percentage

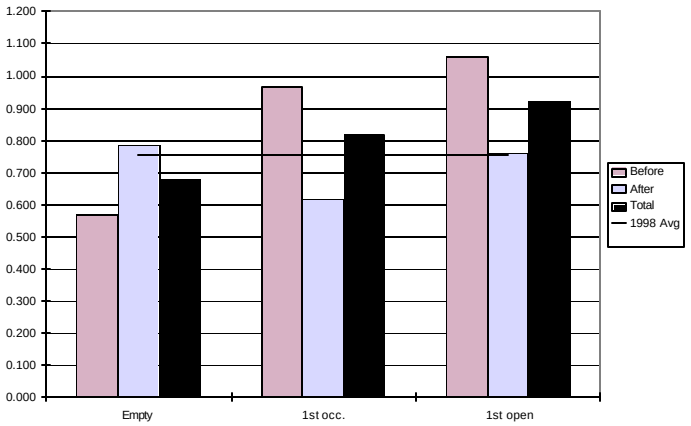


1) MORE BB WITH 1ST OPEN PUSHED OBP HIGHER

2) BASES EMPTY: FEWER BB AFTER, HIGHBER BA MEANS ALMOST SAME OBP

3) DIFFERENCE BETWEEN EMPTY AND 1ST OCC. PROBABLY “NOISE” (RANDOM EFFECT)

Slugging Average

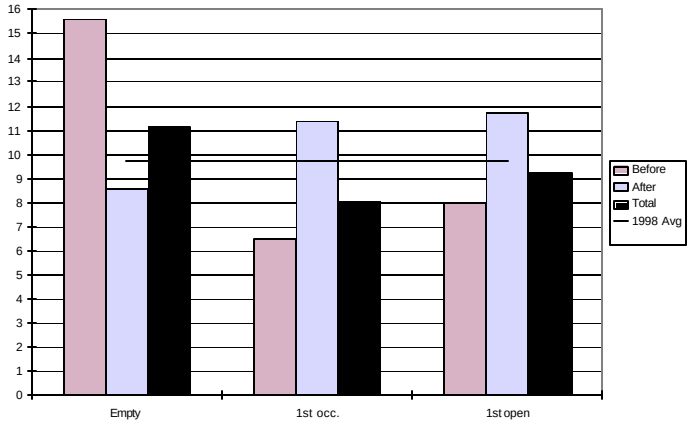


1) EMPTY vs. 1ST OCC BEFORE MAY HAVE INFLUENCED LA RUSSA (ALSO REVERSED AFTER)

2) HIGHER SLG WITH 1ST OPEN (BB NOT IN SLG) MAY CAUSE PITCHERS TO BE EXTRA CAREFUL, SO MAC HIT MAINLY "MISTAKES" (OR CONCENTRATED BETTER) IN THESE CASES

Plate Appearances per HR

(lower is better)



1) PA RATHER THAN AB (MORE COMMON) BECAUSE OF SO MANY WALKS

2) BEFORE EMPTY vs. OTHERS (15 vs. ABOUT 7) MAY HAVE INFLUENCED LA RUSSA

3) BUT AFTER, EMPTY HAS BEST PA/HR (MAC ADJUSTED, PITCHERS TOLD NOT TO PITCH AROUND HIM WITH NO ONE ON (BY FANS!), OR RANDOM DUE TO SMALL NUMBERS)

Why Model is Needed

- 72 Mac starts each with P batting #8, #9
- More runners on when P batted #9
- Many lineups used
- Hitters ahead of Mac did better when P #9
- Model can produce valid comparisons

OBP of hitters before McGwire
(games when he started, no DH)

	Pitcher bats	
	#9	#8
#1 batter	0.312	0.278
#2 batter	0.386	0.391
Combined	0.349	0.334

FOLLOW-UP ON NUMBER PA WITH RUNNERS ON

1) LA RUSSA USED MORE LINEUPS THAN ANY OTHER MGR IN 1998 (INFLUENCED BY P BAT 8, BUT FREQUENT CHANGES COMMON)

2) MAC ALWAYS BATTED #3 WHEN HE STARTED (152 GAMES -- 8 IN AL PARKS), CARDS PLAYED 163 (6.5 INN TIE, MAC DID NOT PLAY)

3) COMPARISONS BETWEEN THE PAIRS OF 72 GAMES (BB WEEKLY LA RUSSA ARTICLE; COST MAC SHOT AT RBI TITLE) NOT VALID DUE TO DIFFERENT PLAYERS AND PERFORMANCES

4) MODEL HOLDS PERFORMANCE OF PLAYERS CONSTANT, SO VALID COMPARISONS ARE POSSIBLE

[WHY SUCH POOR LEAD-OFF HITTERS???]

