

Network and data science tools in quantifying success

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Computational Social Science

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We live life in the network. We check our e-mails regularly, make mobile phone calls from almost any location, swipe transit cards to use public transportation, and make purchases with credit cards. Our movements in public places are captured by video cameras, and our medical records stored as digital files. We make entries accessible to anyone, or maintain friendships through online social networks. These transactions leave digital traces that can be compiled into comprehensive pictures of both individual and group behavior, with the potential to transform our understanding of our lives, organizations, and societies.

ment agencies such as the U.S. National Security Agency. Computational social science could become the exclusive domain of private companies and government agencies. Alternatively, there might emerge a privileged set of academics who have access to unique data from which they produce papers that cannot be

critiqued or replicated. Neither scenario will serve the long-term public interest of accumulating, verifying, and disseminating knowledge.

What value might a computational social science—based in an open academic environment—have? Who decides what is being studied, and how is it being used? What are the implications for privacy, security, and the well-being of individuals and collectives? What are the

"A field is emerging that leverages the capacity to collect and analyze data at a scale that may reveal patterns of individual and group behaviors."



Corrected 9 July 2018. See full text.

RESEARCH

REVIEW SUMMARY

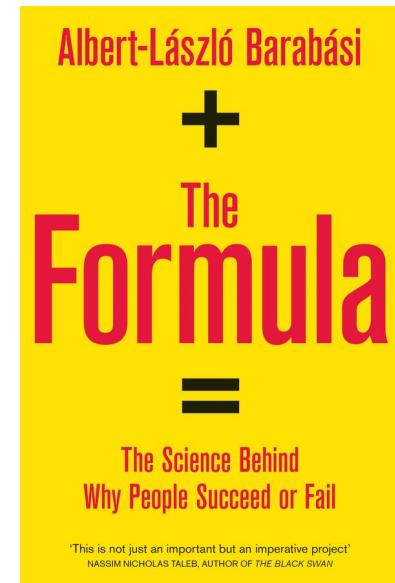
SCIENCE COMMUNITY

Science of science

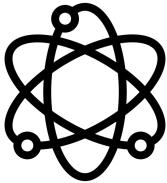
Santo Fortunato,* Carl T. Bergstrom, Katy Börner, James A. Evans, Dirk Helbing, Staša Milojević, Alexander M. Petersen, Filippo Radicchi, Roberta Sinatra, Brian Uzzi, Alessandro Vespignani, Ludo Waltman, Dashun Wang, Albert-László Barabási*

BACKGROUND: The increasing availability of digital data on scholarly inputs and outputs—from research funding, productivity, and collaboration to paper citations and scientist mobility—offers

ADVANCES: Science can be described as a complex, self-organizing, and evolving network of scholars, projects, papers, and ideas. This representation has unveiled patterns characterizing



