Redes: Clase 1

Motivación y Conceptos Fundamentales

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https://github.com/leoferres/redes_msc_ids

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Facebook

Figure 1: Facebook links

Una compañía

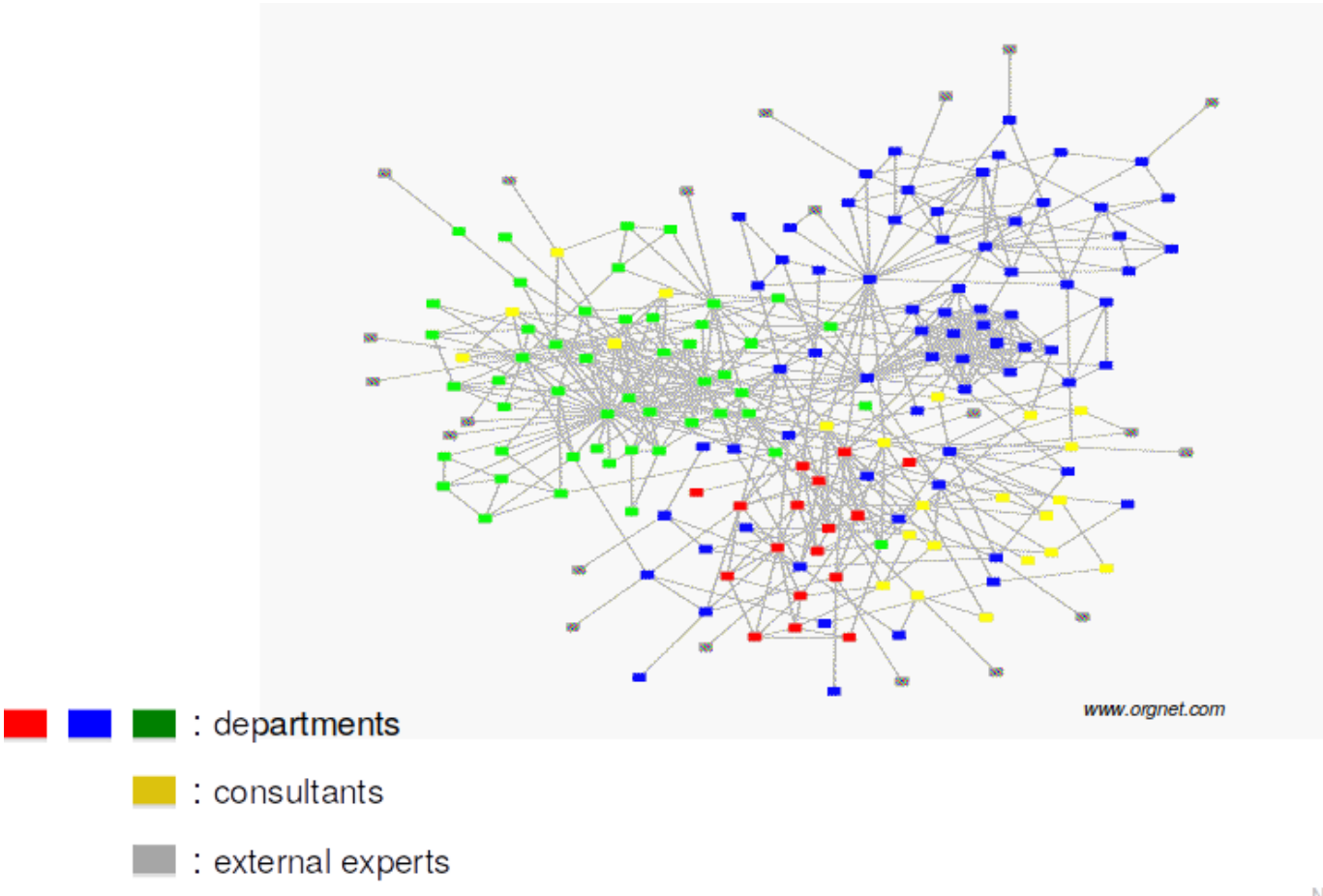

Figure 2: Grupos en organizaciones

Infraestructura

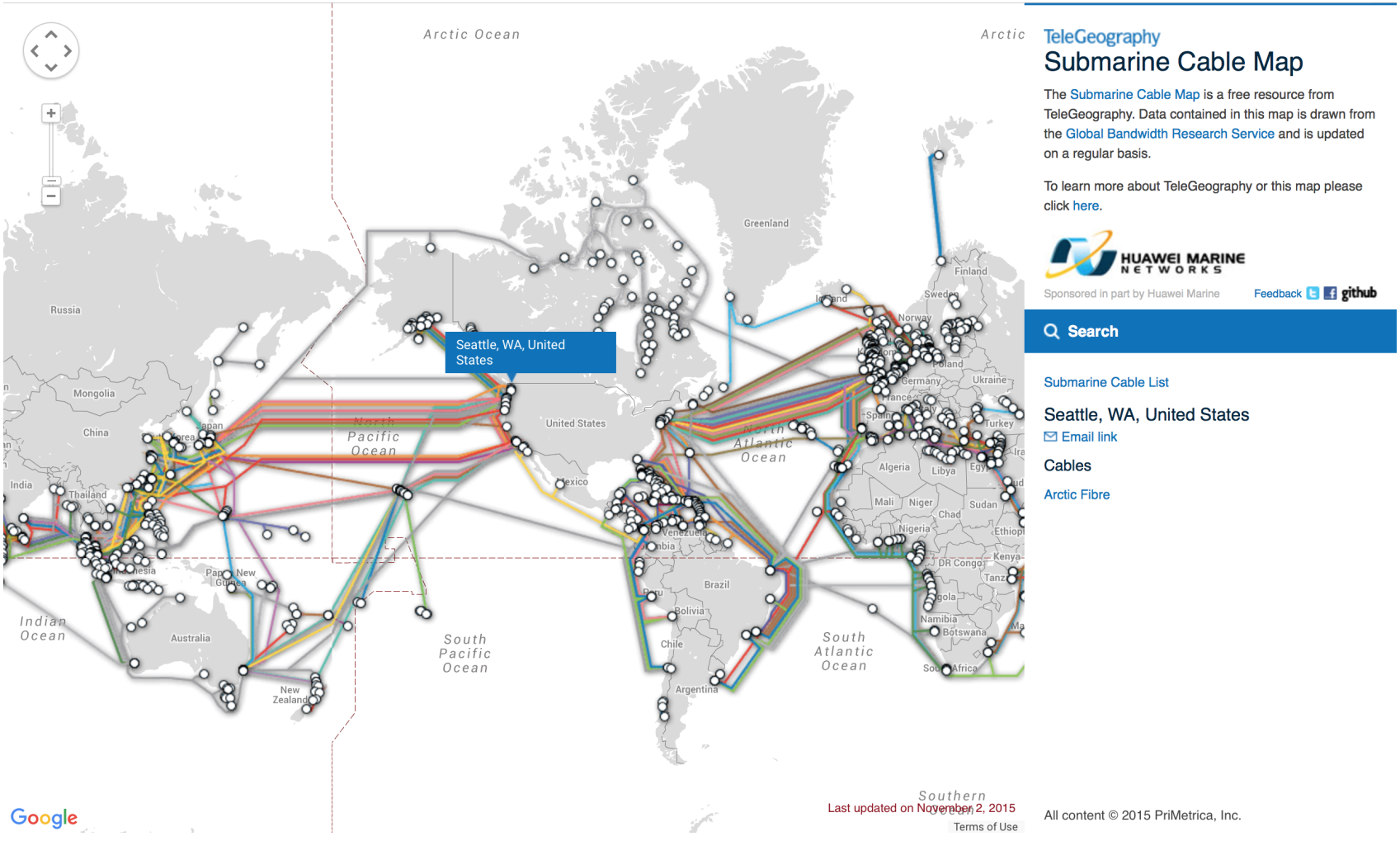

Figure 3: Cables de internet

Pluralismo