Markov Process Model

- Calculates long-term average number of runs per 9 inn. that a lineup will produce
- Internal calculations yield probabilities of runners and out situations
- Major assumption: batters perform the same in all batting order positions, essentially the same in all runners/outs situations

JUST SO HAPPENS I HAVE A SUITABLE MODEL…

1) MODEL IS BASED ON PROBABILITIES OF GOING FROM ONE RUNNERS/OUTS TO ANOTHER BASED ON INDIVIDUAL BATTER DATA

2) USES MATRIX ALGEBRA

3) OVERALL MORE BB WITH 1st OPEN (NOT LIKE MAC) AND FEWER WITH BASES FULL, SO MODEL ADJUSTS (BUT MAC WALKED 6/14 LOADED PA!)

4) OTHER ASSUMPTIONS:

A) RUNNING EVENTS EXCEPT FOR SB TRY ARE ACCORDING TO LEAGUE AVERAGES

B) ONLY PITCHERS TRY SAC BUNTS

5) ASSUMPTIONS OK SINCE BATTING ORDER COMPARISONS ARE MAIN INTEREST

Lineups Used in Model

Player	1998 Full Season OBP	SLG	vs. RHP - vs. LHP OBP	SLG	Notes
DeShields	0.374	0.429	0.053	0.056	
Jordan	0.370	0.534	-0.044	-0.103	Bats 4th vs. LHP
McGwire	0.473	0.752	0.012	0.163	
Lankford	0.394	0.540	0.025	0.113	Bats 2nd vs. LHP
Gant	0.333	0.493	-0.087	-0.107	
Tatis	0.329	0.415	-0.009	0.086	
Marrero (M)	0.319	0.370	-0.058	-0.118	Bats 9th when P is #8
Ordaz (O)	0.261	0.235	0.103	0.123	Bats 7th when P is #8
Pitcher (P)	0.174	0.176	<-- NL average (Cards in 1998 were similar)		

M,O,P = lineup above (P bats 9th); O,P,M = lineup with P batting 8th

1) MOST FREQUENT STARTERS AFTER ASG (TATIS DATA IS FULL SEASON)

2) POSITIVE MEANS BATTER DID BETTER vs. RHP

3) M,O,P / O,P,M / M,P,O WILL BE USED IN FOLLOWING

4) ANALYSIS WILL BE BASED ON FULL SEASON, BUT COMPARISONS BASED ON PITCHER HANDEDNESS ARE SIMILAR

Mac's 3rd & 4th Inning Probs.

	M, O, P		O, P, M		M, P, O	
Third Inning Probabilities						
	All cases	if Mac bats	All cases	if Mac bats	All cases	if Mac bats
Mac not up	30.7%		30.7%		30.5%	
Empty	31.7%	45.7%	30.4%	43.8%	30.8%	44.3%
1st occ.	26.9%	38.8%	27.3%	39.4%	27.4%	39.4%
1st open	10.8%	15.6%	11.6%	16.8%	11.3%	16.3%

M,O,P	O,P,M	M,P,O
Combined 3rd & 4th (Mac's second PA)		
55.6%	54.5%	54.8%
31.9%	32.2%	32.4%
12.5%	13.3%	13.0%

	Fourth Inning Probabilities					
	All cases	if Mac bats	All cases	if Mac bats	All cases	if Mac bats
Mac bats	30.7%		30.7%		30.5%	
Empty	23.9%	78.0%	24.1%	78.6%	24.0%	78.1%
1st occ.	5.0%	16.3%	4.9%	16.0%	5.0%	16.3%
1st open	1.7%	5.7%	1.7%	5.4%	1.7%	5.6%

Notes: 1) Assumes McGwire does not bat in 2nd
2) Above are full season, but results are similar using data vs. RHP and vs. LHP

