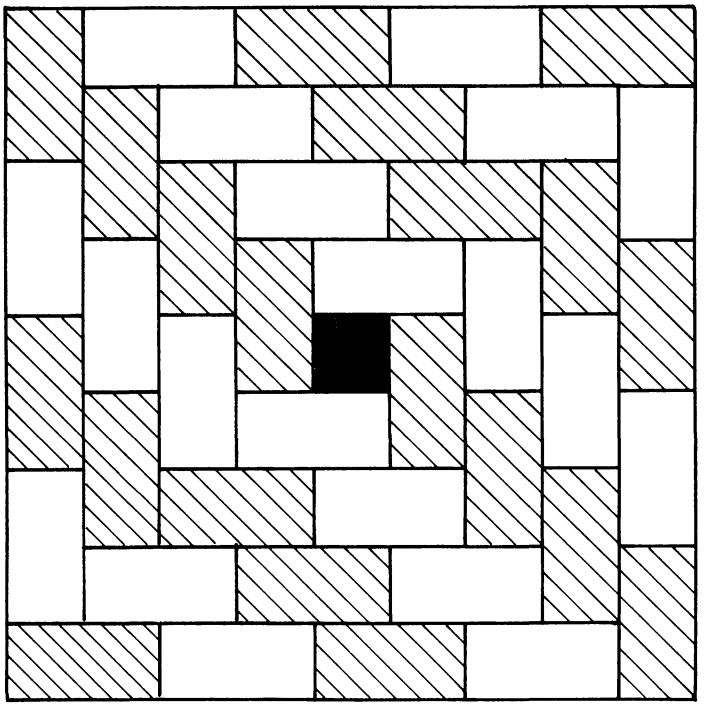
In view of the availability of microcomputers* with powerful graphics capabilities, and the increasing number of students familiar with such hardware, it becomes feasible to make class assignments involving use of Pólya vector field pictures in an introductory complex analysis course. Experience with such a geometric model, especially in the study of contour integration, can help eliminate from complex analysis the undesirable connotations of the term "imaginary."

References

[1] Ruel V. Churchill and James W. Brown, Complex Variables and Applications, 4th ed., McGraw-Hill, 1984.
[2] George Pólya and Gordon Latta, Complex Variables, Wiley, 1974.
[3] Bart Braden, Picturing functions of a complex variable, College Math. J., 16 (1985) 63–72.

*An advantage of mainframe computers in this connection is their access to mathematical libraries for evaluating functions of a complex variable. A simple program (in FORTRAN 77, for a CalComp plotter) to sketch the Pólya vector field for an arbitrary function $f(z)$ along any specified contour, is available from the author upon request.

Proof without Words:
1 Domino = 2 Squares: Concentric Squares



$$1 + 4 \cdot 2 + 8 \cdot 2 + 12 \cdot 2 + 16 \cdot 2 = 9^2$$

$$1 + 2 \sum_{k=1}^{n} 4k = (2n+1)^2.$$

—SHIRLEY A. WAKIN
University of New Haven