



# Hálózatok a csillagokon innen és túl

**Janosov Milán**

Datapolis, CEU, BarabásiLab

[www.janosov.com](http://www.janosov.com)

[linktr.ee/janosov](https://linktr.ee/janosov)



### **Gimnázium**

- 2008+ Kömal (B, P, M, I)
- 2009 MTA MFA "Tanuljunk Egymástól" nyári iskola

### **ELTE Fizika BSc**

- 2010-13, biofizika szakirány, MFA

### **Eötvös József Collegium**

- 2010-2106, Matfiz, BioKém

### **ELTE Biofizikus MSc (2013-2016)**

- 2013-16, Vicsek-lab

### **CEU Network Science PhD (2016-2020)**

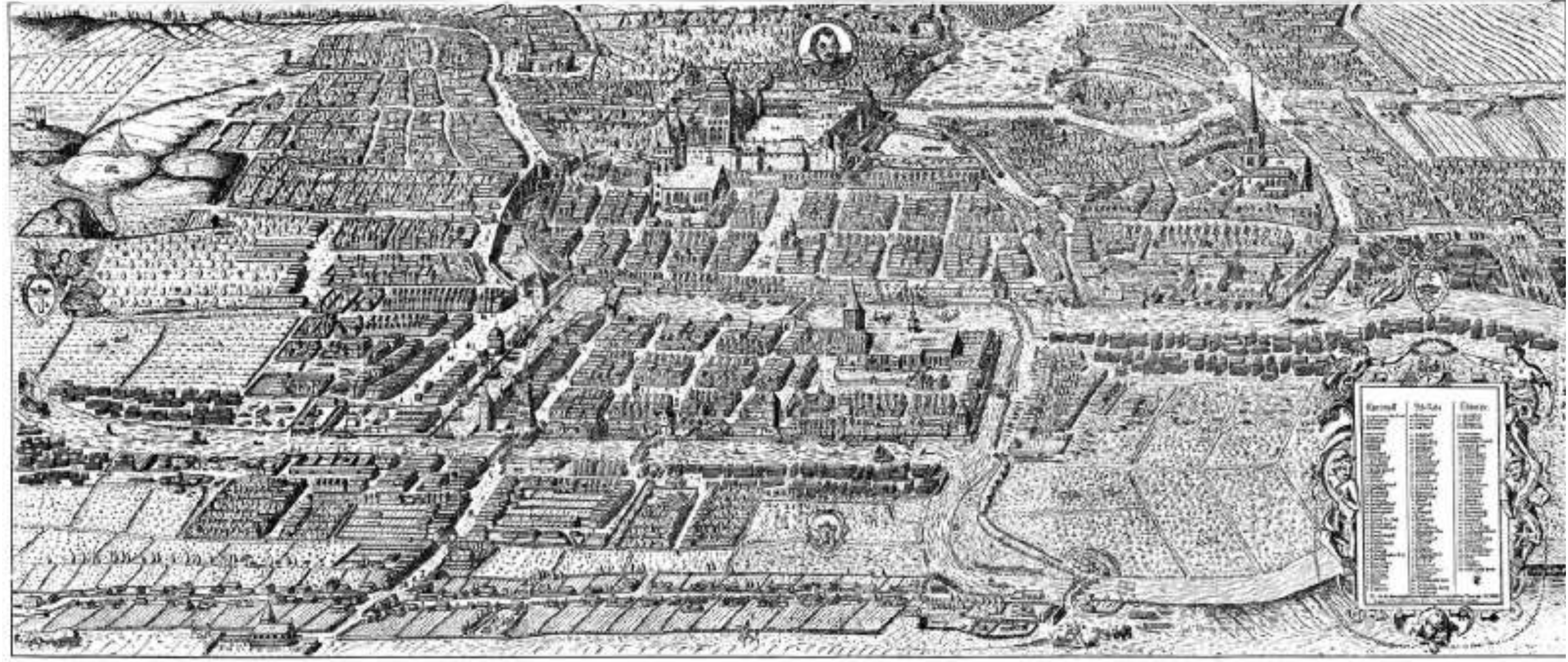
- 2016-2020, BarabásiLab, Bell Labs

### **Datapolis, Maven7, CEU, European Commission**

# HÁLÓZATOKRÓL ÁLTALÁBAN

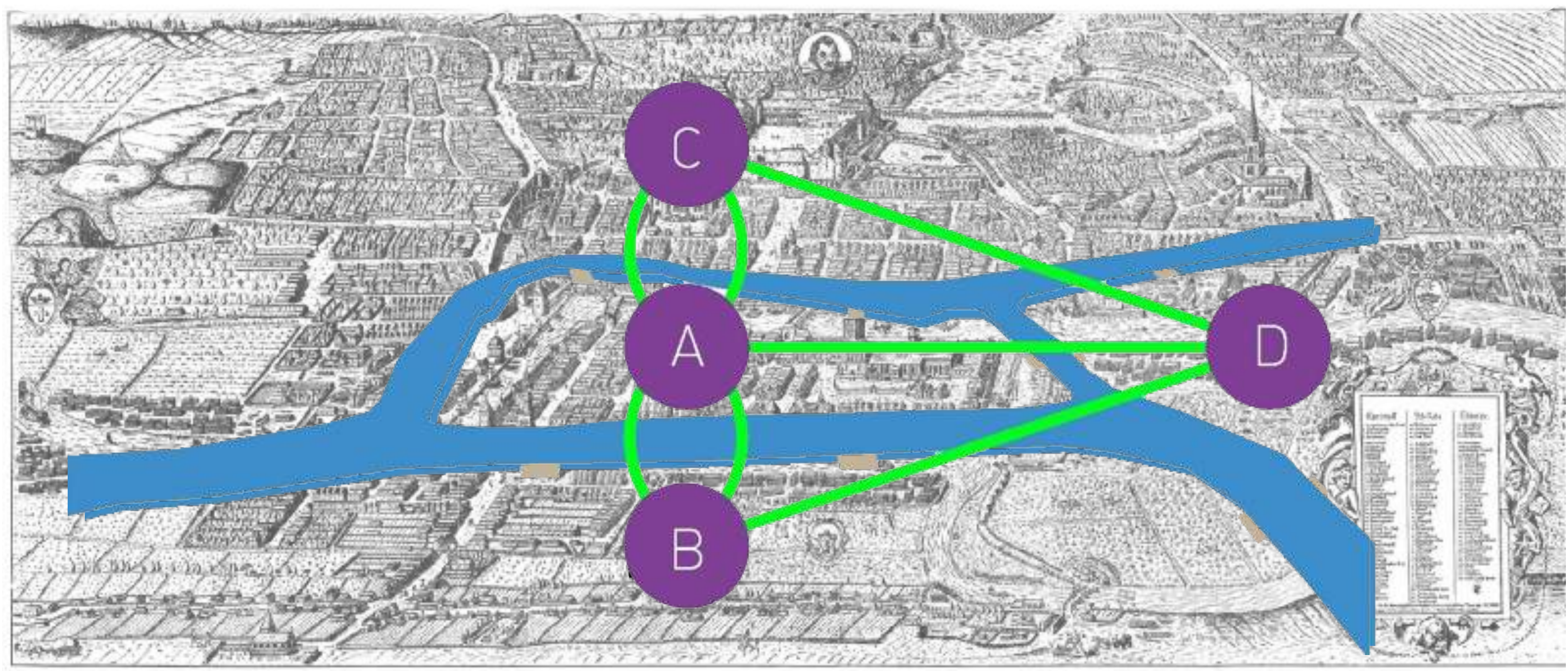


# Königsberg, 1735





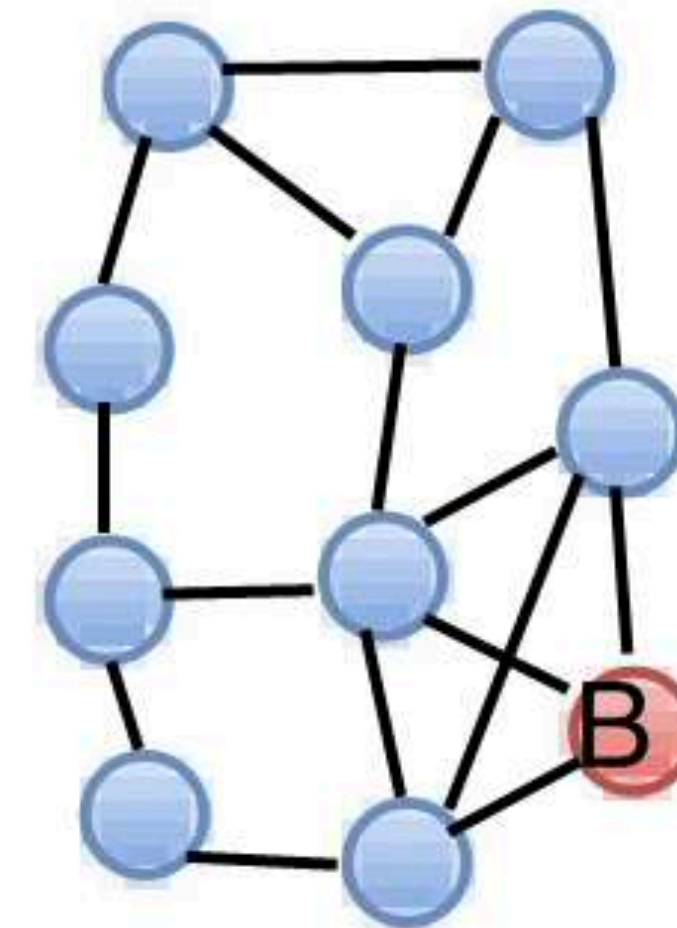
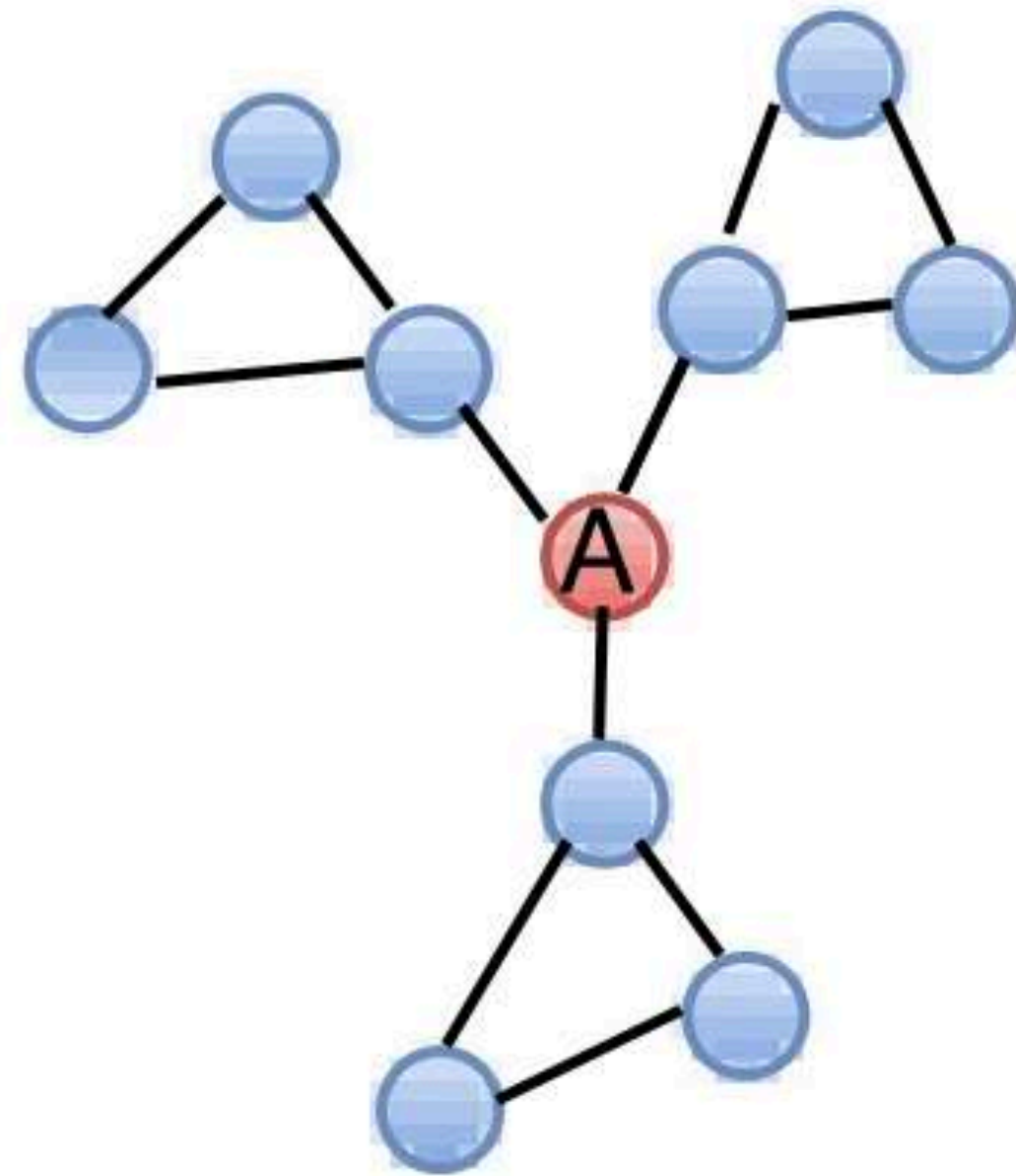
# Königsberg, 1735





# Hálózatok alapfogalmak

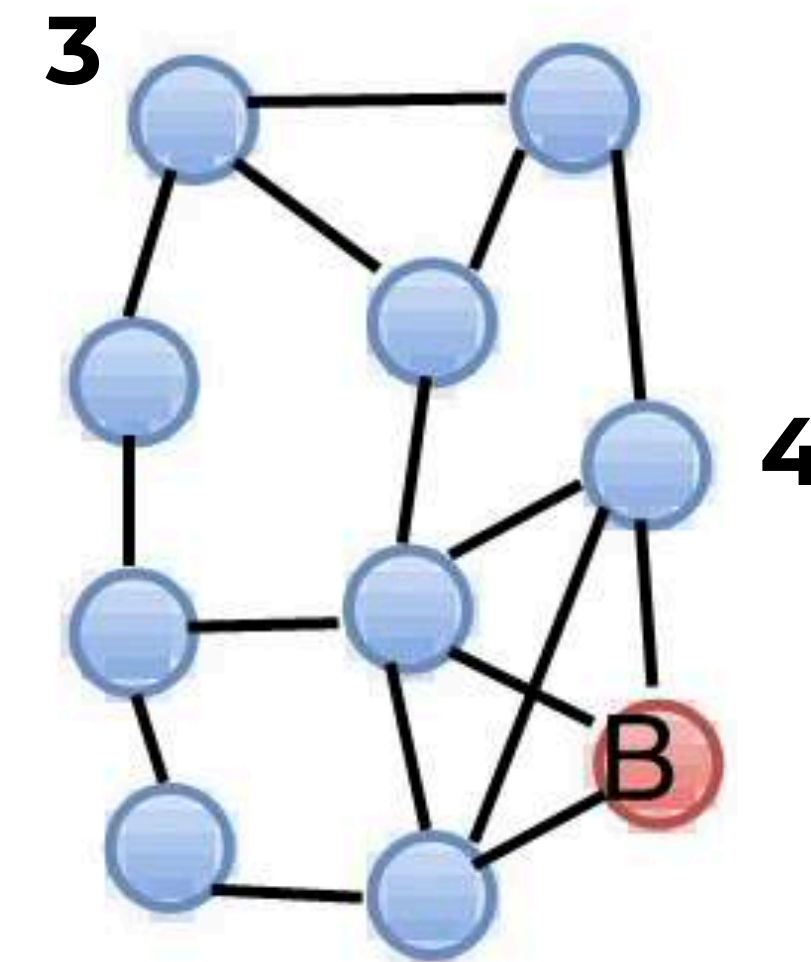
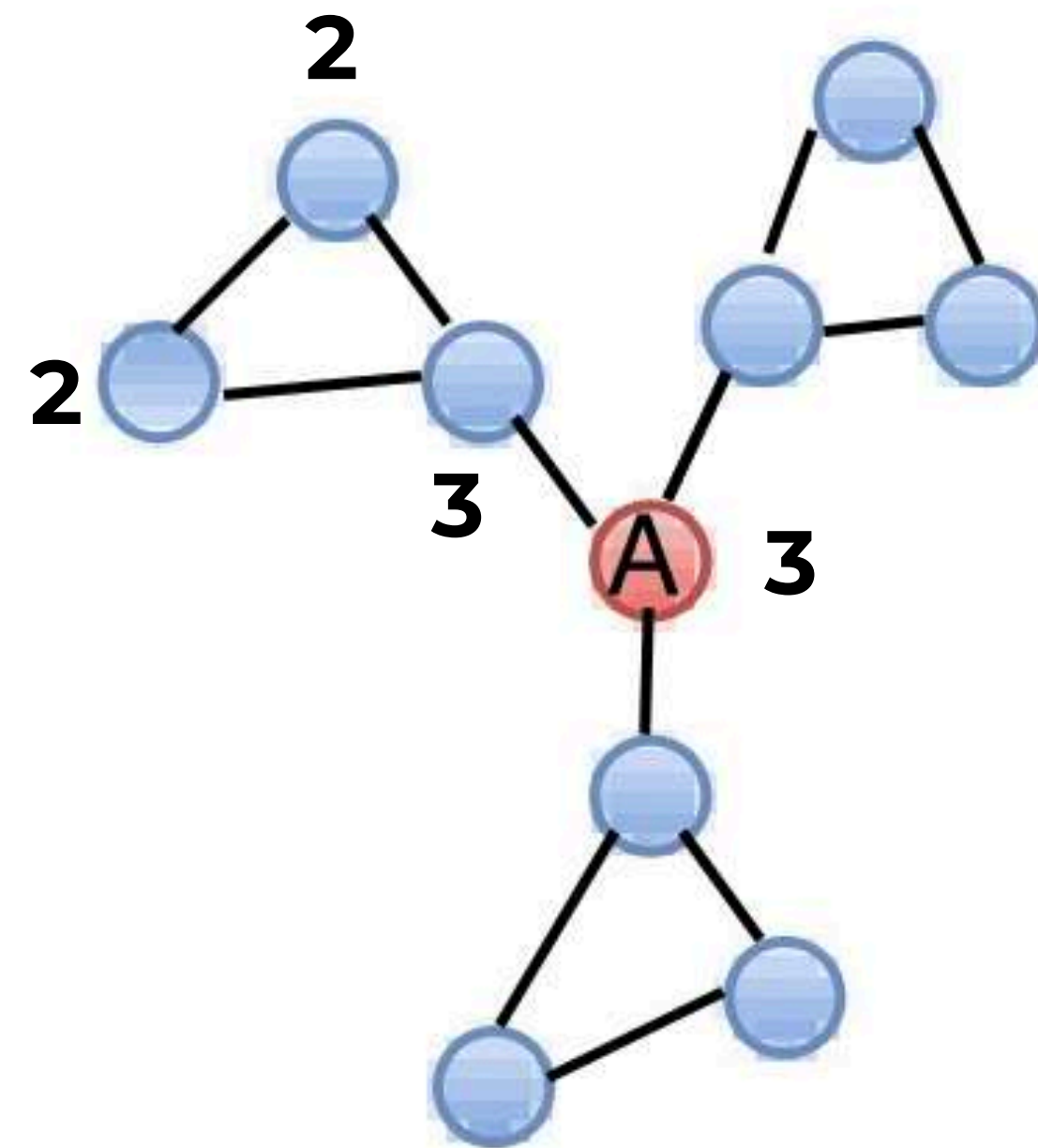
## Központiság





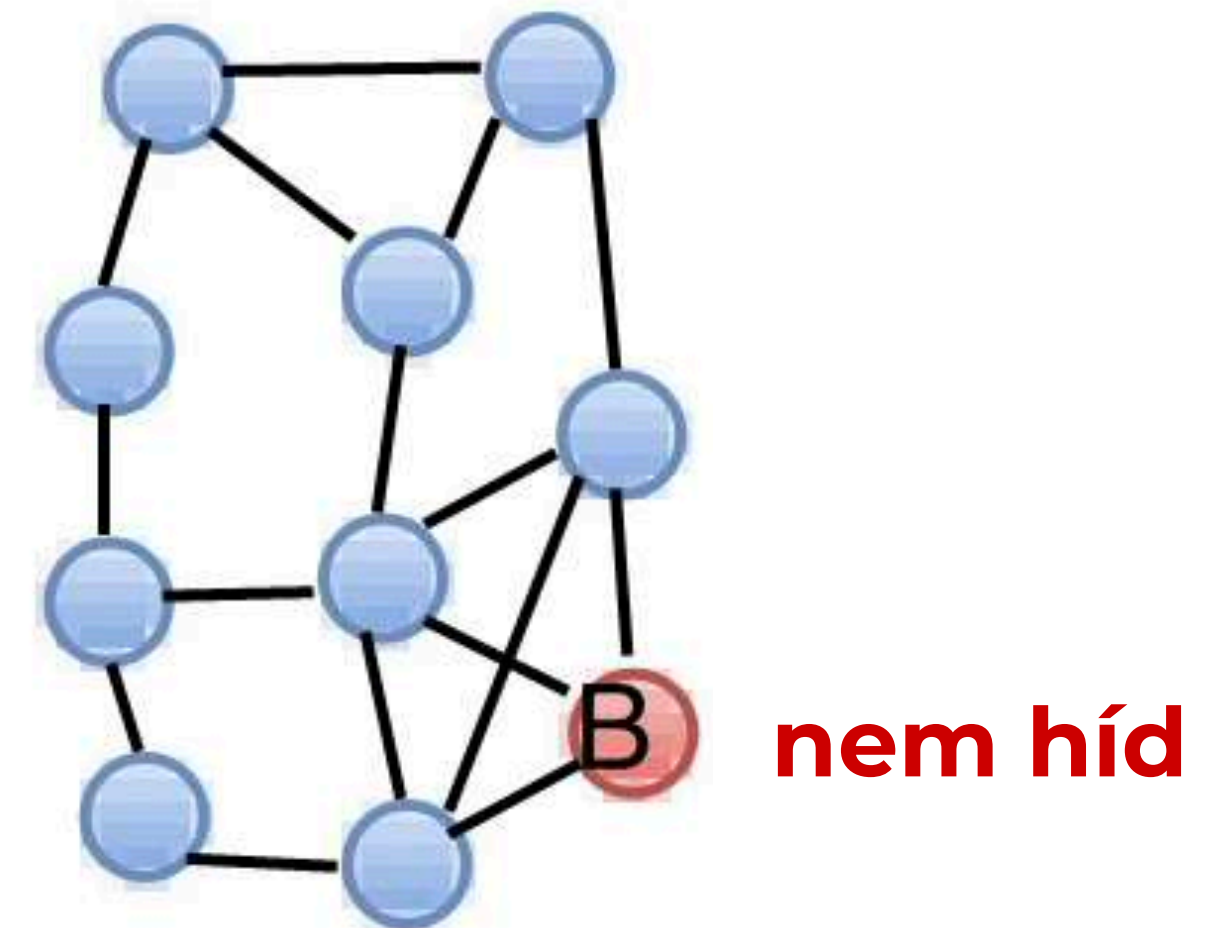
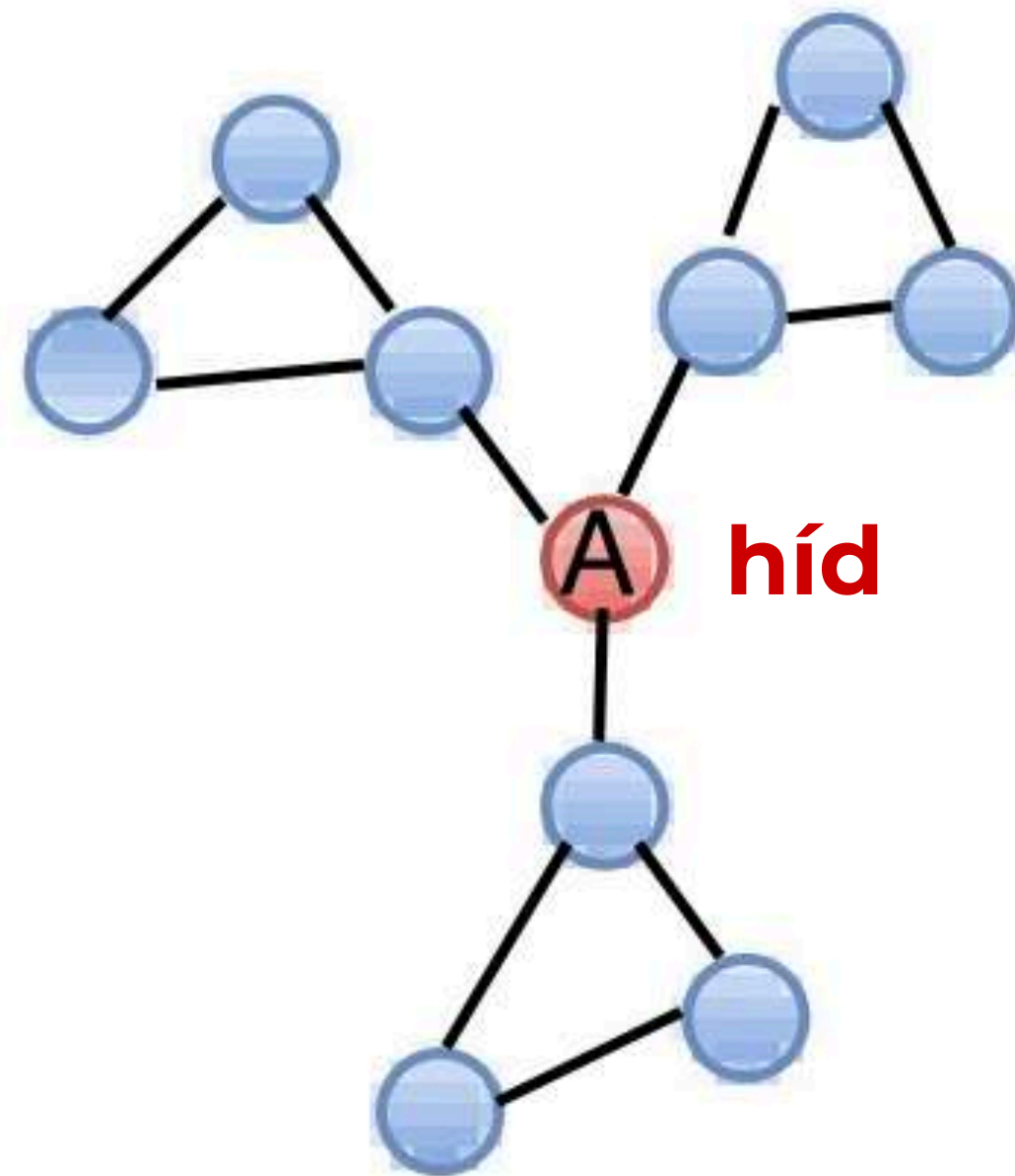
# Hálózatok alapfogalmak

