Pavages

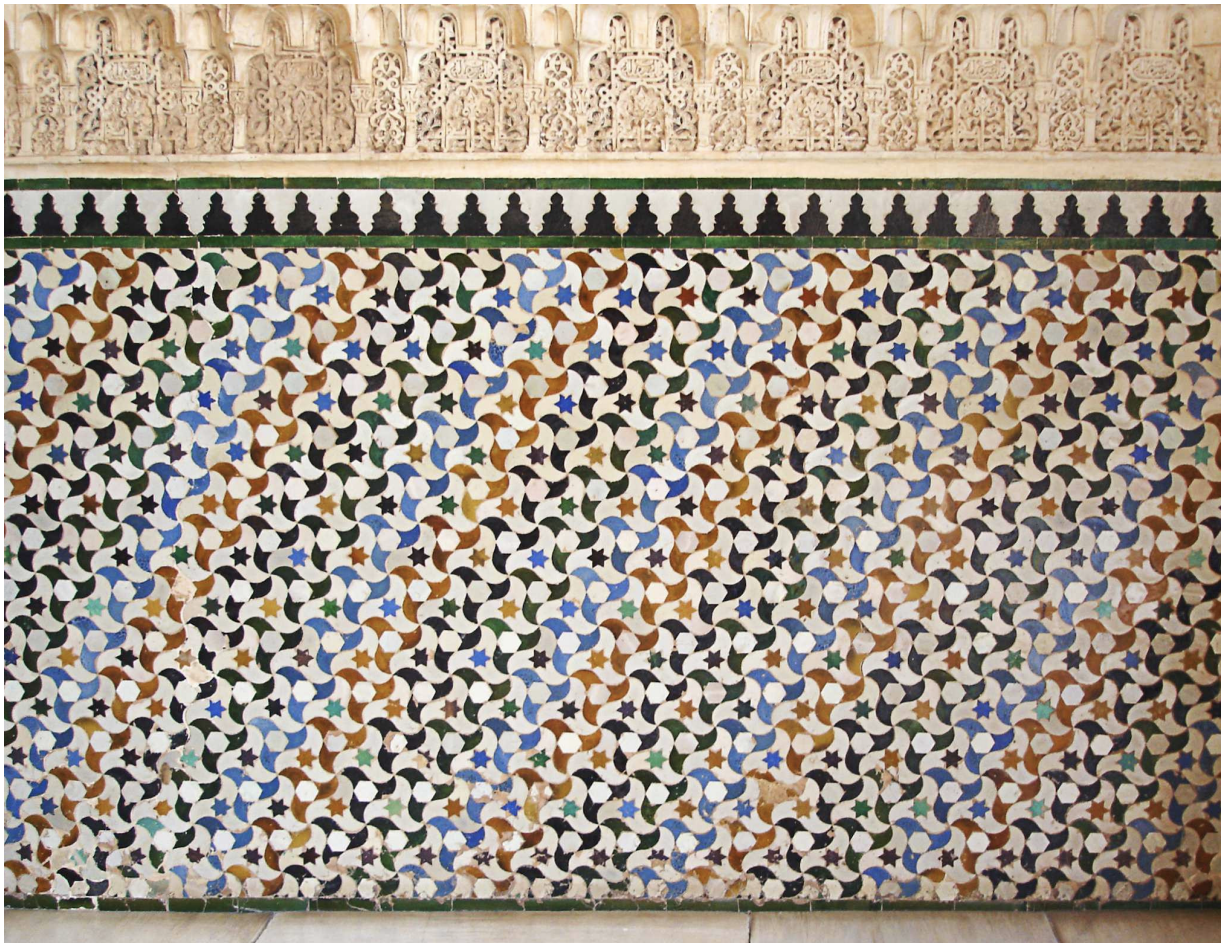
Xavier Buff

Institut de Mathématiques de Toulouse

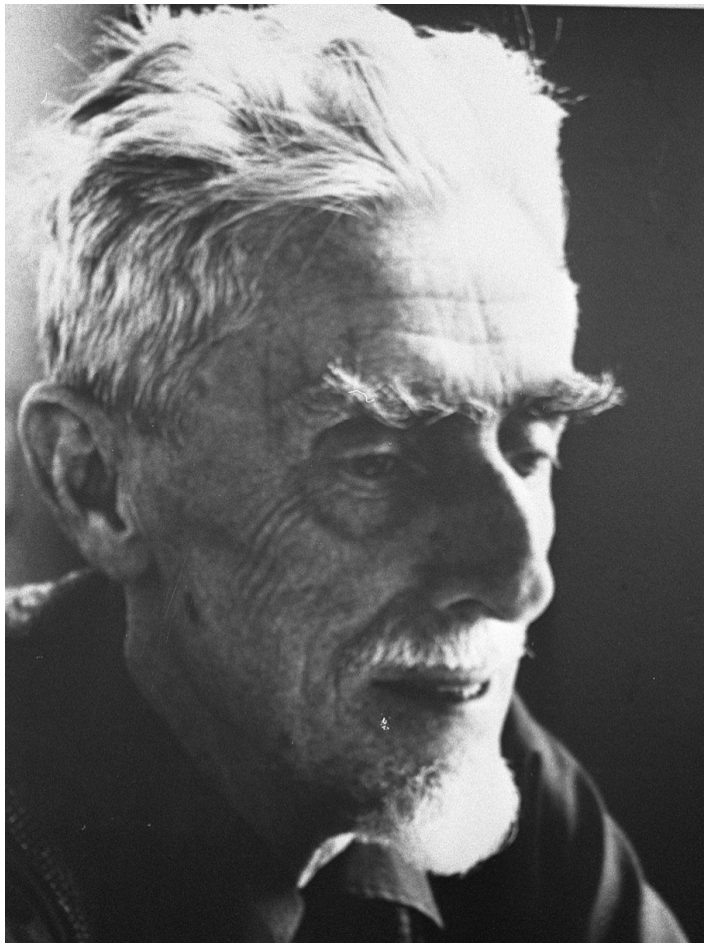
L'Alhambra de Grenade

L'Alhambra de Grenade

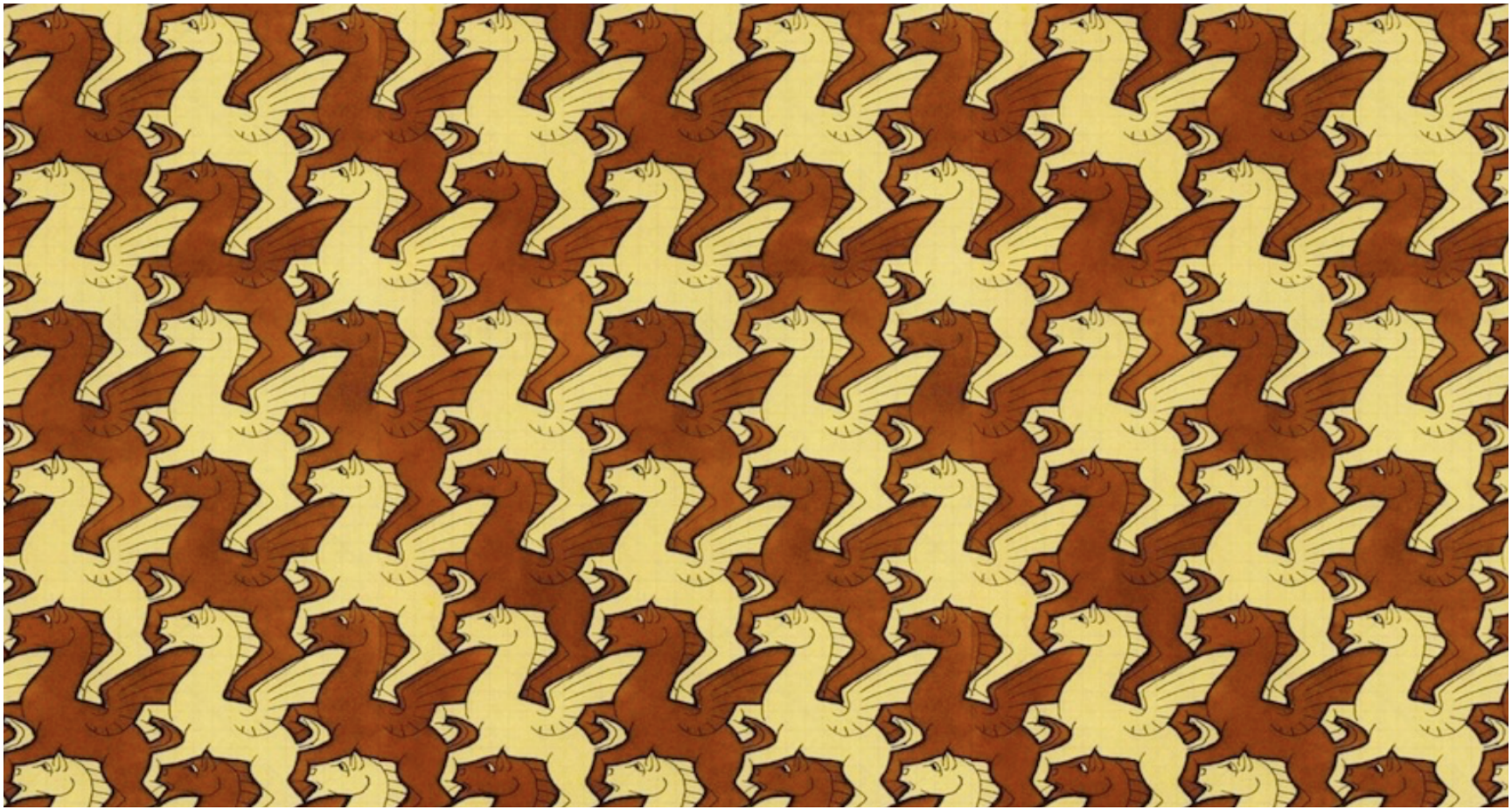
L'Alhambra de Grenade



Maurits Cornelis Escher



Pegasus de M.C. Escher