Today



13 fields



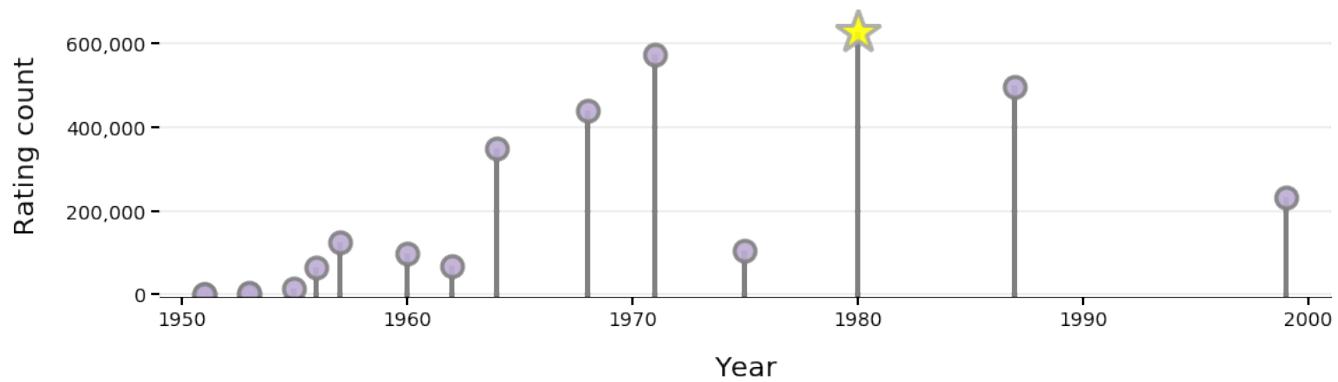
5 professions



9 genres



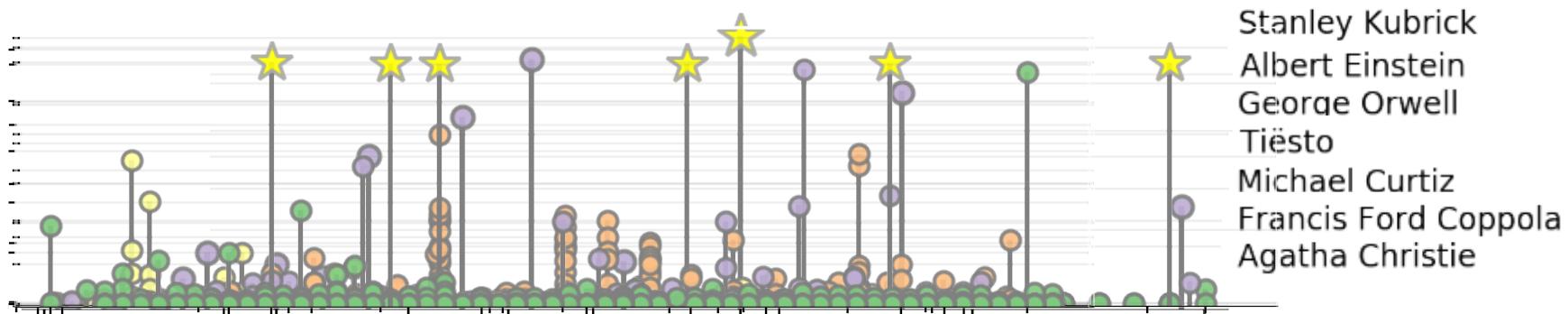
A creative career



Stanley Kubrick



Career patterns



457,199 careers science

45,083 careers from film

7,933 careers from music

457,199 careers science
Random impact rule: across a creative career,
all the products have the same probability to
be the most successful!

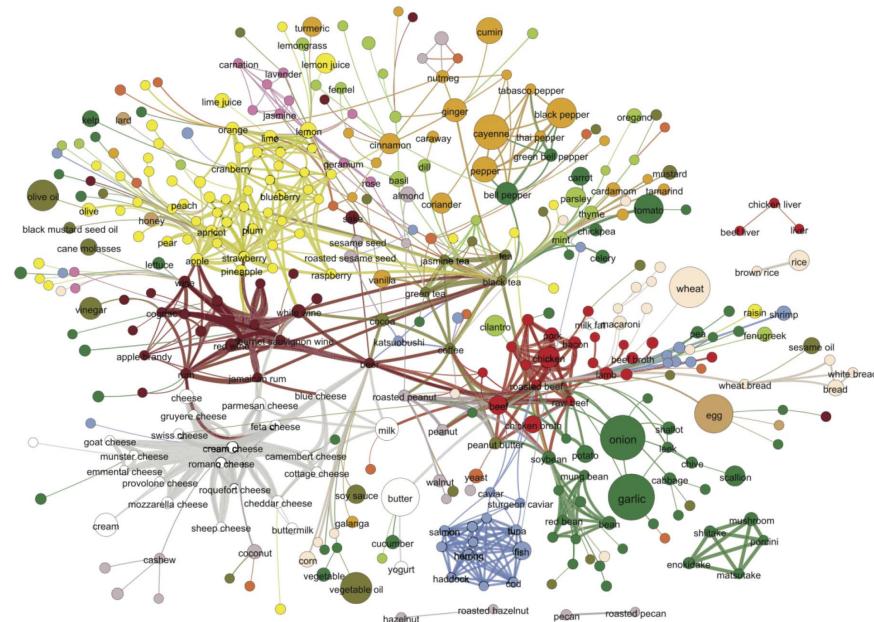
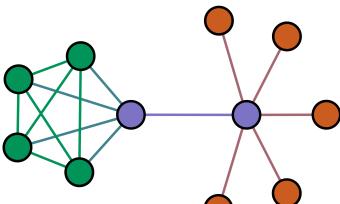
45,083 careers from music
7,933 careers from music

