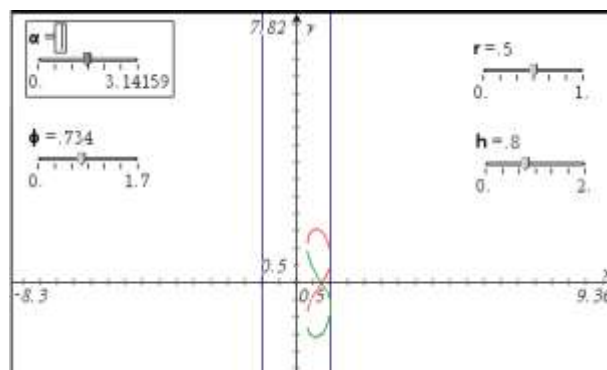


This was used to create another interactive application. Unfortunately, this application required a smaller t step in order for the graph to appear smooth, and gaps still appear between the plus and minus solutions.



Here are ideas for further research:

- Find a nice parameterization for the general intersection curve(s).
- Redo the above applications using the more powerful 3-d graphing on the Nspire when they become available.

Biographical Sketch

Michael Lloyd received his B.S in Chemical Engineering in 1984 and accepted a position at Henderson State University in 1993 shortly after earning his Ph.D. in Mathematics from Kansas State University. He has presented papers at meetings of the Academy of Economics and Finance, the American Mathematical Society, the Arkansas Conference on Teaching, the Mathematical Association of America, and the Southwest Arkansas Council of Teachers of Mathematics. He has also been an Advanced Placement statistics consultant since 2002.

Hall of Fame or Not?

Fred Worth, Ph.D.
Professor of Mathematics

Abstract - In this paper I will consider three players who do not belong in baseball's Hall of Fame.

I do not recall ever hearing an argument about whether or not someone should be inducted into the football or basketball hall of fame. When those sports have their hall of fame elections, the articles are on the second page of the sports sections and no one really seems to notice. When baseball has its Hall of Fame election, it inspires front page articles in the sports section as well as numerous columns by sports editors and columnists telling why this player should be in or why this player should not be in. People argue about it, get angry about it and rejoice over it. In this essay I am going to talk about three who are in that shouldn't be in.

Academic Forum 29 2011-12

Ray Schalk

What statistical feat unites Carlton Fisk, Johnny Bench, Gary Carter, Al Lopez, Ray Schalk and Connie Mack? They are the only Hall of Famers who were primarily catchers and batted below .270 for their careers.

Name	BAVG
Carlton Fisk	.269
Johnny Bench	.267
Gary Carter	.262
Al Lopez	.261
Ray Schalk	.253
Connie Mack	.245

However, Schalk is set apart from the others. Mack and Lopez were not elected to the Hall of Fame for their playing careers but their managerial careers. Batting average is not the full measure of a player. Lower averages can be ignored if a player hits for power. Home runs and OPS (on base average plus slugging percentage) are alternative measures of offensive effectiveness. The other three "sub .270" catchers all far outpace Schalk in both of these measures.

Name	HR	OPS
Schalk	11	.656
Fisk	376	.797
Bench	389	.817
Carter	324	.773

In Fisk's 24 seasons, he out-performed Schalk's CAREER home run total in 15 different seasons. In six of the other nine seasons he had fewer than 300 at bats due to injuries or other reasons. Bench beat Schalk's career total in 15 of his 17 seasons and played in only 78 games combined in the other two seasons. Carter out homered Schalk's career in 12 of his 19 seasons. In the other seven seasons injuries limited him to fewer than 300 at bats five times.

Admittedly Schalk played half of his career in the Dead Ball Era. But the last half of his career, during the 1920s, saw no great increase in his offensive production. But let's compare him to people from his era. The following chart shows all catchers with more than 3000 at bats during the period from 1912-1929 when Schalk was playing.

Name	AB	AVG	HR	OPS
Ray Schalk	5306	.253	11	.656
Steve O'Neill	4768	.263	13	.687
Wally Schang	4441	.292	50	.810
Hank Severeid	4256	.289	17	.708
Frank Snyder	4229	.265	47	.672

Academic Forum 29 2011-12

Ivy Wingo	3945	.260	25	.665
Muddy Ruel	3927	.281	4	.708
Cy Perkins	3518	.260	30	.675
Bob O'Farrell	3248	.279	43	.764

Not a lot of great names here. Schalk has the most at bats. But of the nine players, he had the lowest batting average and lowest OPS. Seven of the other eight out-homered him even though he had more at bats. Schalk was a solid ballplayer. But he was no Hall of Fame performer.

Nellie Fox

At the risk of offending my friend Dennis DiMarzio, I will now argue that Nellie Fox does not belong in the Hall of Fame. The following chart shows all of the Hall of Famers who had at least 4000 at bats as second baseman. Several of them played large portions of their careers at other positions but the chart only includes their statistics as second baseman.