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Lézards de M.C. Escher

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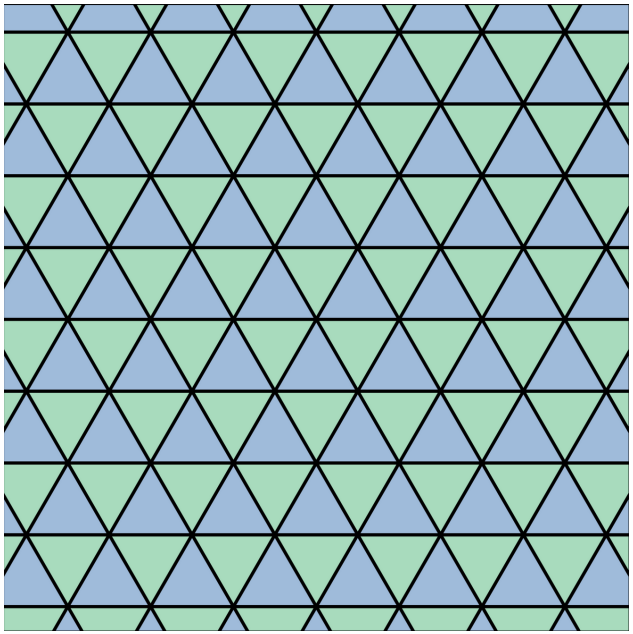
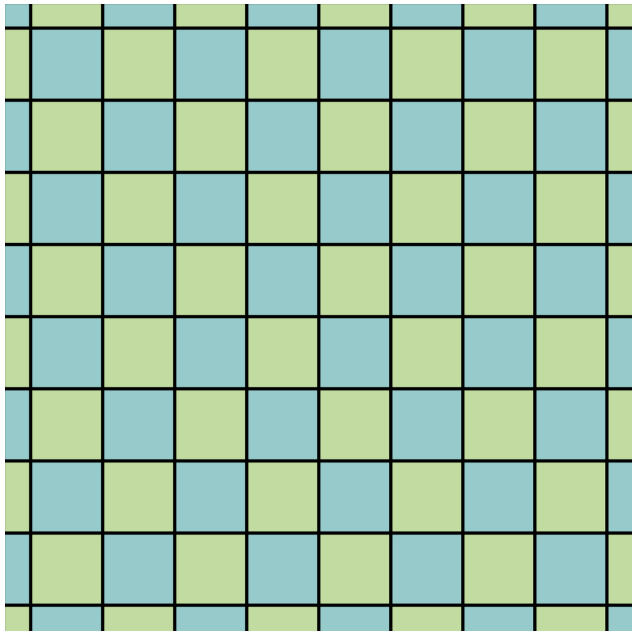
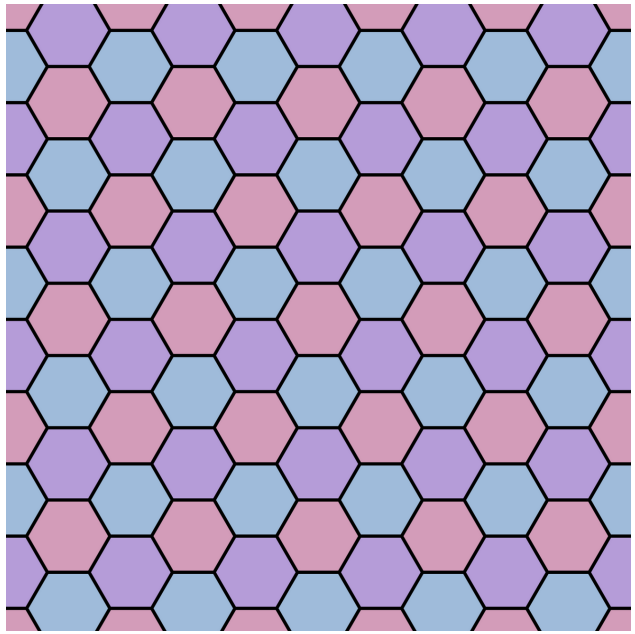
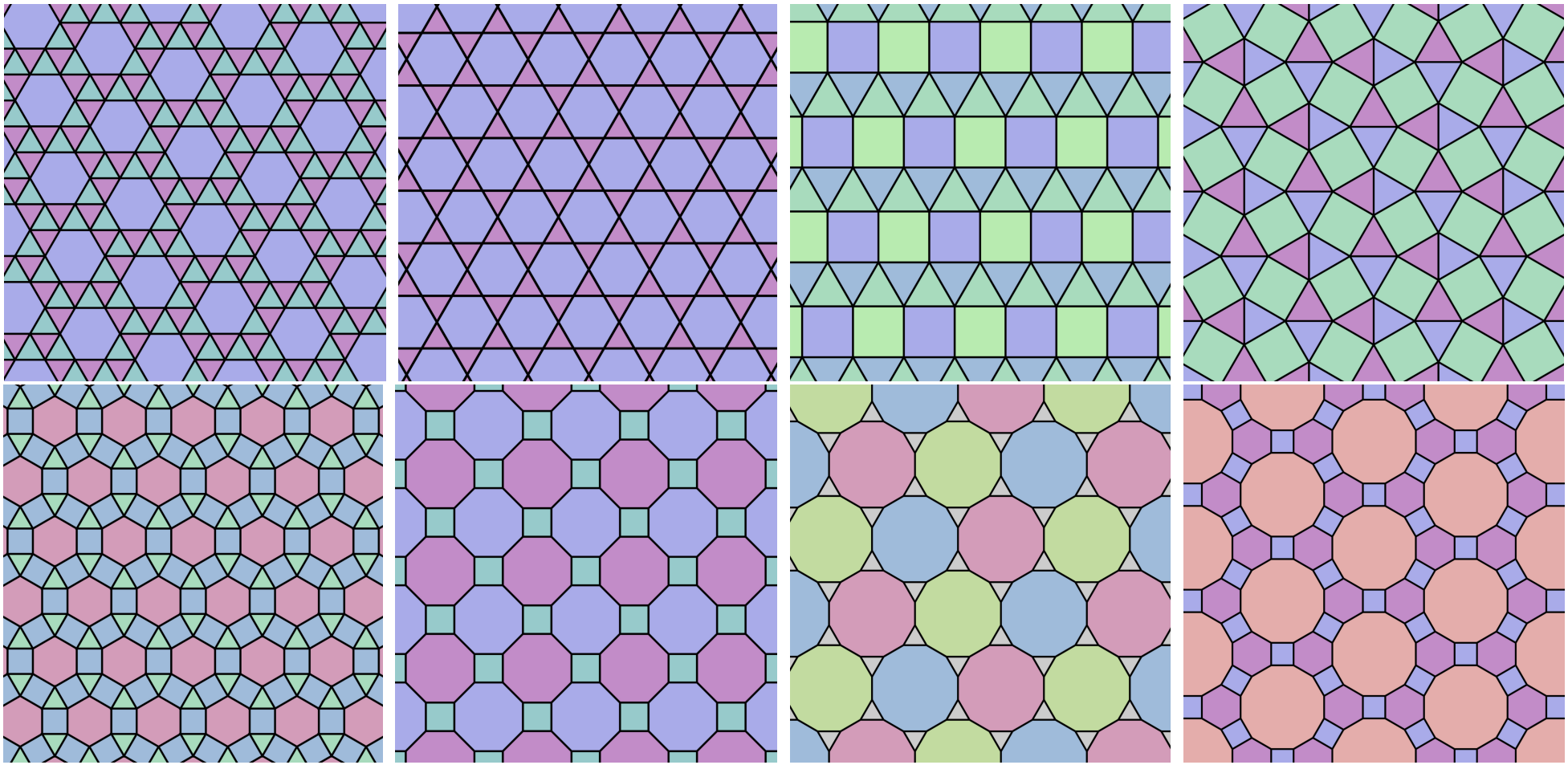
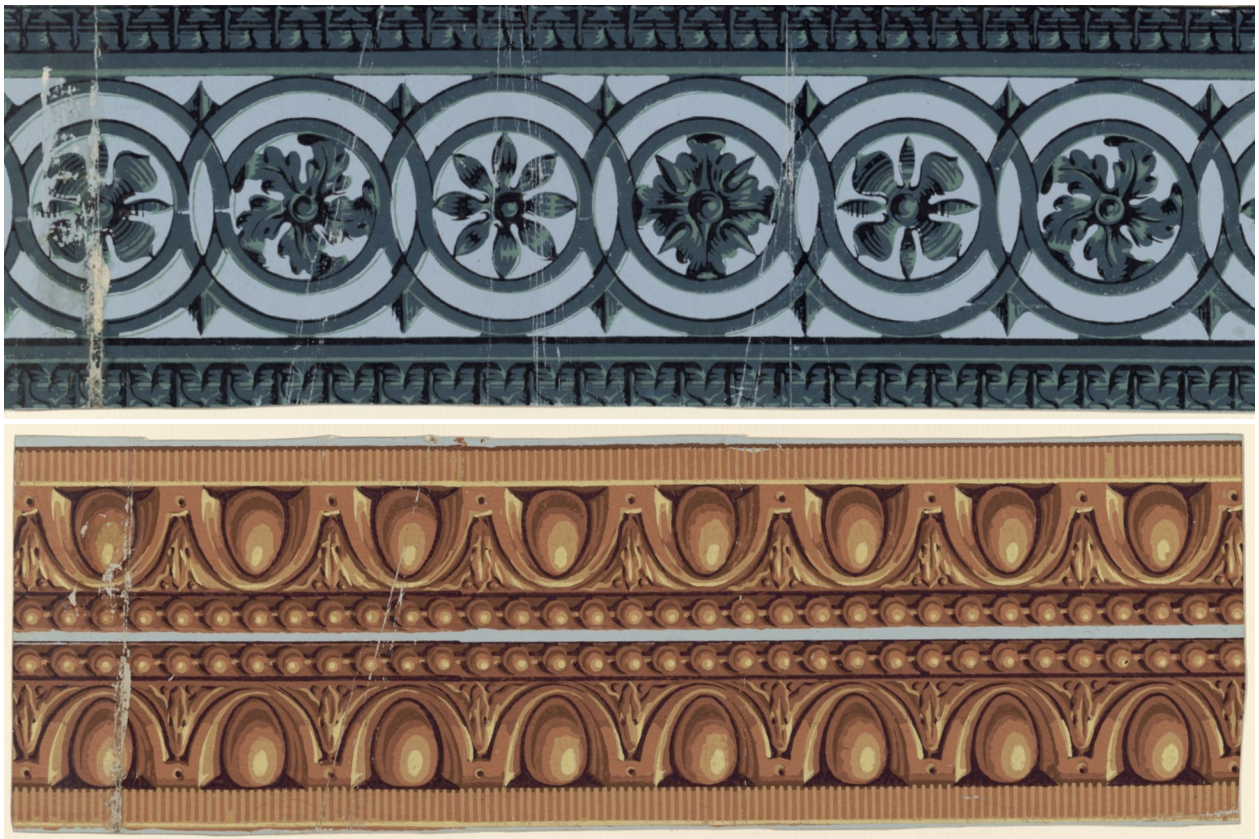
3 pavages réguliers

