

**Primer Congreso
Interactivo
de Educación y
Capacitación
en Línea²**

24-28 Julio 2006

EduOnline ■
■ ■ ■ ■ ■
2006



Conferencia: 9:00 AM CT

**Network Science:
Success Secret for the XXI
Century**

**Marshall Thurber
Inglés (Aula Magna)
Español (Aula A)**

Please get a plain
piece of paper and
wait for instructions.

Por favor, ten a la mano por
una hoja de papel en blanco.

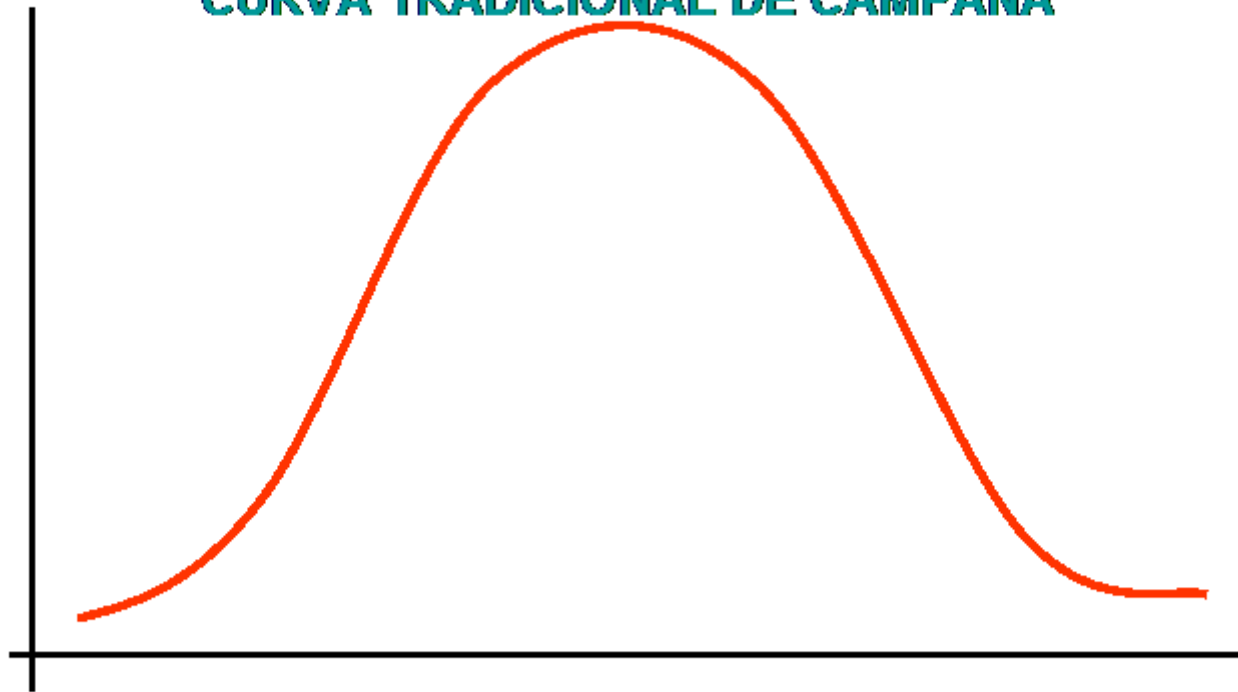
STOP!

¡ALTO!

