

Math 355—Bicycle tracks

In *The Adventure of the Priory School* Holmes and Watson come across some tracks made by a bicycle:

“This track, as you perceive, was made by a rider who was going from the direction of the school.”

“Or towards it?”

“No, no, my dear Watson. The more deeply sunk impression is, of course, the hind wheel, upon which the weight rests. You perceive several places where it has passed across and obliterated the more shallow mark of the front one. It was undoubtedly heading away from the school.”

For consideration

1. Discuss this passage. What do you think of Holmes’s argument?
2. Try to devise a way of telling which way a bike travelled just by looking at the tracks it made. Does your method work only if the bike has passed through wet concrete? A lawn of tall grass? A dry sidewalk between two puddles? Will it work for tracks on a 15-foot long piece of wrapping paper made by applying paint to the tires in such a way that there’s no perceptible fading in one direction?

You might find it helpful to attempt a sketch a set of tracks. What are the important parts of the relationship between the front and back tires?

3. Try to determine the bike’s direction for real tracks.