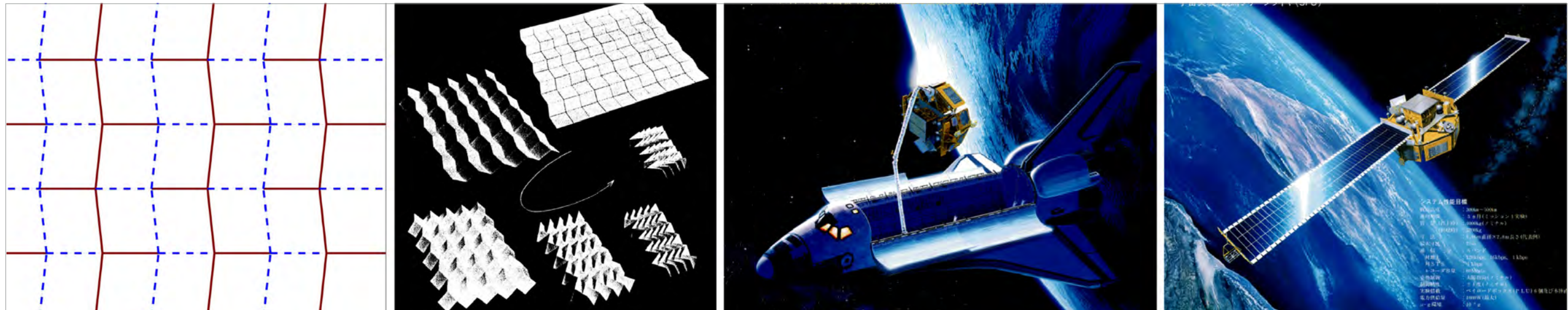


# DESIGN OF NEW METAMATERIALS

SF STATE RESEARCH AND SCHOLARLY ACTIVITY SYMPOSIUM

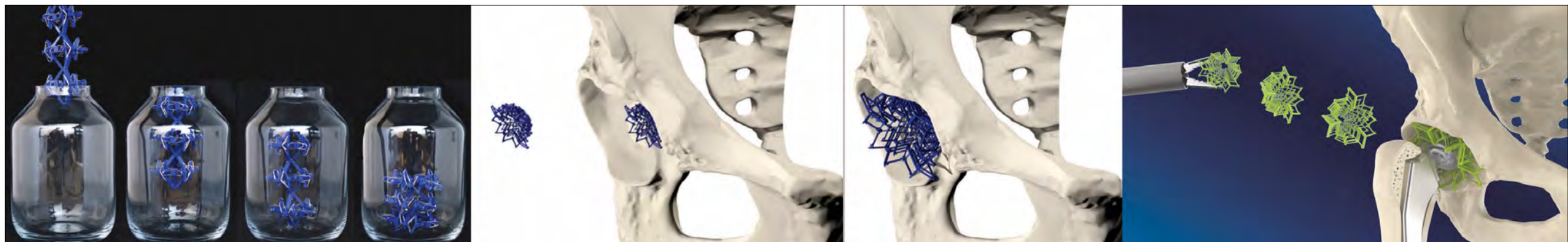
OCTOBER 25, 2019 – FACULTY COMMONS (LIBRARY 286)

## BACKGROUND



(Miura, 1985) Method of Packaging and Deployment of Large Membranes in Space

Infrared Telescope in Space (IRTS, 1995–96)



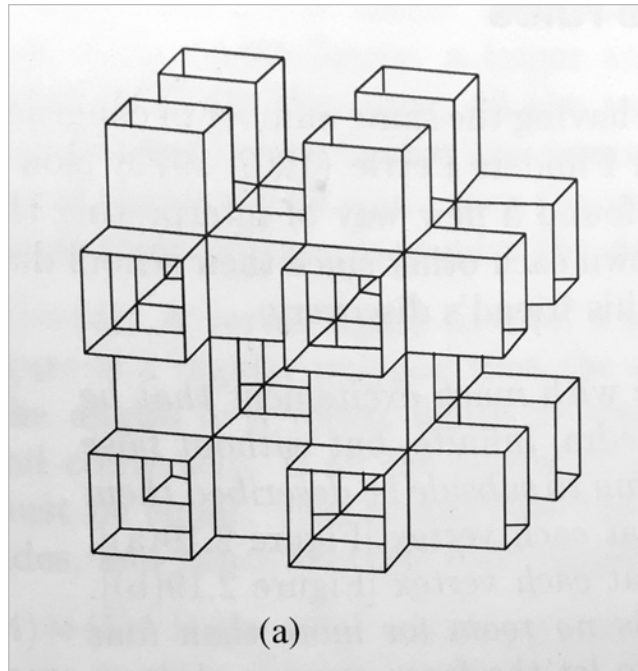
(Bobbert et al, 2018)