FOLDING A PAPER 50 TIMES

FOLD #	LAYERS OF PAPER	PAPER THICKNESS	# INCHES THICK AFTER 50 FOLDS	INCHES PER MILE	NUMBER MILES THICK	Number Kilometers Thick
1	2					
2	4					
3	8					
4	16					
5	32					
6	64					
7	128					
8	256					
9	512					
10	1,024					
11	2,048					
12	4,096					
13	8,192					
14	16,384					
15	32,768					
16	65,536					
17	131,072					
18	262,144					
19	524,288					
20	1,048,576					
21	2,097,152					
22	4,194,304					
23	8,388,608					
24	16,777,216					
25	33,554,432					
26	67,108,864					
27	134,217,728					
28	268,435,456					
29	536,870,912					
30	1,073,741,824					
31	2,147,483,648					
32	4,294,967,296					
33	8,589,934,592					
34	17,179,869,184					
35	34,359,738,368					
36	68,719,476,736					
37	137,438,953,472					
38	274,877,906,944					
39	549,755,813,888					
40	1,099,511,627,776					
41	2,199,023,255,552					
42	4,398,046,511,104					
43	8,796,093,022,208					
44	17,592,186,044,416					
45	35,184,372,088,832					
46	70,368,744,177,664					
47	140,737,488,355,328					
48	281,474,976,710,656					
49	562,949,953,421,312					
50	1,125,899,906,842,620	0.00523696	5,896,293,000,000	63,401	93,000,000	149,668,992

**THE TRADITIONAL BELL CURVE
CURVA TRADICIONAL DE CAMPANA**



**RANDOMNESS
ALEATORIEDAD**

SIR

Node (Nodo):

any noun; a person, place or thing

(cualquier sustantivo, persona, lugar o cosa)

Link (Liga)

connects two nodes

(conecta dos nodos)

Cluster: (enjambre o grupo)

three or more nodes linked together

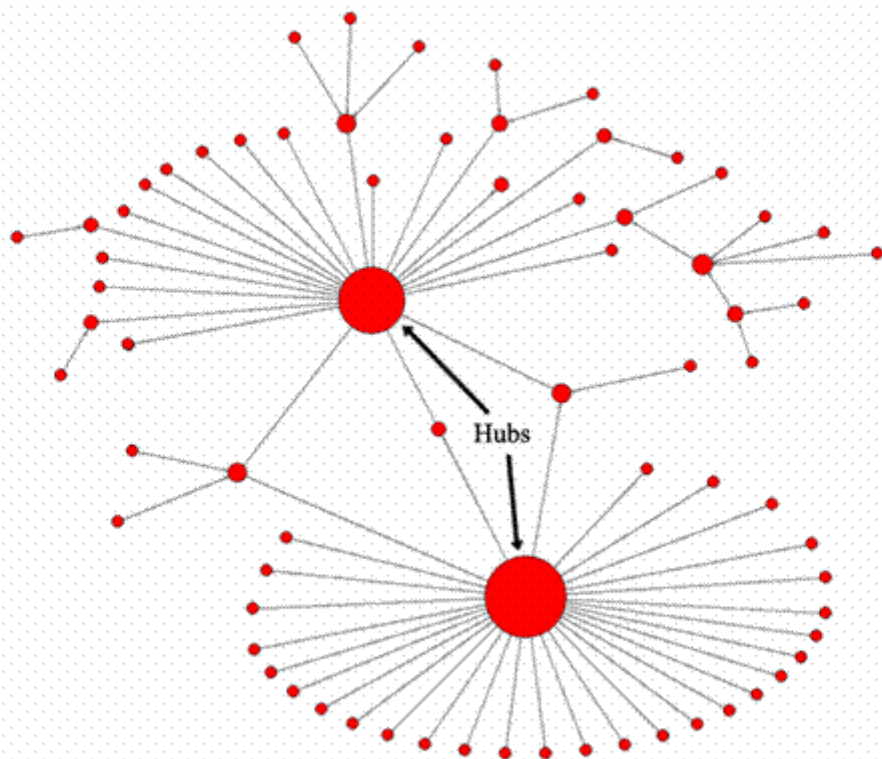
(dos o más nodos ligados entre si)

Is New York City a
node?

(¿Es la ciudad de Nueva York un
nodo?)

Is the city of Ithaca a
node?

(¿Es la ciudad de Ithaca un nodo?)