Success and luck in creative careers, M Janosov, F Battiston, R Sinatra, under review, 2019

Quantifying the evolution of individual scientific impact, R Sinatra, D Wang, P Deville, C Song, AL Barabási, Science, 2016

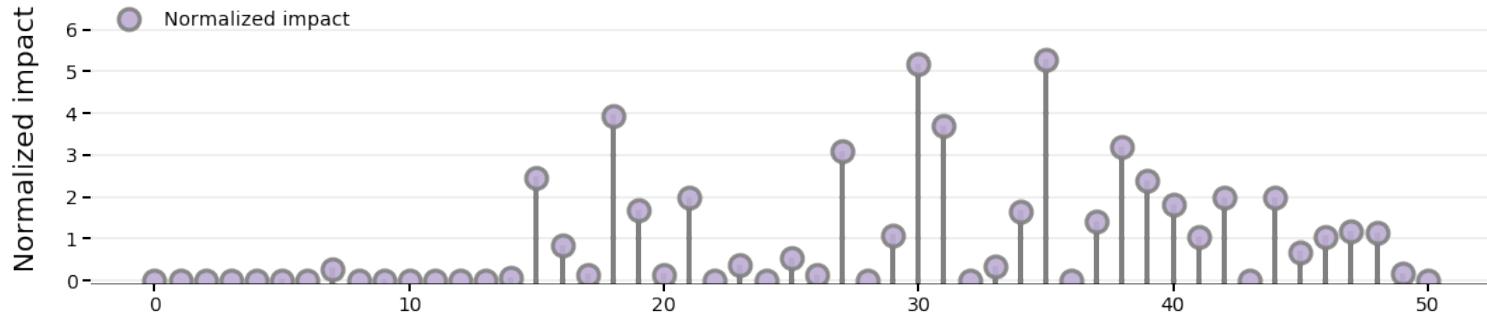
Career landmarks in science: Individual differences and interdisciplinary contrasts, D K Simonton, Dev Psychol, 1991

Multifunctional networks

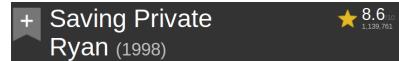


Creative career include collaborations

Steven Spielberg



Director: Steven Spielberg
Writers: Lawrence Kasdan (screenplay by), George Lucas (story by) | 1 more credit >
Stars: Harrison Ford, Karen Allen, Paul Freeman | See full cast & crew »



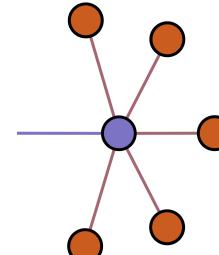
Director: Steven Spielberg
Writer: Robert Rodat
Stars: Tom Hanks, Matt Damon, Tom Sizemore | See full cast & crew »



Director: Steven Spielberg
Writers: Michael Crichton (novel), Michael Crichton (screenplay) | 1 more credit >
Stars: Sam Neill, Laura Dern, Jeff Goldblum | See full cast & crew »