Towards deployable meta-implants

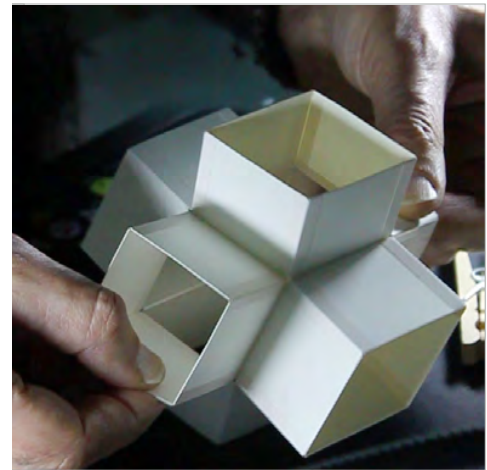
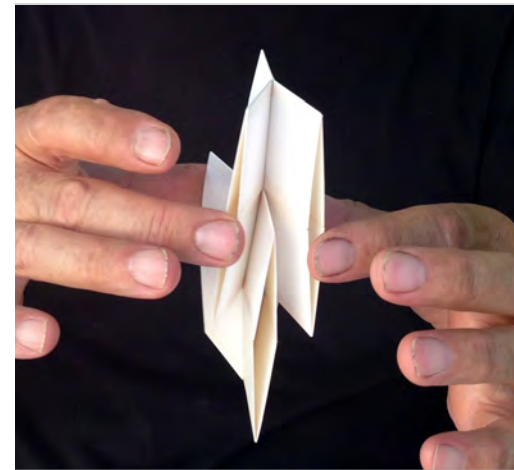
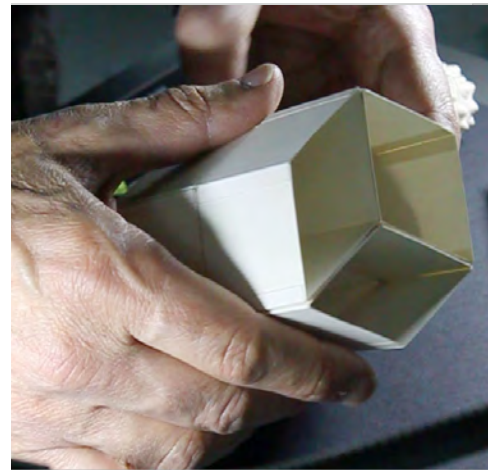


# HISTORY / GEOMETRY

(Petrie, 1926)

