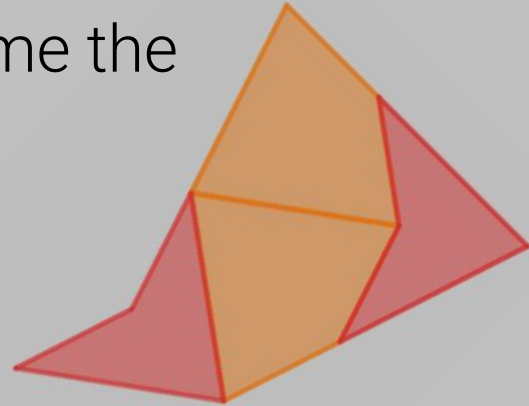


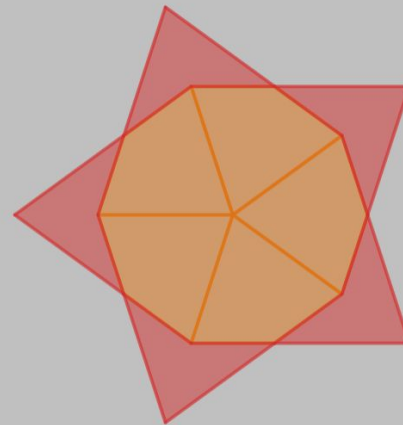
When Penrose Tiling Meets the Darb-i Imam:

Using Ethnomathematics to Reframe the
Discussion



Could Centuries-Old Islamic Patterns be the Key to Hypersonic Flight?

2023 Blog Article by Lin Kayser



Decagonal and Quasi-Crystalline Tilings in Medieval Islamic Architecture

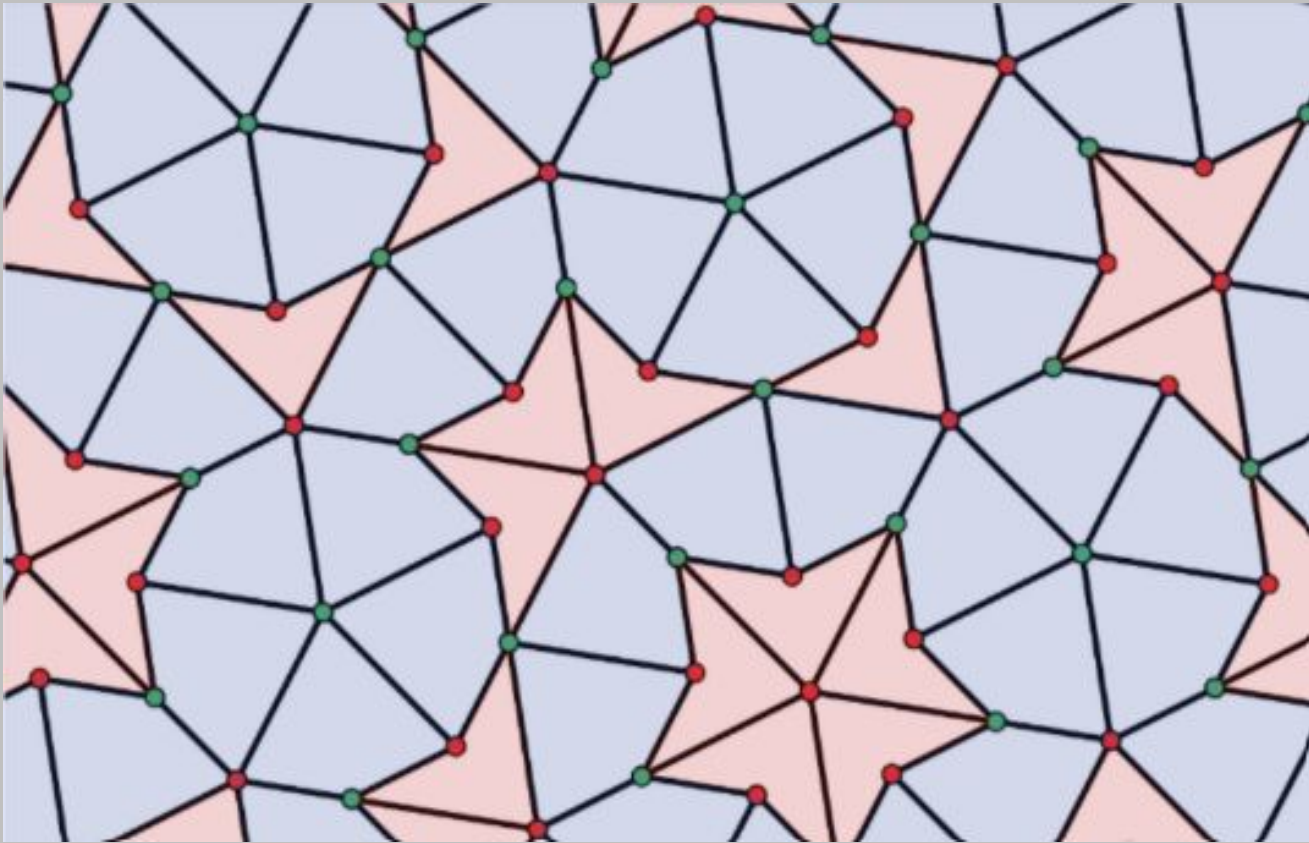
2007 Journal Article by Peter J. Lu and
Paul J. Steinhardt