Kapcsolatok száma és erőssége



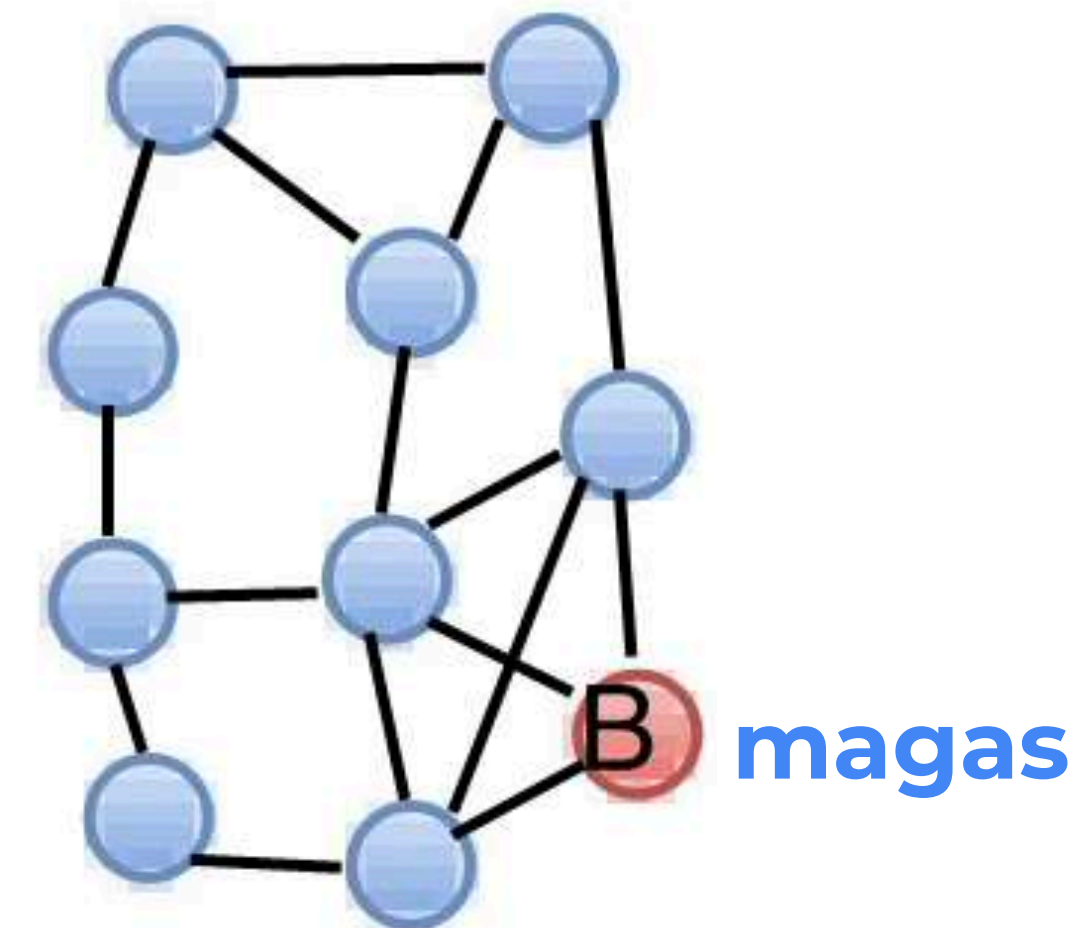
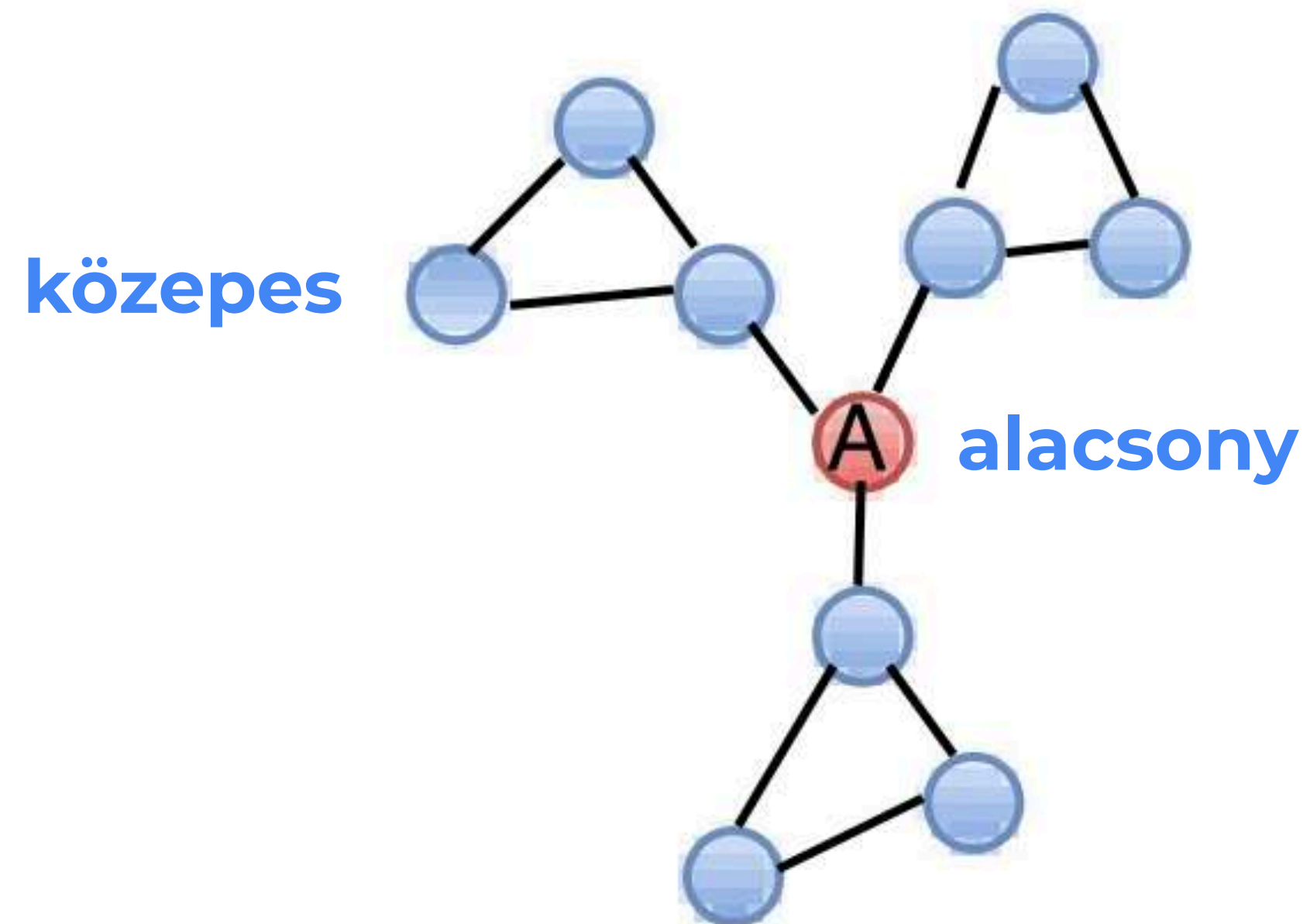
# Hálózatok alapfogalmak

## Hálózati hidak



# Hálózatos alapfogalmak

## Hálózatos beágyazottság





# TRÓNOK HARCA HÁLÓZATOK ÉS GÉPTANULÁS



# Fontos kérdés

2017 nyarán: mely kulcsszereplők élik túl a következő Trónok Harca

évadot?



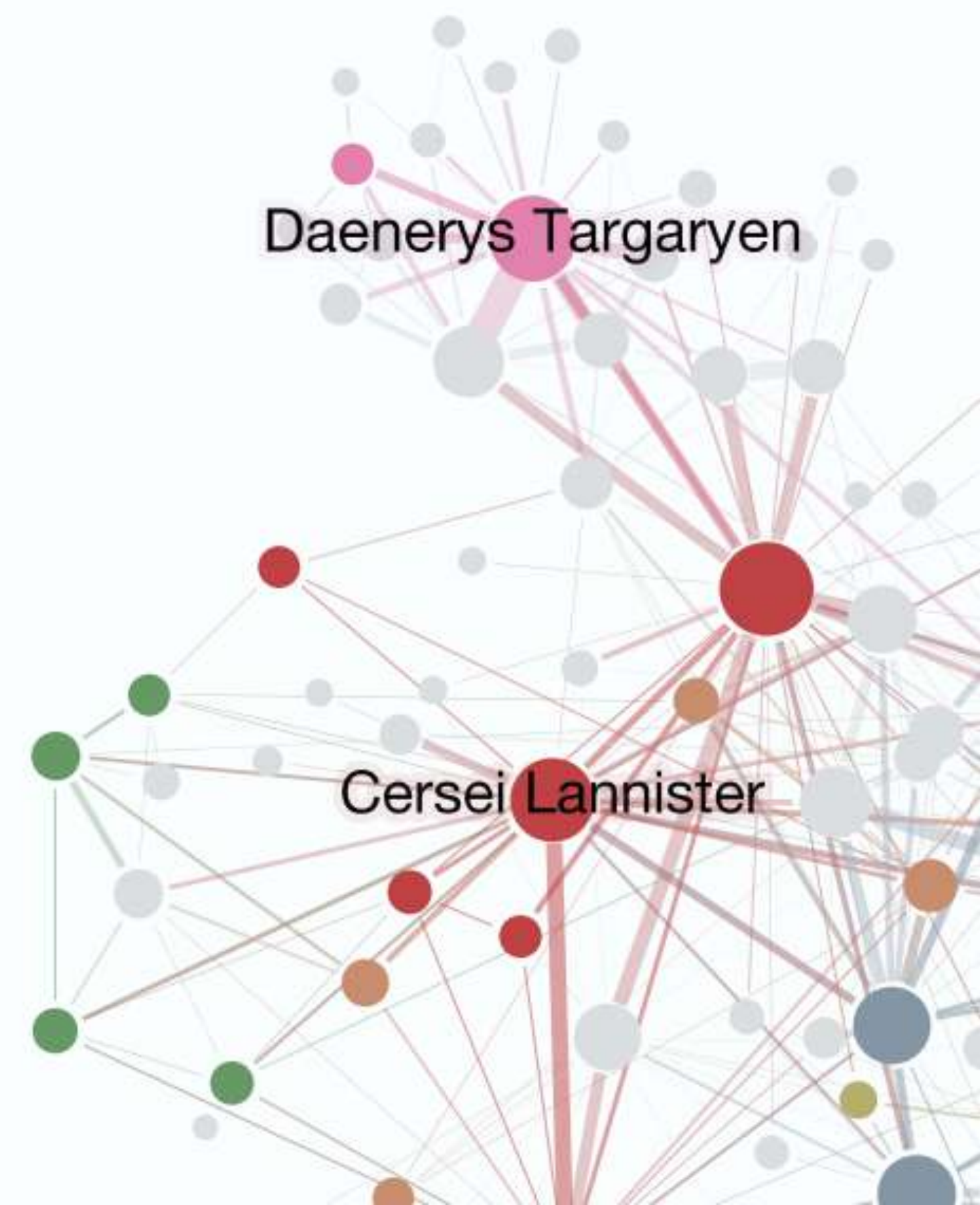
# Adatok

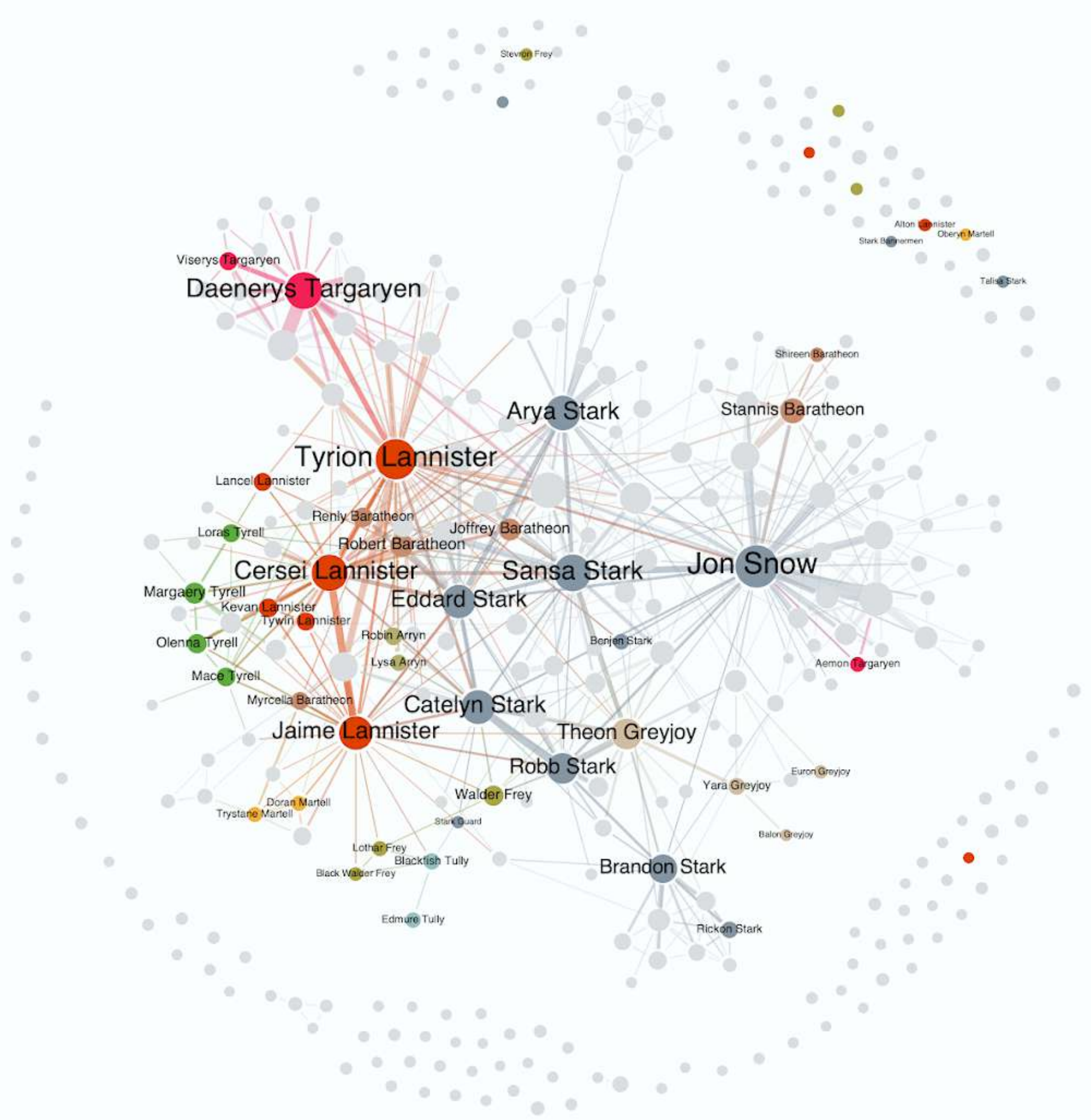


# Hálózat

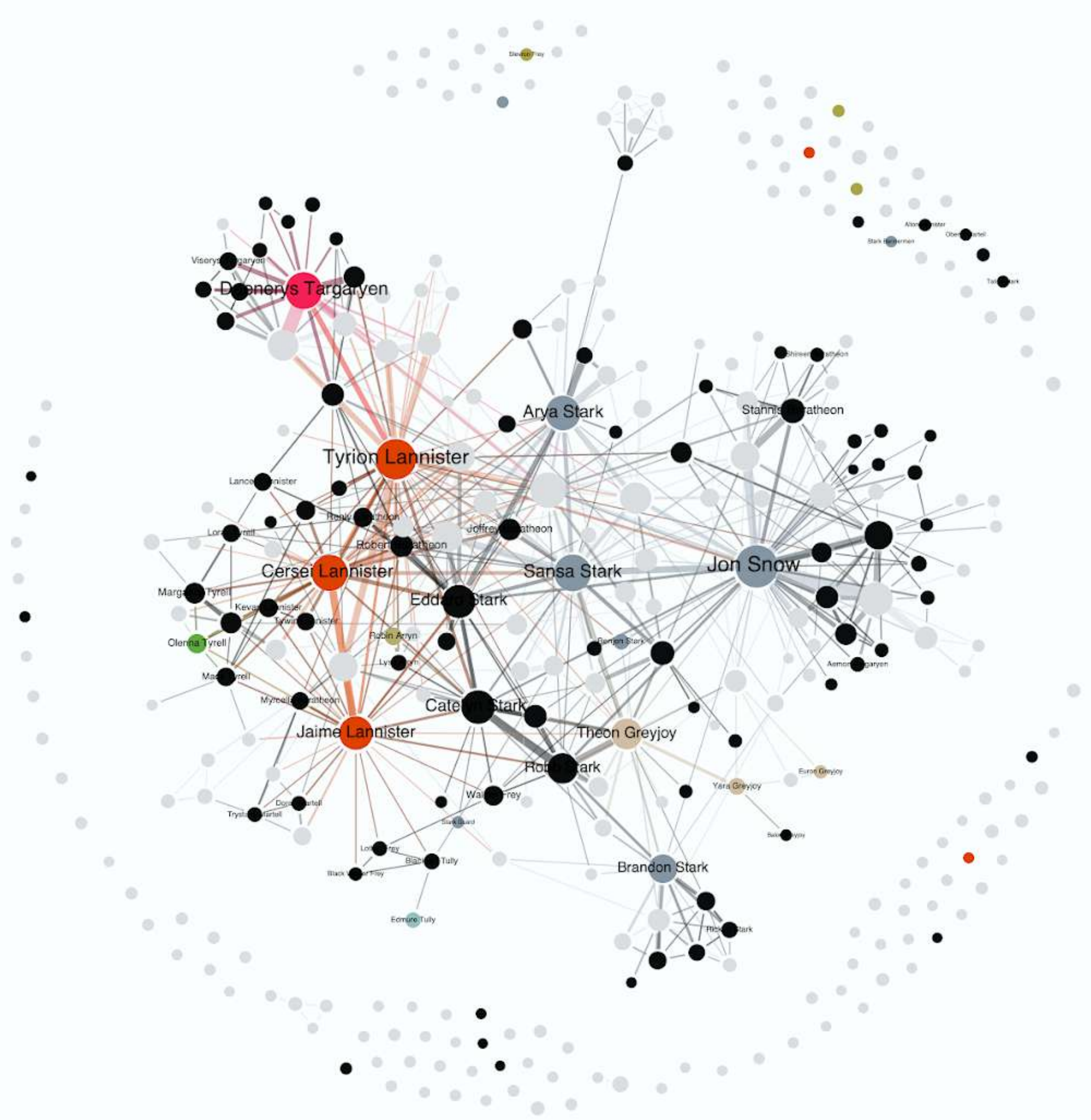
**Csomópontok:** jelentős GoT szereplők

**Kapcsolatok:** közös jelentek száma









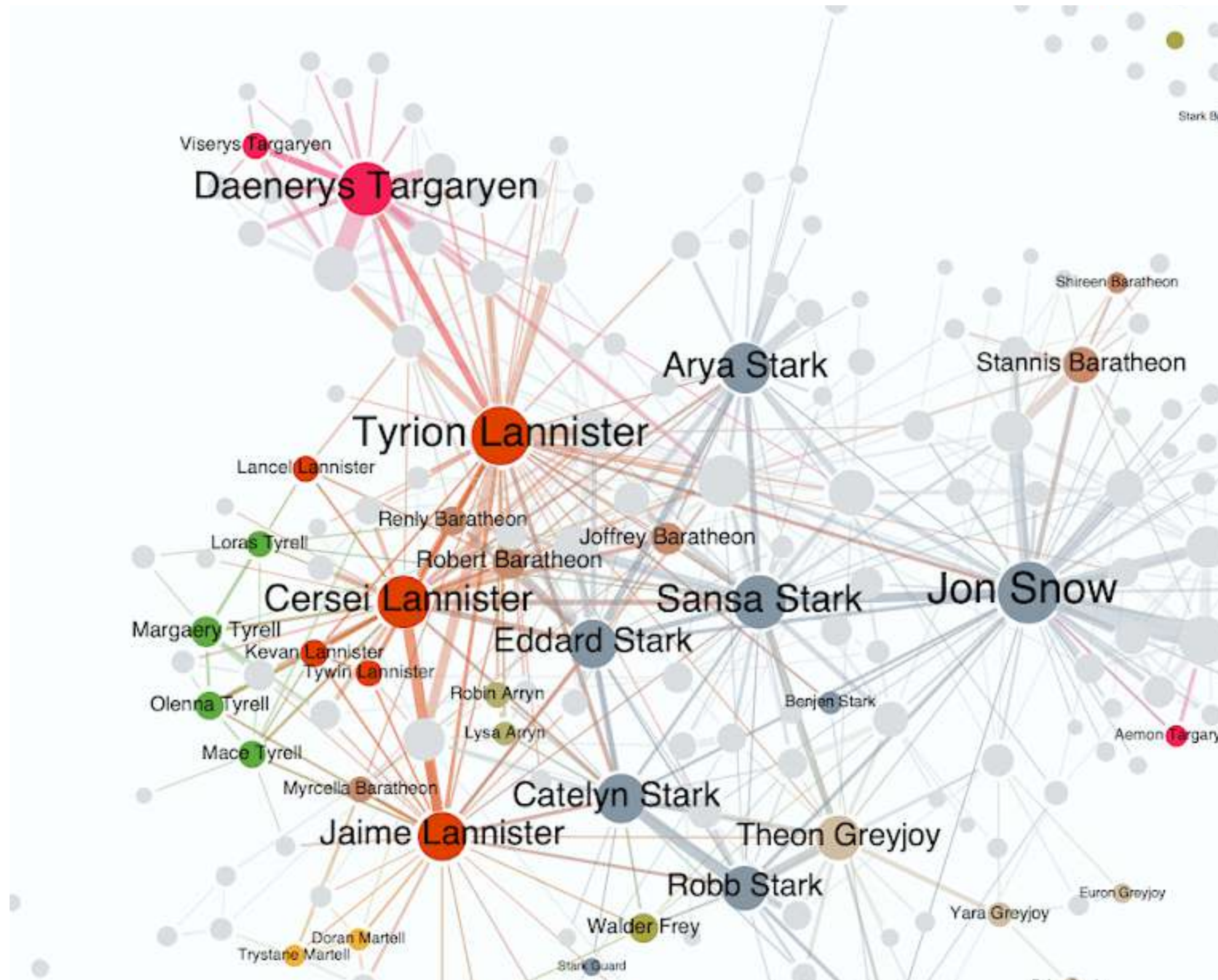
# Szereplők központiséga

	<b>degree</b>	<b>weighted degree</b>	<b>pageranks</b>	<b>clustering</b>	<b>eigencentality</b>	<b>closnesscentrality</b>	<b>betweenesscentrality</b>
<b>Joffrey Baratheon</b>	34	73	0.010648	0.567251	0.516207	0.510730	0.005207
<b>Benjen Stark</b>	23	34	0.007571	0.651515	0.411720	0.508547	0.009492
<b>Theon Greyjoy</b>	43	155	0.013937	0.324111	0.507033	0.548387	0.030976
<b>Jon Snow</b>	74	374	0.024013	0.240216	0.698632	0.595000	0.122631
<b>Melisandre</b>	15	59	0.005920	0.535714	0.106703	0.399329	0.000965

