knack for taking familiar problems and considering them from an unusual angle. For instance, Adam gives a typical illustration of the Mean Value Theorem by considering a jogger running at an average speed of 8 miles per hour, and observing that there must therefore be some point in time at which she is running at a speed of exactly 8 miles per hour. But then he observes that this means the jogger covers a mile in an average of 7.5 minutes, and wonders whether this implies that there is a continuous mile that the jogger must run in exactly 7.5 minutes. The resulting mathematics are quite absorbing.

Indeed, it is a hallmark of *X and the City* that Adam writes with an easy, comfortable style. He frequently punctuates potentially dry passages with unexpected humour, and the result is that even models which might, at first blush, hold little appeal for the reader are well worth perusing. Adam does not dwell too long upon the gory details of his mathematics — and the appendices offer some additional background or analysis which would bloat the main text — but he typically has a good sense of how much to retain to preserve readability. There are exceptions to this, such that less mathematically-sophisticated readers may occasionally find themselves struggling to keep up. There is also a not-insignificant number of typographical errors in both text and mathematics that may pose a point of confusion for some. But, by and large, Adam has succeeded in crafting a text which offers something for a very wide audience. Bright high school students through to veteran mathematicians will find much in *X and the City* that is both fascinating and instructive.

Unsolved Crux Problem

Over the years, a number of the proposed problems have gone unsolved. Below is one of these unsolved problems. Note that the solution to part (a) has been published [1996 : 183-184] but (b) remains open.

2025. [1995 : 158; 1996 : 183-184] *Proposed by Federico Ardila, student, MIT, Cambridge, Massachusetts.*

(a) An equilateral triangle ABC is drawn on a sheet of paper. Prove that you can repeatedly fold the paper along the lines containing the sides of the triangle, so that the entire sheet of paper has been folded into a wad with the original triangle as its boundary. More precisely, let f_a be the function from the plane of the sheet of paper to itself defined by

$$f_a(x) = \begin{cases} x \text{ if } x \text{ is on the same side of } BC \text{ as } A, \\ \text{the reflection of } x \text{ about line } BC \text{ otherwise.} \end{cases}$$

(f_a describes the result of folding the paper along line BC), and analogously define f_b and f_c. Prove that there is a finite sequence $f_{i_1}, f_{i_2}, \ldots, f_{i_n}$, with each $f_{i_j} = f_a, f_b$ or f_c, such that $f_{i_n}(\ldots(f_{i_2}(f_{i_1}(x)))\ldots)$ lies in or on the triangle for every point x on the paper.

(b)$\star$ Is the result true for arbitrary triangles ABC?