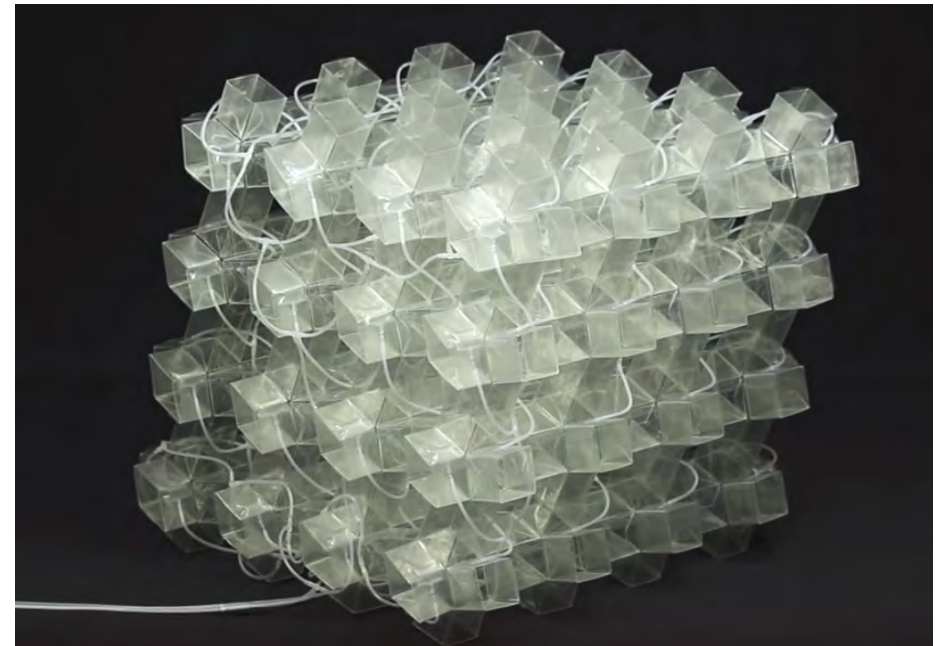
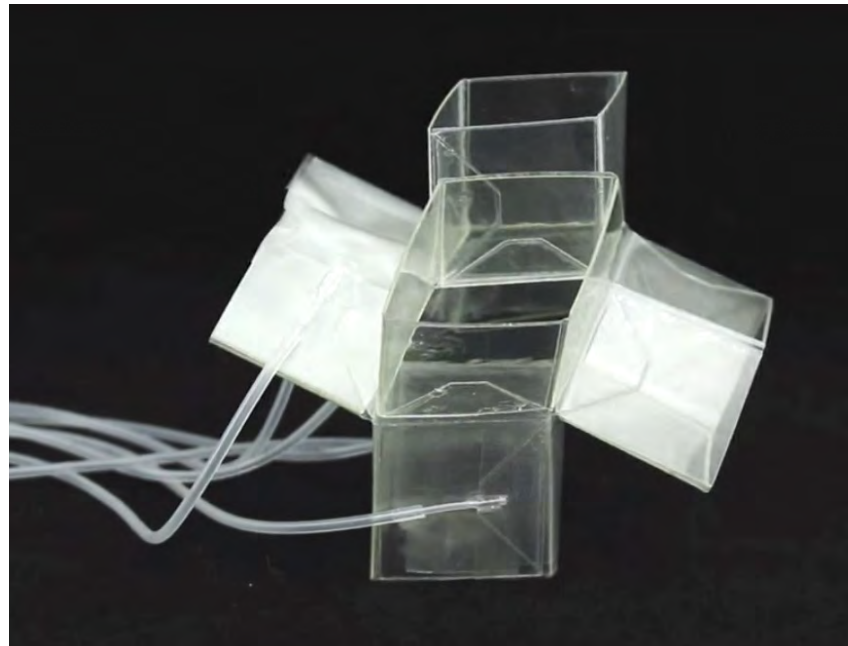


One of three Petrie–Coxeter regular honeycombs.



Transformable Figure

(Scarpa, 1996)