# Szereplők sajátállapota

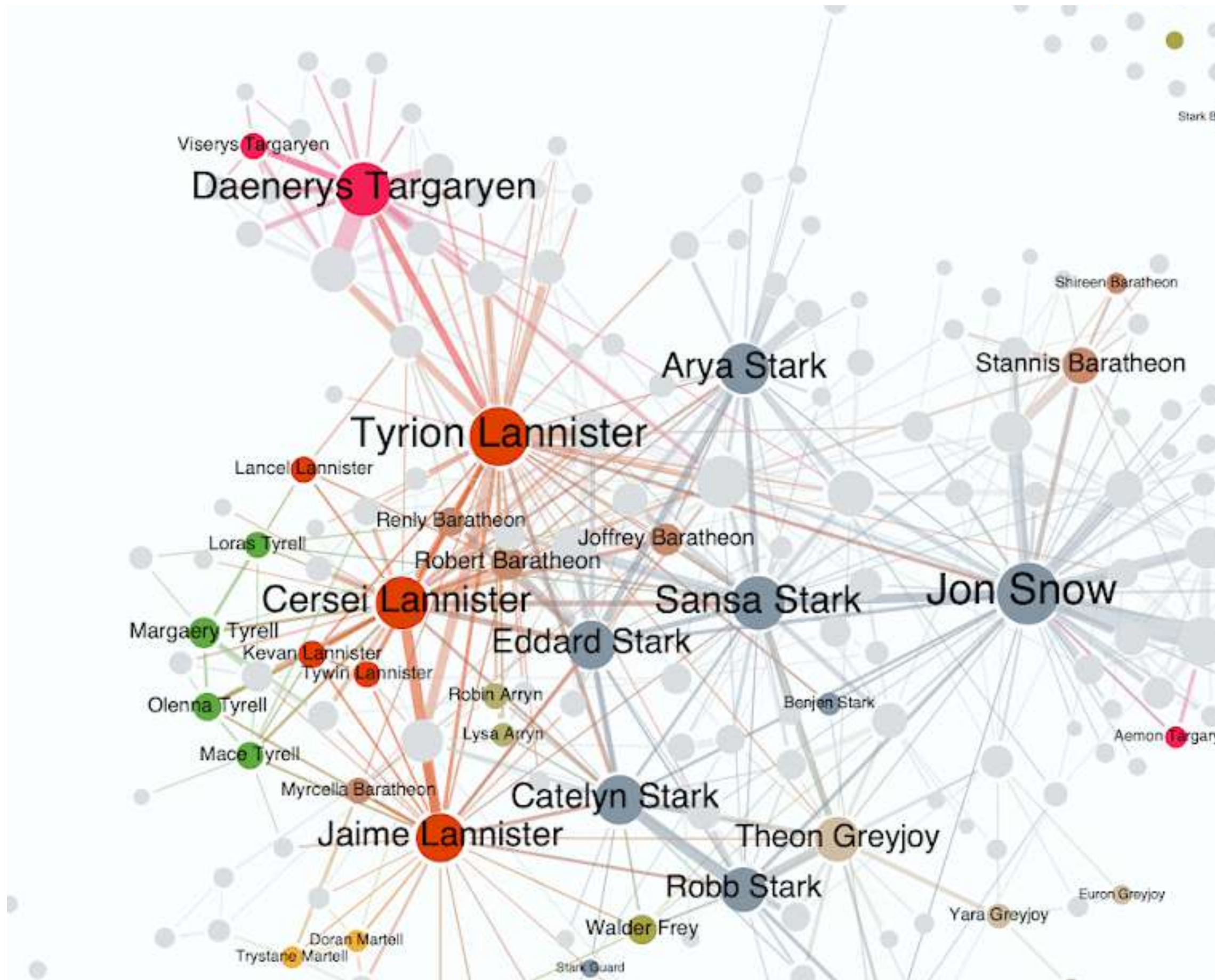
	<b>degree</b>	<b>weighted degree</b>	<b>pageranks</b>	<b>clustering</b>	<b>eigencentality</b>	<b>closnesscentrality</b>	<b>betweenesscentrality</b>	<b>died</b>
<b>Joffrey Baratheon</b>	34	73	0.010648	0.567251	0.516207	0.510730	0.005207	1.0
<b>Benjen Stark</b>	23	34	0.007571	0.651515	0.411720	0.508547	0.009492	1.0
<b>Theon Greyjoy</b>	43	155	0.013937	0.324111	0.507033	0.548387	0.030976	0.0
<b>Jon Snow</b>	74	374	0.024013	0.240216	0.698632	0.595000	0.122631	0.0
<b>Melisandre</b>	15	59	0.005920	0.535714	0.106703	0.399329	0.000965	0.0

# Esélyek a 7. évad előtt



	Probability	Error
<b>Tyene</b>	0.95	0.04
<b>Daenerys Targaryen</b>	0.91	0.05
<b>Grey Worm</b>	0.90	0.05
<b>Robin Arryn</b>	0.90	0.06
<b>Podrick</b>	0.88	0.06
<b>Edmure Tully</b>	0.88	0.06
<b>Greatjon Umber</b>	0.88	0.06
<b>Jaqen</b>	0.87	0.06
<b>Bronn</b>	0.85	0.09
<b>Arya Stark</b>	0.84	0.07
<b>Sandor Clegane</b>	0.83	0.07
<b>Brienne</b>	0.81	0.07
<b>Melisandre</b>	0.80	0.07
<b>Olenna Tyrell</b>	0.79	0.09
<b>Yara Greyjoy</b>	0.74	0.07
<b>Daario Naharis</b>	0.72	0.09
<b>Jaime Lannister</b>	0.67	0.11

# Esélyek a 8. évad után



	Probability	Standard deviation	
Tyene	0.95	0.04	✗
Olenna Tyrell	0.79	0.09	✗
Petyr Baelish	0.5	0.14	✗
Obara	0.25	0.08	✗
Jorah Mormont	0.05	0.06	✓
Theon Greyjoy	0.05	0	✓

	Probability	Standard deviation	Rank change	
1 Grey Worm	1.00	0.00	2	✓
2 Brandon Stark	0.99	0.01	17	✗
3 Missandei	0.98	0.01	28	✓
4 Cersei Lannister	0.98	0.01	25	✓
5 Qyburn	0.98	0.01	19	✓
6 Jaime Lannister	0.94	0.03	11	✓



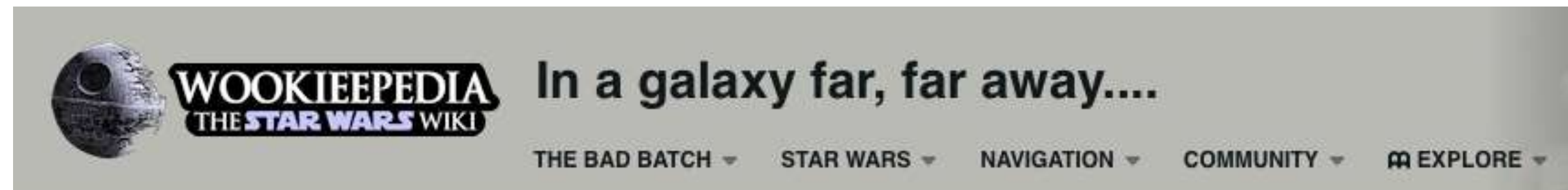
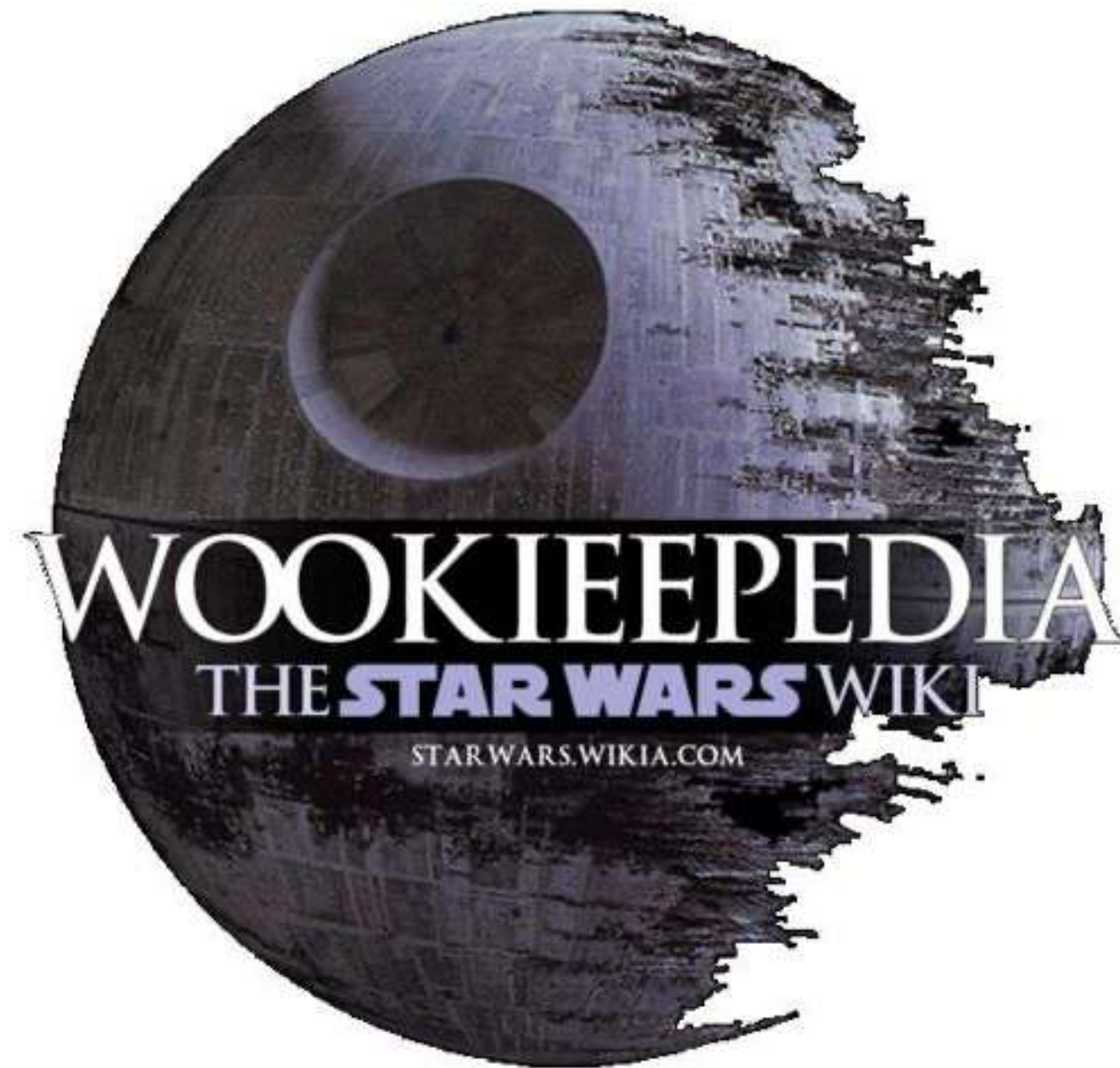
# **BABY YODA ÉS A SÖTÉT OLDAL**

# Kérdés

Előrevetítik-e a hálózatok, hogy áll a sötét oldalra?



# Adatok



in: [Canon articles](#), [Semi-protected articles](#), [Articles with spoilers](#), and [16 more](#)

## Obi-Wan Kenobi

*"You can kill me, but you will never destroy me. It takes strength to resist the dark side. Only the weak embrace it."*

*"It is more powerful than you know."*

*"And those who oppose it are more powerful than you'll ever be."*

—Obi-Wan Kenobi and Maul<sup>[src]</sup>

**Obi-Wan Kenobi** was a [Force-sensitive](#) legendary [human male Jedi Master](#) who served on the [Jedi High Council](#) during the last [years](#) of the [Republic Era](#). During the [Imperial Era](#), he adopted the alias **Ben Kenobi** in order to hide from the [regime](#) that drove the [Jedi](#) to near [extinction](#). A noble man known for his skills with [the Force](#), Kenobi [trained Anakin Skywalker](#), served as a [Jedi General](#) in the [Grand Army of the Republic](#), and became a mentor to [Luke Skywalker](#) prior to his [death](#) in 0 BBY.

Born on the [planet Stewjon](#) in 57 BBY, Kenobi joined the [Jedi Order](#)—an order of [Force-sensitive peacekeepers](#)—at a [young age](#). Following his initial lessons under [Grand Master Yoda](#), he became the [Padawan](#) of Jedi Master [Qui-Gon Jinn](#). During the [Invasion of Naboo](#) in 32 BBY, Kenobi [defeated](#) the [Sith Lord Darth Maul](#) and was awarded the status of [Jedi Knight](#). As a result of Jinn's death, Kenobi took on the task of training Anakin Skywalker, but often had to rein in his adventure-seeking apprentice. Although he deemed Skywalker arrogant and overconfident in his [Force powers](#), Kenobi also regarded him as a brother and good friend. Moreover, he was convinced that Skywalker was the [Chosen One](#) destined to bring the Force into balance by destroying the [Sith](#).

In the aftermath of the [First Battle of Geonosis](#) in 22 BBY, Kenobi and his fellow

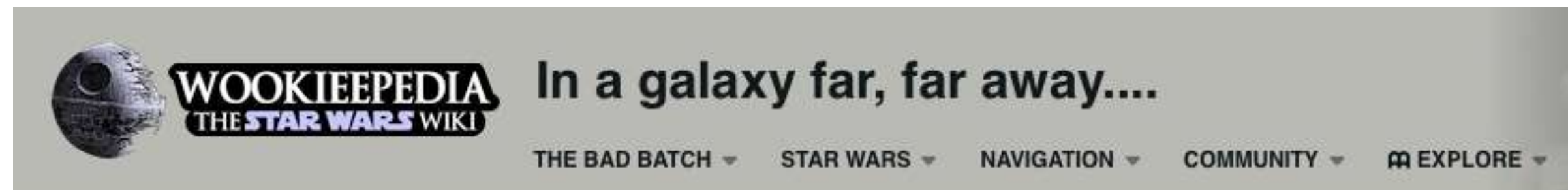
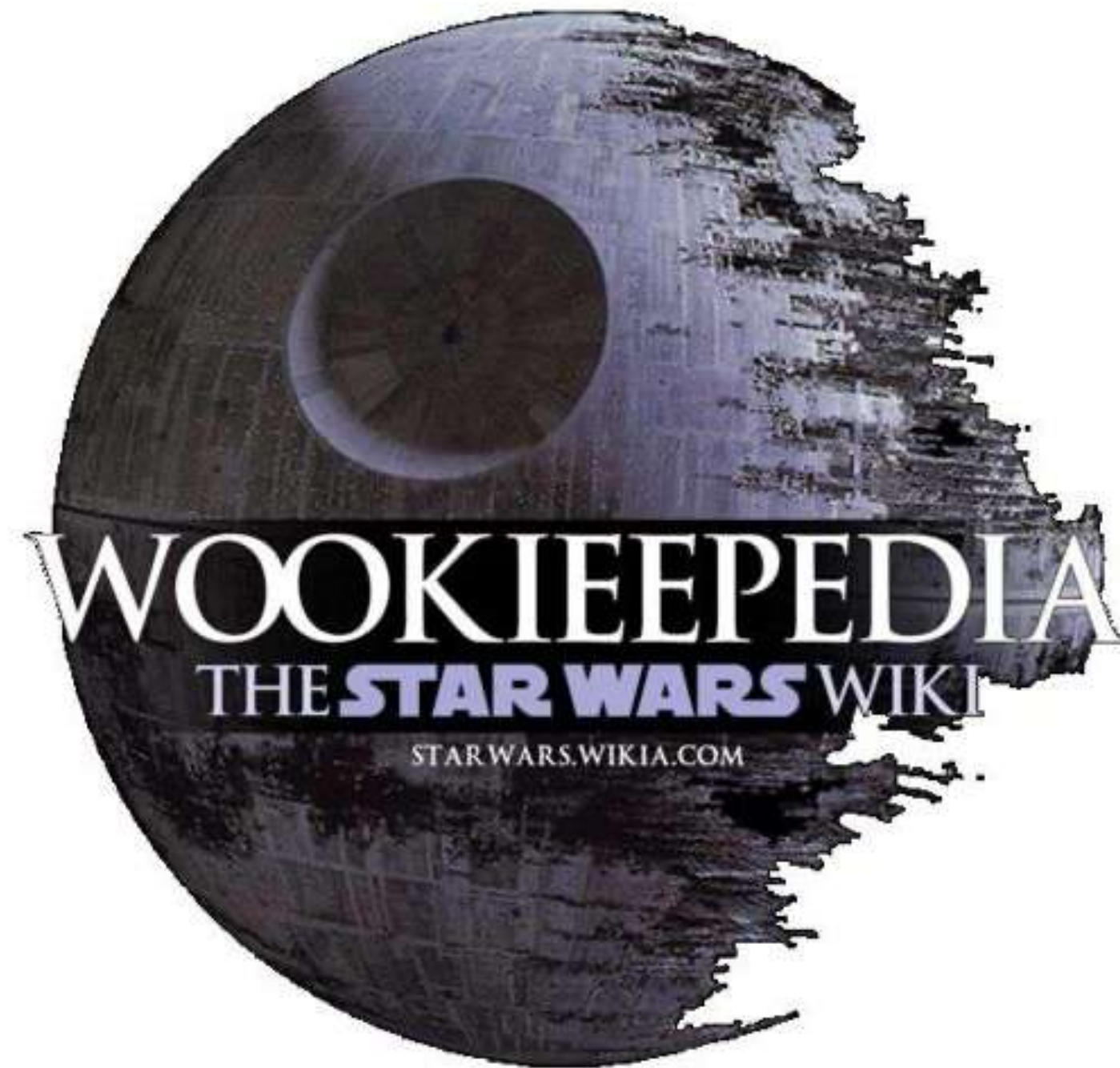


**Obi-Wan Kenobi**

<b>Biographical information</b>	
Homeworld	<a href="#">Stewjon</a> <sup>[1]</sup>
Born	<a href="#">57 BBY</a> , <sup>[2]</sup> <a href="#">Stewjon</a> <sup>[3]</sup>
Died	<a href="#">0 BBY</a> , <sup>[4]</sup> <a href="#">Death Star</a> , <a href="#">Alderaan system</a> <sup>[5]</sup>
<b>Physical description</b>	
Species	<a href="#">Human</a> <sup>[6]</sup>
Gender	<a href="#">Male</a> <sup>[1]</sup>
Height	<a href="#">1.82 meters</a> <sup>[7]</sup>



