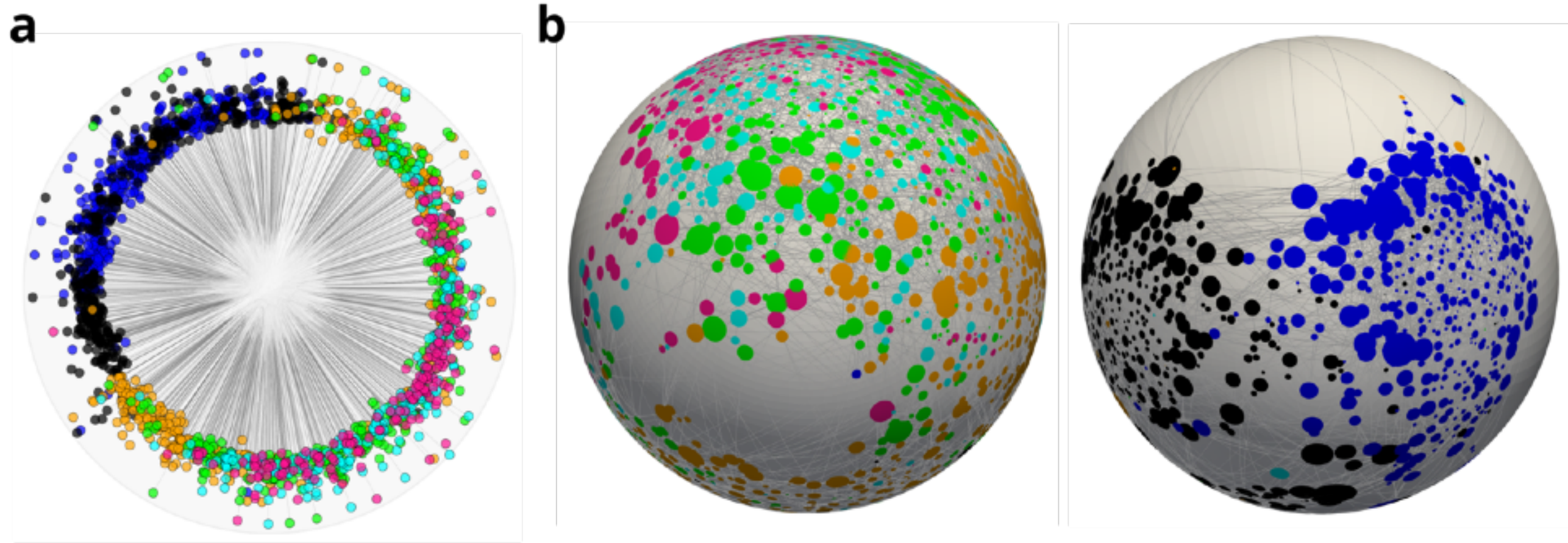


A hyperbolic solution to modular architecture?

The S^1/\mathbb{H}^2 models are easily generalizable to arbitrary dimensions.