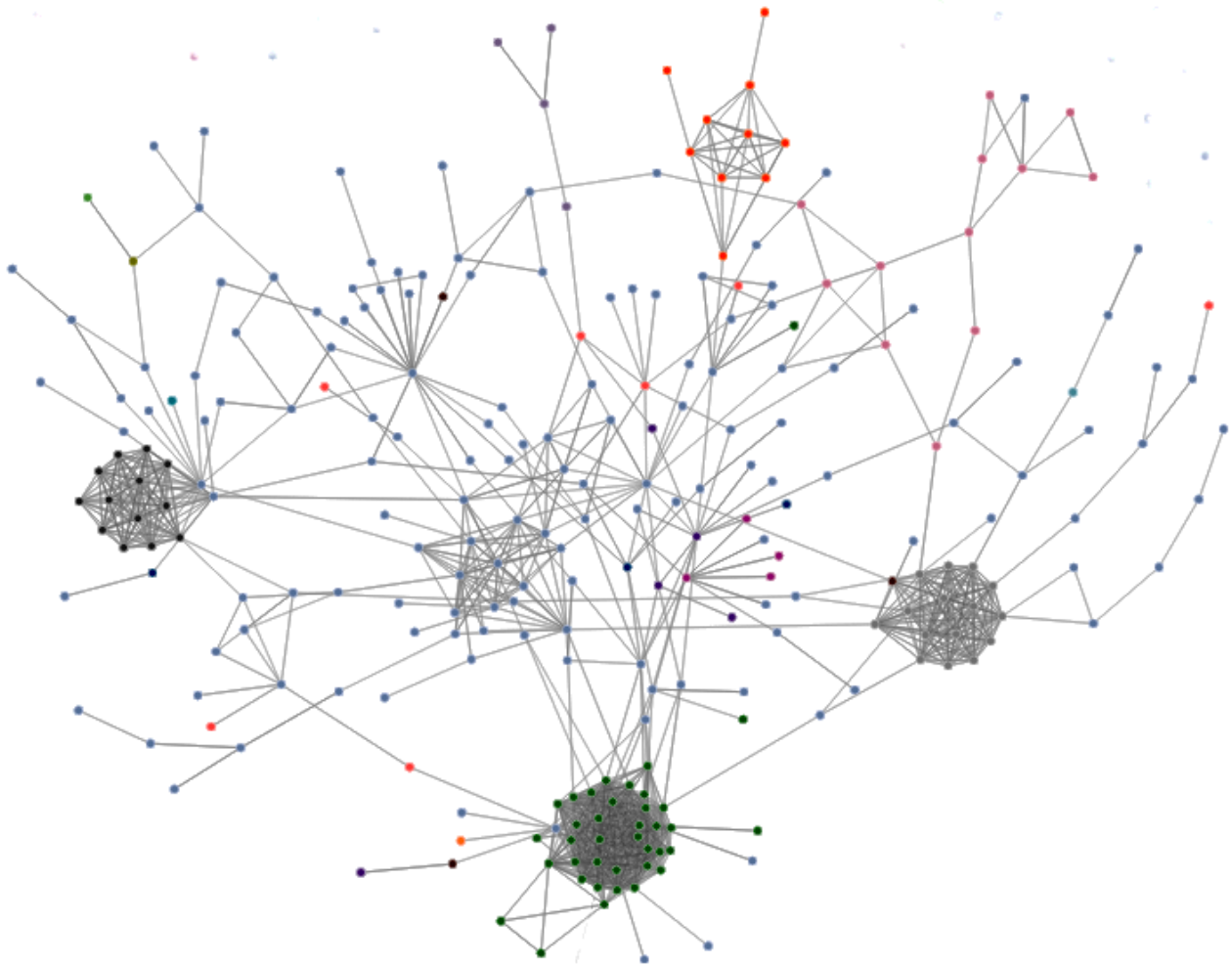

Figure 4: Propietarios de Medios de Comunicación

Bahamonde J, Bollen J, Elejalde E, Ferres L, Poblete B (2018) Power structure in Chilean news media. PLOS ONE 13(6): e0197150.

