Linear spaghetti

Your recent letter on Feynman's joke (14 January) reminded us of the passage in the book *No Ordinary Genius* (ed. Christopher Sykes; 1994) in which Danny Hills describes his and Feynman's experiments with spaghetti:

"If you get a spaghetti stick and you break it, it turns out that instead of breaking in half, it almost always breaks into three pieces. Why is this true—why does it break into three pieces? ... Well, we ended up at the end of a couple of hours with broken spaghetti all over the kitchen and with no real good theory about why spaghetti breaks in three."

We can only assume that Feynman was not really trying, since when we investigated this profound and fundamental problem in our own kitchen laboratory, not only did we quickly establish the underlying mechanism, but we even went on to formulate the following general rule for linear spaghetti structures:- If a spaghetti stick is uniformly bent until it fractures and ejects a third piece, then the third piece is always ejected outwards from the convex side.

When the spaghetti fractures for the first time the two remaining pieces then spring outwards, and providing there is a sufficiently weak potential fracture site on the opposite side a second fracture occurs, resulting in a third piece being ejected away from the initially convex side.

The third piece cannot be ejected away from the concave side since this would require a second (and lower energy) fracture on the same side as the first fracture, in which case the spaghetti would have fractured at this site first.

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`www.nickalls.org/dick/papers/spaghetti/spaghetti_NS_1995.pdf`