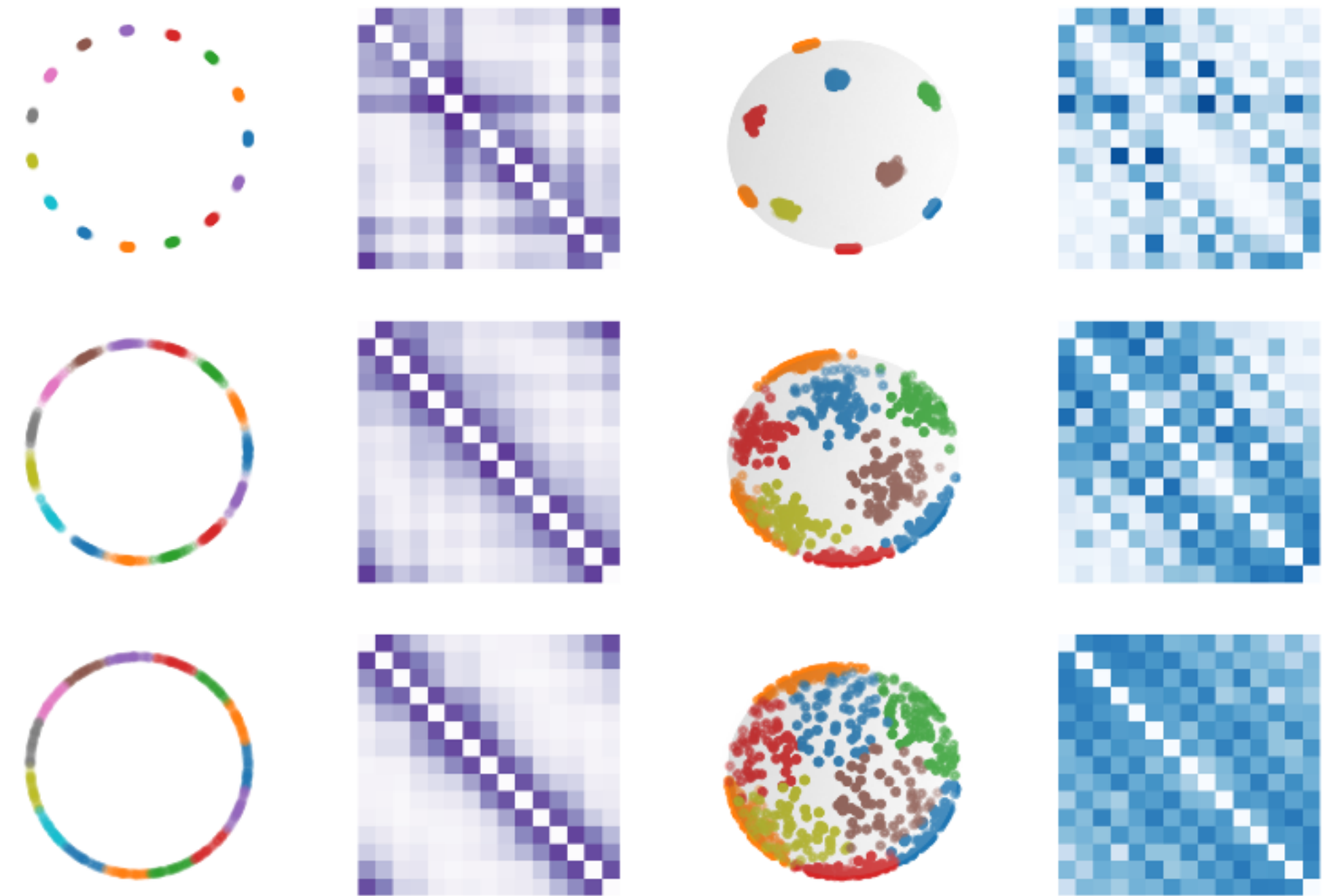
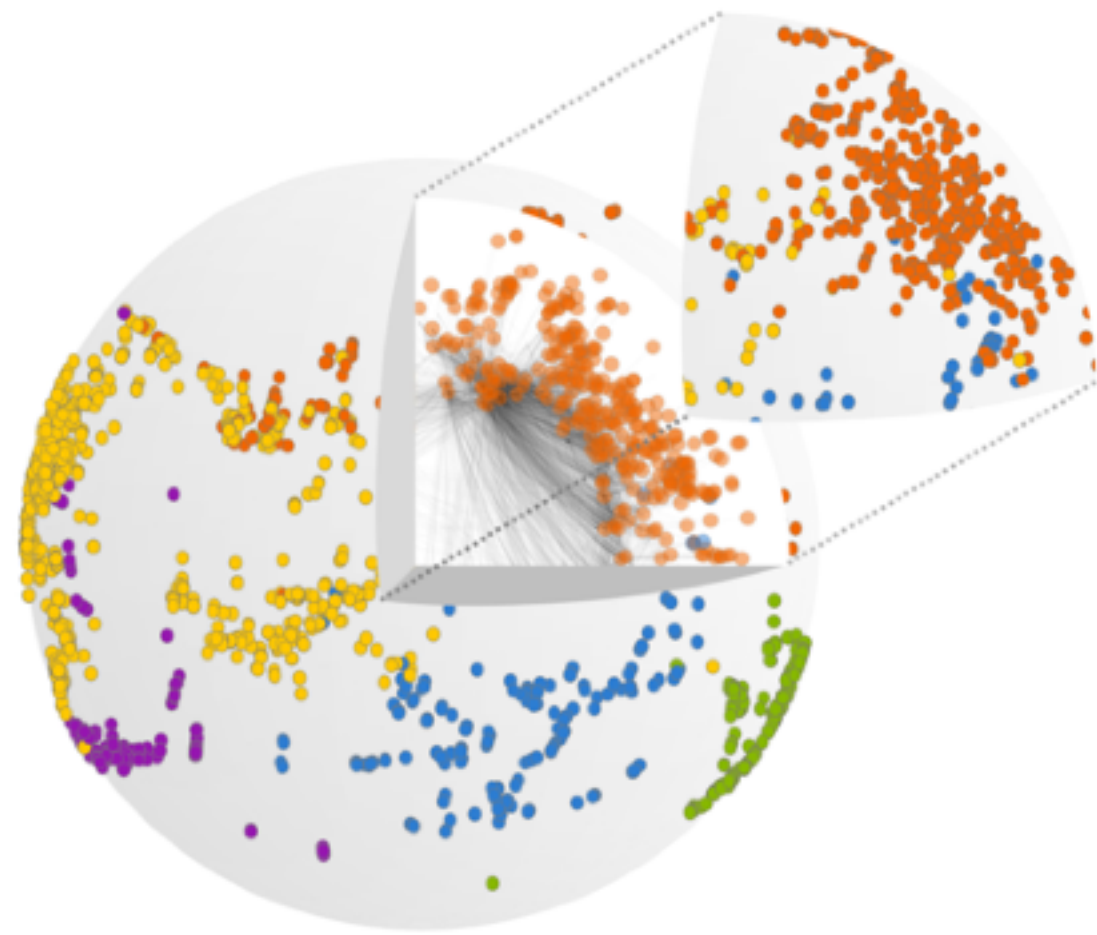
This *extra space* allows for a rich modular architecture.