1) COMPLEX TABLE -- SMALL SUMMARY TABLE AT RIGHT IS KEY RESULT

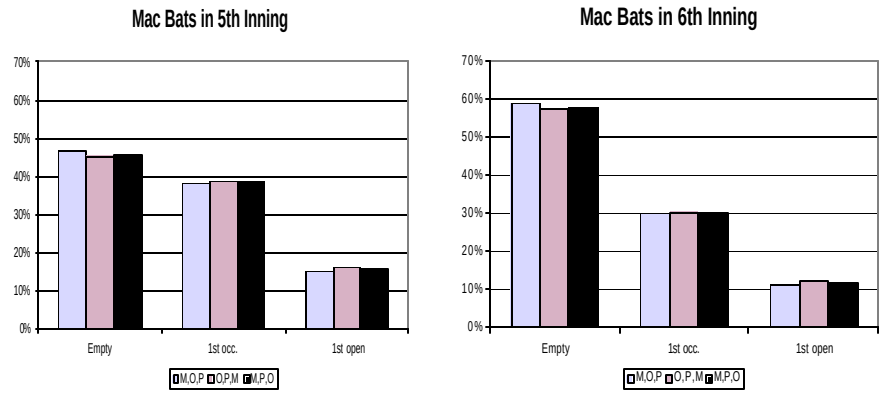
2) USES FULL SEASON DATA; COMPARISONS (NOT VALUES) USING PITCHER HAND SPLITS SIMILAR

3) ASSUMES MAC DOES NOT BAT IN 2nd (SMALL PROB. HE DOES), SO WE ARE LOOKING AT EFFECT OF P BAT POSITION ON HIS 2nd PA

4) ABOUT 1% LESS CHANCE OF BASES EMPTY WHEN P BATS 8 --> 1 MORE 2nd PA IN SECOND HALF WITH MEN ON EXPECTED

5) BASES EMPTY MORE LIKELY IF MAC BATS IN 4th THAN IN 3rd

If Mac bats in 5th or 6th



1) CONDITIONAL PROBABILITIES ASSUMING HE BATS IN INNING SHOWN; TOO COMPLICATED TO CALC PROB HE BATS AND WHICH PA (3 OR 4)

2) GROUPINGS AS BEFORE, BARS FOR 7-9 ORDER (M,O,P; O,P,M; M,P,O)

3) SIMILAR SMALL EFFECTS TO 3rd & 4th

4) TOO COMPLEX (PINCH HITTERS) TO GO BEYOND THIS POINT

5) ALL TOLD, BATTING PITCHER 8 IS EXPECTED TO RESULT IN ABOUT 2 MORE PAs WITH MEN ON AFTER ASG

Modeled Runs per 162 Games

- Full season data
- Similar results by pitcher hand
- First four are near “optimal”
- Differences among first four are minor

	Normal	Pitcher bats 8th		"Gant"	Worst?
1	DeShields	DeShields	DeShields	DeShields	Tatis
2	Jordan	Jordan	Jordan	Lankford	Ordaz
3	McGwire	McGwire	McGwire	Gant	Marrero
4	Lankford	Lankford	Lankford	McGwire	Pitcher
5	Gant	Gant	Gant	Jordan	Gant
6	Tatis	Tatis	Tatis	Tatis	DeShields
7	Marrero	Ordaz	Marrero	Marrero	Jordan
8	Ordaz	Pitcher	Pitcher	Ordaz	Lankford
9	Pitcher	Marrero	Ordaz	Pitcher	McGwire
Runs	865.2	864.9	867.6	865.4	815.5

1) BEST FOUND <869 (MAC #1, SO MIGHT NEED TO ADJUST EQUAL PERFERMANCE ASSUMPTION, WHICH COULD CHANGE RESULTS)

2) “GANT” LINEUP OPTIMIZED BASED ON DeSHIELDS 1st AND McGWIRE 4th

3) MODELS NOT DESIGNED TO FIND LOW SCORING ORDERS. TRIED REVERSING AND “OPTIMIZING”, BUT MIGHT BE WORSE ONES

4) 10 RUNS APPROX. EQUAL 1 WIN (TO PROVIDE PERSPECTIVE)

5) SIMILAR RELATIONSHIPS (DIFFERENT RUN VALUES) USING PITCHING HAND SPLITS

Conclusion

- Who's right?: Possibly La Russa
  - No meaningful effect on modeled runs when pitcher bats 8th
  - Slightly increased chance of men on for Mac
  - McGwire did hit 70, but probably would have hit about the same with normal batting order
- For more on Markov model visit my web site at http://www.pankin.com

1) ACCORDING TO MODEL, BATTING P 8 DID NOT HURT AND MIGHT HAVE PRODUCED A COUPLE MORE MAC PAs WITH MEN ON, BUT DIFFERENCES ARE SMALL, WITHIN ERROR BOUNDS OF MODEL

2) IN EFFECT, NO DIFFERENCE BETWEEN PITCHER 8th AND 9th

3) BATTING MAC 4th WOULD NOT INCREASE SCORING AND WOULD REDUCE HIS PAs BY ABOUT 18 PER SEASON, COST 2 HR BASED ON HIS 1998 PA/HR --> GANT NOT RIGHT

4) HOPE TO PUT THIS PRESENTATION ON SITE IN NOT TOO DISTANT FUTURE