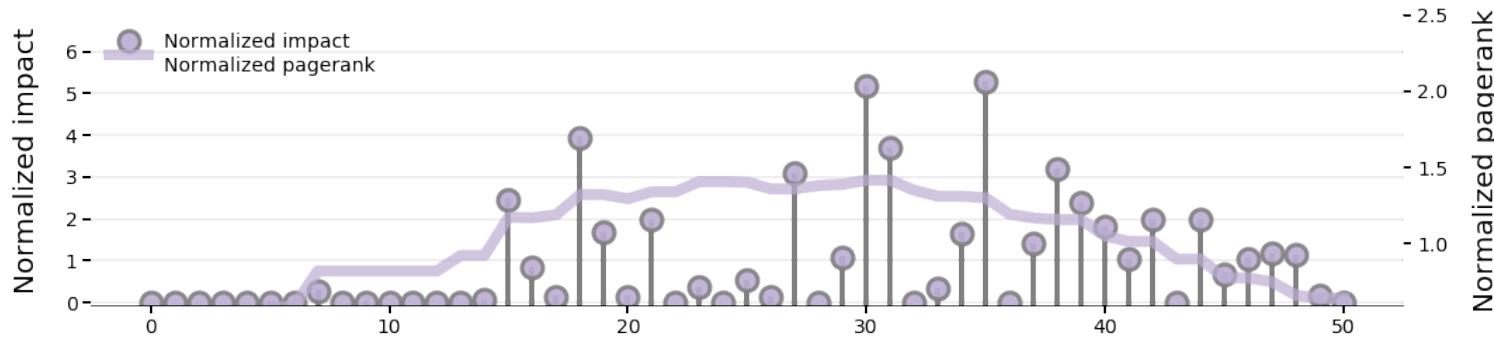


Director: Steven Spielberg
Writers: Thomas Keneally (book), Steven Zaillian (screenplay)
Stars: Liam Neeson, Ralph Fiennes, Ben Kingsley | See full cast & crew »



Creative career include collaborations

Steven Spielberg



Director: Steven Spielberg

Writers: Lawrence Kasdan (screenplay by), George Lucas (story by) | 1 more credit »

Stars: Harrison Ford, Karen Allen, Paul Freeman | See full cast & crew »

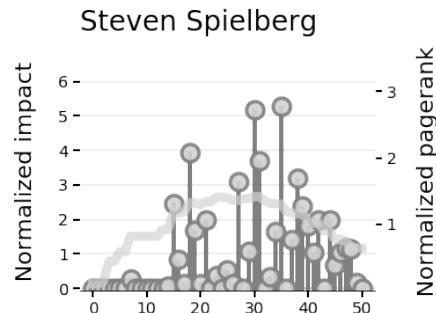
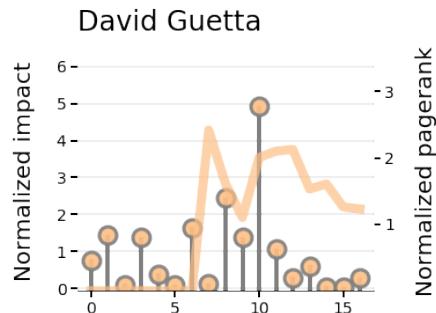


Director: Steven Spielberg

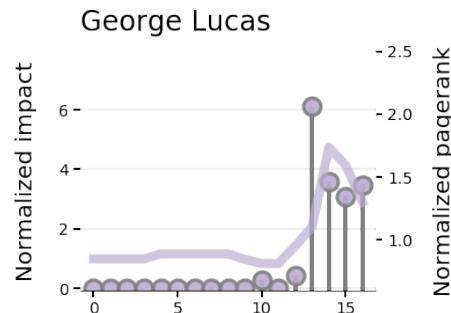
Writer: Robert Rodat

Stars: Tom Hanks, Matt Damon, Tom Sizemore | See full cast & crew »