The modular architecture of several real complex networks are more naturally represented in more dimension.

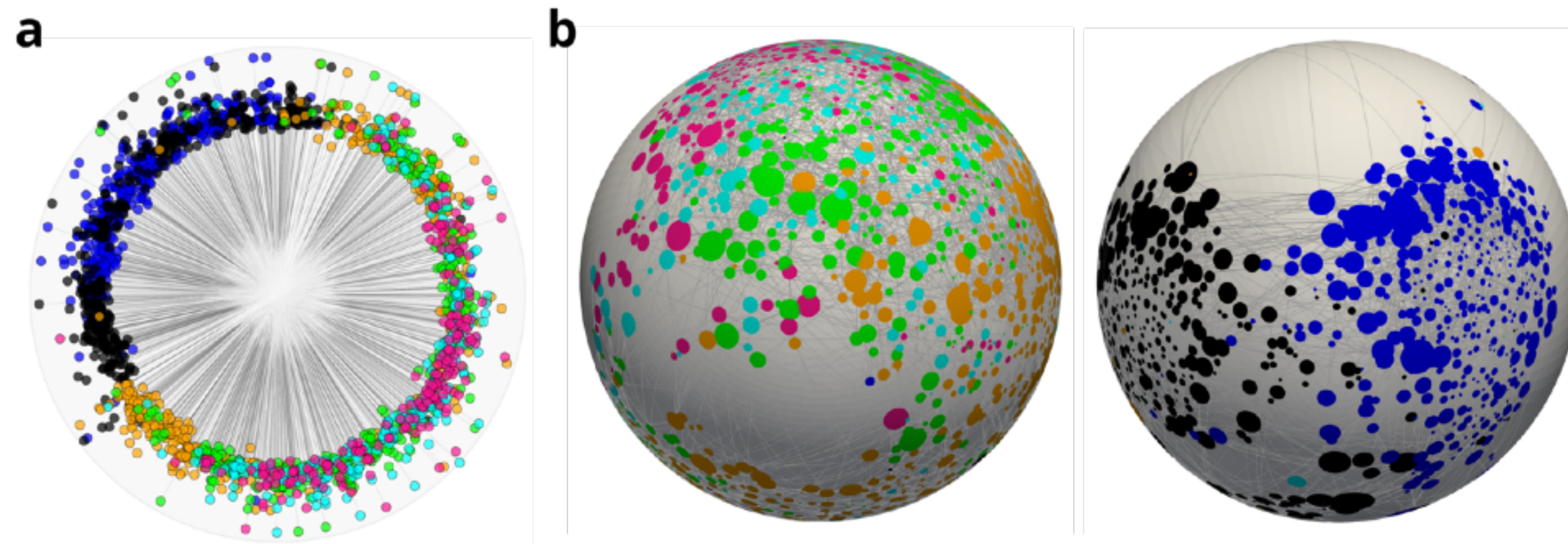


A hyperbolic solution to modular architecture?

The $\mathbb{S}^1/\mathbb{H}^2$ models are easily generalizable to arbitrary dimensions. This *extra space* allows for a rich modular architecture.