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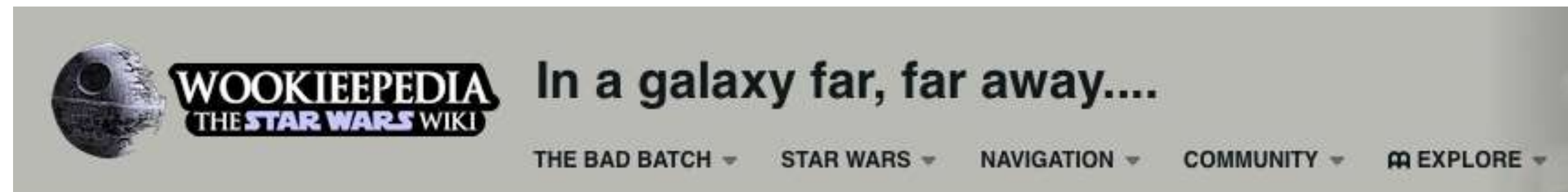
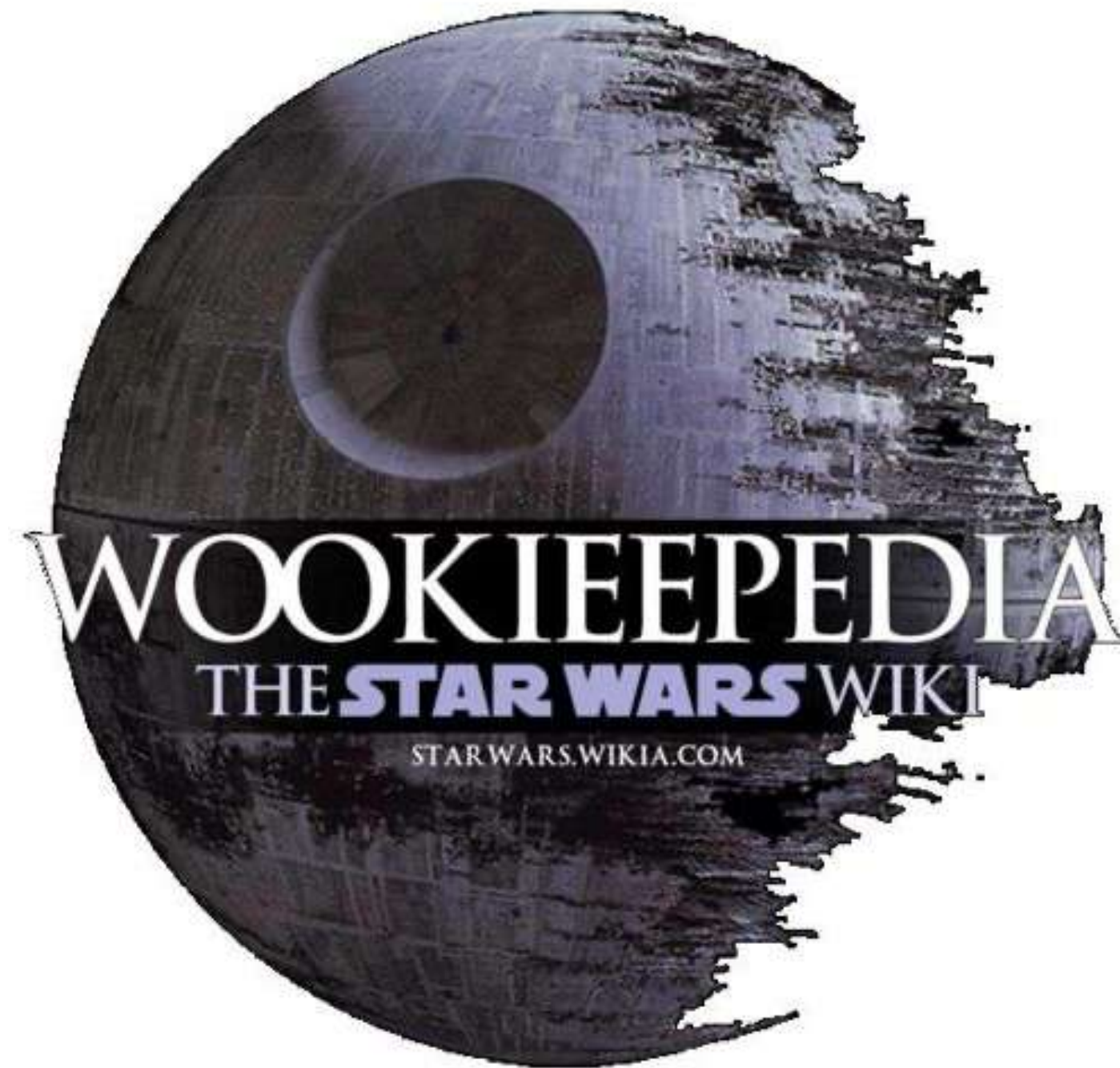
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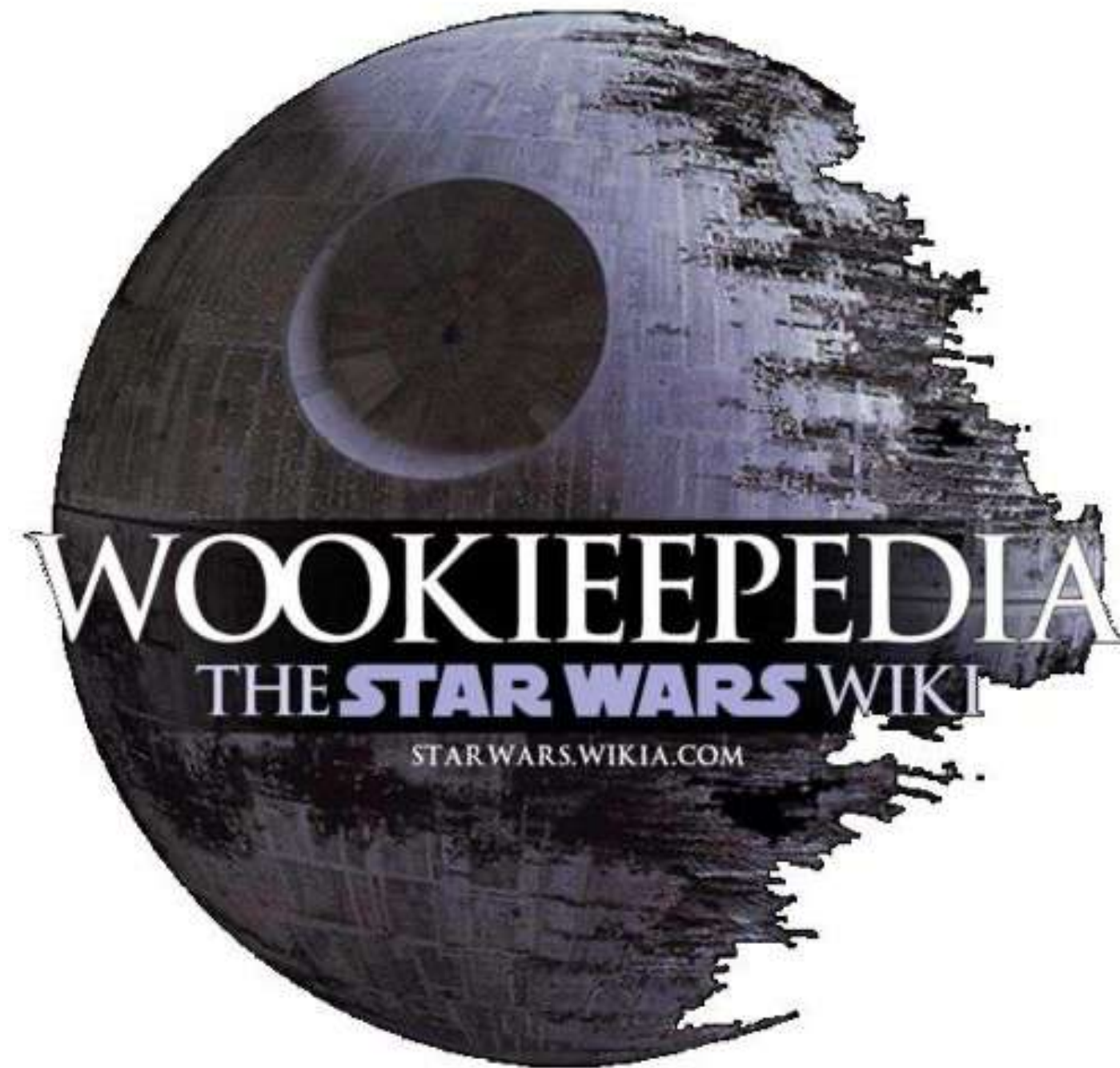
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# Adatok



 **WOOKIEEPEDIA**  
THE STAR WARS WIKI

In a galaxy far, far away....

THE BAD BATCH ▾ STAR WARS ▾ NAVIGATION ▾ COMMUNITY ▾ EXPLORE ▾

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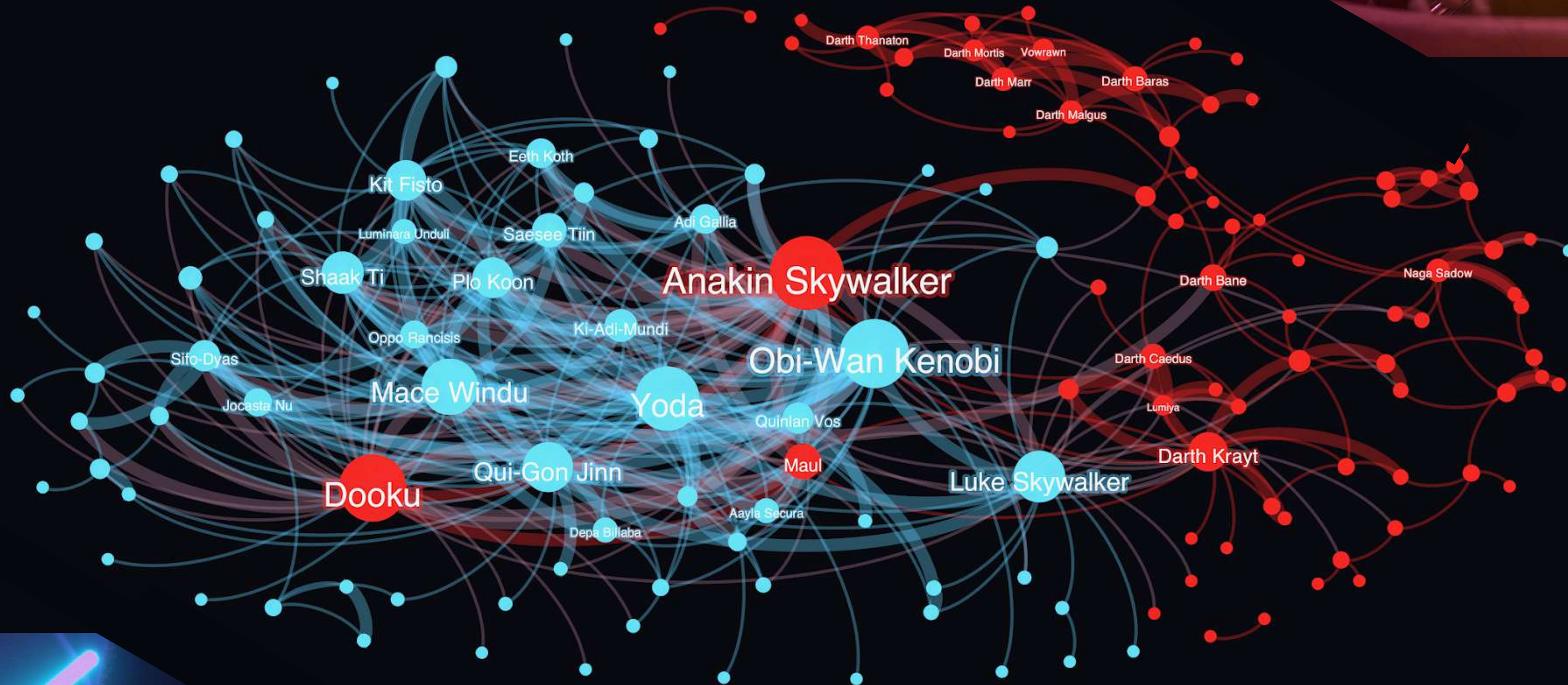
# Egyén-jellemzők

## Hálózatos jellemzők

- Kapcsolatok száma
- Kapcsolatok közelsége
- Köztiség
- Klaszterezettség

## Nem-hálózatos jellemzők

- Fizikai: szemszín, hajszín, magasság, s
- Leírás hossza
- Leírás komplexitása
- Leírás hangulata (+/-)





Eye color

Skin color

Hair color

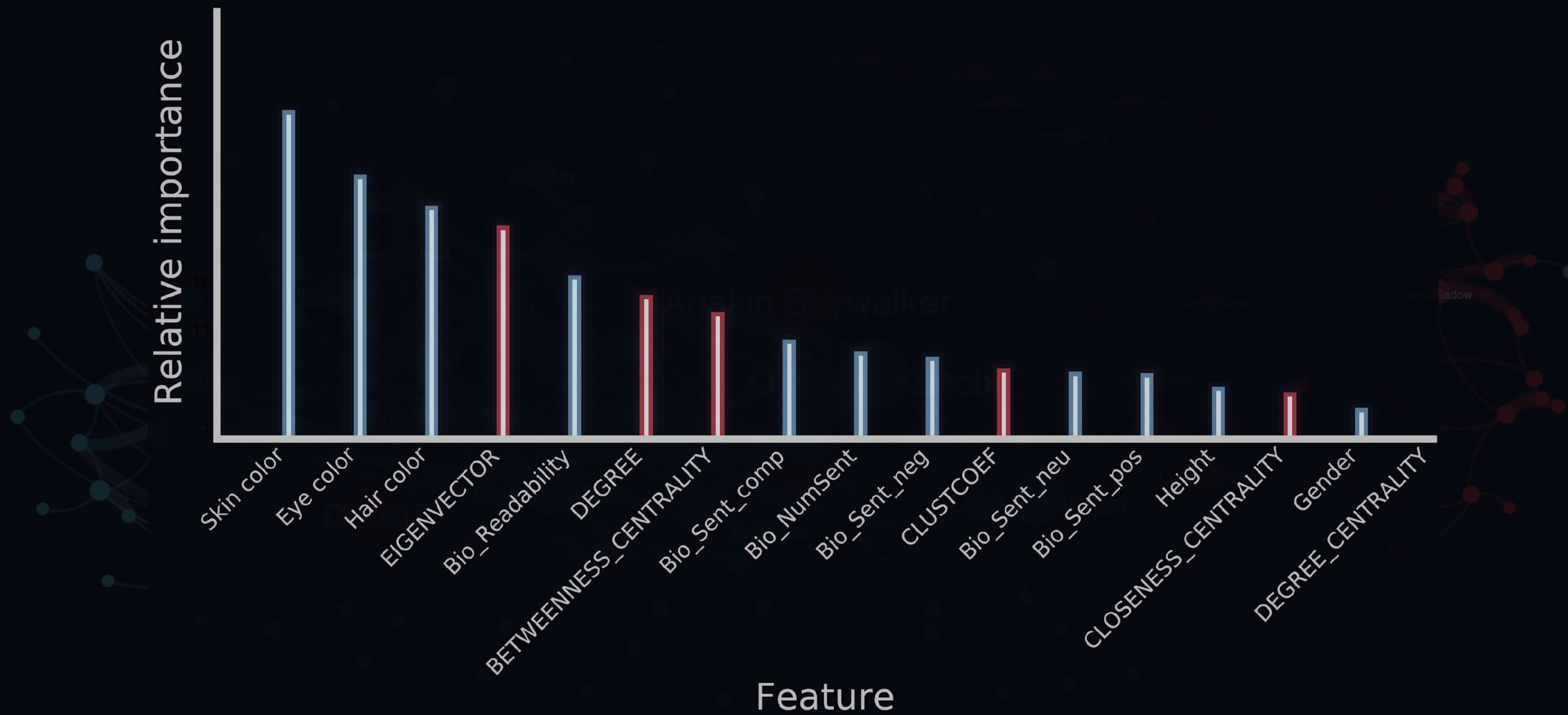
Gender

Article length

XGBoost

Jedi

Sith



\*predictive power of different features derived from wookipedia, targeting the question of whether Baby Yoda is more similar to

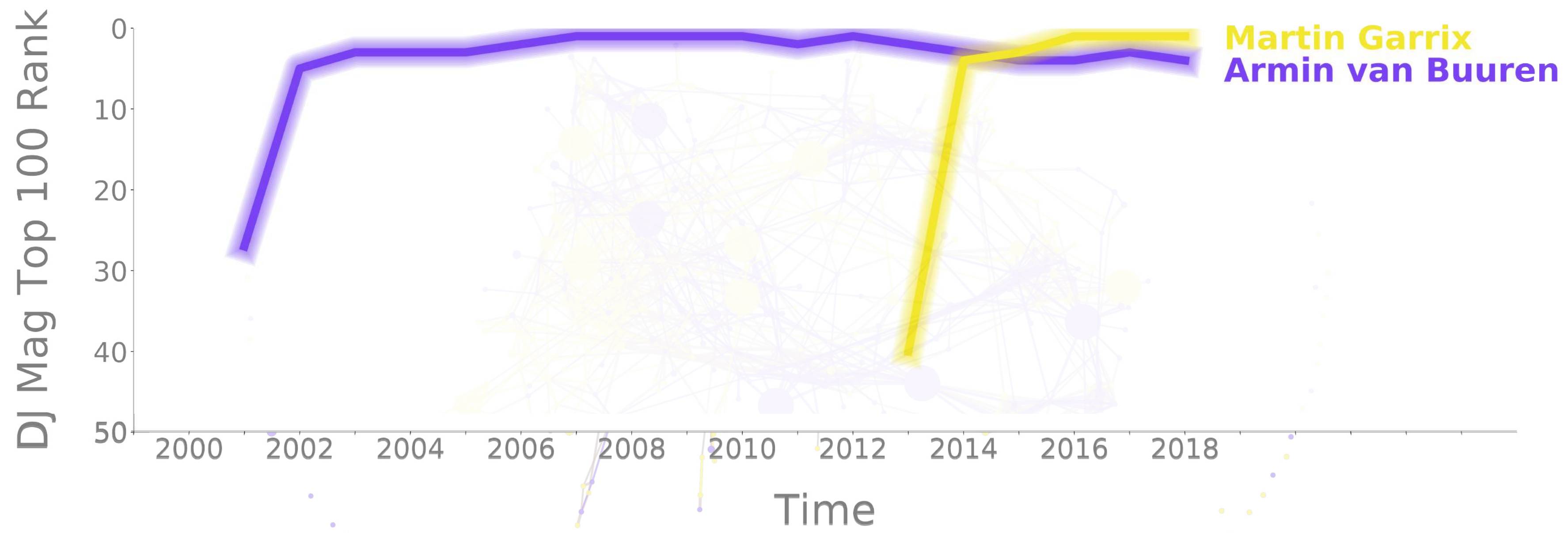




"The dark side clouds everything.  
Impossible to see the future is."

# **SZTÁR DJ-K ÉS MENTOROK**





\*DJMag top 100 éves alakulása

# Kérdés

Hogyan hatnak a hálózatok, kiemelten  
pedig a **mentorok** és **közösségeik** a  
**sztár DJ-k sikerére?**



# Kérdés

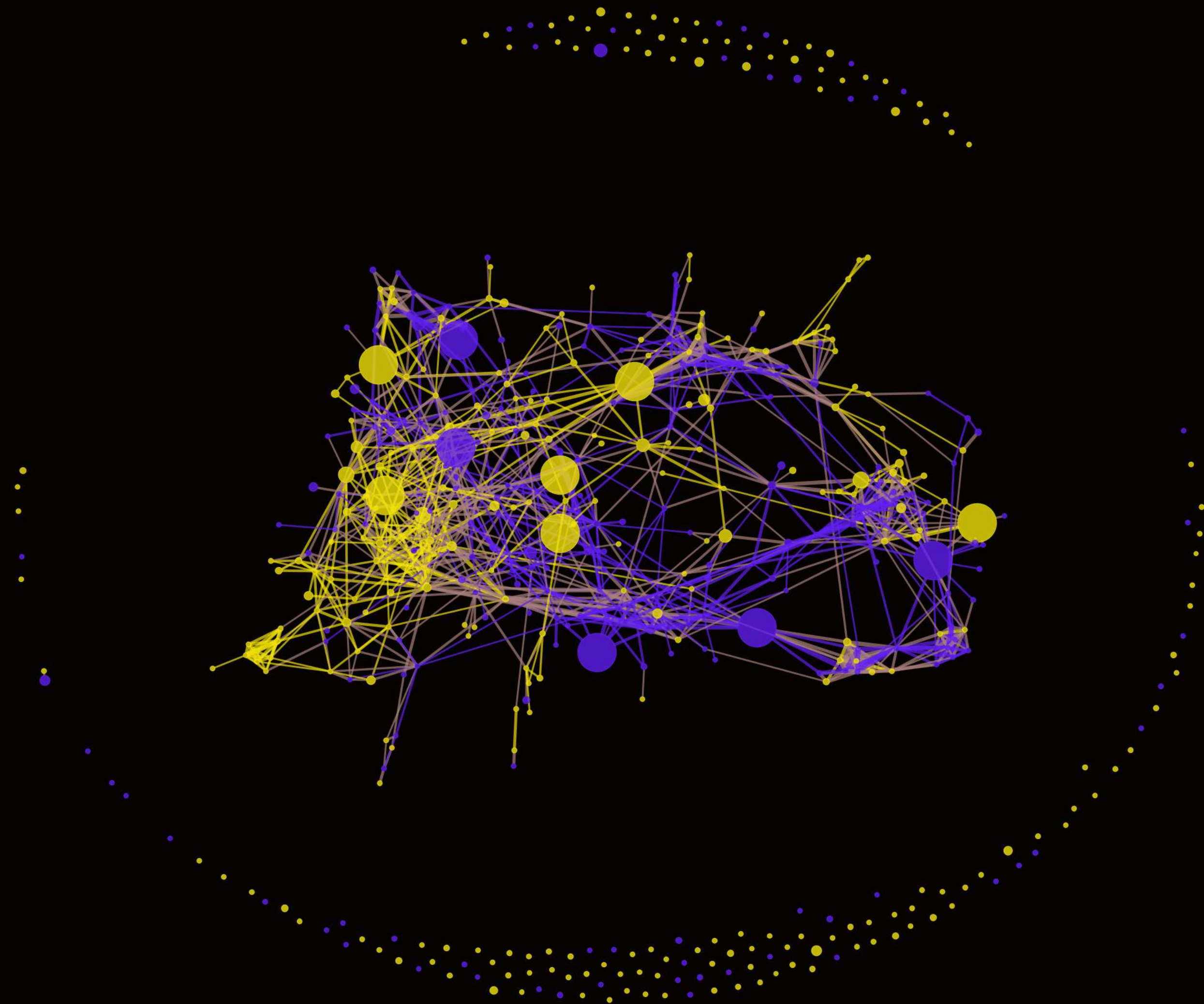
Hogyan hatnak a hálózatok, kiemelten pedig a **mentorok** és **közösségeik** a **sztár DJ-k sikerére?**