Name	AB	BAVG	HR	OPS
Eddie Collins	9904	.334	47	.855
Joe Morgan	9277	.271	268	.819
Nellie Fox	9191	.289	35	.711
Charlie Gehringer	8860	.320	184	.884
Nap Lajoie	8554	.336	67	.837
Bid McPhee	8291	.271	53	.727
Red Schoendienst	7909	.290	83	.730
Bill Mazerowski	7755	.260	138	.667
Ryne Sandberg	7744	.286	275	.805
Frankie Frisch	7552	.315	82	.799
Billy Herman	7523	.305	47	.774
Bobby Doerr	7093	.288	223	.823
Johnny Evers	6137	.270	12	.690
Tony Lazzeri	6133	.293	172	.848
Rogers Hornsby	6051	.377	271	1.080
Joe Gordon	5707	.268	253	.822
Miller Huggins	5558	.265	9	.696
Bucky Harris	4736	.274	9	.706
Rod Carew	4450	.328	46	.812

In batting average, Fox outperformed nine of the others. But that is deceptive. Bill Mazerowski had much more power than Fox but he is another who probably doesn't belong in the Hall of Fame. Miller Huggins went into the Hall as a manager, not a player. The same is true of Bucky Harris. Johnny Evers' offensive numbers are weak but he played in the dead ball era. But he also doesn't belong in the Hall. Bid McPhee was a 19th century player, a much different era, but he had more power than Fox. The others, Joe Gordon, Joe Morgan, Ryne Sandberg and

Academic Forum 29 2011-12

Bobby Doerr all had much more power. In home runs, Fox only outperformed Managers Huggins and Harris, and the dead ball Hall of Fame trespasser Evers. In OPS, he again only outpaced the managers, Evers and another trespasser, Mazeroski.

Let's compare Fox to his peers during 1947-1965 when he played.

Name	AB	AVG	HR	OPS
Nellie Fox	9191	.289	35	.711
Red Schoendienst	7303	.291	83	.736
Frank Bolling	5335	.256	105	.686
Johnny Temple	5215	.285	22	.714
Bill Mazeroski	5138	.265	99	.683
Don Blasingame	5076	.260	20	.661
Bobby Richardson	4776	.268	27	.637
Bobby Avila	4573	.282	80	.750
Tony Taylor	4260	.262	40	.670
Jim Gilliam	4074	.273	44	.736
Jerry Lumpe	3908	.272	39	.694
Jerry Priddy	3286	.268	48	.739
Billy Gardner	3150	.241	36	.626

Though his average is higher than almost all of his peers, his offensive production was comparable to that of Jerry Priddy who was not exactly a household name outside of the Priddy household.

"Ah, but Fox was valuable in other ways." Let's look at fielding, an important consideration for middle infielders. Consider players with over 1000 games at second base during the time Fox played.

Name	G	PO	PCT	DP
Nellie Fox	2295	6090	.984	1619
Red Schoendienst	1705	4276	.983	1281
Frank Bolling	1451	3289	.982	968
Bill Mazeroski	1399	3342	.981	1145
Johnny Temple	1312	3172	.974	829
Don Blasingame	1248	2941	.978	800
Bobby Richardson	1192	2803	.979	872
Bobby Avila	1168	2820	.979	785
Tony Taylor	1054	2398	.973	701
Jim Gilliam	1044	2277	.979	628

Academic Forum 29 2011-12

In putouts and double plays, Fox was far ahead of his peers but that was almost entirely due to the fact that he played so many more games during those years. He did rank above all in fielding percentage, but by no more than .005 over most.

Nellie Fox. Solid ballplayer? Yes. Hall of Famer? Not when he's only marginally better than Jerry Priddy and Frank Bolling.

Phil Rizzuto

I hate the Yankees. I grudgingly respect the talent of many of their players like Babe Ruth, Mickey Mantle and Lou Gehrig. I hate the Yankees. I grudgingly respect their success over the years and the players they've had in recent years, like Bernie Williams, Derek Jeter, Jorge Posada and Mariano Rivera, who play the game "the right way," whatever that means. I hate the Yankees.

I hate the Yankees. I've been a Mets fan since I became aware of baseball and in New Jersey, no one, except those pursuing a career in politics, claim to like the Mets AND Yankees. I hate the Yankees. I hate that many of their great players are considered far greater than they really were. Joe DiMaggio was a great player. No question. Around 1970 he was chosen the "Best Living Baseball Player." When he died, people said "now Willie Mays is the greatest living baseball player." Those who really knew were aware that DiMaggio's death was not necessary for Mays to be the greatest living baseball player. I hate the Yankees.

I hate the Yankees. One of the greatest examples of someone getting credit for greatness far beyond what is justified is Phil Rizzuto. After a long PR campaign, Rizzuto finally was elected to the Hall of Fame. One big reason for his worthiness, according to his supporters, is his ability to do the things that cannot be measured. That is because, if one looks at the things that CAN be measured, he falls woefully short of being worthy. Let's compare Rizzuto to shortstops in the Hall of Fame. We'll limit consideration to those with at least 3000 at bats.