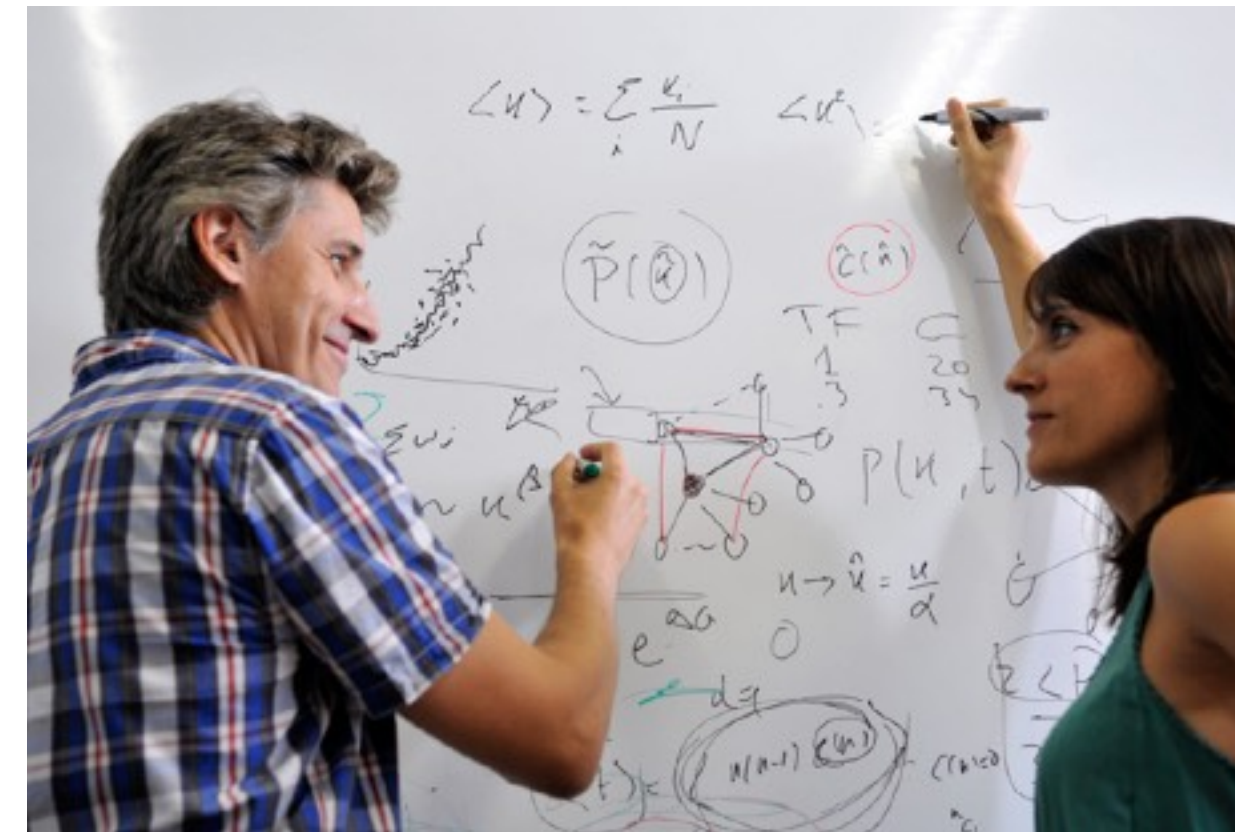


The modular architecture of several real complex networks are more naturally represented in more dimension.



Work done in collaboration with

- ▷ Robert Jankowski (U. Barcelona)
- ▷ M. Ángeles Serrano (U. Barcelona)
- ▷ Marián Boguñá (U. Barcelona)
- ▷ Patrick Desrosiers (CERVO Brain Research Centre)
- ▷ Béatrice Désy (Victoria University of Wellington)



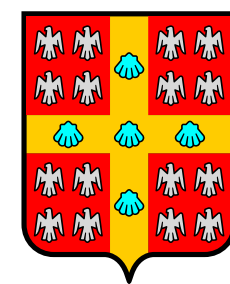
Further details

- ▷ Allard, Serrano & Boguñá, *Geometric description of clustering in directed networks*, Nat. Phys. (in press), arXiv:2302.09055
- ▷ Jankowski, Allard, Boguñá & Serrano, *D-Mercator: multidimensional hyperbolic embedding of real networks*, arXiv:2304.06580
- ▷ Désy, Desrosiers & Allard, *Dimension matters when modeling network communities in hyperbolic spaces*, PNAS Nexus 2, pgad136 (2023)

 <https://github.com/networkgeometry/directed-geometric-networks>

 <https://github.com/networkgeometry/d-mercator>

 https://github.com/bdesy/communities_modelSd



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