8 pavages semi-réguliers



Des frises sur papier peint



Source : gallica.bnf.fr/BnF

Une frise japonnaise en bois

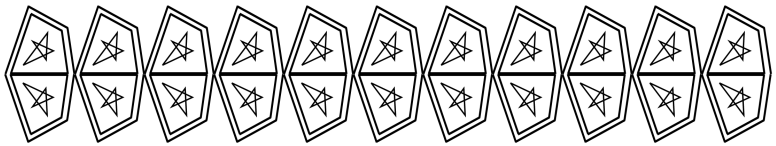
©Kasasagi Fine Arts

7 groupes de frises

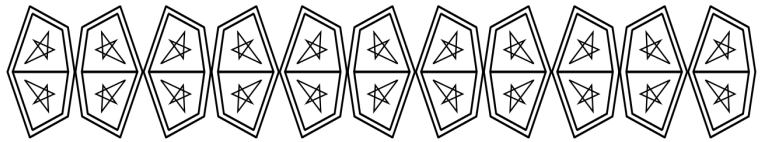
T

V

R



H



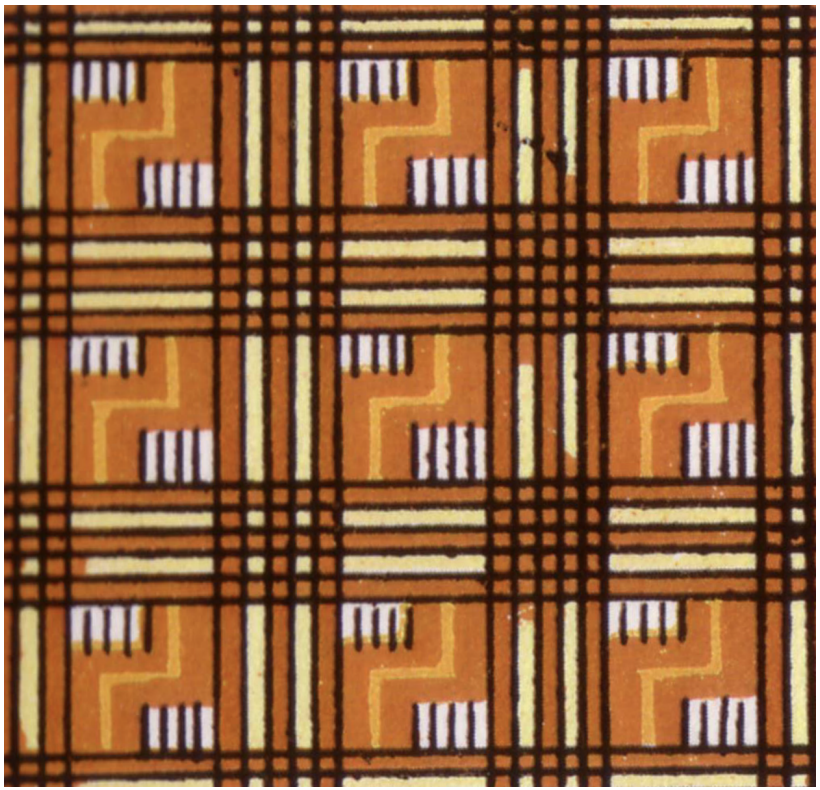
VHR

G

VGR

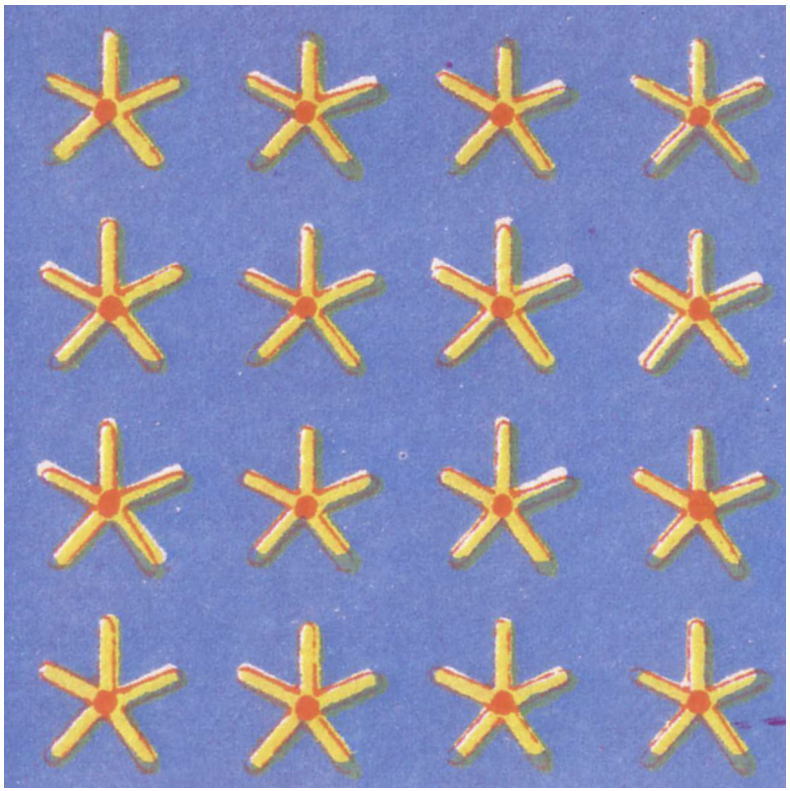
17 groupes de papier peint

1. $T \times 2$
Décoration murale médiévale
Source : wikipédia



2. $R_{1/2} \times 4$
Tissu, îles d'Hawaï

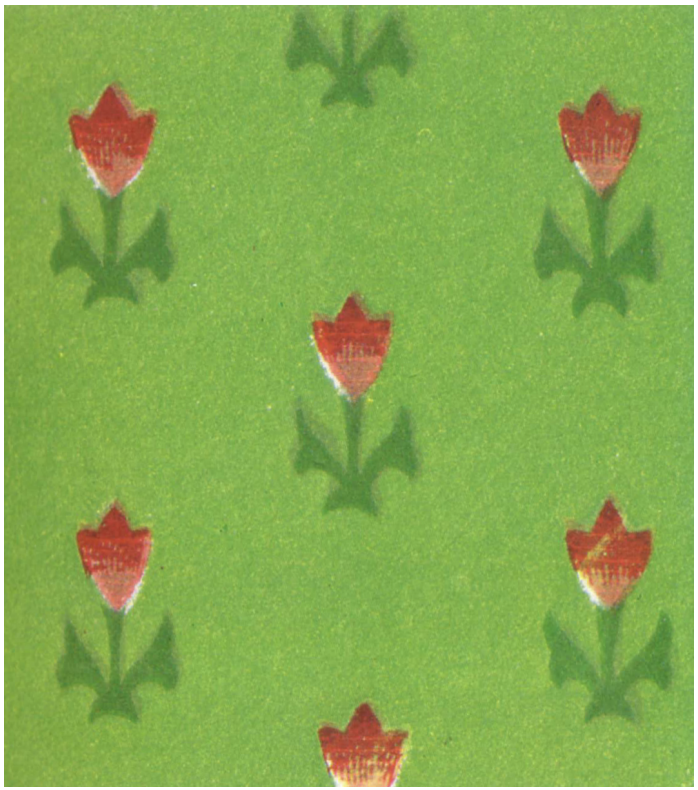
17 groupes de papier peint



3. *S*
Tombe égyptienne à Thèbes
Source : wikipédia

4. *G*
Tapis egyptien

17 groupes de papier peint

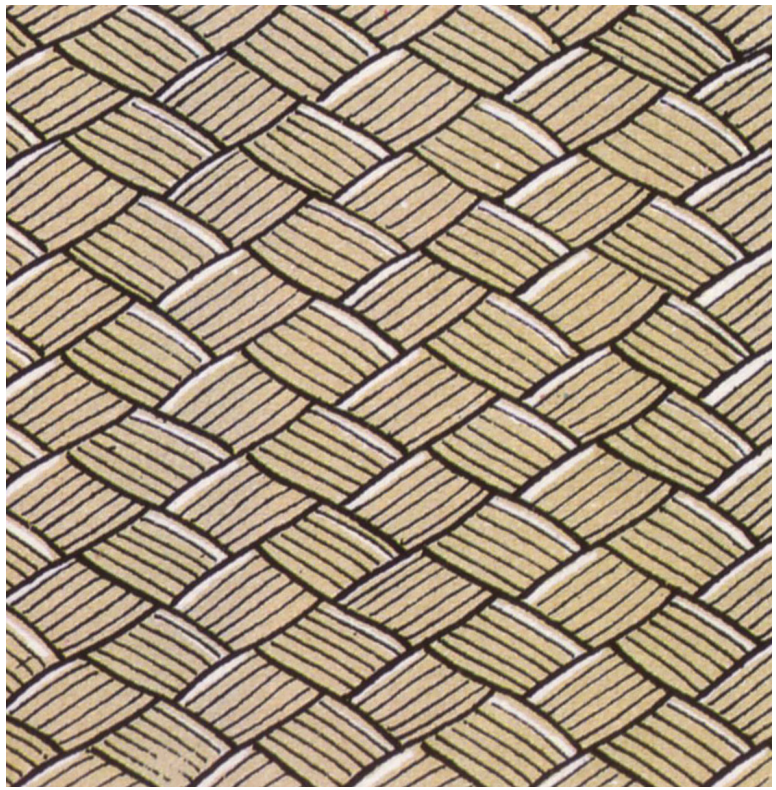