# hálózat

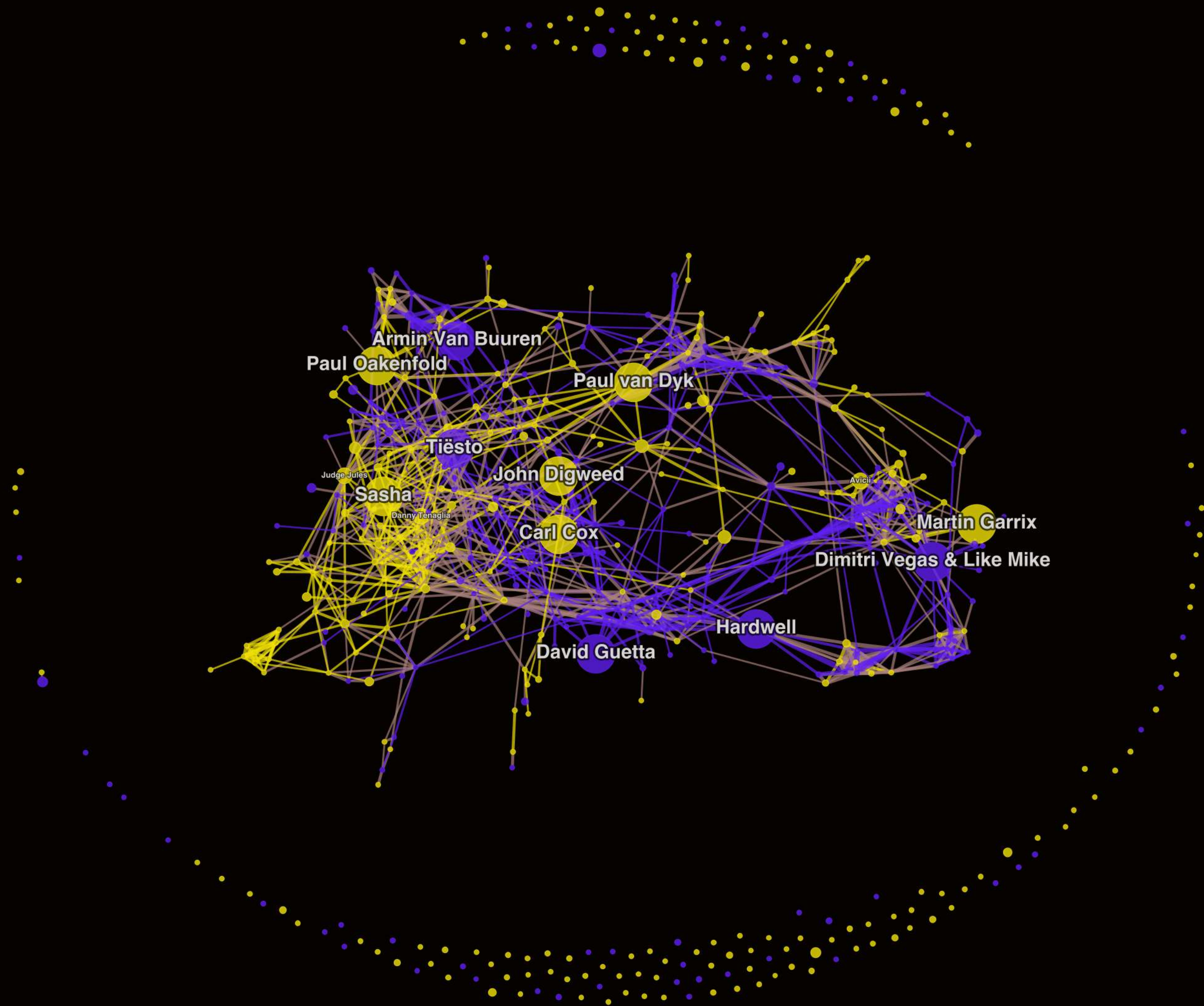
**adat:** discogs, DJMag

**csomópontok:** DJMag top 100 zenészek

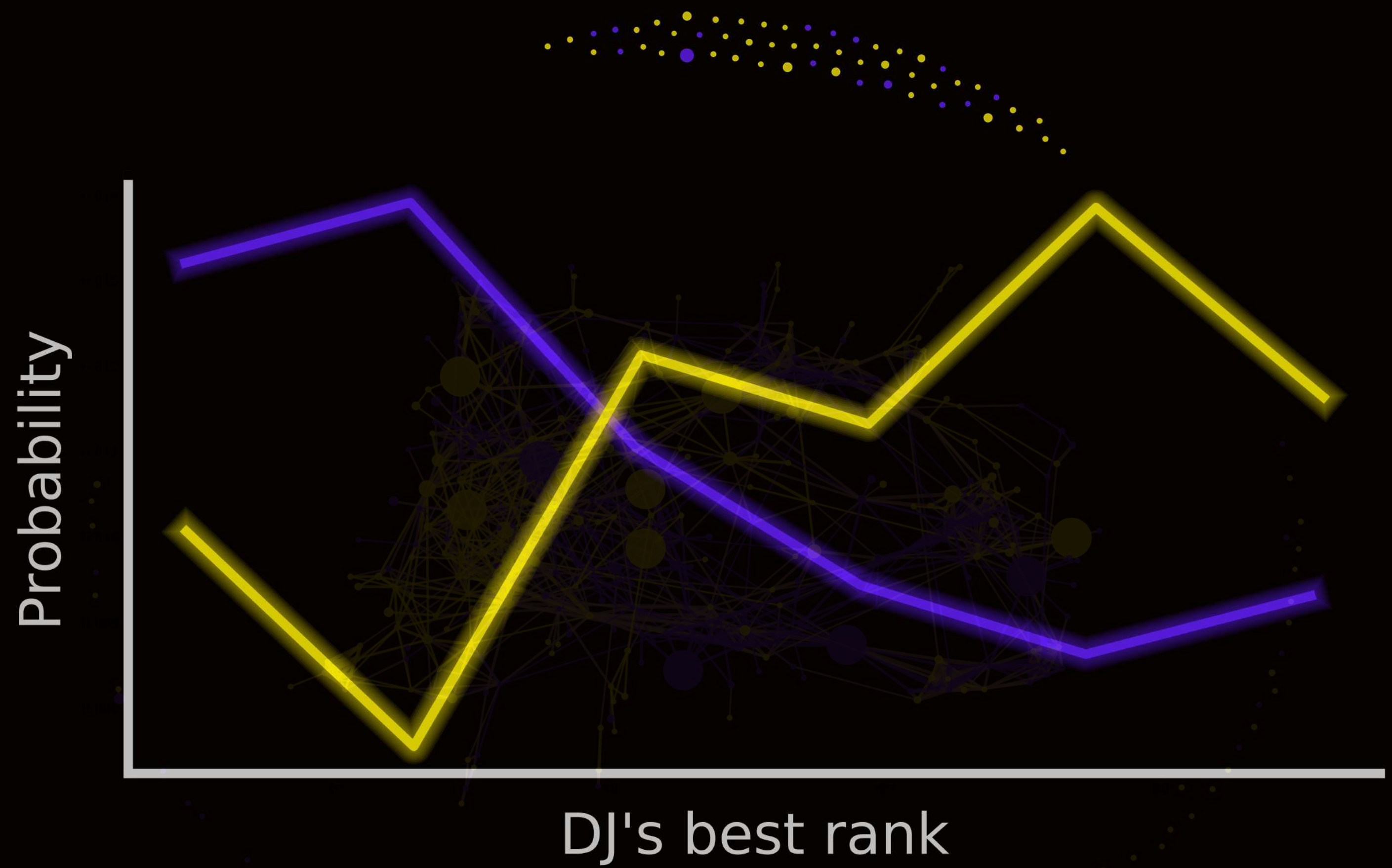
**kapcsolatok:** közös kiadványok száma



- nem mentorált
- mentorált



- nem mentorált
- mentorált

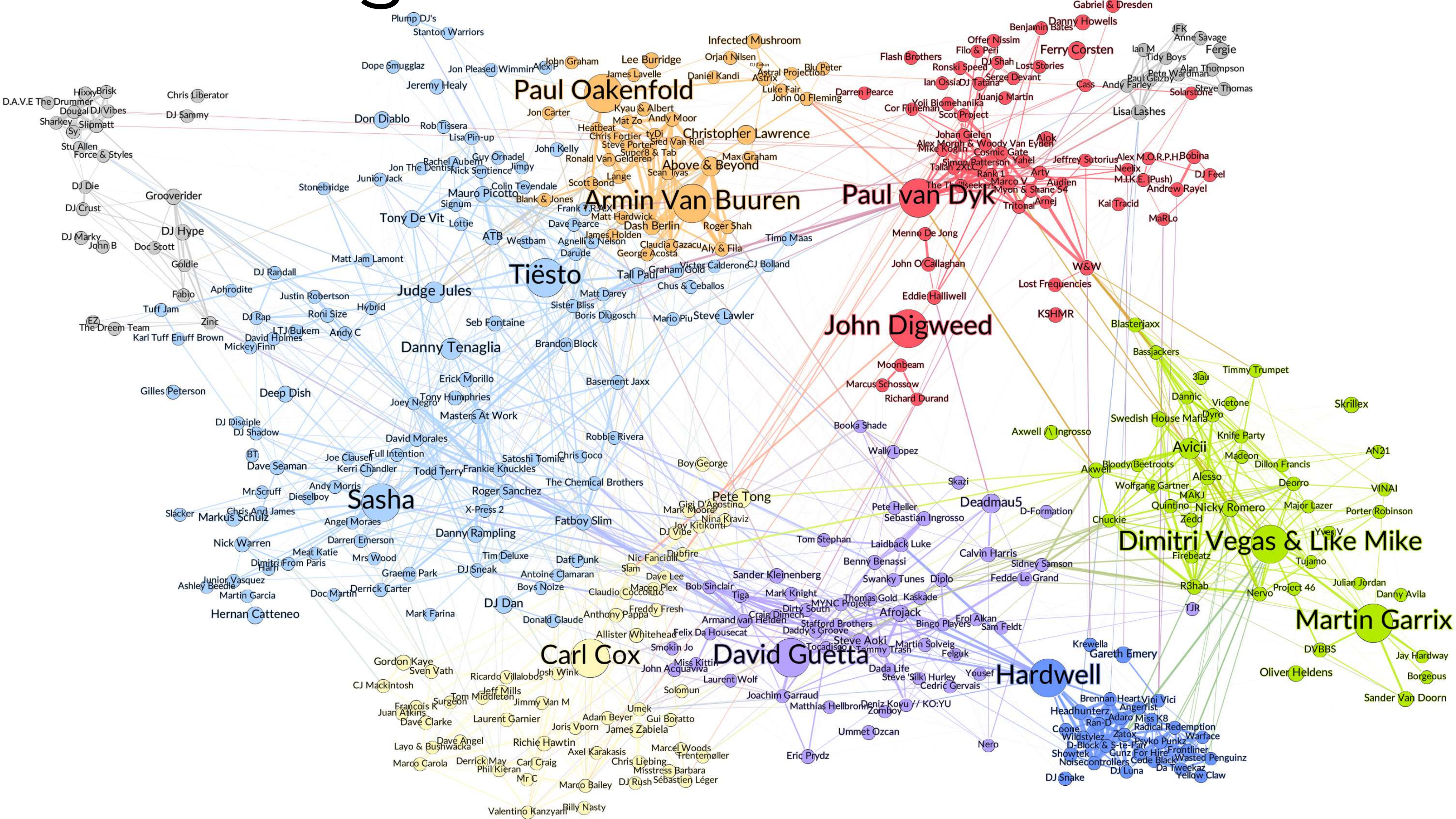


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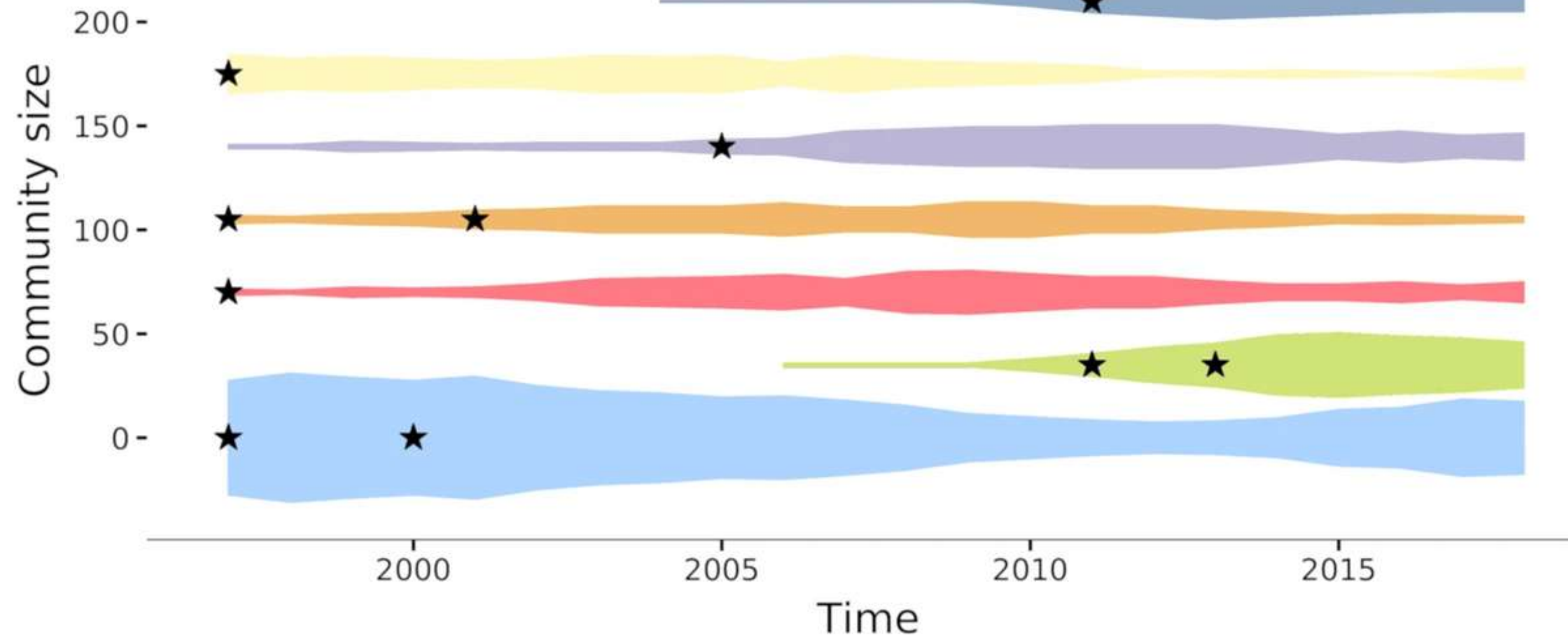
\*comparing the success of mentored and non-mentored DJs



# DJ közösségek



# DJ közösségek



- Sasha & Tiësto community
- Armin Van Buuren & Paul Oakenfold community
- Carl Cox community
- Martin Garrix & Dimitri Vegas & Like Mike community
- David Guetta community
- Hardwell community
- Paul van Dyk & John Digweed community



# MAGYAR MŰVÉSZETI HÁLÓ



**LUDWIG  
MÚZEUM**



**VISIT**  
**COLLECTION**  
**EXHIBITIONS**

**VENICE BIENNALE**

**PRESS**  
**SEARCH**  
**TICKETS**  
**NEWSLETTER**

 **OPEN TODAY:**  
**10 A.M. - 6 P.M.**

**BARABÁASILAB: HIDDEN PATTERNS.  
THE LANGUAGE OF NETWORK  
THINKING**

**10. OCTOBER, 2020 - 26. JUNE, 2021**

## Maurer Dóra

festő, grafikus

Budapest, 1937-06-11

### Egyéni kiállítások

#### Egyéni kiállítások

1966 • Dürer Terem, Budapest (kat.) • Internationale Künstlerclub, Bécs [Miodrag Nagornival], Galerie Maerz, Linz  
 1970 • Dürer Terem, Budapest  
 1971 • Galerie Junge Generation, Bécs (kat.)  
 1974 • *Grafik, Objekte*, Kleine Galerie, Bréma  
 1975 • *Verschiebungen 1975-1975*, Neue Galerie am Landesmuseum Joanneum, Graz (kat.)  
 1976 • Szent István Király Múzeum, Székesfehérvár [Gáyor Tiborral] • Helikon Galéria, Budapest • Alvar Aalto Múzeum, Jyväskylä, (FIN)  
 1979 • *Eltolódások 1975-1979*, Pécsi Galéria, Pécs (kat.)  
 1980 • *Stabilizáció – Artikuláció*, G. Grada, Zágráb [Erdély Miklóssal] • *Verschuivingen 1975-1979*, Hedendagse Kunst, Utrecht (kat.)  
 1982 • *Képek, Rajzok, Fotók*, Galerie Hoffmann, Friedberg • *Tér, kvázi-kép. Egzaktt tendenciák*, Schloss Buchberg (A)  
 1983 • *Exakte Tendenzen*, Bécs-Buchberg • *Filmek/Films*, Pécsi Galéria, Pécs (kat.)  
 1984 • *Munkák/Arbeiten 1958-1983*, Ernst Múzeum, Budapest, (kat.) • Museum Moderner Kunst, Bécs  
 1986 • *Képvétületek*, Budapest Galéria, Budapest (kat.)  
 1990 • *Dialógus*, Goethe Intézet, Budapest [Erika Kifflel]  
 1991 • Herzfeld G., Stockholm  
 1993 • *Kvázi-képek, Installációk*, Galerie Hoffmann, Friedberg • Éri Galéria, Budapest  
 1995 • G. Medium, Pozsony  
 1996 • *A cet gyomrában*, Fővárosi Képtár, Budapest [Szegedy-Maszák Zoltánnal], (kat.)  
 1997 • *Quasi-képek és képek 1990-1997*, Kortárs Művészeti Múzeum/Ludwig Múzeum, Budapest (kat.)  
 1998 • Éri Galéria, Budapest • *Munkák 1974-1977*, Josef Albers M. Bottrop  
 1999 • Vízivárosi Galéria [Balázs Áronnal], Budapest  
 2008 • Ludwig Múzeum, Budapest.

### Válogatott csoportos kiállítások

#### Válogatott csoportos kiállítások

1965 • *Intergrafik 65*, Neue Berliner Galerie, Berlin  
 1968 • *Mai magyar grafika*, Magyar Nemzeti Galéria, Budapest  
 1972 • *Aktuelle Kunst in Osteuropa*, Köln  
 1975 • *Neue Ungarische Konstruktivisten*, Museum Bonn  
 1976 • *Expozíció. Fotó/művészet*, Hatvany Lajos Múzeum, Hatvan • *Sorozatművek. Kortárs*

PRODUKCIÓS KÖZÖSSÁGI INKUB

artRoll  
artAkkord

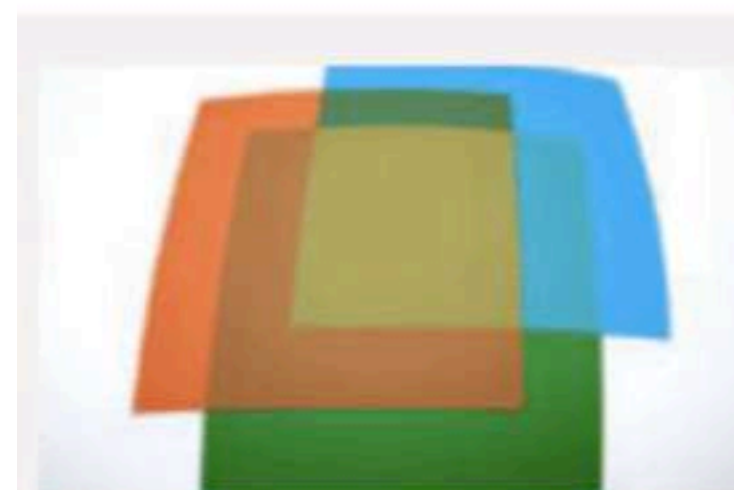
betépes  
A 2000 óta regisztrált események **A megjelenés korlátozva 100 sorral**

horizont	2016. 02. 03. - 02. 13.	Unplig   <b>Varga György, Maurer Dóra, Maurer Dóra</b>   <b>Három Hét Galéria</b>
időalap / Timebase	2015. 12. 04. - 12. 18.	Időalap / Timebase   <b>Barnaföldi Anna, Gróf Ferenc, Kis Judit, Komoróczy Tamás, Maurer Dóra, Monhor Viktória, Németh Hajnal, Révész László László, Rigó Mária</b> hagyományos filmkészítés kurzusa – MKÉ Intermédia [Farkas Rita, Horváth Zsófia, Huszár József, Kemény Zsuzsa, Kiss Antal, Korponovics Roland, Kristóf Gábor, Tulás Hajnalka, Szegedy-Maszák Zoltán – Femeszély Márton, Szemző Tibor, Szécsényi-Nagy László, Sörös János, Szócska József, Vándor Csaba, Waliczky Tamás, Peternák Miklós, Németh Hajnal]   <b>Új Budapest Galéria</b>
Művész társatvezetés az időalap kiállításán II.	2016. 02. 06. - 02. 13.	Művész társatvezetés az időalap kiállításán II.   <b>Maurer Dóra, Barnaföldi Anna, Rigó Mária</b> hagyományos filmkészítés kurzusa, Révész László László, Sörös János, Komoróczy Tamás   <b>Új Budapest Galéria</b>
Erdélyi Gábor: HORDOZÓ	2015. 11. 16. - 11. 28.	Erdélyi Gábor: HORDOZÓ   <b>Erdélyi Gábor, Maurer Dóra</b>   <b>Horizont Galéria</b>
SEQUENCE	2015. 11. 03. - 11. 14.	SEQUENCE   <b>Gáyor Tibor, Gémes Péter, Maurer Dóra, Vera Molnar, Pemeckzy Géza, Törk Péter</b>   <b>Vintage Galéria</b>
Társatvezetés a Tükör által homályosan kiállításán Gulyás Gáborral	2015. 10. 27. - 11. 01.	Társatvezetés a Tükör által homályosan kiállításán Gulyás Gáborral   <b>Joseph Beuys, Christian Boltanski, Erdélyi Miklós, Cindy Sherman, Maurer Dóra</b>   <b>Ernst Múzeum</b>
Filmvetítés és előadás: Tükör által homályosan	2015. 10. 30. - 10. 31.	Filmvetítés és előadás: Tükör által homályosan   <b>Vincze Teréz, Christian Boltanski, Erdélyi Miklós, Cindy Sherman, Maurer Dóra, Joseph Beuys</b>   <b>Ernst Múzeum</b>
Családi fansang az Ernst Múzeumban	2015. 10. 02. - 10. 03.	Családi fansang az Ernst Múzeumban   <b>Joseph Beuys, Christian Boltanski, Erdélyi Miklós, Cindy Sherman, Maurer Dóra</b>   <b>Ernst Múzeum</b>
Társatvezetés a Tükör által homályosan kiállításán Rózsás Lívivel	2015. 09. 24. - 10. 01.	Társatvezetés a Tükör által homályosan kiállításán Rózsás Lívivel   <b>Joseph Beuys, Christian Boltanski, Erdélyi Miklós, Cindy Sherman, Maurer Dóra, Joseph Beuys</b>   <b>Ernst Múzeum</b>
Hatvanas évek: Major János grafikai, karakasztal-összeállítás	2015. 09. 27. - 10. 01.	Hatvanas évek: Major János grafikai, karakasztal-összeállítás   <b>Maurer Dóra, Lengyel András, Albert Ádám,</b>

### ARTIST

## Dóra Maurer

SPOTLIGHT ARTWORKS PROFILE BIOGRAPHY TRENDS



Born 1937, Budapest (HU)  
 Gender Female  
 Nationality Hungary  
 Lives & Works Budapest  
 Period Post-War  
 Media Painting, Photography, Printmaking, Film

♡ FOLLOW (3)

RANKING

Top 1,000

Global

Hungary

Top 10

EXHIBITIONS

278

Sole Shows

26

Group Shows

230

Biennials

4

MOST EXHIBITED IN

1. Hungary

2. Germany

3. Austria

MOST IMPORTANT SHOWS AT

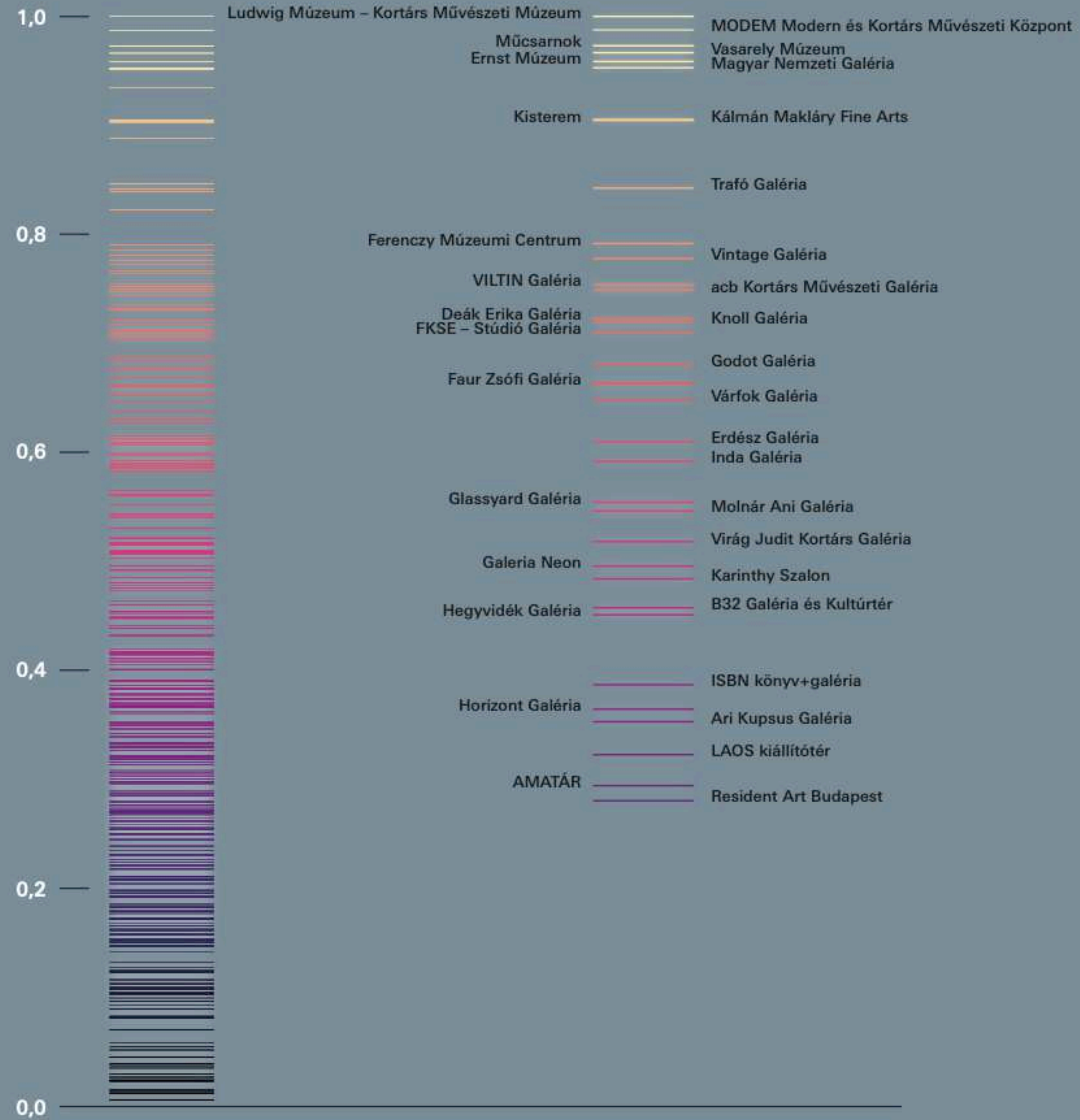
1. Ludwig Museum - Muse...