Network peaks first



Success peaks first



44.95 %



45.44 %



40.57 %

5.43 %

5.76 %

11.53 %

49.61 %

48.80 %

47.90 %

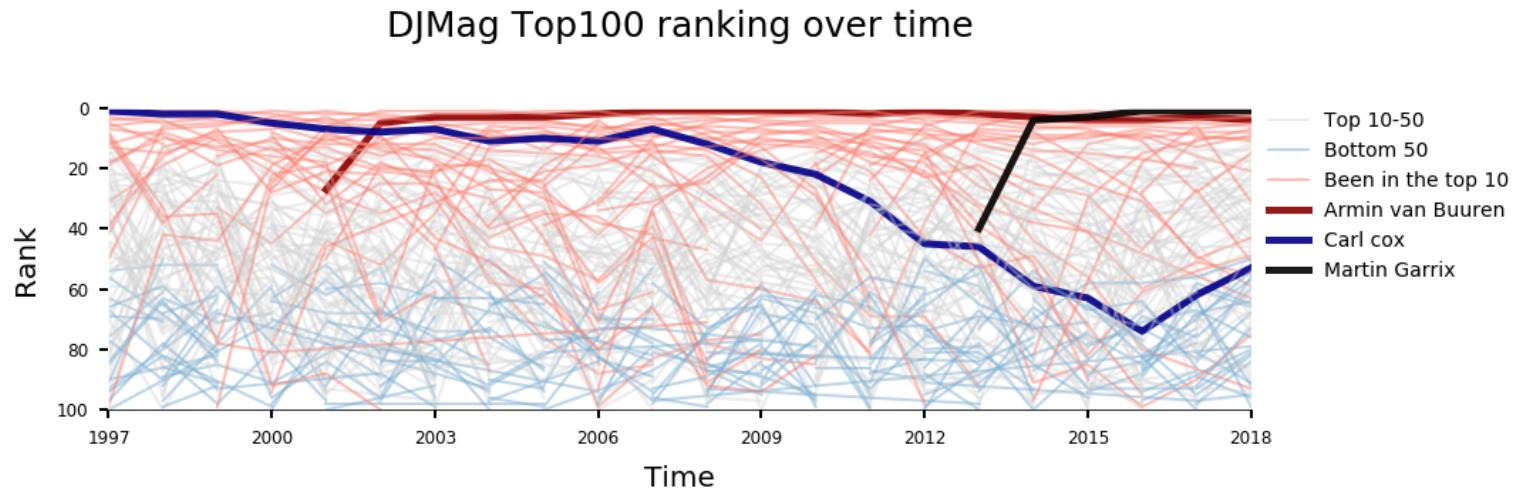
Let's focus on DJs

TOP100DJs

IN AID OF | unicef 2018

1. (+0)	Martin Garrix	26. (+6)	Vinai	51. (-24)	Above & Beyond	76. (-9)	Da Tweekaz
2. (+0)	Dimitri Vegas & LM	27. (+15)	Nervo	52. (-32)	Jeffrey Sutorius	77. (New)	Breathe Carolina
3. (+1)	Hardwell	28. (+5)	Headhunterz	53. (+9)	Carl Cox	78. (New)	KOVU
4. (-1)	Armin Van Buuren	29. (+11)	Angerfist	54. (+16)	Martin Jensen	79. (New)	Adam Beyer
5. (+2)	David Guetta	30. (+5)	Bassjackers	55. (-4)	Paul van Dyk	80. (New)	Daddy's Groove
6. (-1)	Tiesto	31. (-25)	The Chainsmokers	56. (+27)	Will Sparks	81. (+12)	Mosimann
7. (+4)	Don Diablo	32. (-8)	Kygo	57. (+12)	Clapton	82. (+13)	Tchami
8. (+0)	Afrojack	33. (+10)	Timmy Trumpet	58. (+24)	Steve Angello	83. (New)	NGHTMRE
9. (+4)	Oliver Helden	34. (-38)	Vini Vici	59. (-10)	Deadmau5	84. (+14)	DJ L
10. (+0)	Marshmello	35. (+6)	Wolfpack	60. (+16)	Robin Schulz	85. (New)	Wildstylez
11. (-2)	Steve Aoki	36. (-19)	Alan Walker	61. (+19)	Richie Hawtin	86. (New)	Marco Carola
12. (+6)	R3hab	37. (-1)	Blasterjaxx	62. (+9)	Florian Picasso	87. (New)	Cedric Gervais
13. (+6)	Alok	38. (+14)	Danny Avila	63. (New)	Swedish House Mafia	88. (New)	MaRLo
14. (+0)	W&W	39. (-9)	Kura	64. (+4)	Jay Hardway	89. (New)	Deorro
15. (+13)	Avicii	40. (-25)	Calvin Harris	65. (-7)	Miss K8	90. (-13)	Andy C
16. (+6)	DVBBS	41. (-20)	Axwell ^ Ingrosso	66. (-6)	Mike Williams	91. (-10)	Solomun
17. (+9)	Lost Frequency	42. (-17)	Diplo	67. (+12)	Andrew Rayel	92. (-28)	Lucas & Steve
18. (-6)	KSHMR	43. (+7)	Nicky Romero	68. (+16)	Mariana BO	93. (New)	Markus Schulz
19. (+12)	Vintage Culture	44. (-15)	Zedd	69. (-25)	Radical Redemption	94. (New)	Bobina
20. (+14)	Erik Prydz	45. (-8)	Alesso	70. (-11)	Brennan Heart	95. (New)	Paul Kalkbrenner
21. (-5)	Skrillex	46. (+0)	Tujamo	71. (+28)	Swanky Tunes	96. (-7)	Alison Wonderland
22. (+17)	Fedde Le Grand	47. (+10)	Yellow Claw	72. (New)	MATTN	97. (New)	Nina Kraviz
23. (+15)	Ummet Ozcan	48. (+26)	Cat Dealers	73. (+19)	Carta	98. (New)	Rave Republic
24. (-1)	DJ Snake	49. (+5)	ATB	74. (-21)	Aly & Fila	99. (-36)	Carl Nunes
25. (+5)	Quintino	50. (+6)	Diego Miranda	75. (+15)	Ferry Corsten	100. (New)	Slander