Preferential Attachment (Unión Preferencial)

Distribución de actores

Distribution of Actors According to
Bacon Number
Approximately 200,000
Feature Films 1898-2000

<u>Bacon Number</u>	<u>Number of Actors</u>	<u>Cumulative Total Number of Actors</u>
0	1	1
1	1,550	1,551
2	121,661	123,212
3	310,365	433,577
4	71,516	504,733
5	5,314	510,047
6	652	510,699
7	90	510,789
8	38	510,827
9	1	510,828
10	1	510,829

Bonus: Why Kevin Bacon? ¿Por qué Kevin Bacon?

Measure the average distance between Kevin Bacon and all other actors.

Kevin Bacon	No. de películas : 46	No. de actores :			
<i>Is Kevin Bacon the most connected actor?</i>	1811	Average separation: 2.79			
<i>¿Es Bacon el actor más conectado?</i>	Rank	Name	Average distance	# of movies	# of links
NO!	1	Rod Striger	2.537527	112	2562
	2	Donald Pleasence	2.542376	180	2874
	3	Martin Sheen	2.551210	136	3501
	4	Christopher Lee	2.552497	201	2993
	5	Robert Mitchum	2.557181	136	2905
	6	Charlton Heston	2.566284	104	2552
	7	Eddie Albert	2.567036	112	3333
	8	Robert Vaughn	2.570193	126	2761
	9	Donald Sutherland	2.577880	107	2865
	10	John Gielgud	2.578980	122	2942
	11	Anthony Quinn	2.579750	146	2978
	12	James Earl Jones	2.584440	112	3787