5. $S \parallel G$
Tapisserie perse
Source : wikipédia

6. $S_1 \perp S_2$ et $R_{1/2} \times 4$
Sarcophage de momie

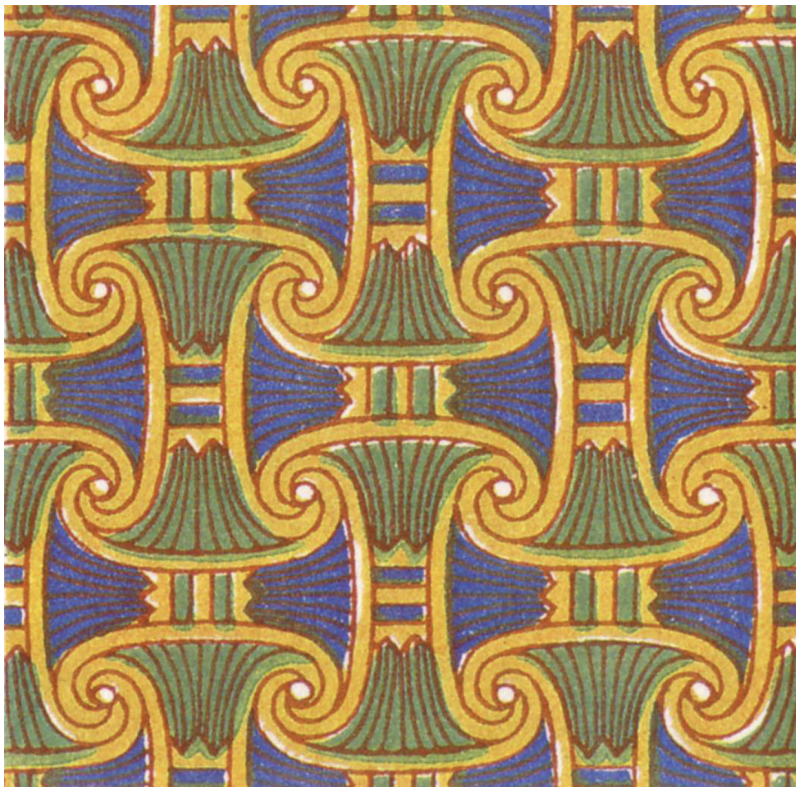
17 groupes de papier peint

7. $S \perp G$ et $R_{1/2} \times 2$
Plafond d'une tombe égyptienne
Source : wikipédia

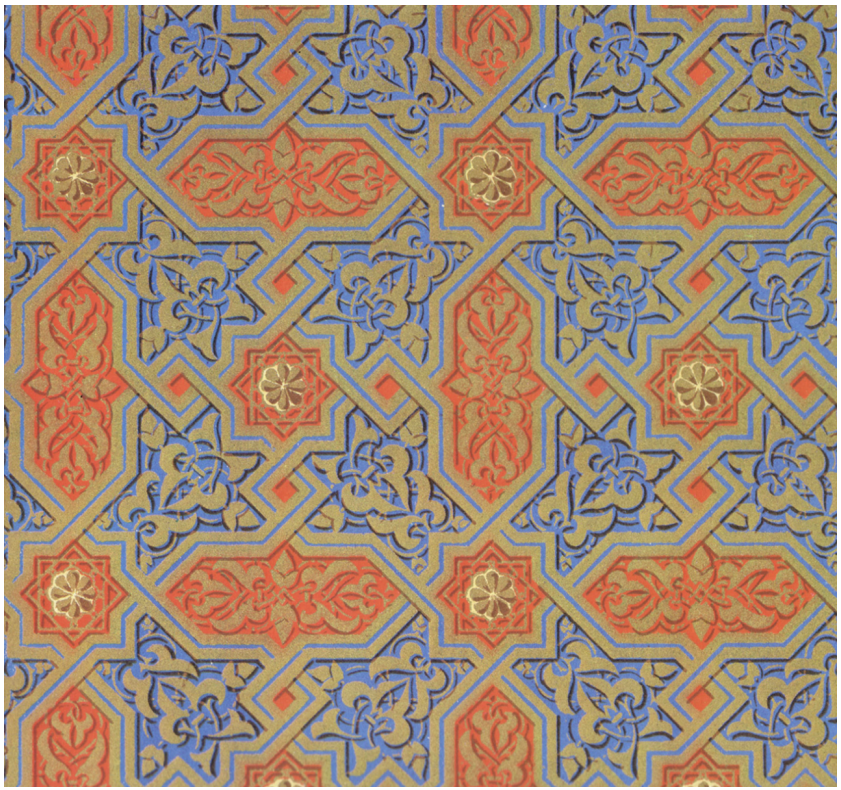


8. $G_1 \perp G_2$ et $R_{1/2} \times 2$
Bol en bronze, Assyrie

17 groupes de papier peint



9. $S_1 \perp S_2$ et $R_{1/2} \times 3$
Plafond d'une tombe égyptienne
Source : wikipédia



10. $R_{1/4} \times 2$ et $R_{1/2}$
Alhambra

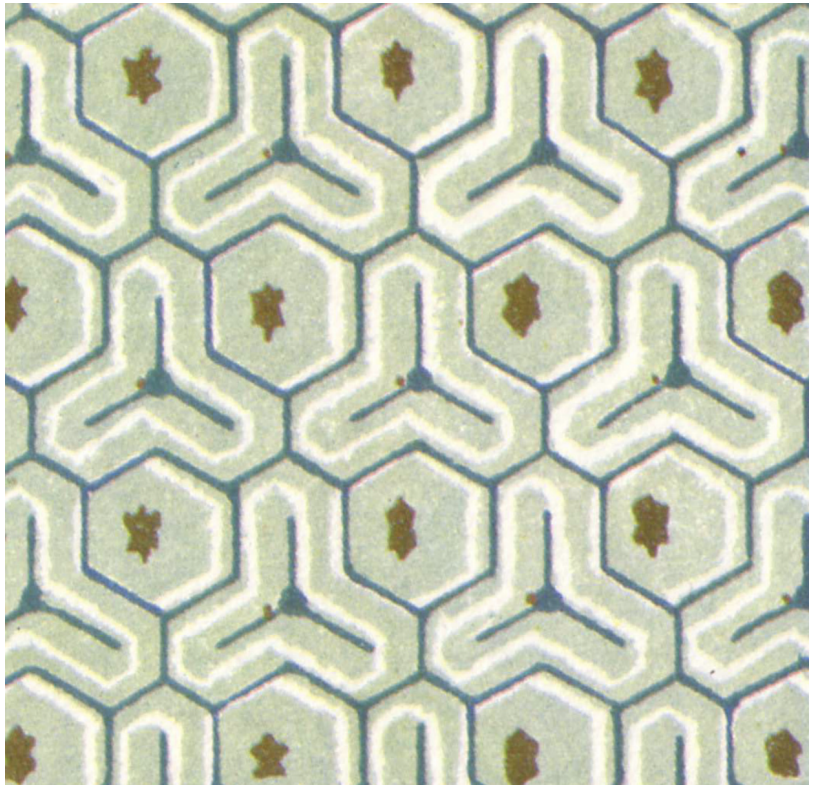
17 groupes de papier peint

11. $S \times 4$, $R_{1/4} \times 2$ et $R_{1/2}$
Motif de la cathédrale de Bourges
Source : wikipédia