2. Museum Moderner Kun...

3. Vasarely Museum

művész	ország	intézmény	év	forrás	a kiállítás címe
Maurer Dóra	de	Neue Berliner Galerie, Berlin	1965	Artportal	Intergrafik 65
Maurer Dóra	de	Galerie Maerz, Linz	1966	Artportal	Internationale Künstlerclub, Bécs [Miodrag Nagornival]
Maurer Dóra	hu	Dürer Terem, Budapest	1966	Artportal	
Maurer Dóra	hu	Magyar Nemzeti Galéria, Budapest	1968	Artportal	Mai magyar grafika
Maurer Dóra	Germany	Studiengalerie des Studium Generale der Universität Stuttgart	1970	Artfacts	Dora Maurer: radierungen
Maurer Dóra	hu	Dürer Terem, Budapest	1970	Artportal	
Maurer Dóra	de	Galerie Junge Generation, Bécs	1971	Artportal	
Maurer Dóra	de	Aktuelle Kunst in Osteuropa, Köln	1972	Artportal	
Maurer Dóra	Poland	Miedzynarodowe Triennale Grafiki – Kraków	1974	Artfacts	V International Print Biennale Krakow1974
Maurer Dóra	de	Kleine Galerie, Bréma	1974	Artportal	Grafik, Objekte
Maurer Dóra	de	Museum Bonn	1975	Artportal	Neue Ungarische Konstruktivisten
Maurer Dóra	de	Neue Galerie am Landesmuseum Joanneum, Graz	1975	Artportal	Verschiebungen 1975-1975,
Maurer Dóra	hu	Hatvany Lajos Múzeum, Hatvan	1976	Artportal	Expozíció. Fotó/művészet
Maurer Dóra	hu	Csók Képtár, Székesfehérvár	1976	Artportal	Sorozatművek. Kortárs művészet magángyűjteményekben 2.
Maurer Dóra	Finland	Alvar Aalto Múzeum, Jyväskylä, (FIN)	1976	Artportal	
Maurer Dóra	hu	HelikOn Galéria, Budapest	1976	Artportal	
Maurer Dóra	hu	Szent István Király Múzeum, Székesfehérvár	1976	Artportal	[Gáyor Tiborral]









Kortárs magyar  
képzőművészet az  
adatok tükrében

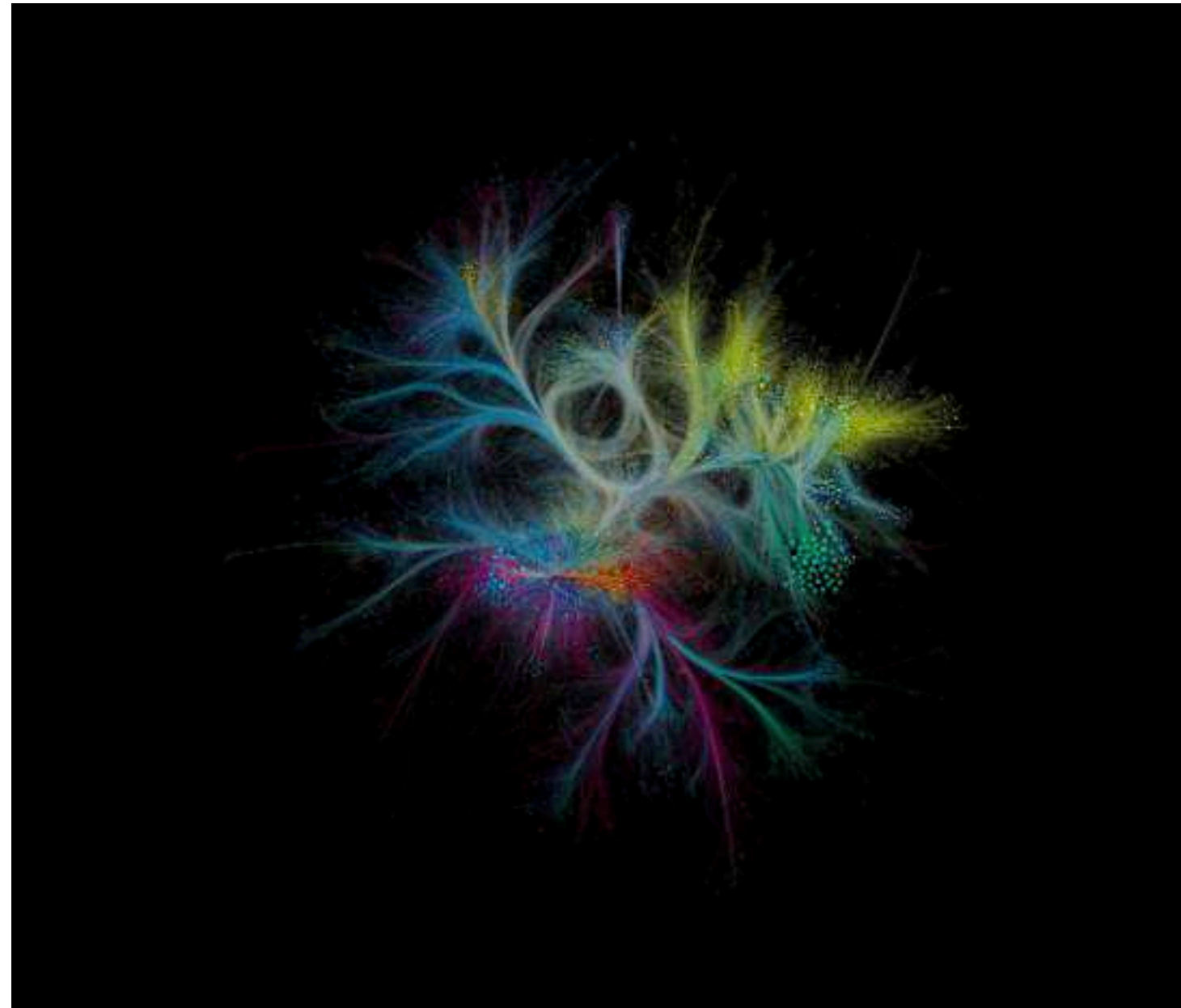
# Elek mentén

Elek mentén Kortárs magyar képzőművészet az adatok tükrében

Együtt a Művészetért Egyesület

# MŰVÉSZETI HÁLÓK BLOCKCHAIN-EN





“

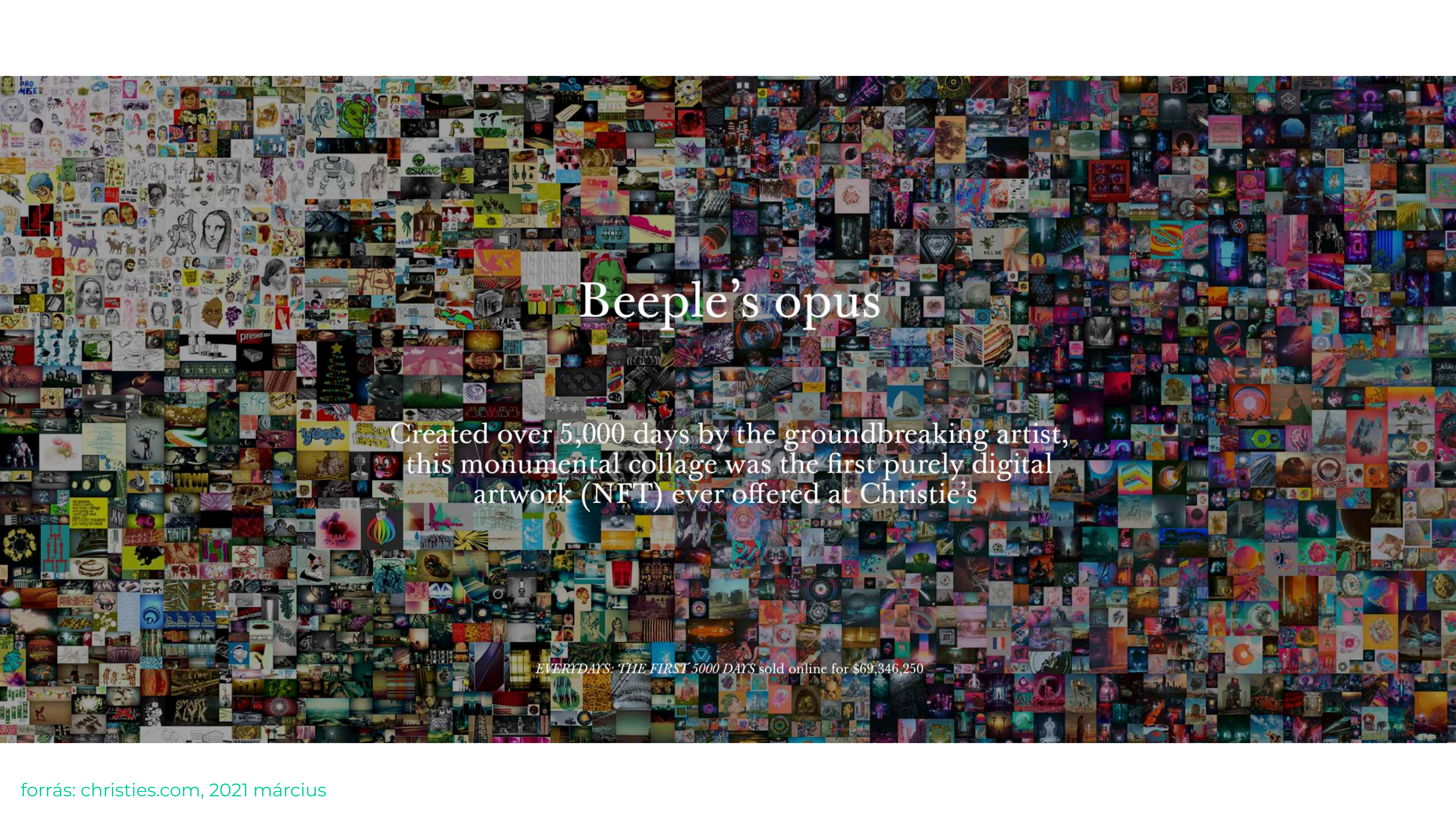
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DataArt is a new movement within art, that aims to bring alive the invisible, by merging the visual language of art and data science. It offers a deeper understanding of our world by conceptualizing data in a way that we humans can penetrate its meaning and message

— ALBERT LÁSZLÓ BARABÁSI,  
LEFT: COVER FOR *NATURE* 150 ANNIVERSARY

**NFT**

**Non-Fungible Token**



# Beeple's opus

Created over 5,000 days by the groundbreaking artist, this monumental collage was the first purely digital artwork (NFT) ever offered at Christie's

*EVERYDAYS: THE FIRST 5000 DAYS* sold online for \$69,346,250



# Beeple's opus

*EVERYDAYS: THE FIRST 5000 DAYS* sold online for \$69,346,250

*EVERYDAYS: THE FIRST 5000 DAYS* sold online for \$69,346,250



**EVERYDAYS: THE FIRST  
5000 DAYS**

*beeple*

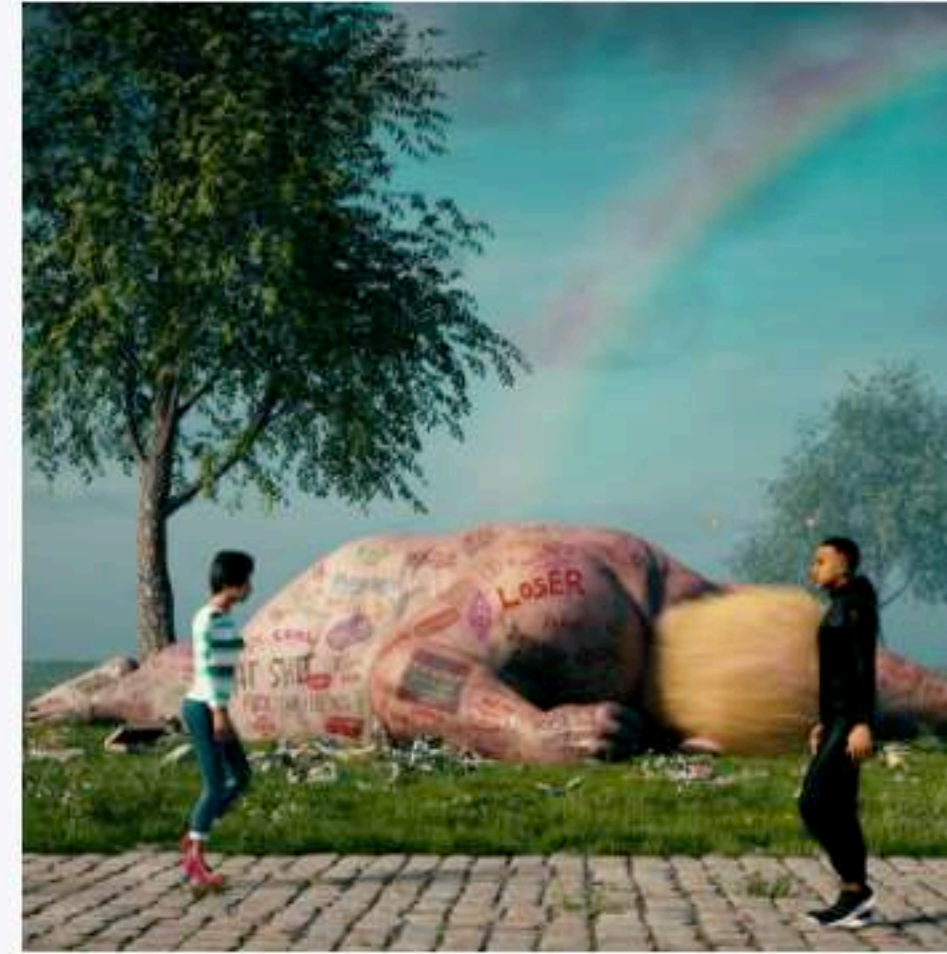
\$69,346,250.00 (14,459.758 ETH)



**Stay Free (Edward  
Snowden, 2021)**

*snowden*

\$10,665,881.44 (2,224 ETH)

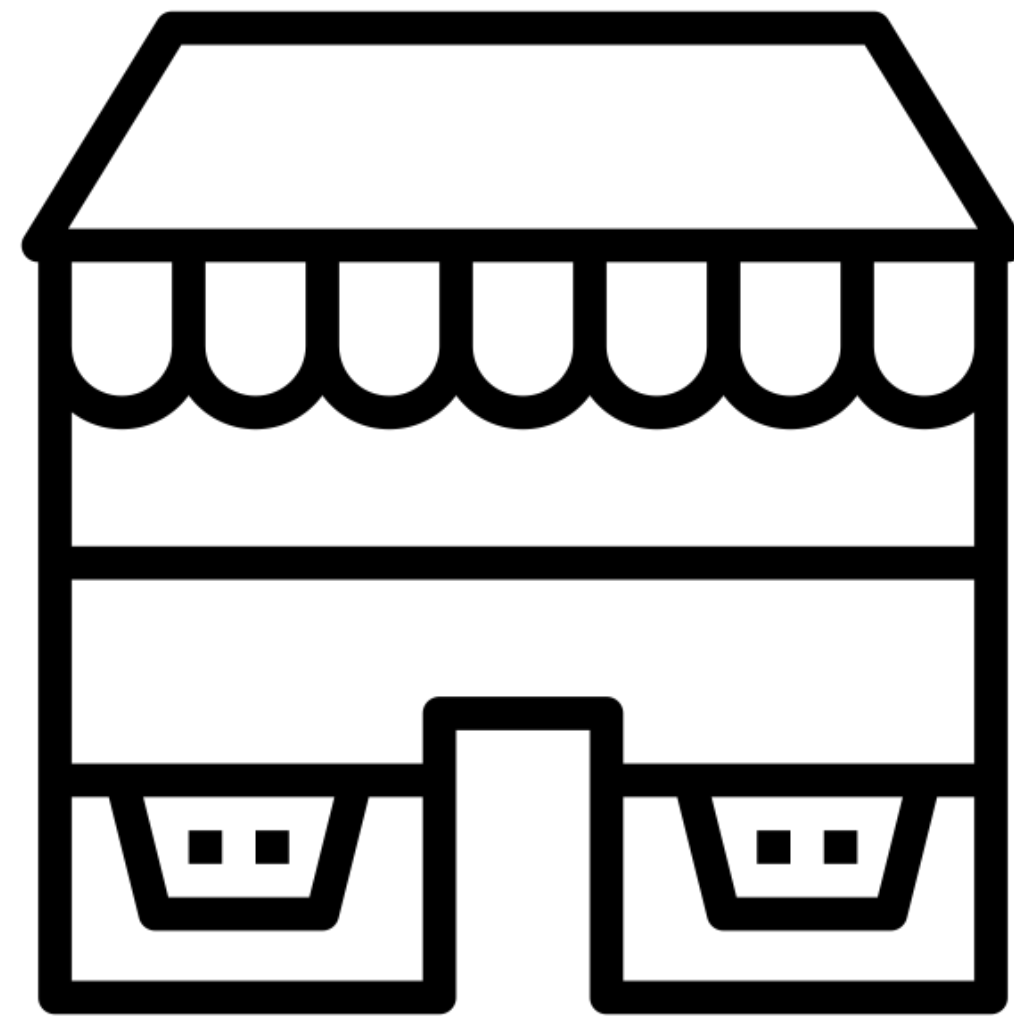


**CROSSROAD**

*beeple*

\$6,600,000.00 (1,376.201 ETH)







**SuperRare**

# Collect digital art

Buy and sell NFTs from the world's top artists

START COLLECTING

## FEATURED ART



ARTIST

 @camila\_illustration

RELEASE DATE

Nov 2, 2021, 10AM

# MARKET

Artwork Artists

27,210 Results Recently Active

### Artwork Details

- List price
- Reserve price
- Live auction
- Upcoming auction
- Secondary sale
- Open offer
- Owned by creator
- Never received an offer
- Genesis piece

### Price Range

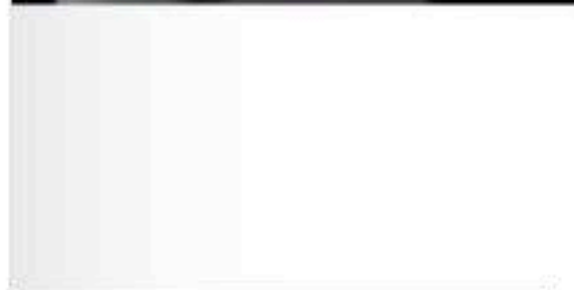


\$ 0

\$ 100,000 +

### File Types

- Still image
- 3D artwork
- GIF
- Video



OWNER: jonnoorland...