	876	Kevin Bacon	2.786981	46	1811



14,857 US Airports/Aeropuertos

20% @ Random = 2,971

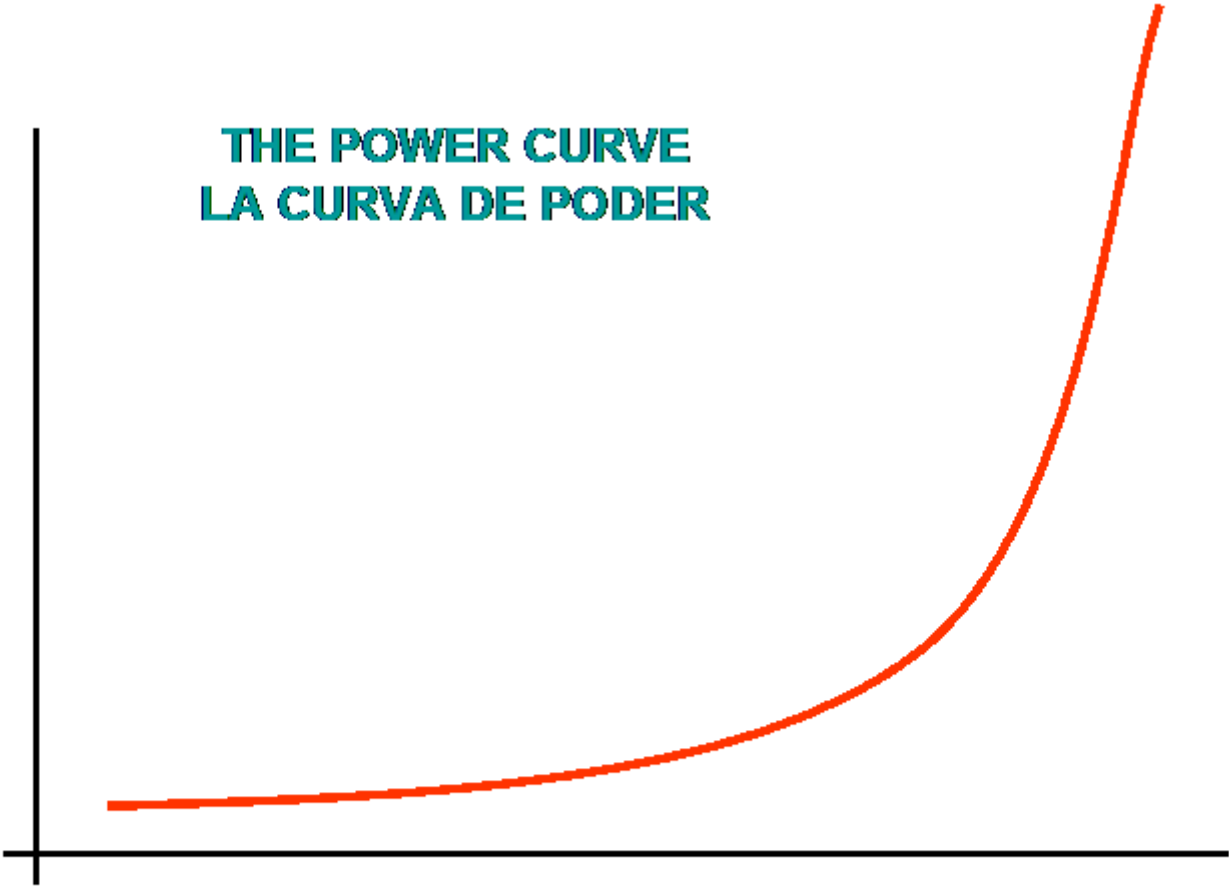
OR

Top Twelve Airports in US by Passenger Volume

Los 12 principales aeropuertos por volumen de pasajeros

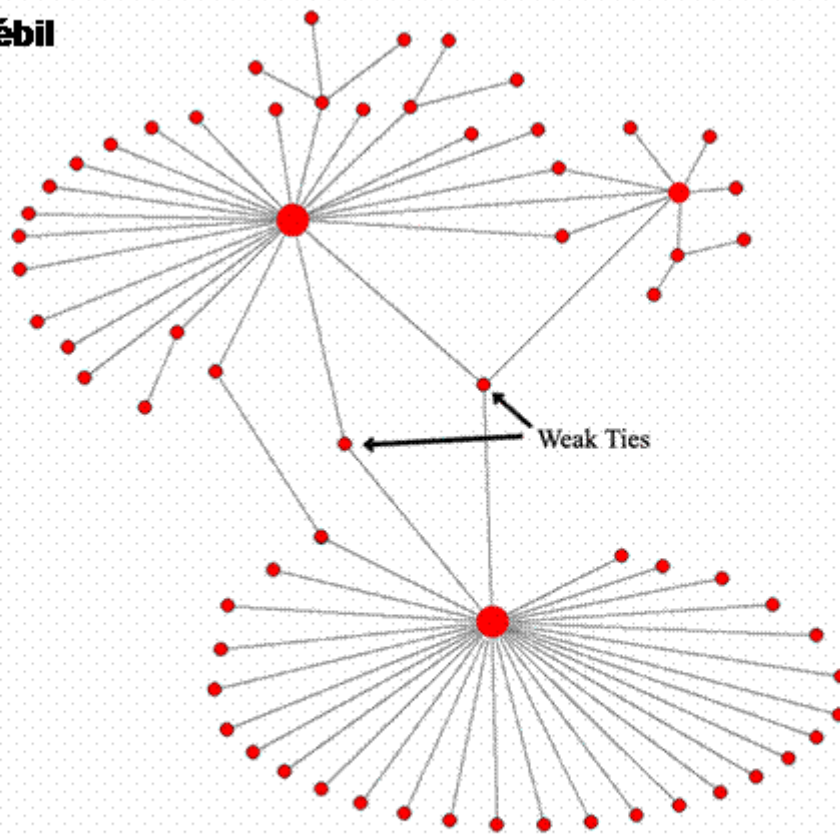
1. Atlanta
2. Chicago
3. Los Angeles
4. Dallas/FT Worth
5. Denver
6. Las Vegas
7. New York (JFK)
8. Minneapolis/St. Paul
9. Houston
10. Detroit
11. San Francisco
12. Newark

