
Zbl 1151.51007**Baloglou, George****Isometrica. A geometrical introduction to planar crystallographic groups.**
(English)

Oswego: State University of New York. xvi, 434 p., electronic only. (2007). ISBN 978-0-9792076-0-0

<http://www.emis.de/monographs/Isometrica/isopage.html>

“Isometrica” gives a detailed description of a “General education” course based on symmetries. Baloglou draws on several books, among them D. Crowe’s “Symmetry analysis of repeated patterns” and D. Washburn’s “Symmetry of culture”. Baloglou’s book has no bibliography. The index is part of the table of contents. In the introduction, the author comments on the nature of teaching a course to students who do not specialize in mathematics.

Baloglou was teaching the course, “gradually abandoning [his] passion for rigor and computation in favor of intuition and visuality.” Further, “It is fair to say that a determined reader can read the entire book relying only on some high school mathematics.”

In Chapter 1, the author describes translations, reflections, rotations, and glide reflections leisurely on 42 pages.

Chapter 2 is devoted to frieze patterns or border patterns. Triangles, parallelograms, and rhombuses are introduced next in Chapter 3, so are cyclic groups and dihedral groups.

The contents of Chapter 4 are wallpaper patterns. Two-colored border patterns and two-colored wallpaper patterns are treated in Chapters 5 and 6, respectively.

The narrative concludes with the Chapter “Why precisely seventeen types?”

The book contains many examples; it refers to the work of Escher and to the art found in the Alhambra, and to many other pleasing patterns.

Baloglou demonstrates how he masters the challenging problem of giving a “General education course devoted entirely to symmetry”. He succeeds presenting the material in a smooth conversational style, avoiding technical discussions and definitions. Each pattern is discussed extensively so that its characteristics become familiar to the student. After comparing many patterns, stressing similarities and differences, the students will have learned to find the place of every given pattern in the lists at the ends of the chapters.

The last paragraph of the introduction is retrospective. Baloglou writes: “Finally, Isometrica owes a lot to my father . . . ; he certainly influenced me to study mathematics. My whole symmetry project may be seen as a Sisyphean effort to annul his lovely – and, less obviously, loving – verdict on it”: “Son, this is not Mathematics!”

Erich W. Ellers (Toronto)

Keywords : isometries; border patterns; frieze patterns; wallpaper patterns; compositions of isometries; classification of wallpaper patterns

Classification :

*51F15 Reflection groups and geometries

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20H15 Other geometric groups, including crystallographic groups
51-01 Textbooks (geometry)