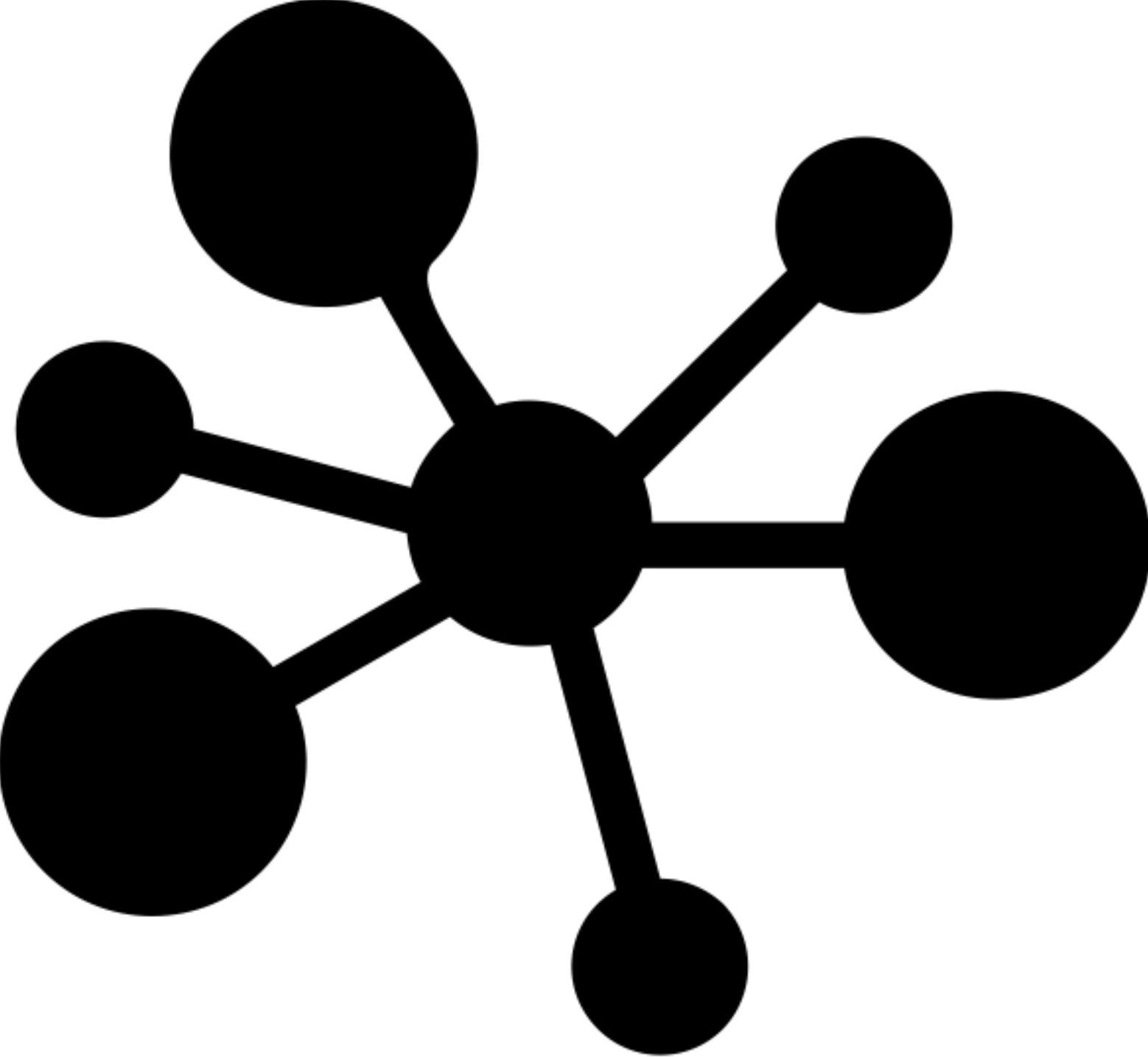


### Stolen Pleasures

Current bid

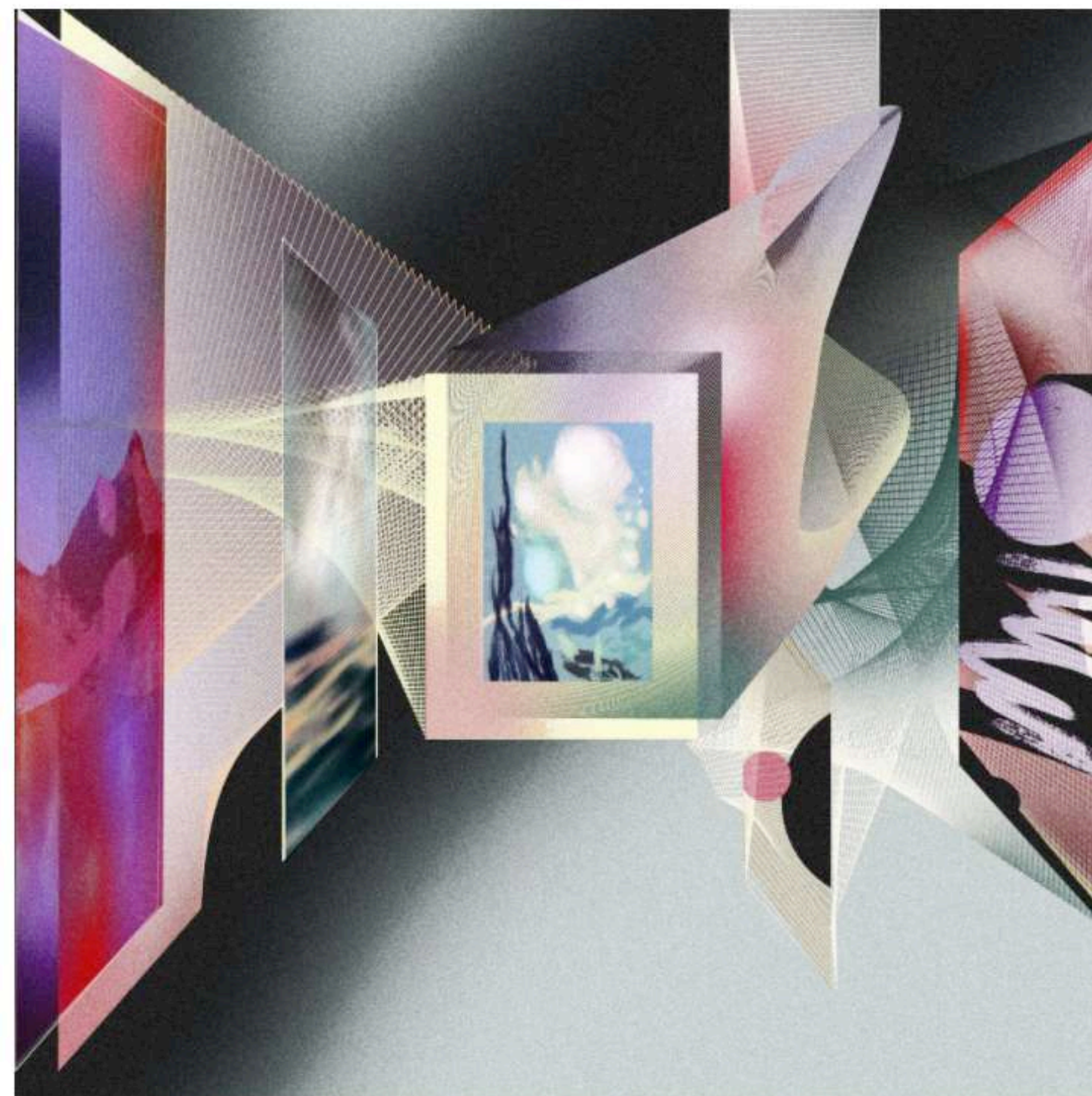
AUCTION STARTS IN 789 BLOCKS

0 2 53 31  
DAYS HOURS MINUTES SECONDS



# Secret. Here's a Look Inside.

May 7, 2021

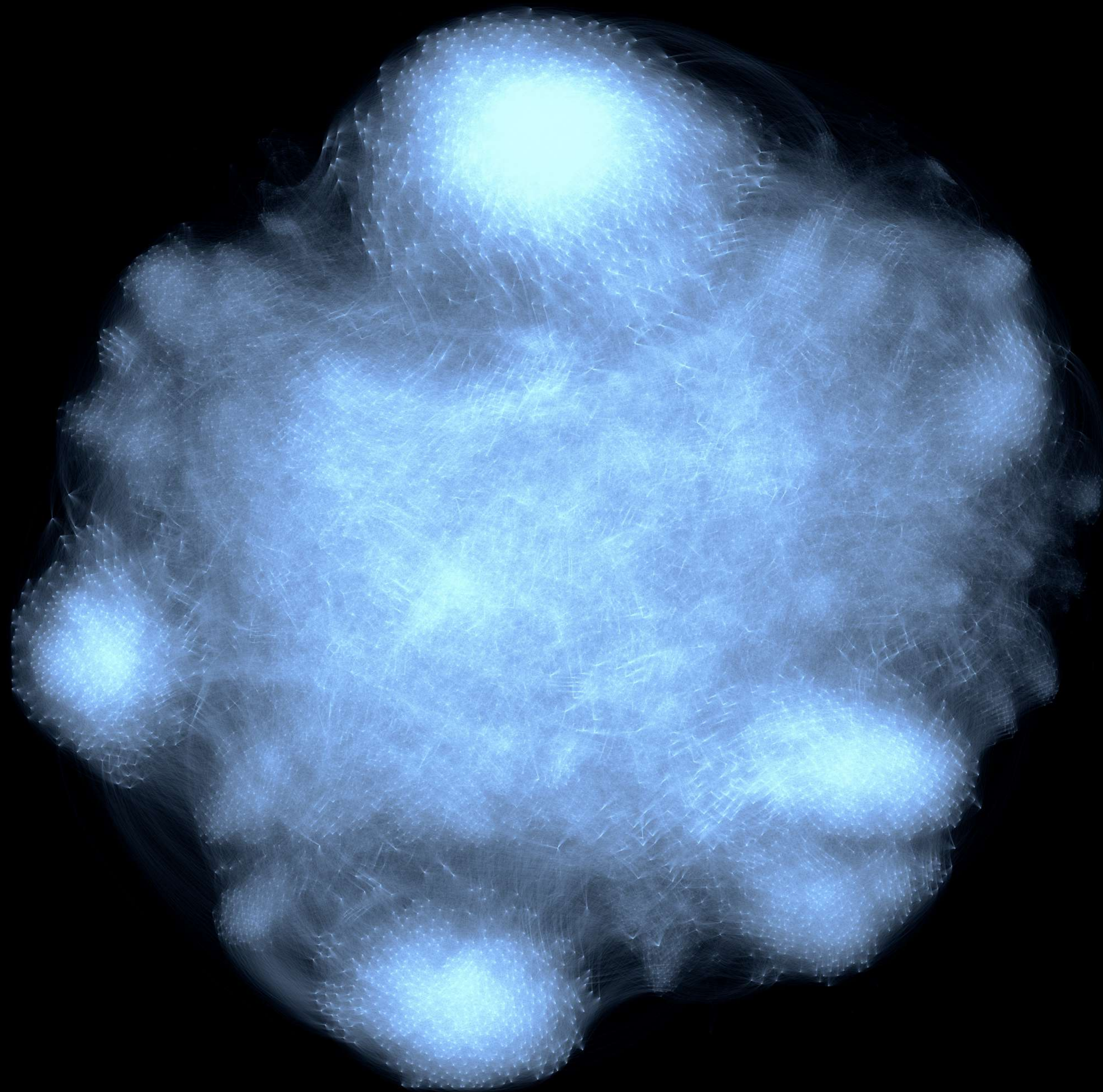


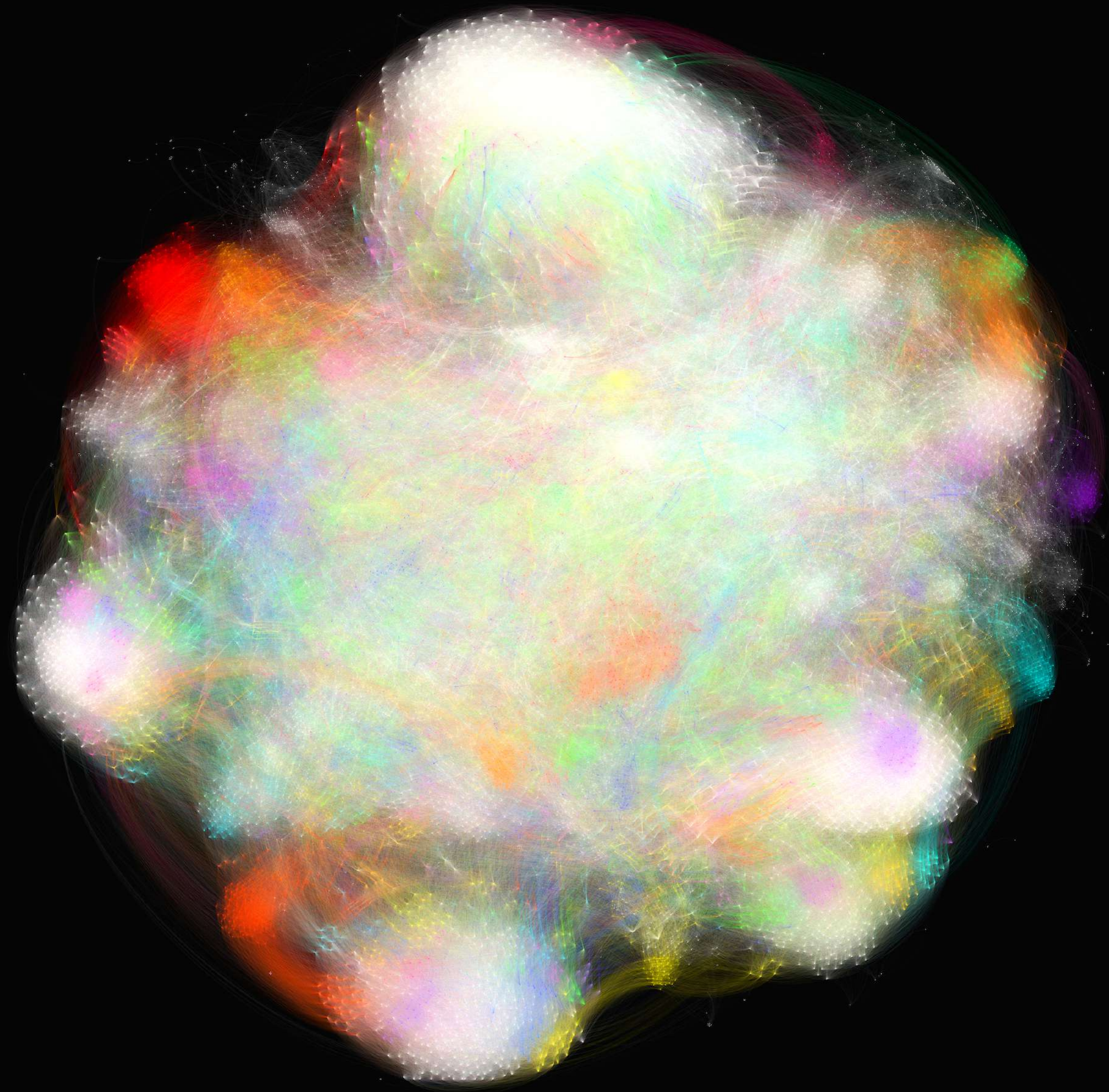
Albert-Laszlo Barabasi ([@barabasi](#)) is a professor of network science at Northeastern University and at Central European University. He leads the BarabasiLab, a collective of scientists and artists whose visual work is currently the subject of exhibitions at the ZKM Center for Art and Media in Karlsruhe, Germany, and the Ludwig Museum in Budapest.

*Maps courtesy of BarabasiLab (M. Janosov and A.-L. Barabasi)*

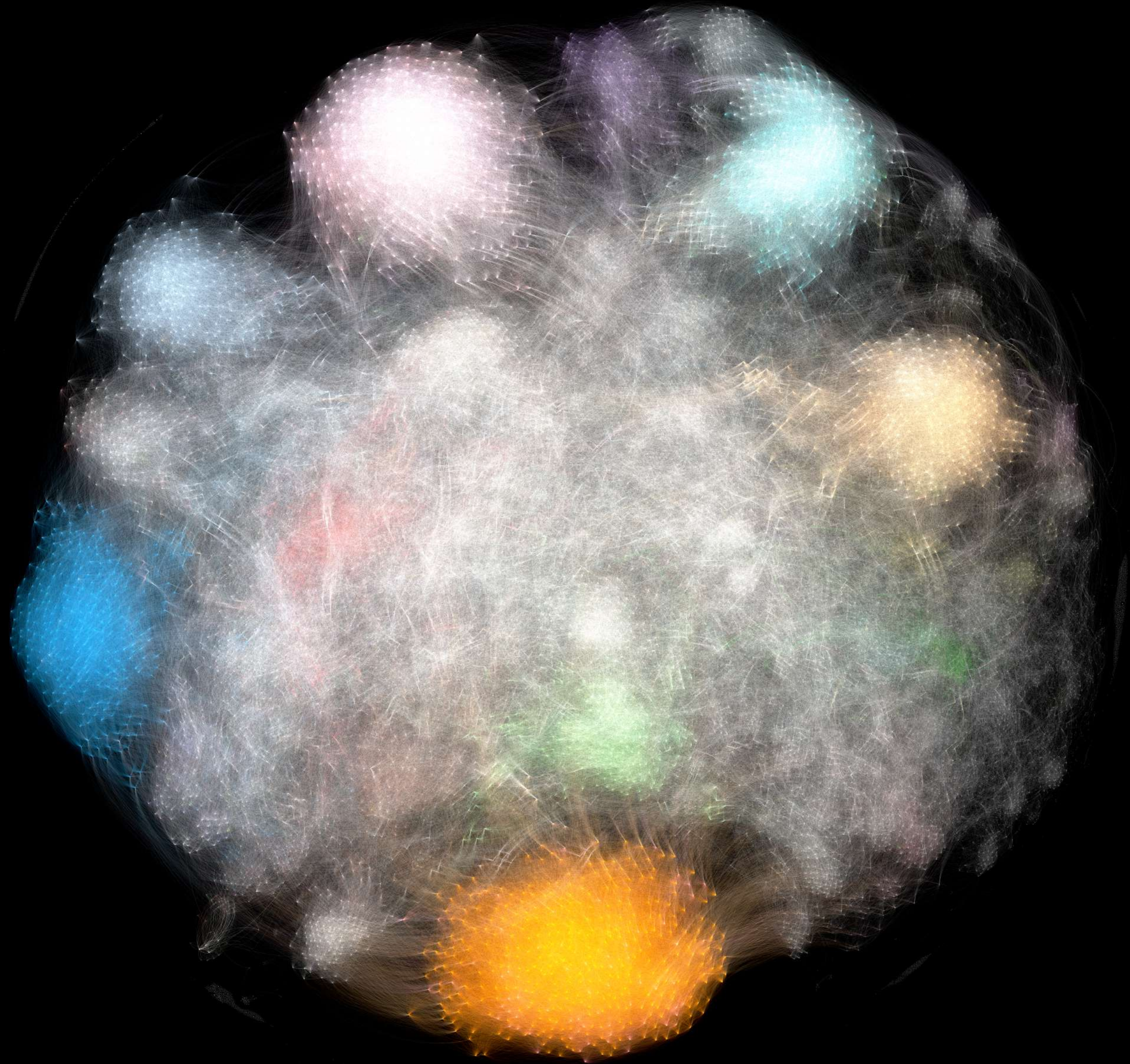
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# BarabasiLab

@barabasilab

COLLECTION CREATIONS

0

4

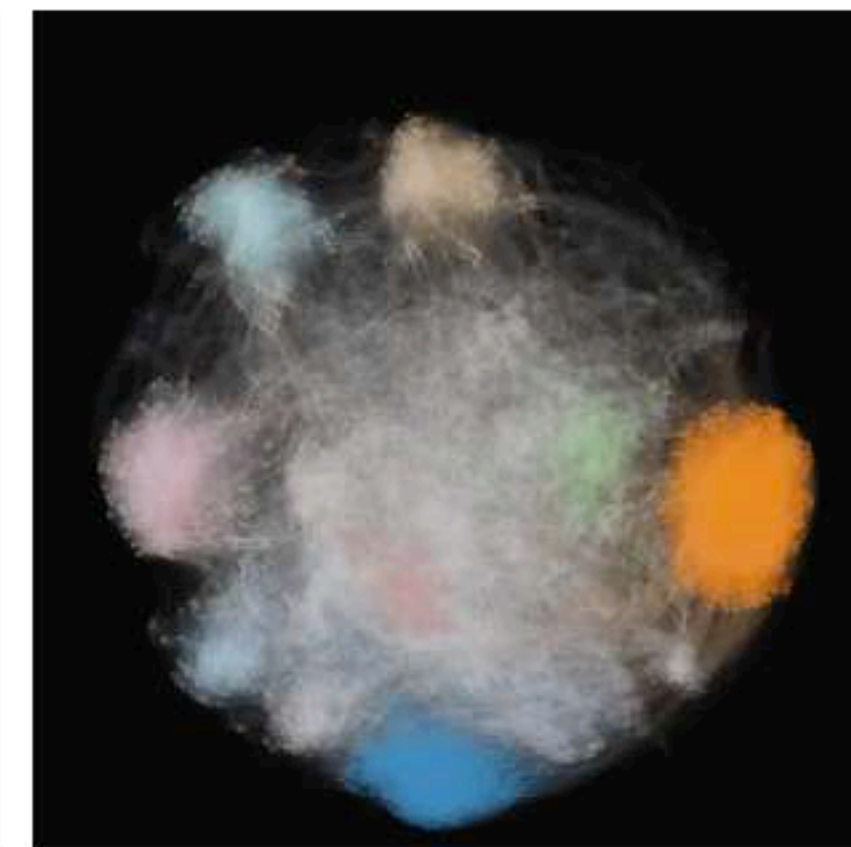
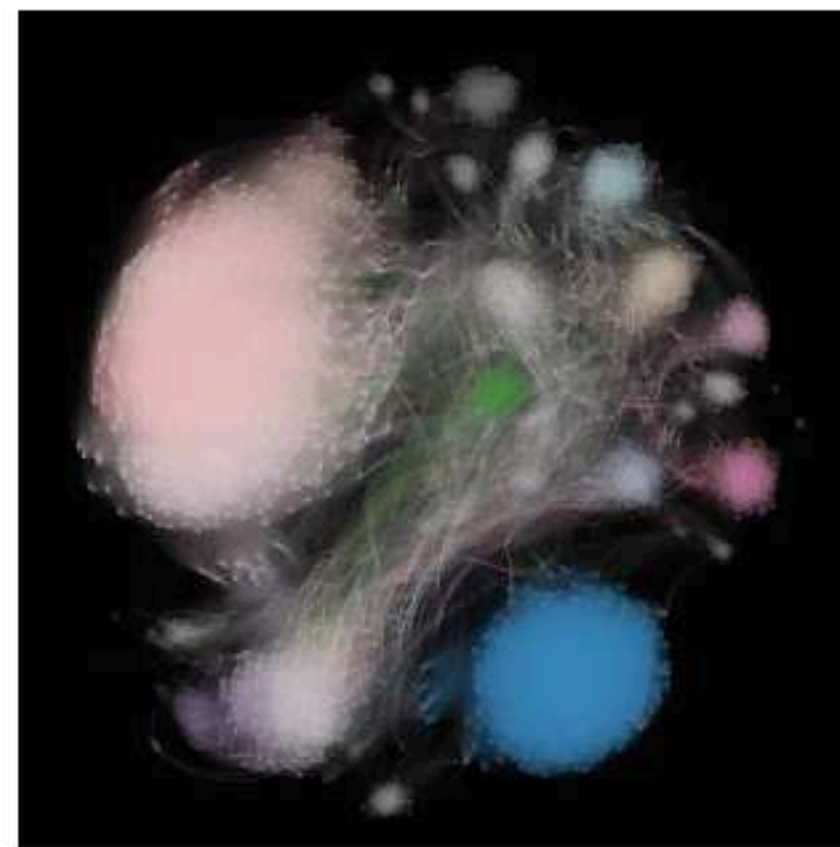
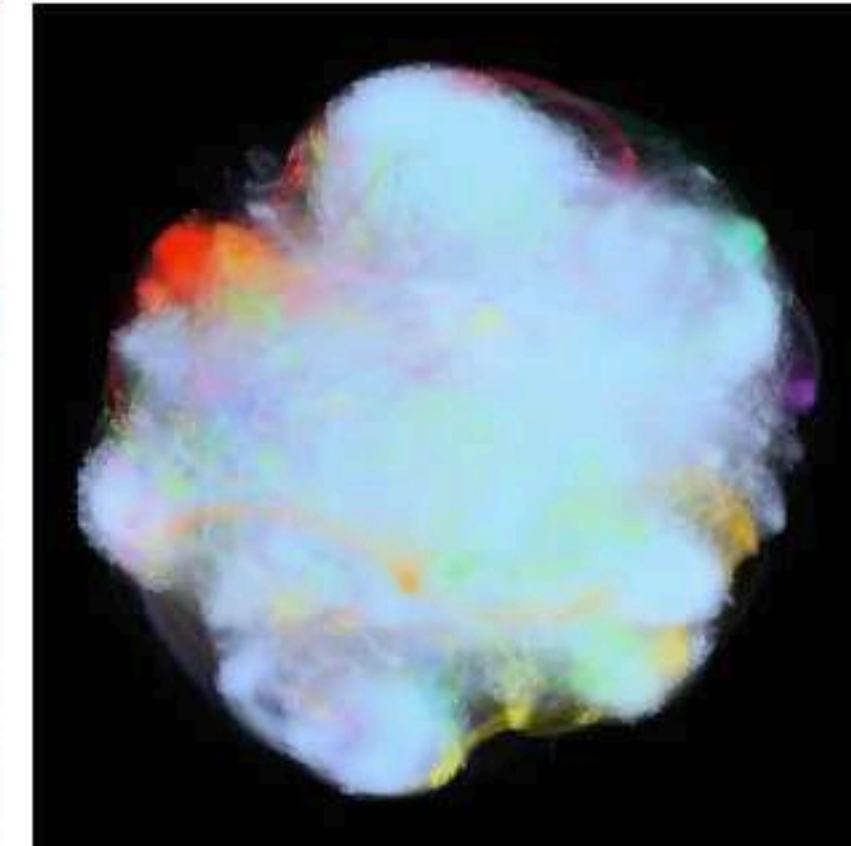
Boston and Budapest



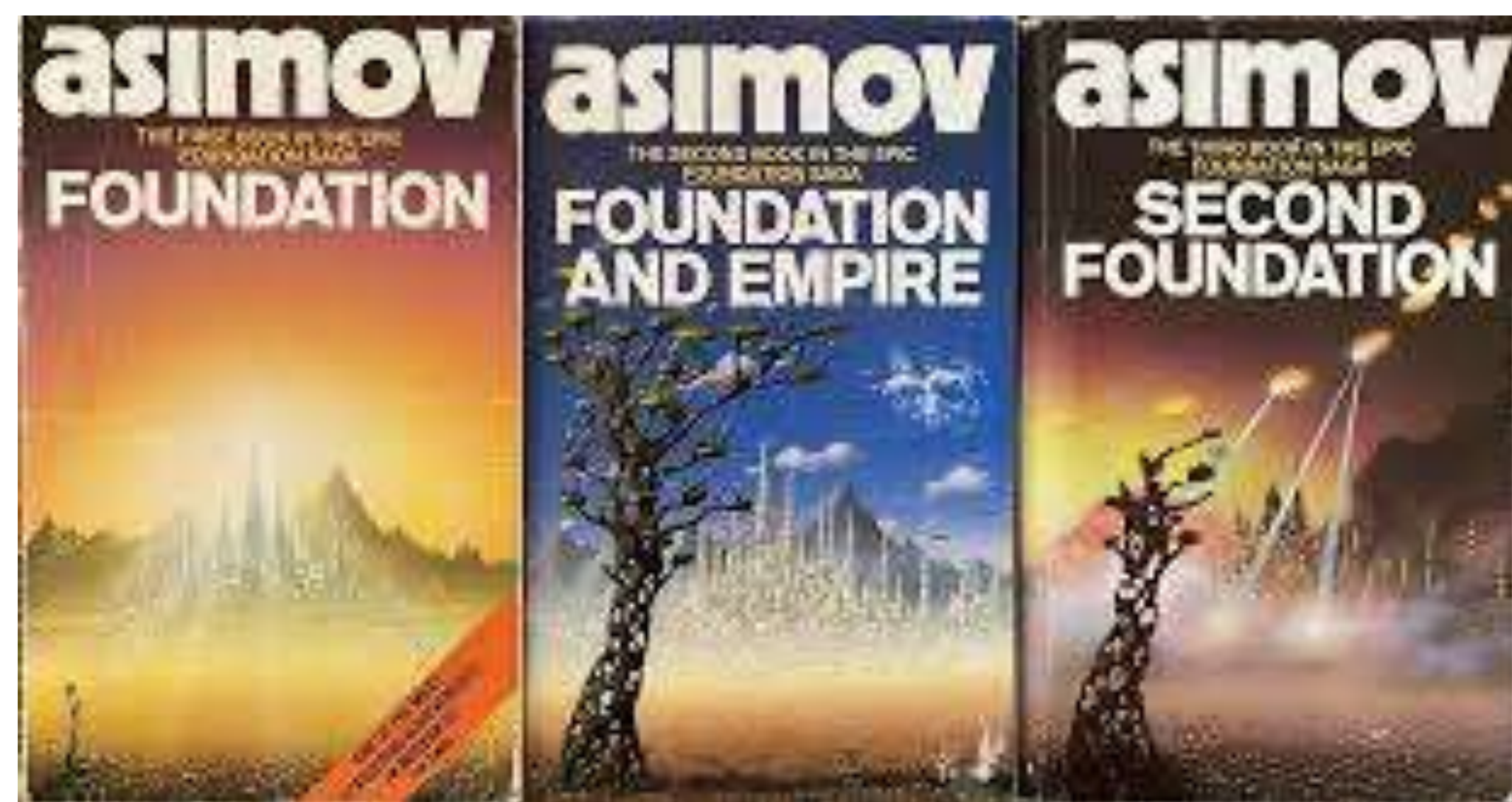
Lead by Albert-László Barabási, BarabásiLab is one of the most influential labs in network science. It brings together scientists, designers, and artists, united by a desire to understand networks and complexity. Over 25 years, BLab has pioneered the visual language of networks and DataArt like the Art Network, the NFT Universe, and the award-winning Nature150 anniversary work.