In 2007, Peter J. Lu and Paul J. Steinhardt published an article showing a nearly perfect mapping from an important mathematical tiling called Penrose tiling, to a tiling in the Darb-i Imam, an imamzadeh in Isfahan, Iran.

Alexandre Pais

- An assumption that any practice which appears remotely mathematical is **our idea of mathematics**. [5]
- By bringing cultural practices into our system of mathematics, we strip them of everything that makes them unique. [6]





Penrose Tiling. Photo by Adams

Darb-i Imam, An Imamzadeh in Isfahan, Iran (15th to 18th century)

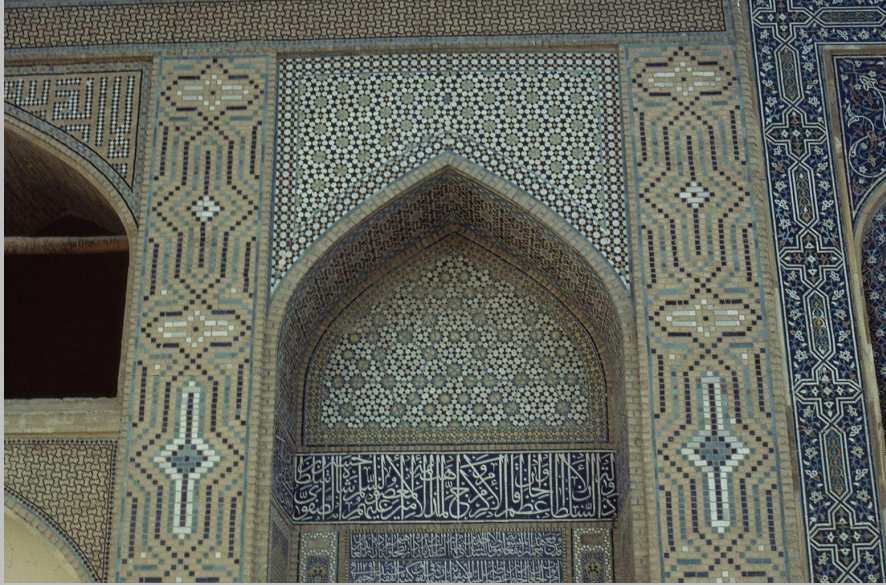


Exterior of the Darb-i Imam. Photo by Bloom and Blair

An **imam** is a leader or a head of a community. Specifically for Shi'ites an **imam** is a descendant of the prophet Muhammad. [3]

Imamzadeh is used to refer to both to a descendant of Shi'ite imam and to "shrine where such a descendant is buried". [3]

Darb-i Imam, An Imamzadeh in Isfahan, Iran (15th to 18th century)



Left Portal of the Darb-i Imam. Photo by Bloom and Blair

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“This arbitrary and unnecessary choice means that, strictly speaking, the tiling is not self-similar [a property of Penrose tiles]”

Lu and Steinhardt

“They probably had an intuitive understanding of the crystallographic restriction [Penrose tiling]”

Peter Cromwell

There is a continual assumption that there is no other option than our idea of mathematics.

These studies of the Darb-i Imam strip it from all cultural context but its possible connection to Penrose tilings. when we assume our mathematics and when we do not.

We must be more careful about when we assume our mathematics and when we do not.

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