12. $S \times 2$, $R_{1/4}$ et $R_{1/2}$
Linoleum de salle de bains

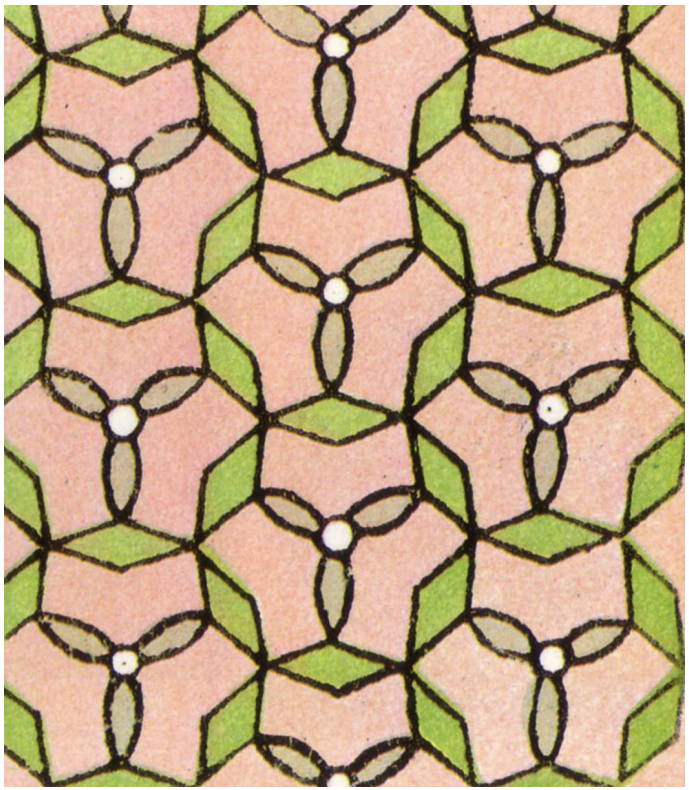
17 groupes de papier peint

13. $R_{1/3} \times 3$
Alhambra
Source : wikipédia



14. $S \times 3$ et $R_{1/3} \times 3$
Décoration perse

17 groupes de papier peint



15. $R_{1/3} \times 2$ et $S \times 3$
Glacis perse
Source : wikipédia

16. $R_{1/2}$, $R_{1/3}$ et $R_{1/6}$
Décoration perse

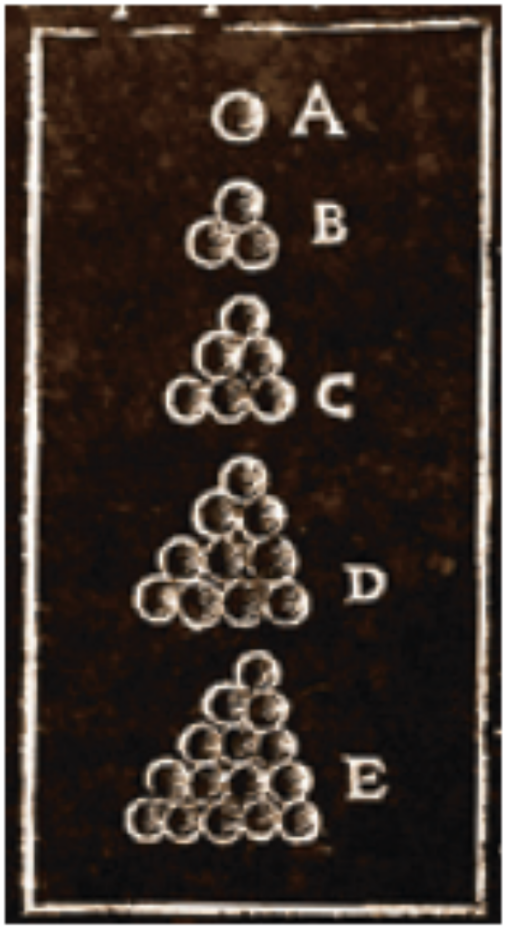
17 groupes de papier peint

17. S, $R_{1/2}$, $R_{1/3}$ et $R_{1/6}$
Marbre byzantin, Rome, Italie

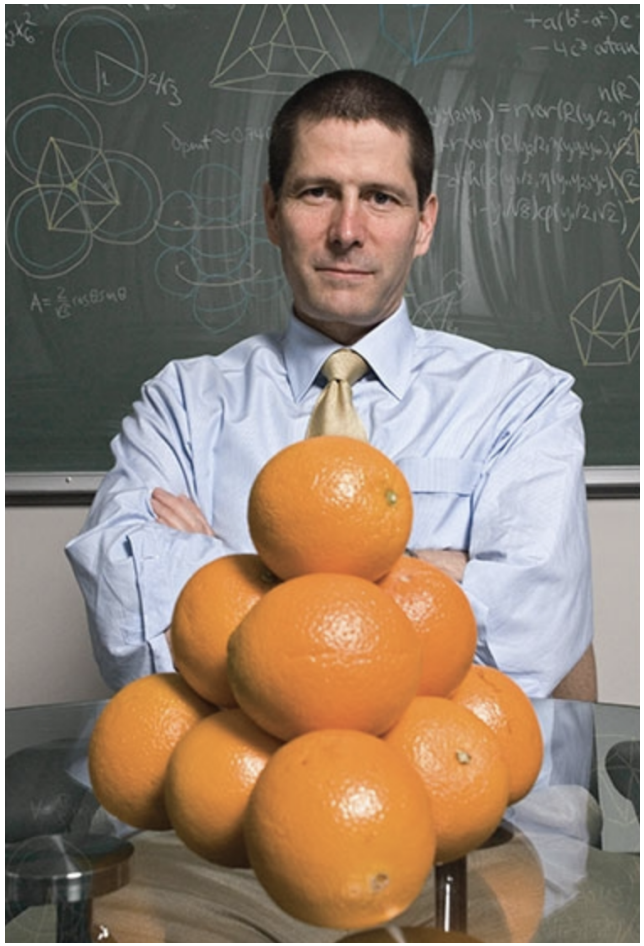
Source : wikipédia

Ruche

Conjecture de Kepler (1611)

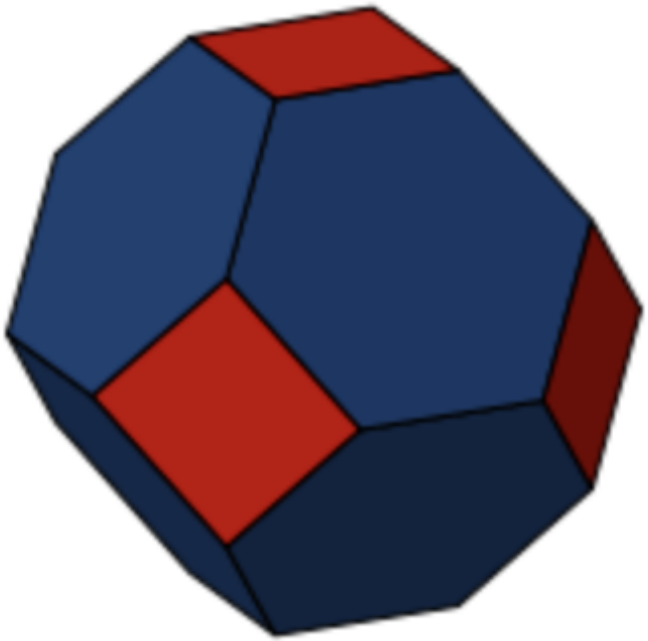


Thomas Hales résout la conjecture en 1998



Maryna Viazovska reçoit la médaille Fields en 2022

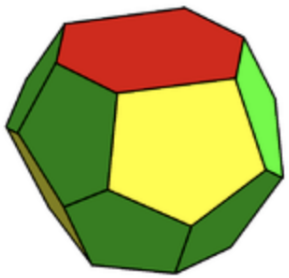
Structure de Kelvin (1887)

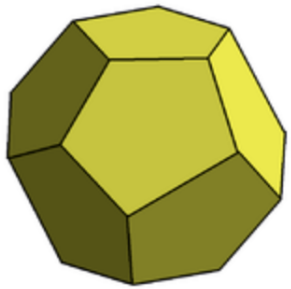


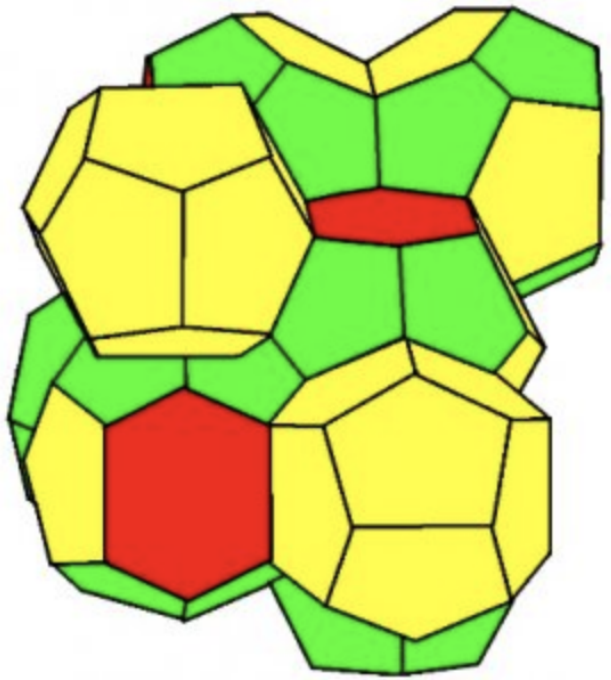
Polyèdre de Kelvin

Empilement de Kelvin

Structure de Weaire et Phelan (1994)



