

2006 Olympic Winter Games: Pairs Figure Skating

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February 13, 2006. Today, Chinese Pairs skaters won silver and bronze medals. In fact, Chinese teams placed 2nd, 3rd, and 4th behind the Russian gold medalists. The scores were close: Zhang and Zhang (silver) were less than 3 points ahead of Shen and Zhao (bronze), and Shen and Zhao were a mere 0.24 points ahead of Pang and Tong, who did not make the podium. These outcomes, however, were not simply based on the judges' scores. A computer made a random choice, and the results could have been different.

I recently discovered that this problem was anticipated by Katherine Godfrey in March, 2003, when the ISU was proposing changes to the scoring system; please see <http://skatefair.com>. My study is, to the best of my knowledge, the first to actually study the impact of the June 2004 rules using real data from major competitions.

The new scoring system relies on the random selection of panels of nine judges among the twelve who actually score the events. Thus, there are 220 possible panels that could score the Short Program, and 220 panels that could score the Free Skate. In total, 48,400 combinations of panels are possible, and these choices are made at random by a computer. In this particular competition, judges numbered 7, 8, and 10 were excluded from the Short Program, and judges 3, 6, and 12 were excluded from the Free Skate. The individual judges could study the published scores and determine whether their votes were counted, although the public will never know the identities or nationalities of these judges.

Each of these panels produces slightly different scores (and possibly different medal standings) in close competitions. For example, Pang and Tong would have been awarded the bronze medal if one of 5925 other panel combinations had been selected by the computer. Shen and Zhao would then have finished out of the medal standings (though a tie was possible in a small number of cases). On the other hand, Shen and Zhao might have won silver (with Zhang and Zhang earning bronze), if one of 1891 panel combinations had been chosen.

However, the best available information is contained in all twelve judges' scores. In this particular competition, the medalists would not have changed if all twelve sets of scores had been used. This is good news. But arguably, Pang and Tong were unlucky: a choice made by a computer left them off the podium. If the same competition were repeated, with the same performances by the skaters and scores from the judges, Pang and Tong might have won bronze.

The following graphs show the distributions of rankings for each of the top four finishers, based on 48,400 possible combinations of panels of judges. The bars indicate the proportion of the panels that would have resulted in a particular ranking of the skaters. The red bar indicates the actual outcome of the competition. The grey bars represent alternate outcomes of the competition under the current rules, the effect of the phantom figure skating judge: the computer.

I have a hypothesis that does not bode well for future competitions: if the nationalities of the three Chinese teams had been different, I believe there would have been even more uncertainty in the results. The often-suspected presence of nationalism in voting might have dampened the uncertainty in this particular event; changes in the judging panel could have impacted each team's scores in a similar manner, having a muted effect on their relative rankings.

Let me be clear: I'm not calling past or future results illegitimate. Rules are rules, and the rules have been and will be applied fairly to determine the winners. I simply think this one particular aspect of the rules is undesirable. There may be no perfect system, but we should work to find a good one.