The BarabasiLab's work is the subject of exhibits at ZKM Karlsruhe and Ludwig Museum of Contemporary Art in Budapest.

## CREATIONS



View all artworks created by @barabasilab




Preprint

File available

## Asimov's Foundation - turning a data story into an NFT artwork

September 2021

Project: Asimov's Foundation through the lens of network and data science

 Milan Janosov · Flóra Borsi

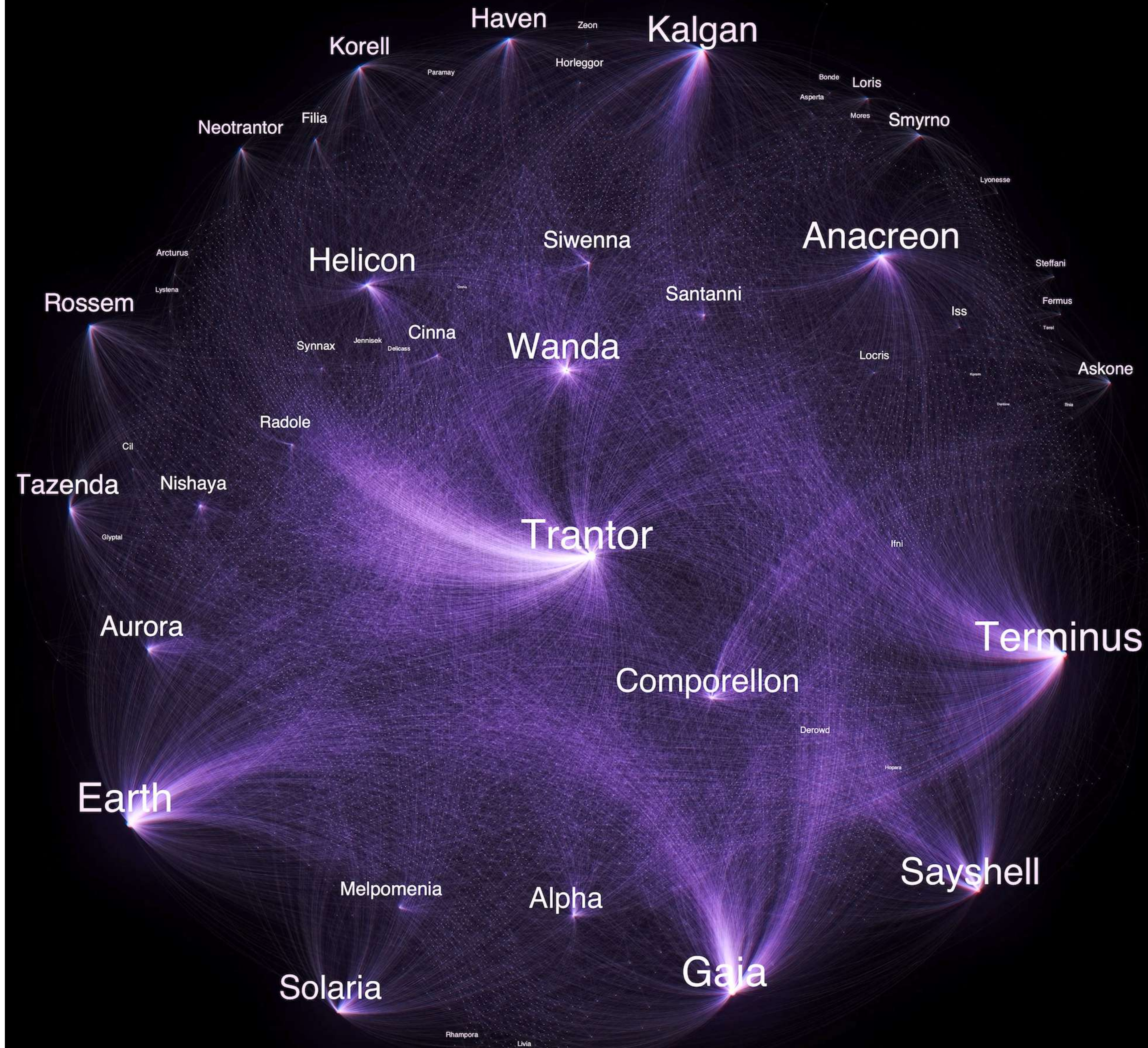
Research Interest ⓘ  3.3

Citations  0

Recommendations  0 new 0

Reads ⓘ  20 new 1,660

[See details](#)



# Asimov's worlds

↓ Artwork information

## Description

Isaac Asimov's Foundation series is one of the most iconic science fiction novels ever written. With this artwork, we pay tribute to his masterpiece by transforming the seven books into a unique network visualization.

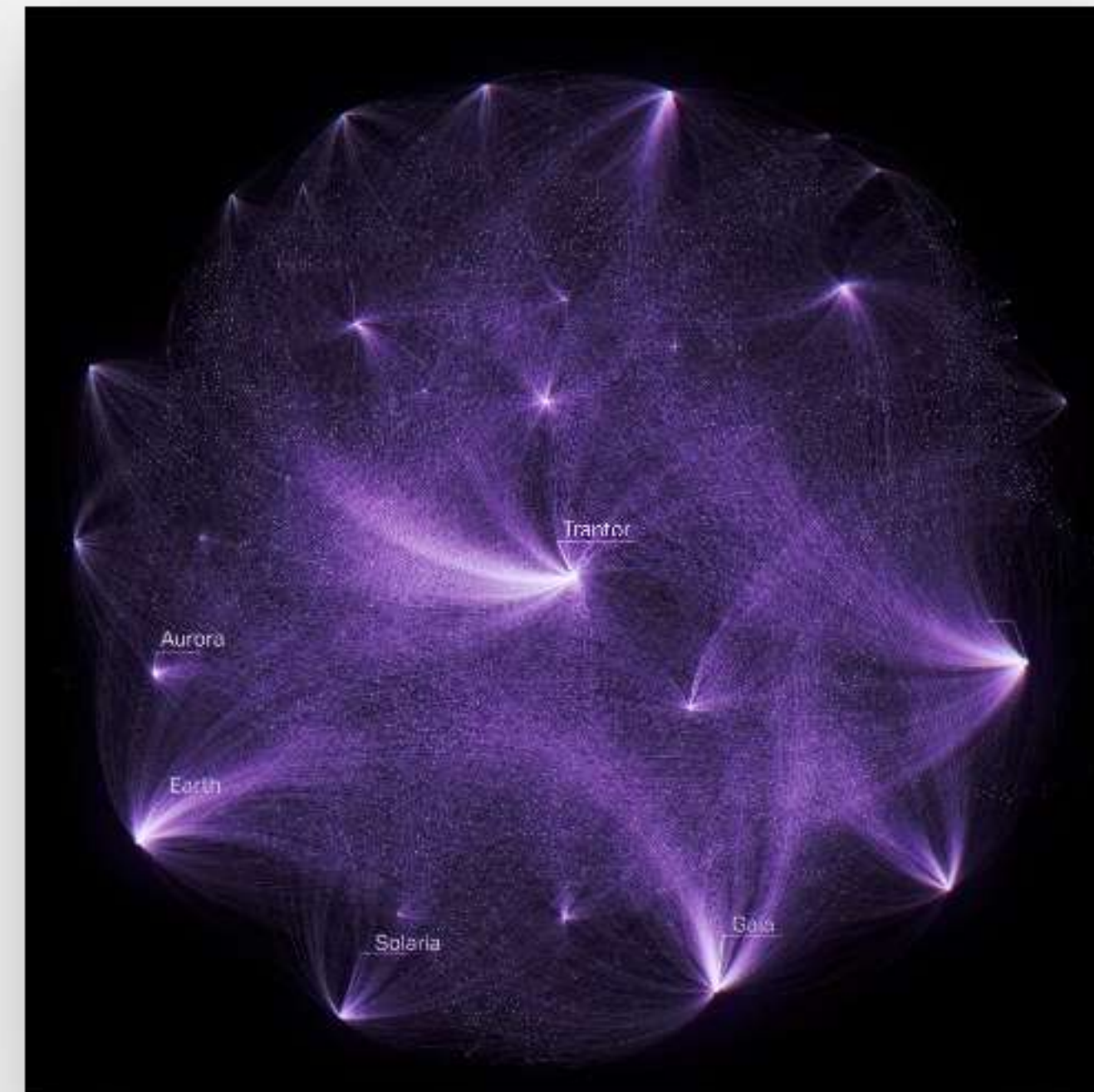
The interstellar network of Asimov's most frequently mentioned worlds and words was built by algorithmically processing the text of each book. In this network, nodes correspond to the mentioned words or planets, and a connection is born when two wor(l)ds are co-mentioned in the same sentence. The complete series counts about 350,000 words, while the network measures 8,375 nodes and 22,299 links. With a set of innovative digital creation tools, we transformed the data graph into ethereal animation and sound design matching the books' dreamy, utopist atmosphere.

The data science analysis behind this art piece is summarized in our article titled "Asimov's Foundation - turning a data story into an NFT artwork".

Flóra Borsi and Milán Janosov



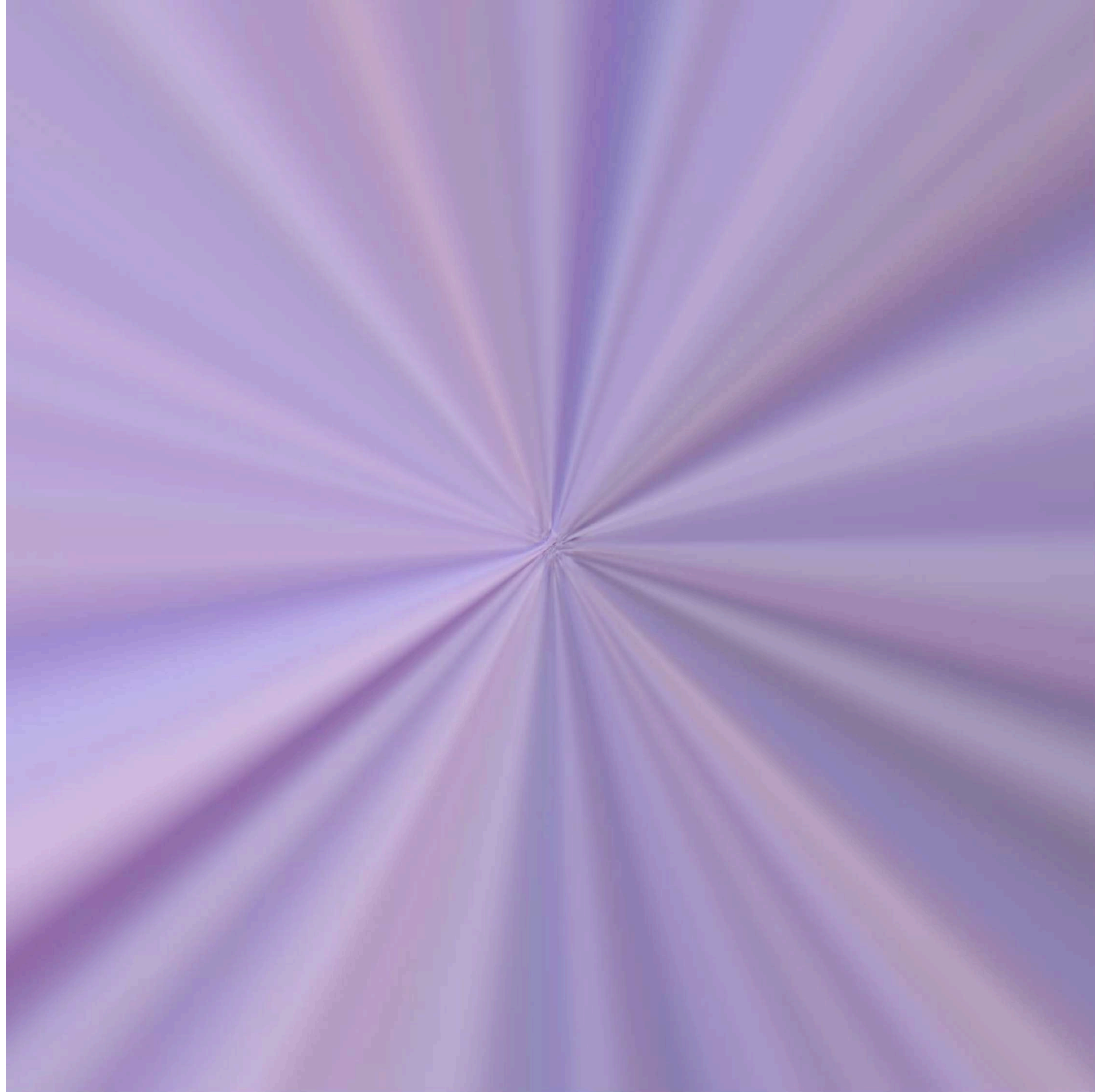
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@milanjanosov

...

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Artwork: Flóra Borsi  
[www.floraborsi.com](http://www.floraborsi.com)

<https://foundation.app/@milanjanosov/~92747>

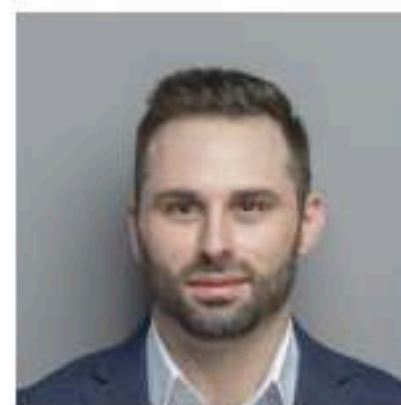


**HIÁNYZIK A LÁNCCHÍD?**



# VÁRTNÁL KEVÉSBÉ SÍNYLI MEG A LÁNCHÍD LEZÁRÁSÁT, A GYALOGOSOK ANNÁL INKÁBB

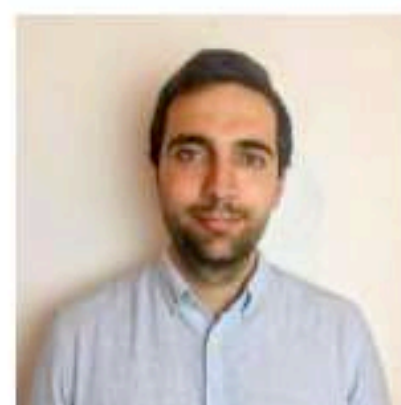
07.07. | — TUDOMÁNY



JANOSOV MILÁN



JABLONSZKY GYÖRGY



SZIGETI PATRIK

Nincsen jövőnk tudomány nélkül, nincsen Qubit nélkületek.

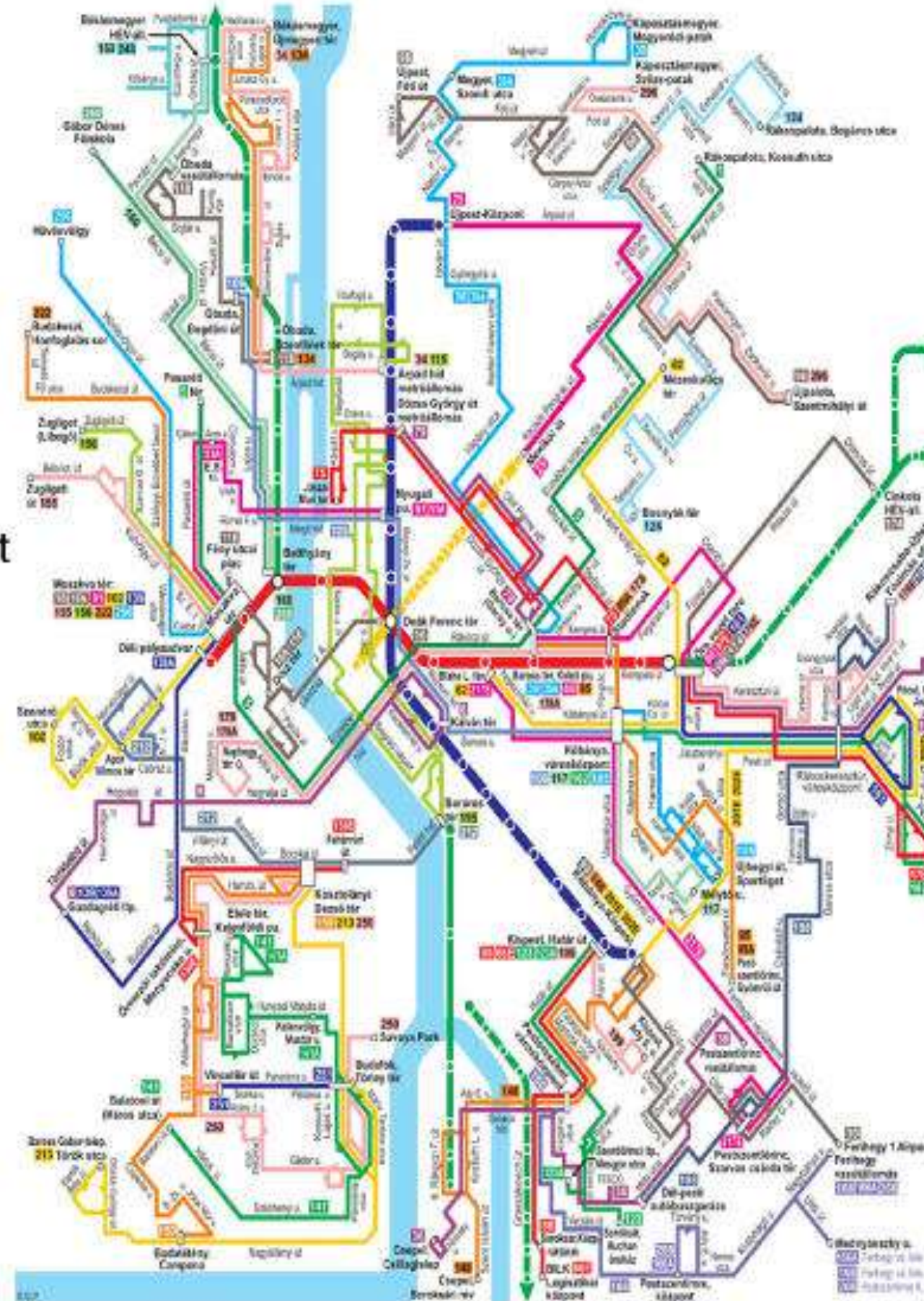
**Támogasd a munkánkat!**

Az elmúlt időszak egyik legtöbbször tárgyalt közlekedési híre a Lánchíd lezárása – a híd kiemelkedő jelentőségét nap mint nap tapasztaljuk a budapesti tömegközlekedés, egy Duna-parti séta vagy éppen a bosszús taxisofőrök panaszai alapján. De vajon mekkora hatással bír a lezárás ténylegesen? Mit mutatnak a számok?

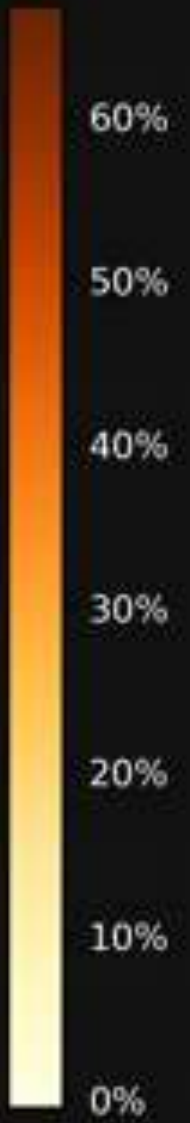
Természetesen ez a kérdés megannyi különböző irányból vizsgálható, melyek közül mi most elsősorban a zöld közlekedés jegyében a tömeg- és gyalogos közlekedésre

## Budapest 20 legmagasabb köztiség-értékkel rendelkező BKK-megállója

1. Keleti pályaudvar (M) 2
2. Közvágóhíd (H) 6
3. Uránia
4. Kálvin tér (M) 3 4
5. Fővám tér (M) 4
6. Nyugati pályaudvar (M) 3
7. Hősök tere (M) 1
8. Petőfi híd, budai hídfő
9. Haller utca / Soroksári út
10. Nagykörösi út / Határ út
11. Fehérló utca
12. Zugló vasútállomás
13. Astoria (M) 2
14. Boráros tér (H) 7
15. Zsil utca
16. Ferenciek tere (M) 3
17. Jászai Mari tér
18. Sasadi út
19. Blaha Lujza tér (M) 2
20. Kosztolányi Dezső tér







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