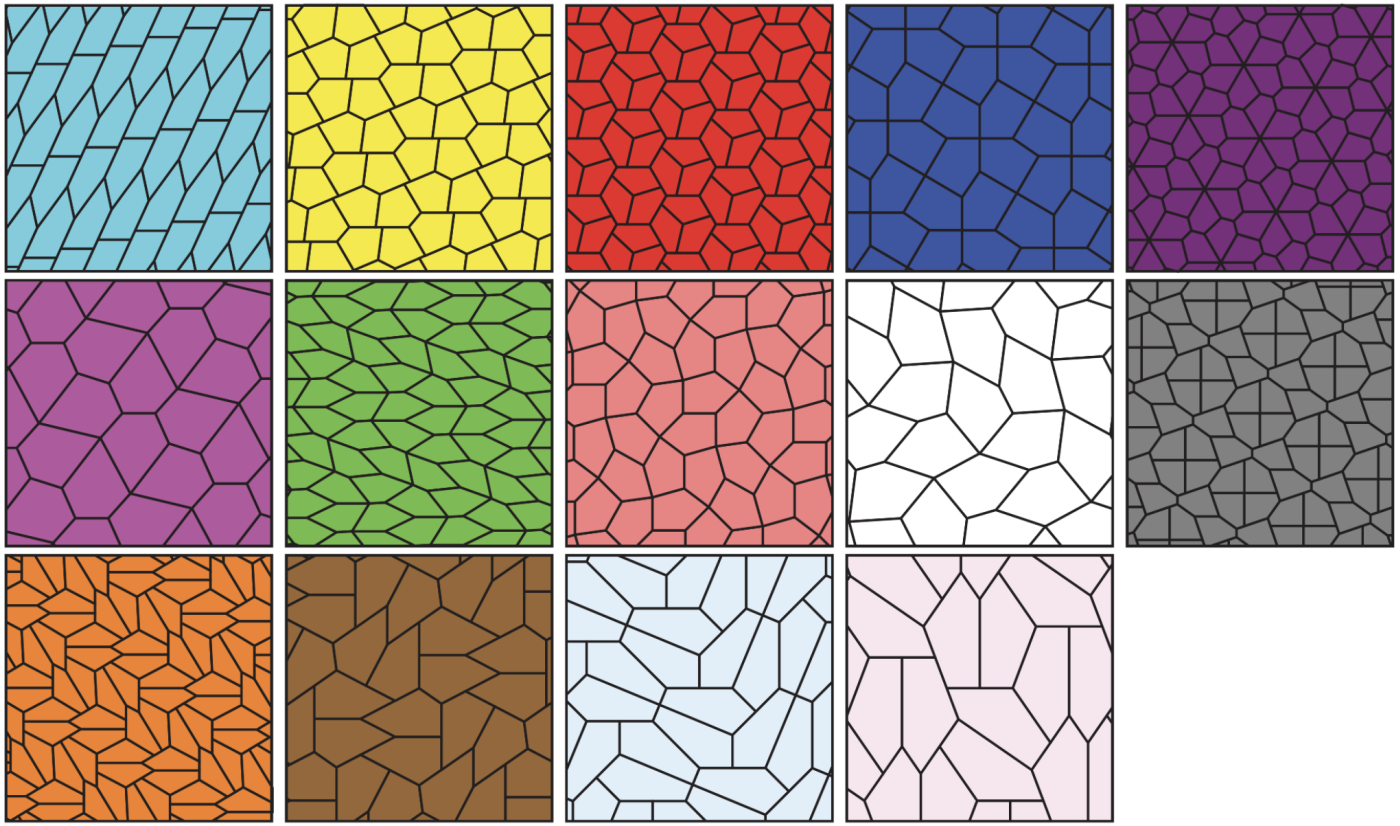




Structure de Weaire et Phelan

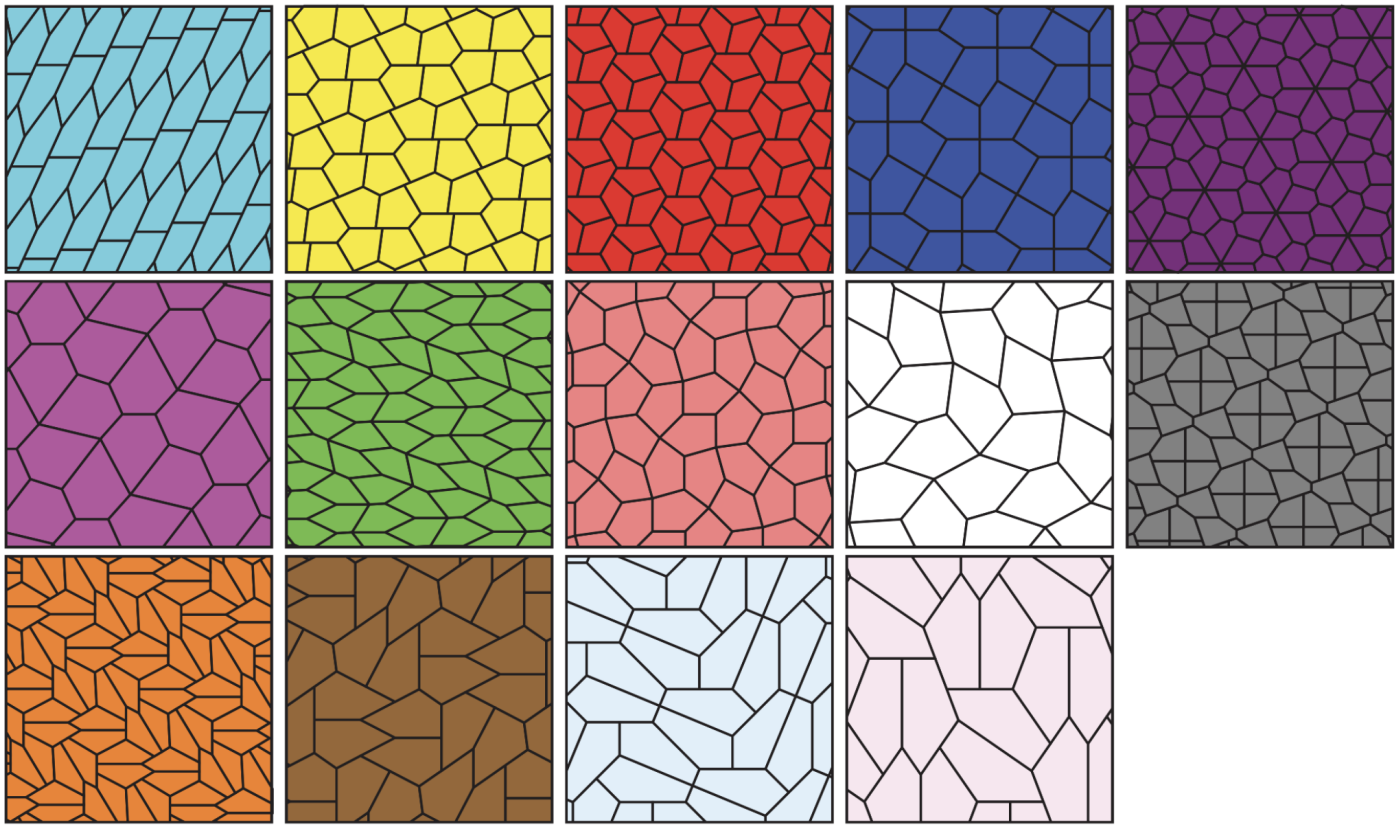
Piscine olympique de Pékin (2008)

L'enigme des pentagones (Etienne Ghys 2011)