**THE POWER CURVE
LA CURVA DE PODER**



**PREFERENTIAL ATTACHMENT
UNION PREFERENCIAL**

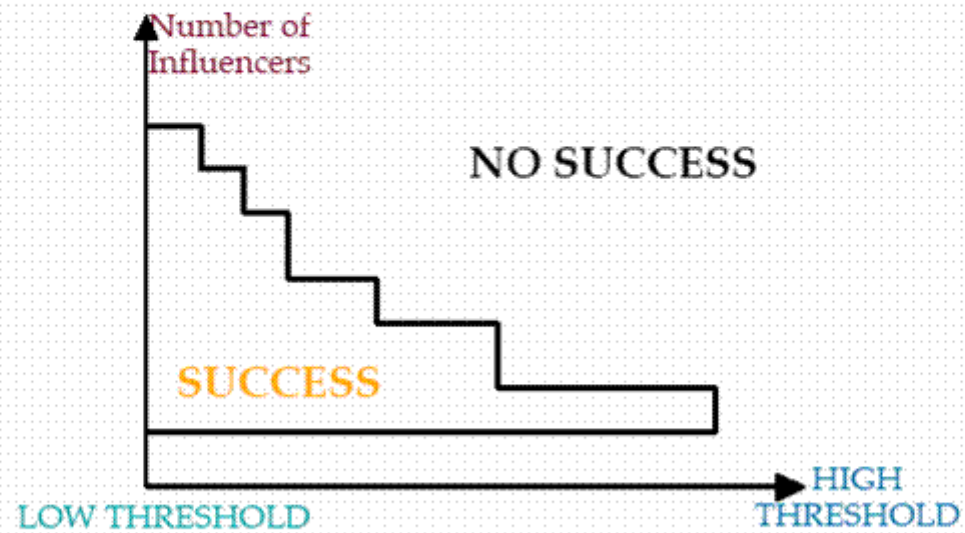
La fuerza a de la liga débil



Strength of the Weak Tie

EL Modelo del Exito En red

The Network Success Model



Cómo la Ciencia de las Red puede acelerar tu éxito por 10 o 30 veces

How Network Science Can Speed Up Your Success by 10 to 20 Times.

Marshall Thurber, J.D.
William Seidman, Ph.D.
Greg Bundy, B.S., P.D.

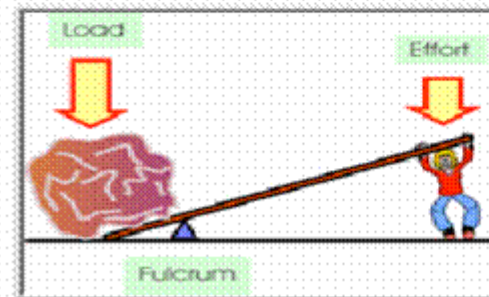
Recall the most influential teacher you had growing up and then recall the most successful movie actor or actress you can think of. Which one added the most value to you? Obviously, the answer for you is your teacher. Why then, do successful actors and actresses make so much more money? They certainly don't add as much value.

The first principle of speeding your success by 10 to 20 times:

Understanding the Theory of Leverage

The answer to why actors and actresses make so much more money than your most influential teacher is leverage. Leverage is a theory. A small force applied over a long distance has a greater impact than a large impact applied over a small distance.

The simplest device for creating leverage is the lever. A lever is a stick which rests on a fulcrum near one end. When you push the long end of the lever, the short end (on the other side of the fulcrum) moves a small distance out with much greater impact. With this device a human can easily lift several times one's weight. Leverage is a universal theory that applies regardless of the type of fulcrum or lever used.



Perhaps Archimedes' most famous quote is: *Give me a lever long enough and a fulcrum on which to place it, and I shall move the world.*