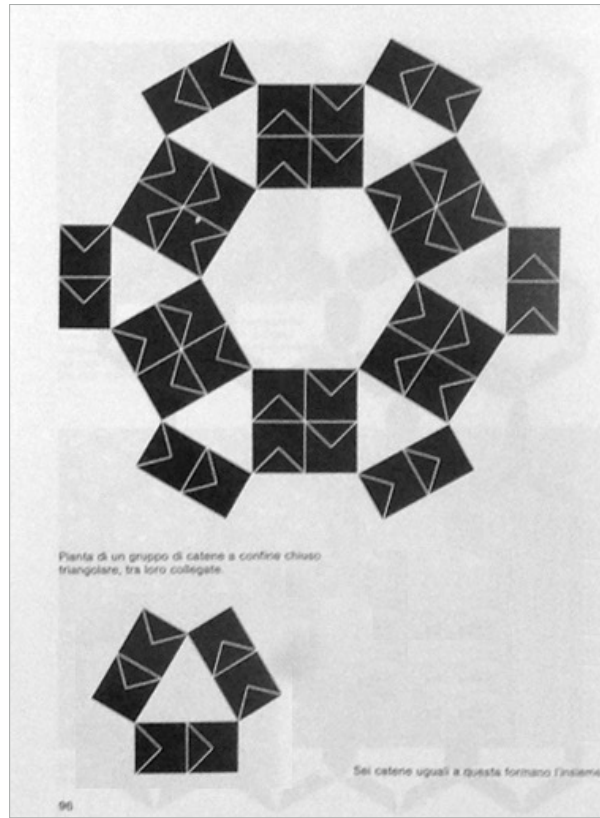


(Overvelde et al, 2016)

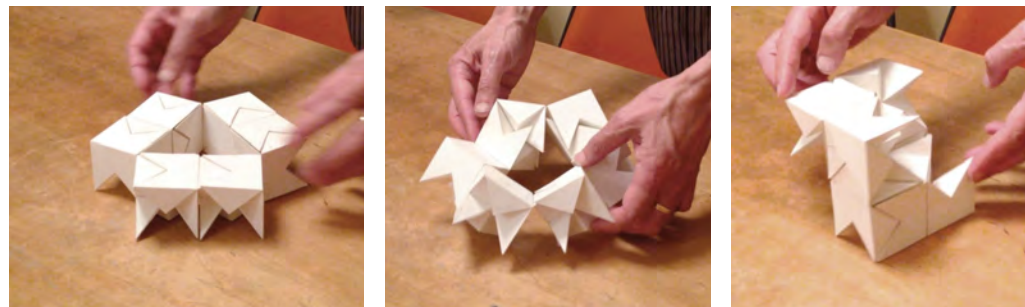
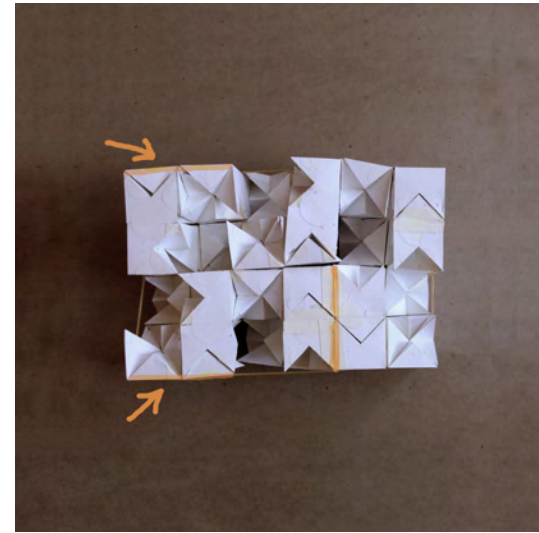
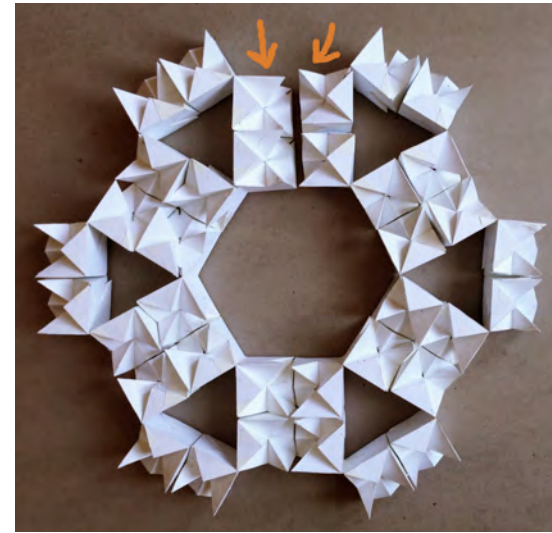
A three-dimensional actuated origami-inspired transformable metamaterial with multiple degrees of freedom.



# TRANSFORMABLE FABRICS



Six triangular chains connected together.  
(72 modules)



**(Scarpa, 1978)**

Single closed chain.  
(12 modules)

**(Trogu, 2016–19)**