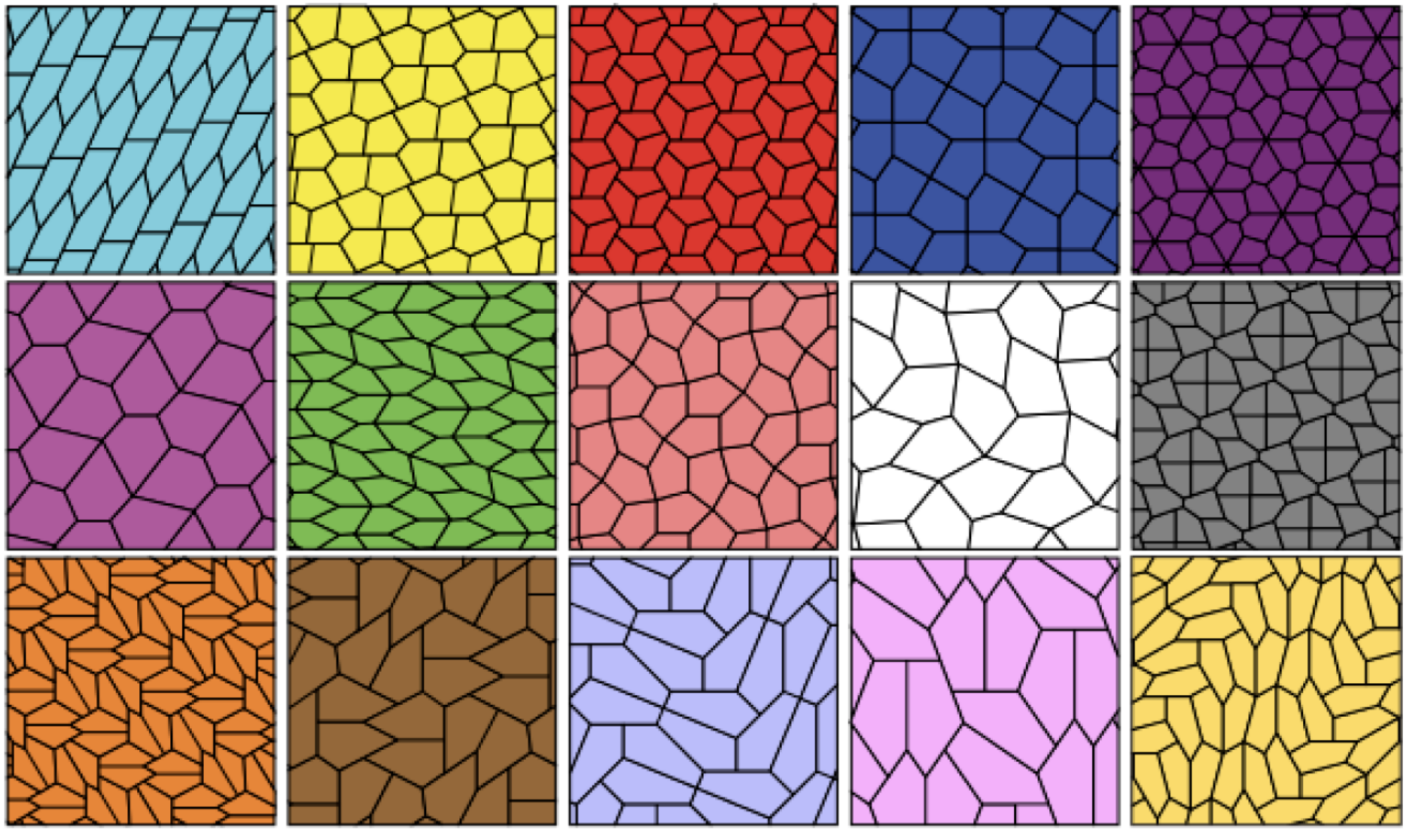
K. Reinhardt (1918) 5, R.B. Kershner (1968) +3

L'enigme des pentagones (Etienne Ghys 2011)

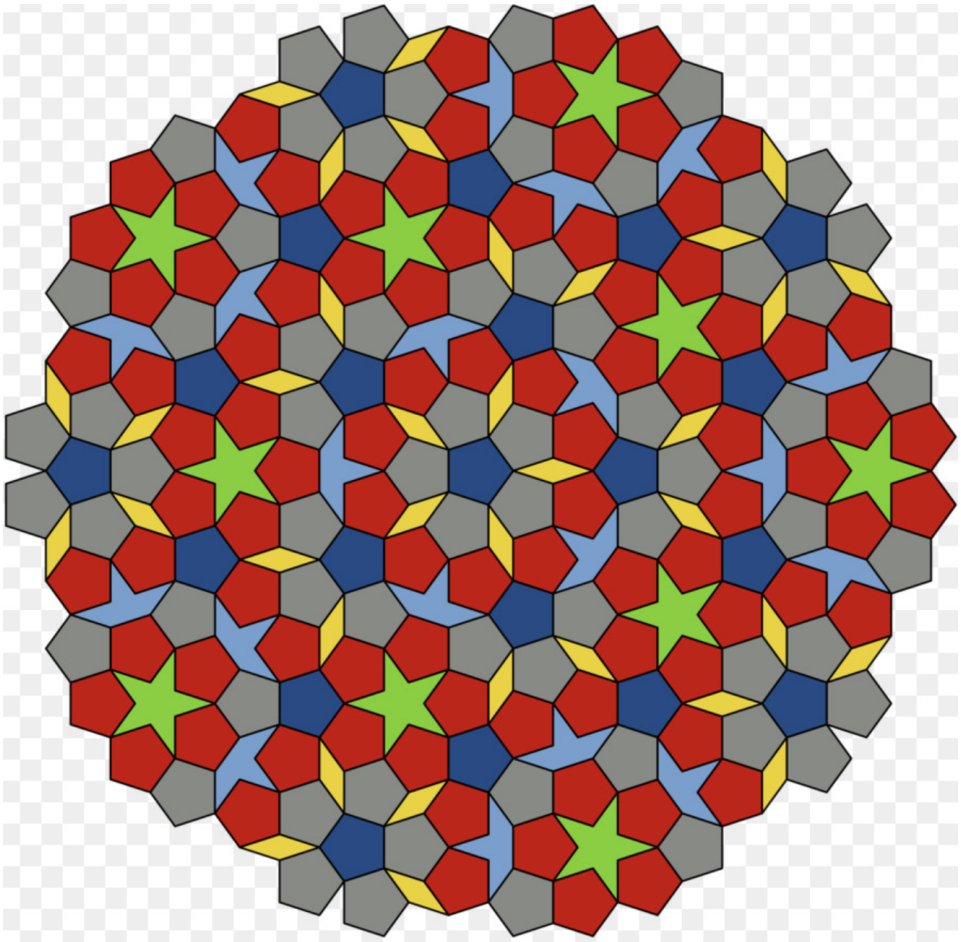


K. Reinhardt (1918) 5, R.B. Kershner (1968) +3,
R. James III (1975) +1, M. Rice (1975) +4, Rof Stein (1985).

L'enigme des pentagones résolue (Michaël Rao 2017)

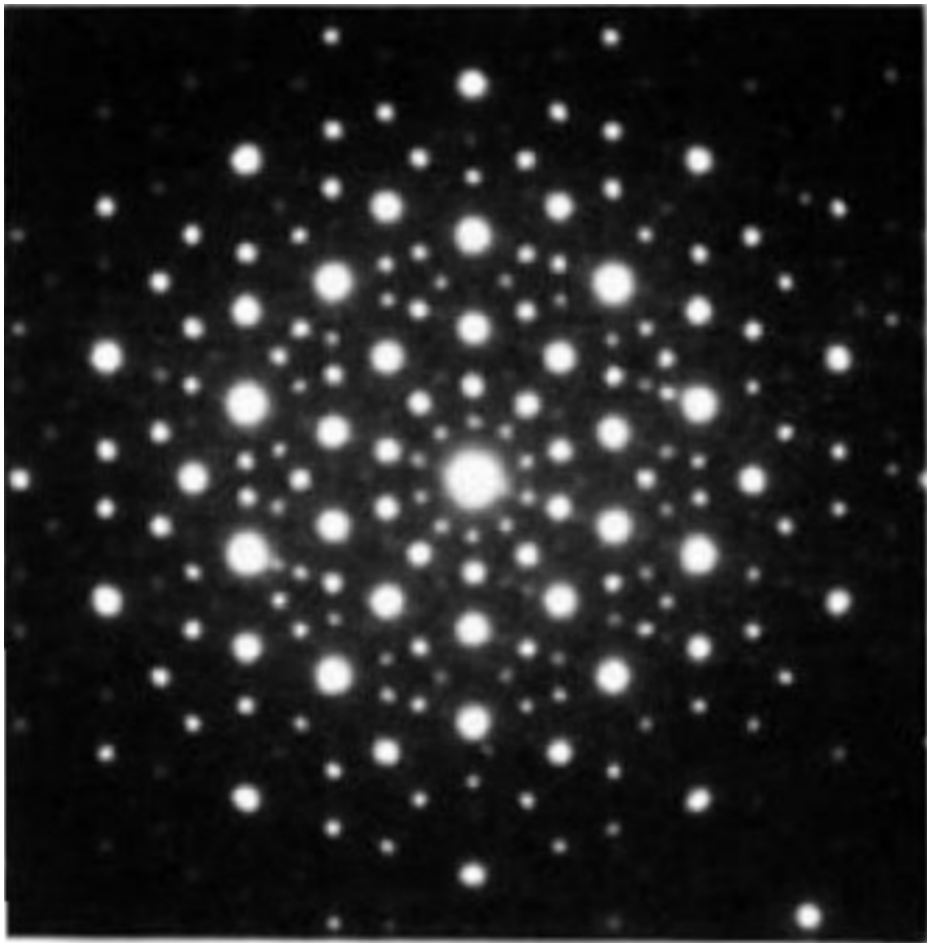


Pavage de Penrose



Pavage de Penrose

Dan Shechtman (prix Nobel de chimie 2011)