(Planar embeddings)

Fast and Compact Planar Embeddings☆

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Abstract

There are many representations of planar graphs, but few are as elegant as Turán's (1984): it is simple and practical, uses only 4 bits per edge, can handle self-loops and multi-edges, and can store any specified embedding. Its main disadvantage has been that "it does not allow efficient searching" (Jacobson, 1989). In this paper we show how to add a sublinear number of bits to Turán's representation such that it supports fast navigation while retaining simplicity. As a consequence of the inherited simplicity, we offer the first efficient parallel construction of a compact encoding of a planar graph embedding. Our experimental results show that the resulting representation uses about 6 bits per edge in practice, supports basic navigation operations within a few microseconds, and can be built sequentially at a rate below 1 microsecond per edge, featuring a linear speedup with a parallel efficiency around 50% for large datasets.

Keywords: Planar embedding, Compact data structures, Parallel construction

Figure 5: fast compact planar embeddings

Nature 150

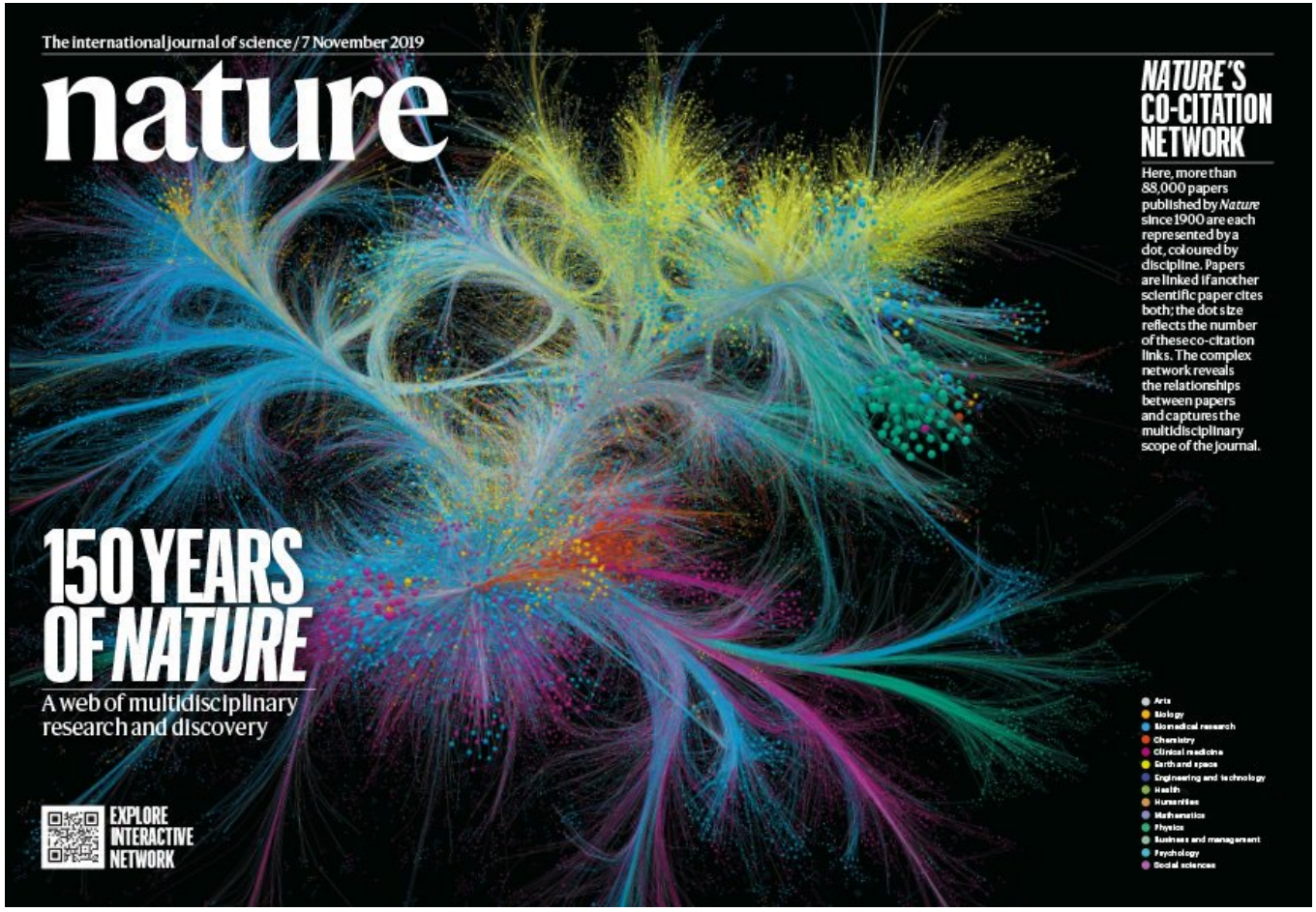

Figure 6: Nature co-citation network

https://youtu.be/GW4s58u8PZo

Königsberg

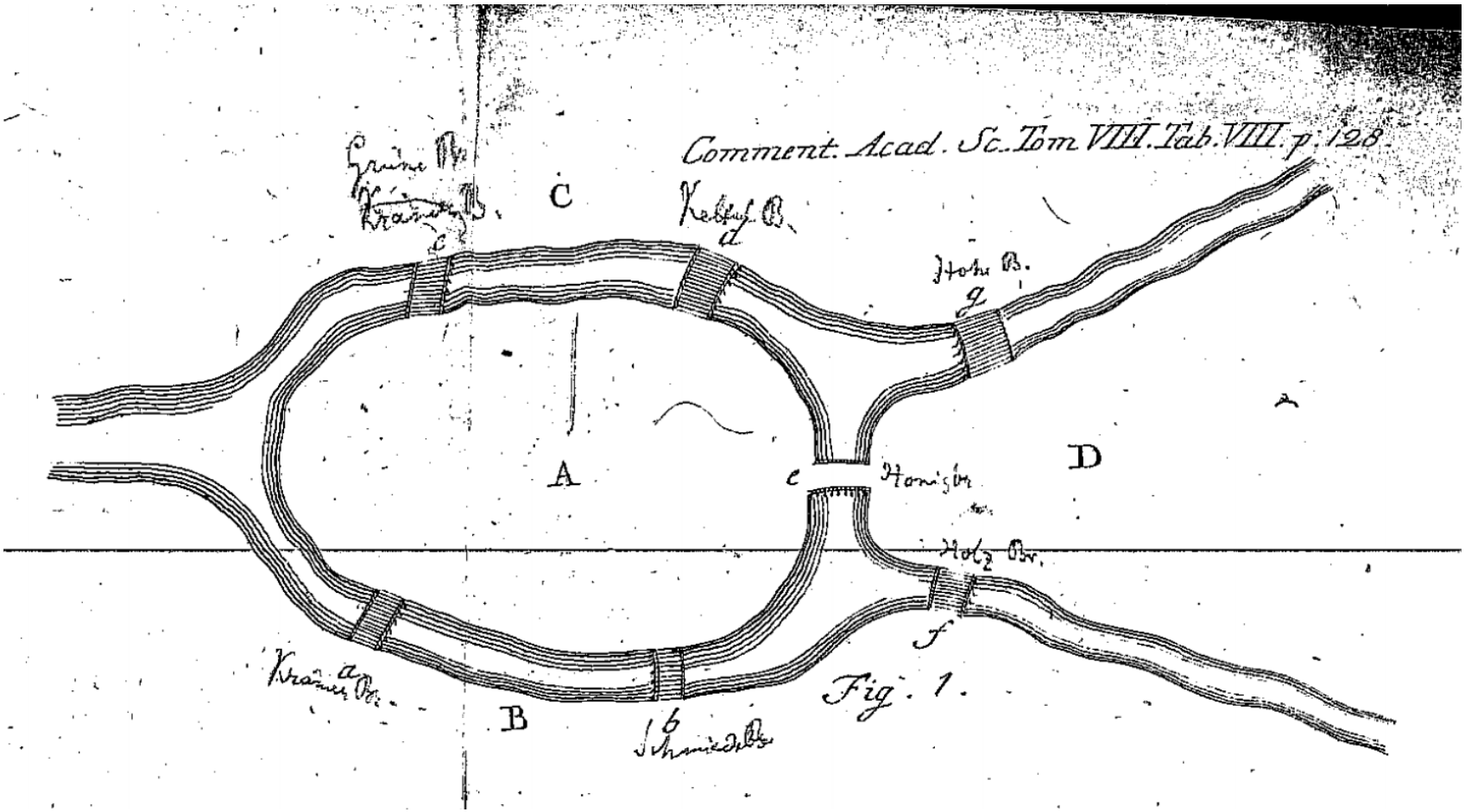

Figure 7: Euler's original drawing

http://eulerarchive.maa.org//docs/originals/E053.pdf

Distribución de grados

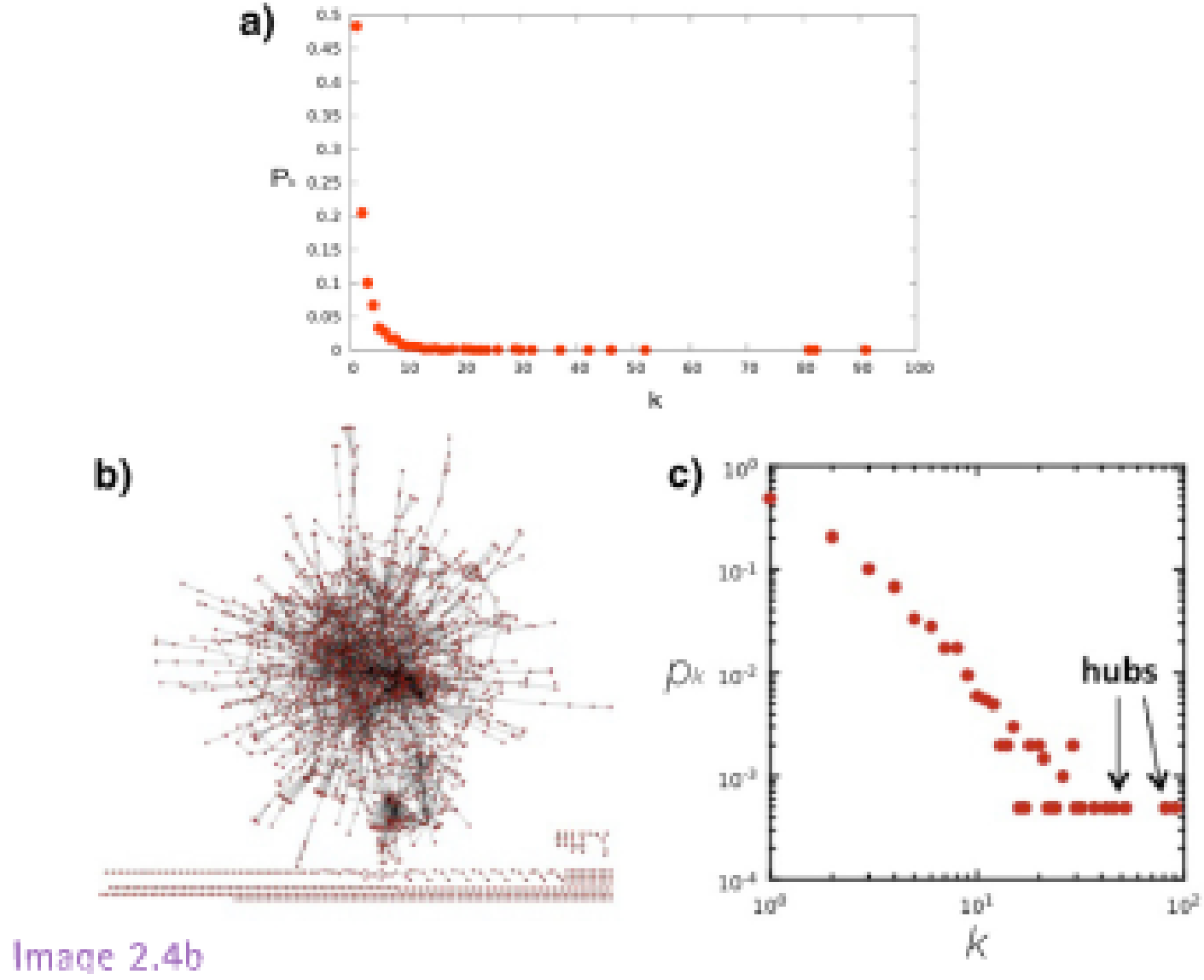

Figure 8: protein interaction

Nice doc on distributions

`https://threeplusone.com/pubs/FieldGuide.pdf`

less intense:

`https://www.statisticshowto.datasciencecentral.com/probabil`

Ejercicio: dibuje la distribucion de grado

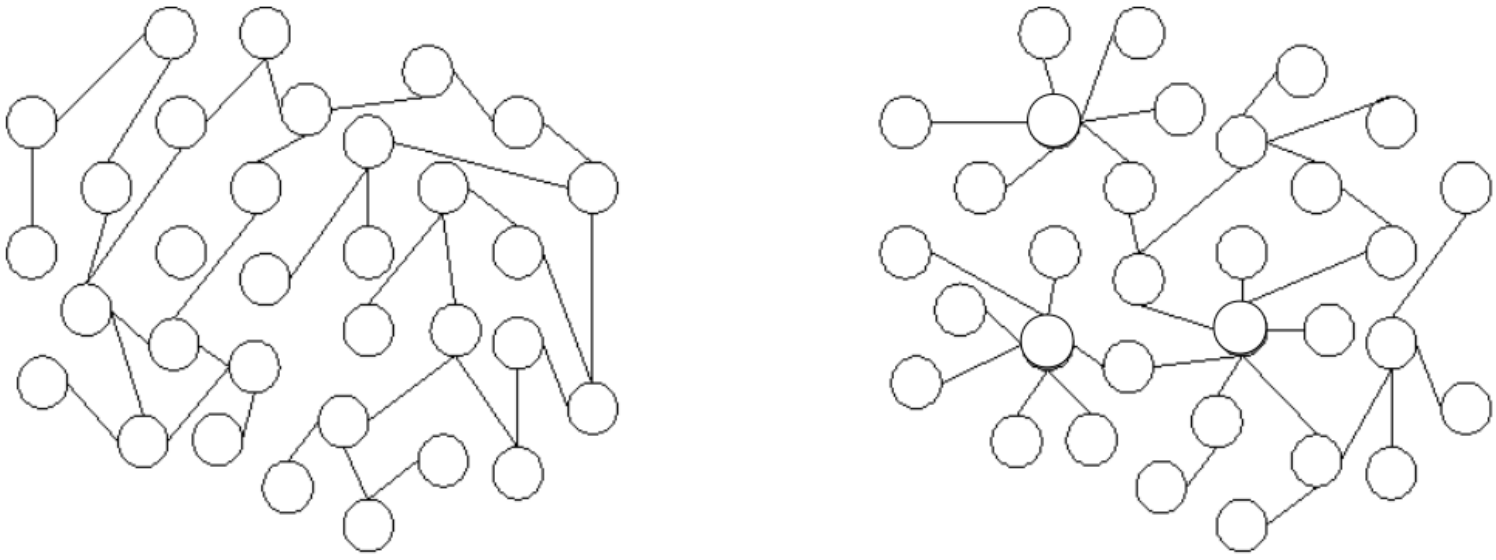

Figure 9: ejercicio

Redes esparzas

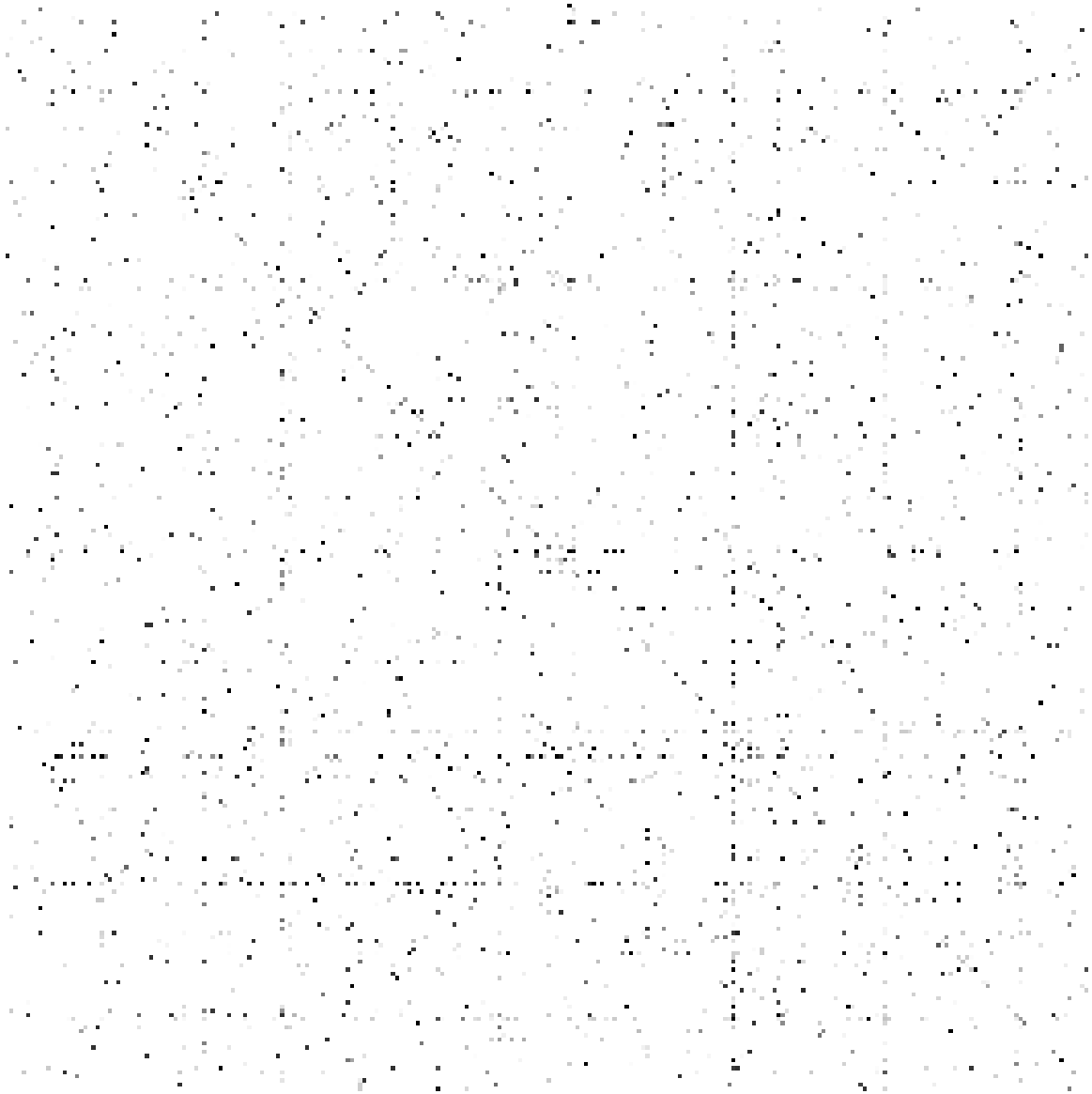

Figure 10: Protein