Report on 3765: Pythagoras sheared, Euclid dissected

This is an interesting survey article centred on certain types of dynamical proofs of Pythagoras' Theorem and its generalisations. The mathematical details are correct and explained at a level appropriate to the *Gazette*. The style is unusually expansive for the *Gazette* with many paragraphs bristling with overlaid historical details and references. Some readers might find this approach rather daunting and it may, perhaps, detract from their appreciation of the main thrust of what is a long article by *Gazette* standards. I suggest two possible remedies to this, if it is judged to be a problem:

- The most drastic suggestion would be to prune the article down to §1 and §4 so that it squarely centres on Cundy and Rollett's apparent oversight in their treatment of Figure 1. The problem with this is that it would cut out some interesting points of contrast and comparison with other approaches to *Elements I.47* and its generalisations.

- A more satisfactory idea would be to add a short new paragraph at the end of §1 outlining the plan of the article with the aim of helping readers navigate their way through. This would give the authors a chance to explain the apparent detour through §2, §3 before they return to Cundy and Rollett's shearing dissection in §4: I certainly read the last paragraph of §1 as indicating that the rest of the paper would simply clarify and amplify Cundy and Rollett's throwaway observation.

Finally, two short observations: at the top of page 13, I think it would be appropriate for the authors to quote the results of the suggested Pell analysis of the equation $x^2 = (n^2+2n+2)a^2 - 2(n+1)a + 1$ (leaving readers to insert the details). And, apropos of Pappus' extension of Pythagoras, I wonder whether it would help readers if it were drawn as (v) (with a caption stating the theorem) in Figure 13. It is also worthy of note in connection with Artmann's quote on page 16 that one of the elementary proofs of the Erdös-Mordell inequality uses the Pappus extension: see (for example) *Geometric inequalities*, by N.D. Kazarinoff (Anneli Lax New Mathematical Library, 1961, MAA) pp84 – 87.

Overall though, although the "historical survey style" of this article is an unusual one for the *Gazette*, I think there is sufficient interest and novelty in the story presented to warrant publication in the *Gazette*.