Looking at Numbers

Drawings by Tom Johnson
Text by Tom Johnson, composer
and Franck Jedrzejewski, mathematician

Tom Johnson
Franck Jedrzejewski

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Birkhäuser
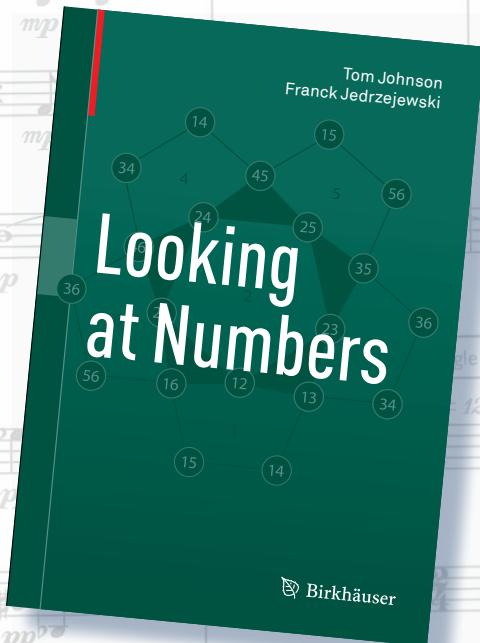
- ▸ Mathematics and music from a platonic point of view
- ▸ Numbers as Pythagoras might have seen them
- ▸ Numbers producing images and music too
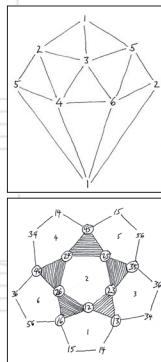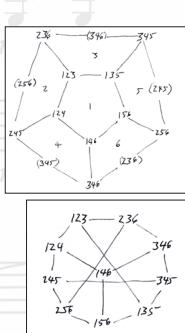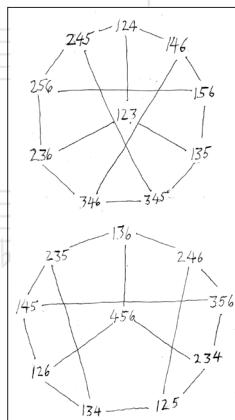
Numbers are part of nature. Observing them, looking at them, thinking about them, is a way of understanding our relationship to nature. But when we do so in a technical, professional way, we tend to overlook their basic appearances, the things we can understand by simply "looking at numbers."

Tom Johnson is a composer who uses logic and mathematical models, such as combinatorics of numbers, in his music. The patterns he finds while "looking at numbers" can also be explored in drawings. This book focuses on the drawings, the beauty and their mathematical meaning. The accompanying comments were written in collaboration with the mathematician Franck Jedrzejewski.

About the authors

Tom Johnson (born 1939) is considered a minimalist, since he works with simple forms, limited scales, and generally reduced materials, but he proceeds in a more logical way than most minimalists, often using formulas, permutations, predictable sequences and various mathematical models. He is particularly well known for his operas. *The Four Note Opera* (1972) has been presented in 11 different languages since its premier 40 years ago. *Riemannoper* has been staged more than 30 times in German-speaking countries since its premier in Bremen in 1988. Often played non-operatic works include *Bedtime Stories*, *Rational Melodies*, *Music and Questions*, *Counting Duets*, *Tango*, *Narayana's Cows*, and *Failing*: a very difficult piece for solo string bass. His longest work is the *Bonhoeffer Oratorio* for four soloists, two choruses and orchestra, presented in Maastricht (1996), Berlin (1998) and New York (2000). The book *Conversations avec Tom Johnson*, in collaboration with Bernard Girard, was published in 2011.

Franck Jedrzejewski is a researcher in mathematical physics at the CEA Saclay and has also a PhD in philosophy and musicology. He teaches at the INSTN as well as in the University of Paris Sud and Versailles-Saint-Quentin.

From the contents

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