Does *QuesTec* Affect the Strike Zone?

By Mitchel Lichtman (MGL)

If you were to ask Curt Schilling, all you would have to do would be to examine the wreckage of an expensive camera for your answer. Of course I am referring to the infamous incident whereby Schilling, apparently in response to his perception that umpires in *QuesTec* parks were calling a "tighter" strike zone or *squeezing* the pitchers, out of fear that they would receive an unfavorable rating from MLB if they called marginal (on *the black*) pitches strikes, calmly but methodically destroyed a *QuesTec* camera in Bank One Ballpark. Was Schilling right? Is the strike zone in *QuesTec* parks smaller than that in non-*QuesTec* parks?

According to Sandy Alderson, MLB's executive vice president of baseball operations, "As for pitchers' complaints that they get squeezed in *QuesTec* parks (Schilling has said umpires have admitted as much to him), Alderson noted that the ERA in parks with *QuesTec* was lower than in parks without it and that the number of pitches thrown are lower and the percentage of pitches called strikes are higher in *QuesTec* parks than non-*QuesTec* parks."

Basically Alderson is saying the exact *opposite* of what Schilling (and apparently some umpires) is saying. He (Alderson) is saying that in *QuesTec* parks *more* rather than *fewer* strikes are being called. Of course, since Alderson cites no particular study to back up his assertion, why should we believe him? Not to mention the fact that there are all kinds of reasons (the pitchers, the parks, the hitters, luck) why ERA, pitches thrown, walks, or strikeouts might be higher or lower in *QuesTec* parks than in other parks.

Last year, Nate Silver and Keith Woolner of Baseball Prospectus looked at various data in *QuesTec* versus non-*QuesTec* parks for 2002 and part of 2003 to see whether there were any discernible differences. Here is the link to that article:

http://espn.go.com/mlb/columns/bp/1563505.html

I'll let them (from the article) describe the methodology and some of the results of their study:

> Our technique was to look at all games from the start of the 2002 season until May 29 of this year that fell into one of two categories:
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> - Home games played by a *QuesTec* team against a non-*QuesTec* team
> - Road games played by a *QuesTec* team against a non-*QuesTec* team
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> In geek speak, the latter set of games forms an effective control group, since they involve essentially the same sets of teams, only in different ballparks. In fact, this method is very close to the standard approach used to calculate park factors -- which makes sense since, when it comes right down to it, differences based on *QuesTec* are really park effects in another guise.
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> Here's what the numbers looked like for the nearly 1,500 games in our sample:

	***QuesTec* Parks**	**Non-*QuesTec* Parks**
Strikeouts/Batters Faced	17.44%	17.63%
Walks/Batters Faced	8.84%	8.75%
Percentage of Strikes Called	62.46%	62.67%
Runs Scored (both teams)	9.29	9.27

Although it appears as if there is a slight inference that the strike zone is indeed smaller in *QuesTec* parks, there is a fatal flaw in their methodology. The *cause* of those differences is entirely unclear. By looking at home and road stats for *QuesTec* teams against only non-*QuesTec* opponents, they are controlling for the players' effect on the strike zone, but they are *not* controlling for any park affects (independent of *QuesTec* itself) which may be unique to the *QuesTec* parks as opposed to the non-*QuesTec* parks. In other words, the differences between *QuesTec* and non-*QuesTec* parks could just as easily be due to the parks themselves (e.g., the mound, the lighting, and the dimensions) than to the *QuesTec* system's influence on the umpires' strike zone.

When it comes right down to it, it is darn near impossible to separate the park effects from the *QuesTec* effect – unless we look at the same data *before* the introduction of the *QuesTec* system and then again *after* the *QuesTec* cameras were installed. That is exactly what I did, except that I was too lazy (actually I just didn't have the time as I am involved with 18 other projects as it is) to control for the pitchers and hitters by looking at home and road stats the way Silver and Woolner did. Instead, I looked at *home batting data only* in *QuesTec* and non-*QuesTec* parks to remove the influence of the home pitchers. We still have a bias in terms of the home batters (and a little bias in terms of the visiting pitchers), but there are two things that mitigate this bias. One, I use the ratio of balls to called strikes as a proxy for the strike zone, rather than *all* balls and strikes or walks and strikeouts *only* (I also looked at walks and strikeouts). (By the way, looking at ERA or runs scored in order to find subtle differences between *QuesTec* and non-*QuesTec* parks is like going after a fly with a Howitzer, if I can use a bad analogy.) Two, I only looked at the *ratio* between the data at *QuesTec* parks and the league as a whole, both before *QuesTec* and after *QuesTec*. The assumption is that many of the same hitters and pitchers were on the *QuesTec* teams both pre and post *QuesTec*.

Here is the data from the 10 *QuesTec* parks versus the league as a whole pre-*QuesTec*, in 2000 and 2001:

2000

	QuesTec parks	Entire League (NL&AL)	Ratio of *QuesTec* parks to League
Ball to called strike ratio	2.38	2.67	.891
Walks per PA	.0951	.0910	1.045
K's per PA	.1604	.1567	1.024

2001

	QuesTec parks	Entire League (NL&AL)	Ratio of *QuesTec* parks to League
Ball to called strike ratio	2.17	2.48	.875
Walks per PA	.0796	.0775	1.026
K's per PA	.1705	.1655	1.030

Here is the same data from the post-*QuesTec* years, 2003-2003:

2002

	QuesTec parks	Entire League (NL&AL)	Ratio of *QuesTec* parks to League
Ball to called strike ratio	2.23	2.22	1.003
Walks per PA	.0812	.0806	1.008
K's per PA	.1604	.1596	1.005

2003

	QuesTec parks	Entire League (NL&AL)	Ratio of *QuesTec* parks to League
Ball to called strike ratio	2.17	2.15	1.008
Walks per PA	.0786	.0783	1.004
K's per PA	.1528	.1561	.9780

There does appear to be a marked change in 2002 and 2003 in the ball to called strike ratios *and* the walks and strikeouts per PA for the *QuesTec* parks *as compared to the league as a whole.* Given that the *de facto* strike zone has not changed since 2001 (2001 is when the edict for the higher and larger zone was given to the umpires), the change in 2002 and 2003 appears to have taken place in the non-*QuesTec* parks and not the *QuesTec* parks, at least as far as the ball to called strike ratio is concerned. I suspect however that the change in ball to strike ratio in the league as a whole in 2002 and 2003 has nothing to do with *QuesTec* and everything to do with the fact that it took a year or so for many umpires to get used to the new strike zone.

In any case, there does appear to be a significant difference between the strike zones (as *proxied* by ball to called strike ratio) and the walks and strikeouts per PA in the *QuesTec* parks as compared to the non-*QuesTec* parks (or the league as a whole) once we control for park effects (by looking at the same parks pre and post *QuesTec*).

Maybe Schilling should get his fine (for smashing the camera) refunded…