Name	AVG	HR	OPS	AB
Honus Wagner	.327	78	.859	8277
Hughie Jennings	.324	15	.824	3625
Joe Sewell	.323	23	.831	4690
Arky Vaughan	.322	89	.876	5878
Luke Appling	.310	45	.799	8360
Joe Cronin	.304	156	.863	7119
Lou Boudreau	.295	68	.795	6028
Travis Jackson	.295	119	.788	5110
George Davis	.295	29	.745	4901
Ernie Banks	.290	298	.905	4670
Monte Ward	.288	10	.677	3473
Robin Yount	.286	129	.757	6049
Dave Bancroft	.279	32	.714	7182

Academic Forum 29 2011-12

Cal Ripken	.277	353	.798	9217
Phil Rizzuto	.273	38	.706	5816
Pee Wee Reese	.271	125	.751	7728
Bobby Wallace	.266	26	.682	7123
Rabbit Maranville	.263	26	.668	8368
Joe Tinker	.262	31	.660	6367
Ozzie Smith	.262	28	.666	9396
Luis Aparicio	.262	83	.653	10230
Leo Durocher	.245	24	.617	5048

Of these 22, Rizzuto only beats seven in batting average. Leo Durocher went into the Hall of Fame because of his managing, not his playing. Bobby Wallace, Rabbit Maranville, and Joe Tinker played in the Dead Ball Era, making their deficient statistics understandable. Luis Aparicio got in mainly because he, Maury Wills and Lou Brock transformed the game in the 1960s by stealing bases in huge quantities. Ozzie Smith got in the Hall of Fame solely because of his stellar defense and his back flips. I am not convinced Aparicio and Smith belong in the Hall of Fame. The only other below Rizzuto is Pee Wee Reese. Reese was significantly more productive offensively than Rizzuto. Insignificant difference in batting average. Significantly higher home run total. Significantly higher OPS. Reese was a much better player.

Let's compare Rizzuto to those from his era. The following table shows shortstops from 1941-1956 with at least 3000 at bats, plus one other player.

Name	AVG	HR	OPS	AB
Luke Appling	.302	22	.780	3483
Lou Boudreau	.297	59	.797	5176
Al Dark	.293	108	.758	5292
Vern Stephens	.287	214	.826	5399
Johnny Logan	.278	51	.734	2936
Phil Rizzuto	.273	38	.706	5816
Pee Wee Reese	.272	116	.752	7269
Marty Marion	.262	33	.670	5064
Chico Carrasquel	.262	39	.681	3590

Rizzuto was below the middle of the pack in average. He was below the middle of the pack in home runs. He was below the middle of the pack in OPS. He was nothing special. I included Johnny Logan, even though he had fewer than 3000 at bats. Let's take a look at Rizzuto and Logan. The following gives their career statistics, not just for the six years of Logan's career that overlapped with Rizzuto's.

Name	AB	R	H	2B	3B	HR	RBI	SB	AVG	SLG	OPS
Rizzuto	5816	877	1588	239	62	38	563	149	.273	.355	.706
Logan	5244	651	1407	216	41	93	547	19	.268	.378	.708

Except for home runs and stolen bases, these are basically the same ballplayer. So the answer to "Is Phil Rizzuto a Hall of Famer?" has to have the same answer as "Is Johnny Logan a Hall of Famer?" And the answer is an absolute "No."

I hate the Yankees.

Biographical Sketch

Fred Worth received his B.S. in Mathematics from Evangel College in Springfield, Missouri, in 1982. He received his M.S. in Applied Mathematics in 1987 and his Ph.D. in Mathematics in 1991 from the University of Missouri-Rolla. He has been teaching at Henderson State University since August 1991. He is a member of the Society for American Baseball Research and the Mathematical Association of America. He hates the Yankees.

Fado, UNESCO's World Intangible Cultural Heritage.

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Abstract

In November of 2011, UNESCO officially recognized *Fado*, Portugal's most traditional music genre, as 'World's Intangible Cultural Heritage', during a meeting of the committee of experts on the Indonesian island of Bali. As this recognition is entirely deserved, it becomes important to the non-national of Portugal to understand the nature and history of this unique musical expression form.

Speaking of the origins of Fado is difficult, for there is little consensus as where the roots of the genre lay. From Moorish tradition to Afro-Brazilian rhythms, from the caravels that sailed from these latitudes to discover half of the world to the old streets of Alfama, Fado is most likely the result of the confluence of cultures which, for a great part of its history, formed the anatomy of Lisbon, the country's largest city and the second oldest European capital, after Athens.

Fado is traditionally sung by a solo performer, the *Fadista*, who can be either male or female, whose vocals are accompanied by a pear-shaped 12-string guitar – the unique *Guitarra Portuguesa*, or Portuguese Guitar.

More importantly than its past and its format, it is the essence of the genre, its motifs, and its object that truly set Fado apart as an exceptional art form. Fado, as a product of Lisbon in its modern form, conveys a set of imagery mostly akin to a society that no longer exists, and often speaks of a history long passed. But it is also a reflection of a people and a temperament that are very much alive, by means of establishing a balanced dichotomy between gloom and hope, simultaneously and paradoxically Portugal's biggest weakness and most remarkable