Capturing the all-time elite

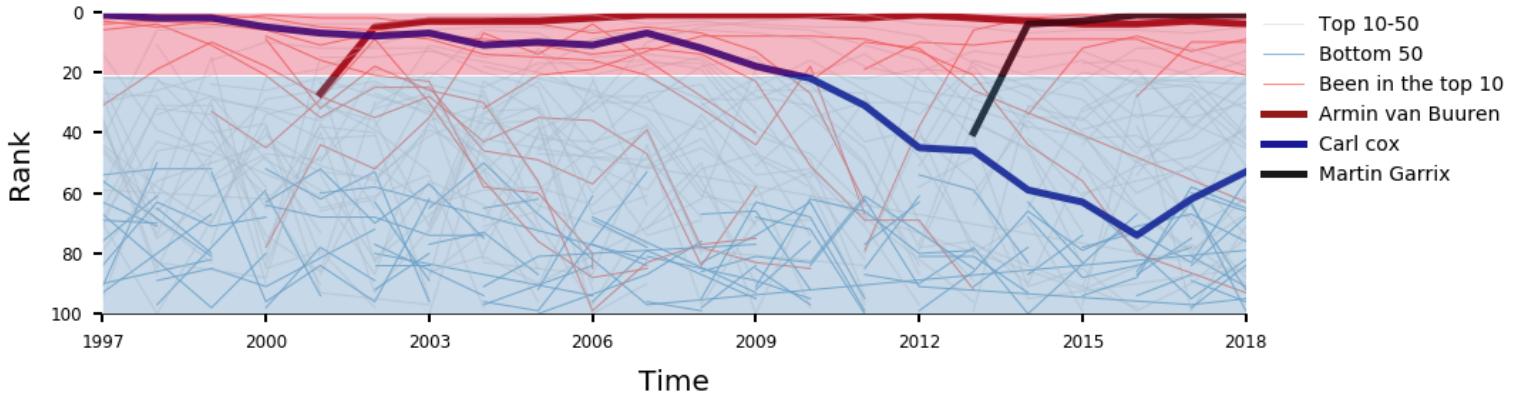


Capturing the all-time elite

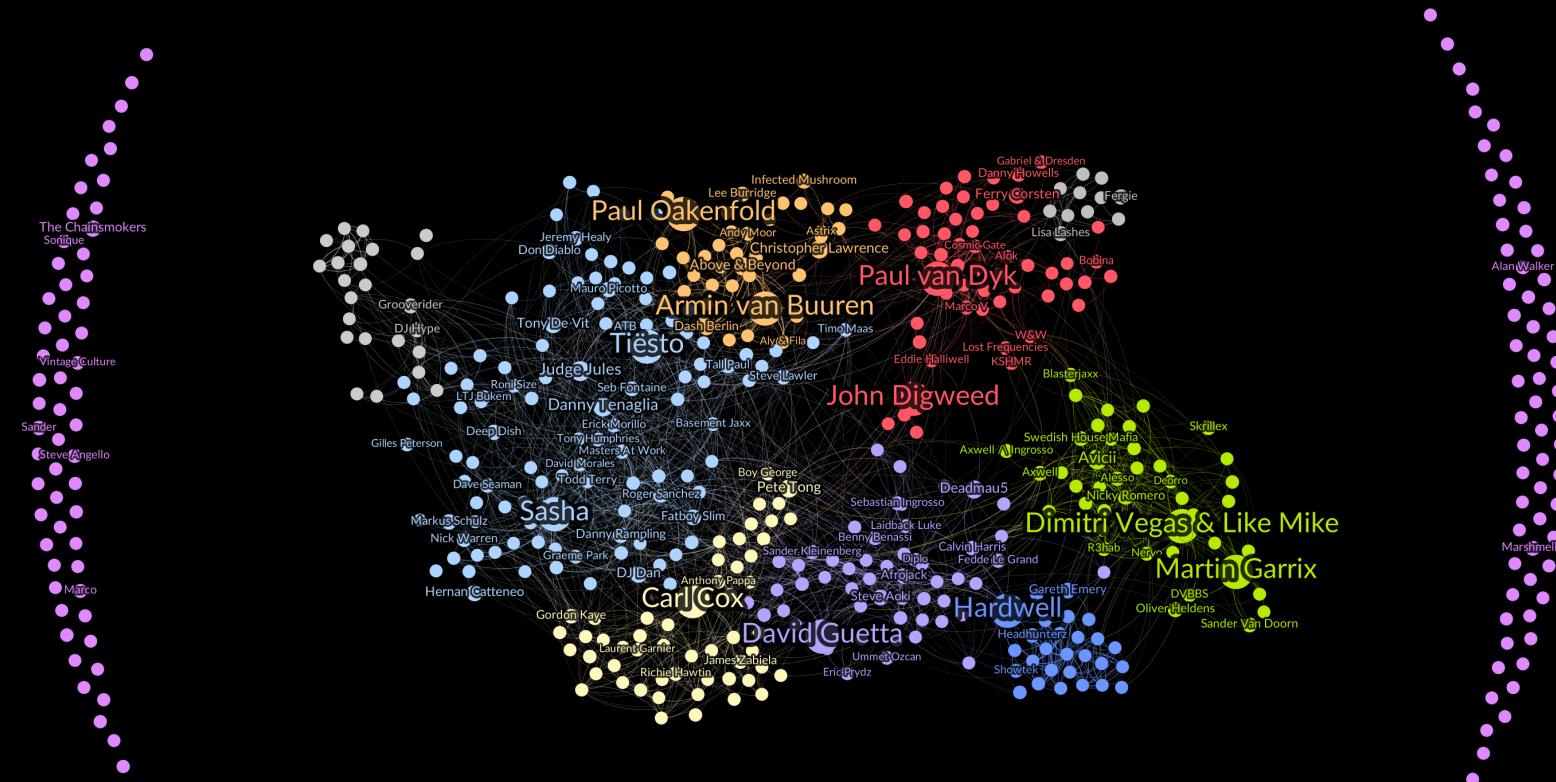
All-time stars

Ephemeral success

DJMag Top100 ranking over time



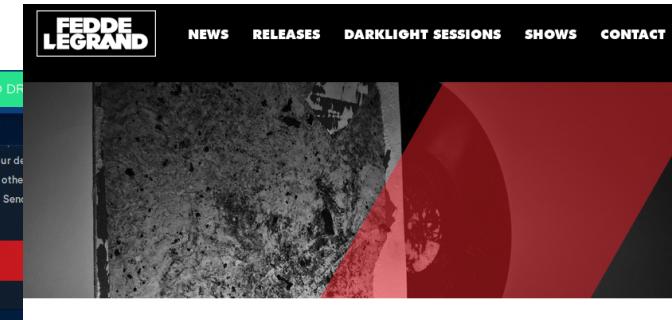
Collaborations between the Top 100 DJs



Mentorship

The screenshot shows the Rolling Stone website. At the top, there's a search icon and a "Send Us a Tip" button. The main navigation menu includes "Menu", "Music", "TV", "Movies", "Politics", "Culture", "Video", and "Charts". Below the menu, a breadcrumb trail shows "HOME > MUSIC > MUSIC NEWS". A timestamp "OCTOBER 23, 2013 12:00PM ET" is also present. The main headline reads "Afrojack Pays Tribute to Mentor David Guetta". A sub-headline states "DJ releases last installment of 'March of the Afrojack'". The Armada Music logo is visible at the bottom left.