Circle Limit III de M.C. Escher

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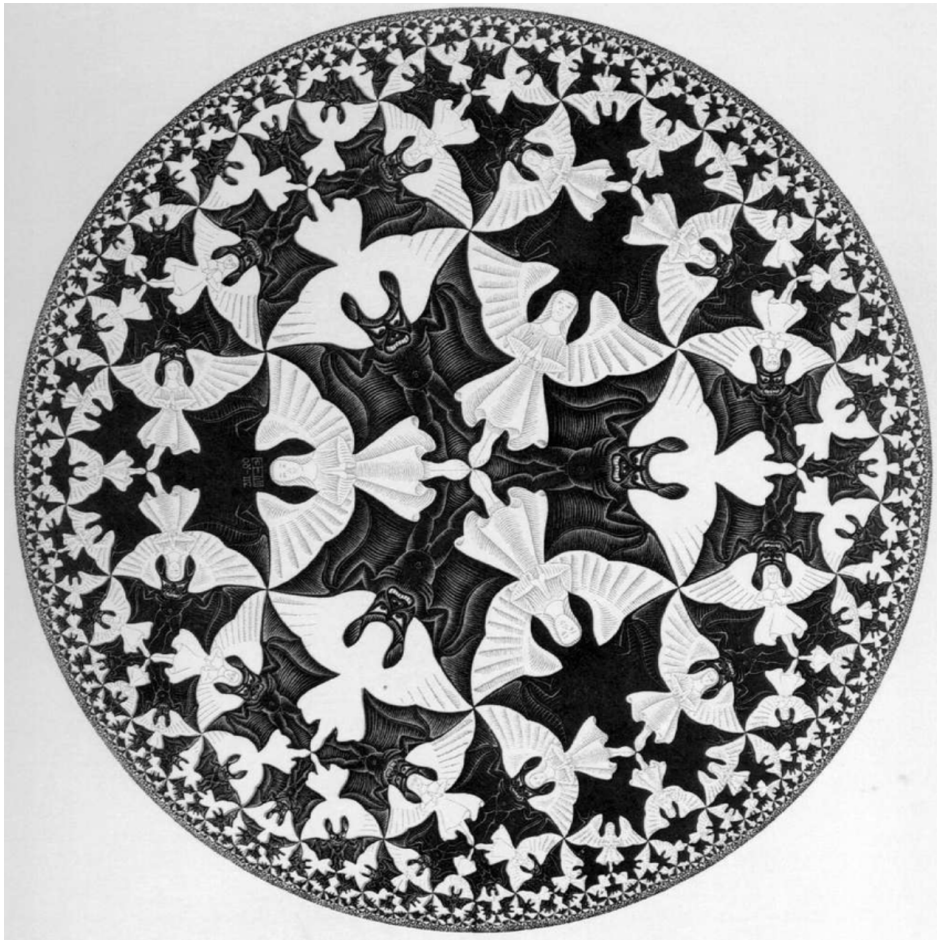
Circle Limit IV de M.C. Escher



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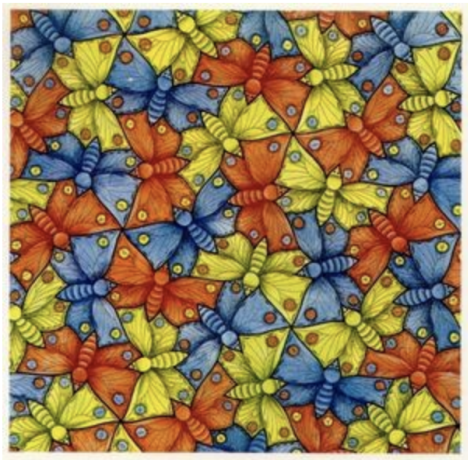
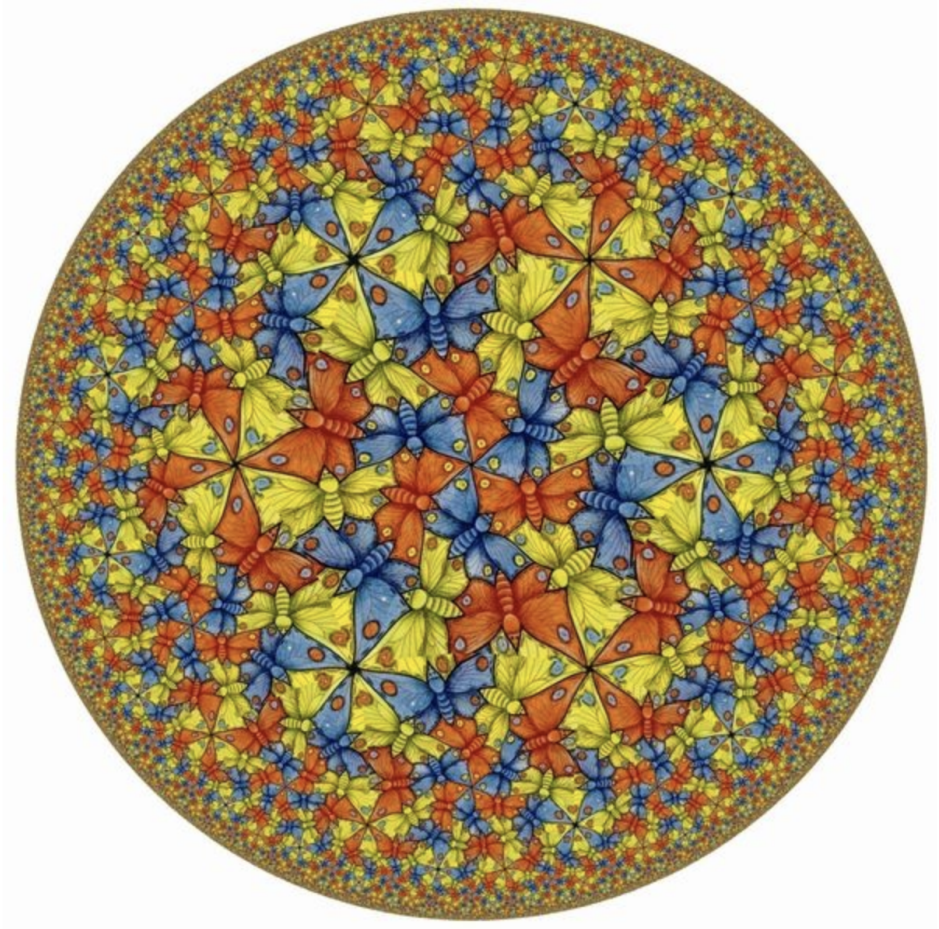
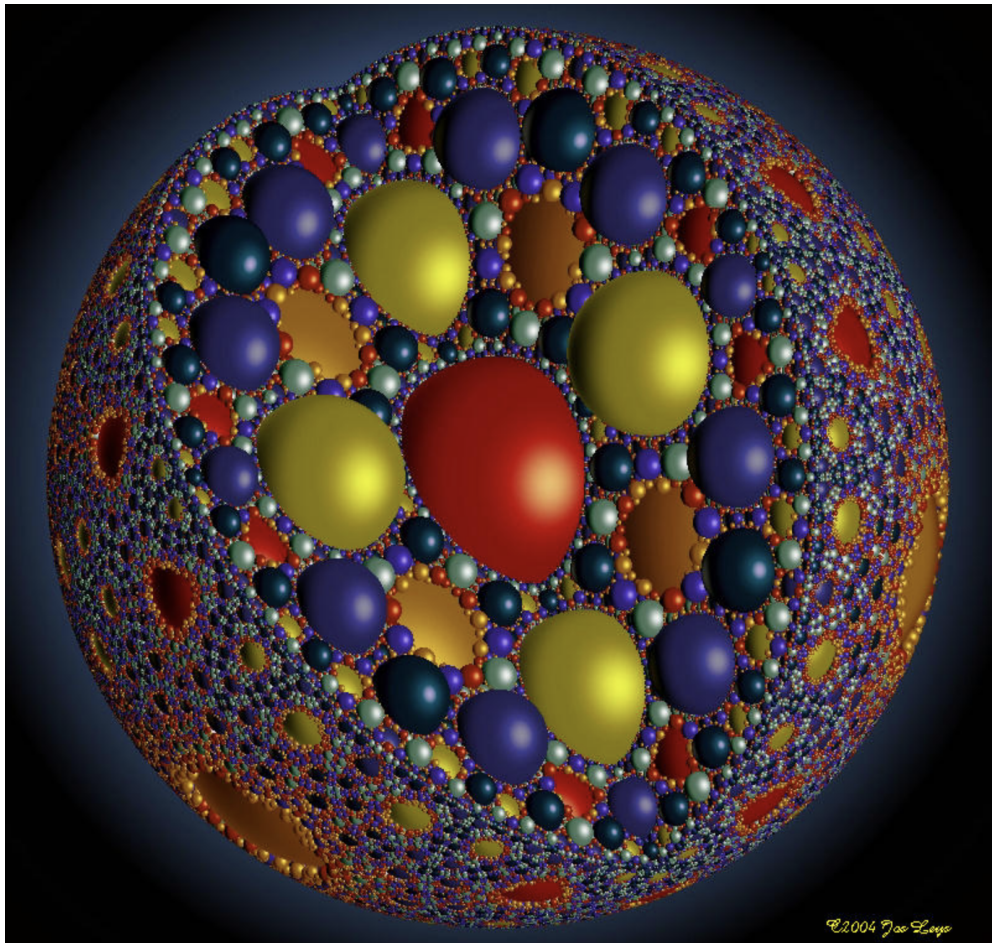
Jos Leys http://www.josleys.com/



E70 by M.C.Escher



Jos Leys http://www.josleys.com/

E61 by M.C.Escher

Jos Leys http://www.josleys.com/