The screenshot shows the Hexagon Demo Drop website. The header features a black background with white text for "HOME", "NEWS", "MUSIC", "VIDEO", "RADIO", "HEXAGON", "SHOP", and "DEMO DROP". The main title "DEMO DROP" is prominently displayed in large white letters. The footer contains links for "NEWS", "RELEASES", "DARKLIGHT SESSIONS", "SHOWS", and "CONTACT".



UPLOAD YOUR PROMO OR DEMO

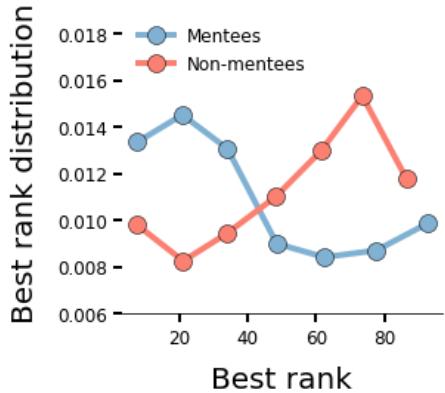
Mentorship

Mentor: a collaborator who was in the Top 100 first, while the mentee broke into the Top 100 only after their co-release.

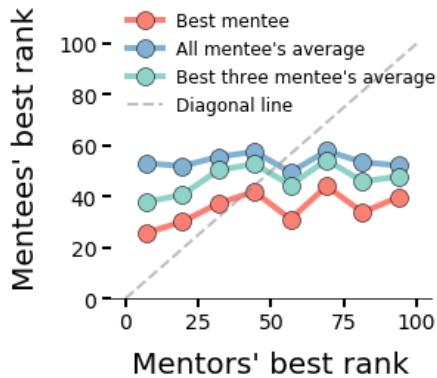
50% of Top 100 Djs have been mentored

30% of by Top 20 DJs

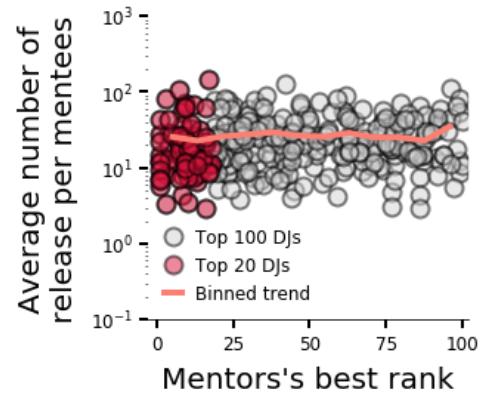
Mentorship pays off



Mentorship helps



Mentees wont
break into the elite



There are no
star mentors

References

arXiv.org > physics > arXiv:1909.07956

Physics > Physics and Society

Success and luck in creative careers

Milan Janosov, Federico Battiston, Roberta Sinatra

(Submitted on 17 Sep 2019)

<https://arxiv.org/abs/1909.07956>

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Around half of your chances of career success comes down to sheer luck



HUMANS 26 September 2019

arXiv.org > physics > arXiv:1908.10968

Physics > Physics and Society

Elites, communities and the limited benefits of mentorship in electronic music

Milan Janosov, Federico Musciotto, Federico Battiston, Gerardo Iñiguez

(Submitted on 28 Aug 2019)

<https://arxiv.org/abs/1908.10968>



daily

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LIFESTYLE

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Want Career Success? Study Shows You Can Work Hard Or Just Cross Your Fingers And Hope For The Best