



UNIVERSIDAD  
**NACIONAL**  
DE COLOMBIA

**Cátedra  
Pedro Nel Gómez:  
Mindset innovador a  
prueba de futuro**

PROYECTO CULTURAL, CIENTÍFICO Y COLECTIVO DE NACIÓN



**Cátedra**  
**Pedro Nel Gómez:**  
**Mindset innovador a**  
**prueba de futuro**

**Docente:**

Ingeniero administrador  
Juan David Correa Toro



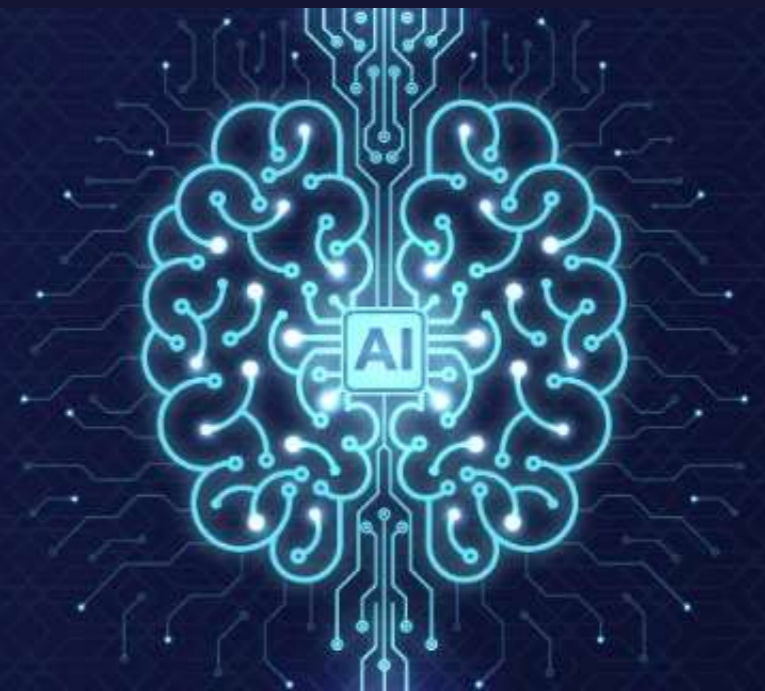
**Código: 3011073** - asignatura de Libre Elección de 3 créditos



Sacándole provecho a las **tecnologías exponenciales** parte 6:

***Internet del valor parte 1: orígenes y fundamentos.***

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# Agenda

- Recapitulando un poco.
- El raro comienzo.
- Por dónde empezar.
- Entendiendo al dinero.
- Por qué – Para qué.
- Algo de historia.
- Volviendo al origen.
- Los primeros y alocados años.
- ¿Alguna paradoja?





Recapitulemos  
un poco

# Seis principios clave para impulsar la **innovación**

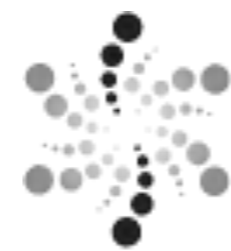
**Y cambiar mentalidades**

Cátedra Pedro Nel Gómez - Facultad de Minas - Sede  
Medellín





**Singularidad**  
UNIVERSITY



**Singularidad**  
group

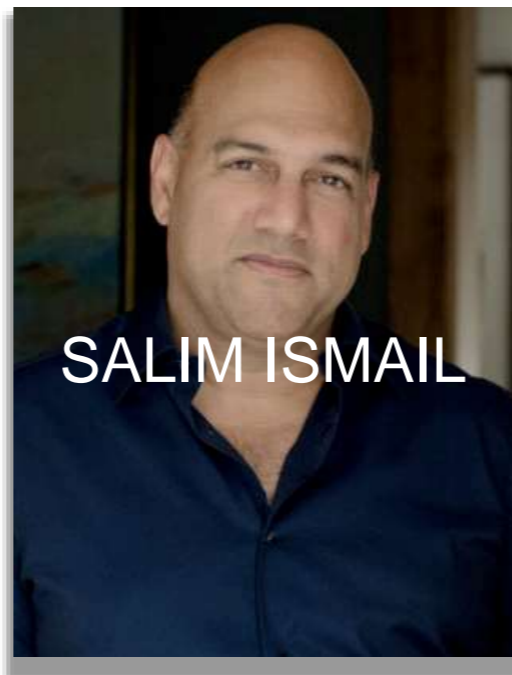
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<https://www.diamandis.com/>



<https://salimismail.com/>



<https://www.kurzweilai.net/>

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PROYECTO CULTURAL, CIENTÍFICO Y COLECTIVO DE NACIÓN

**Desarrolla** un entendimiento profundo de los **“frameworks exponenciales”**

**Deja** de ver escasez donde hay **abundancia**

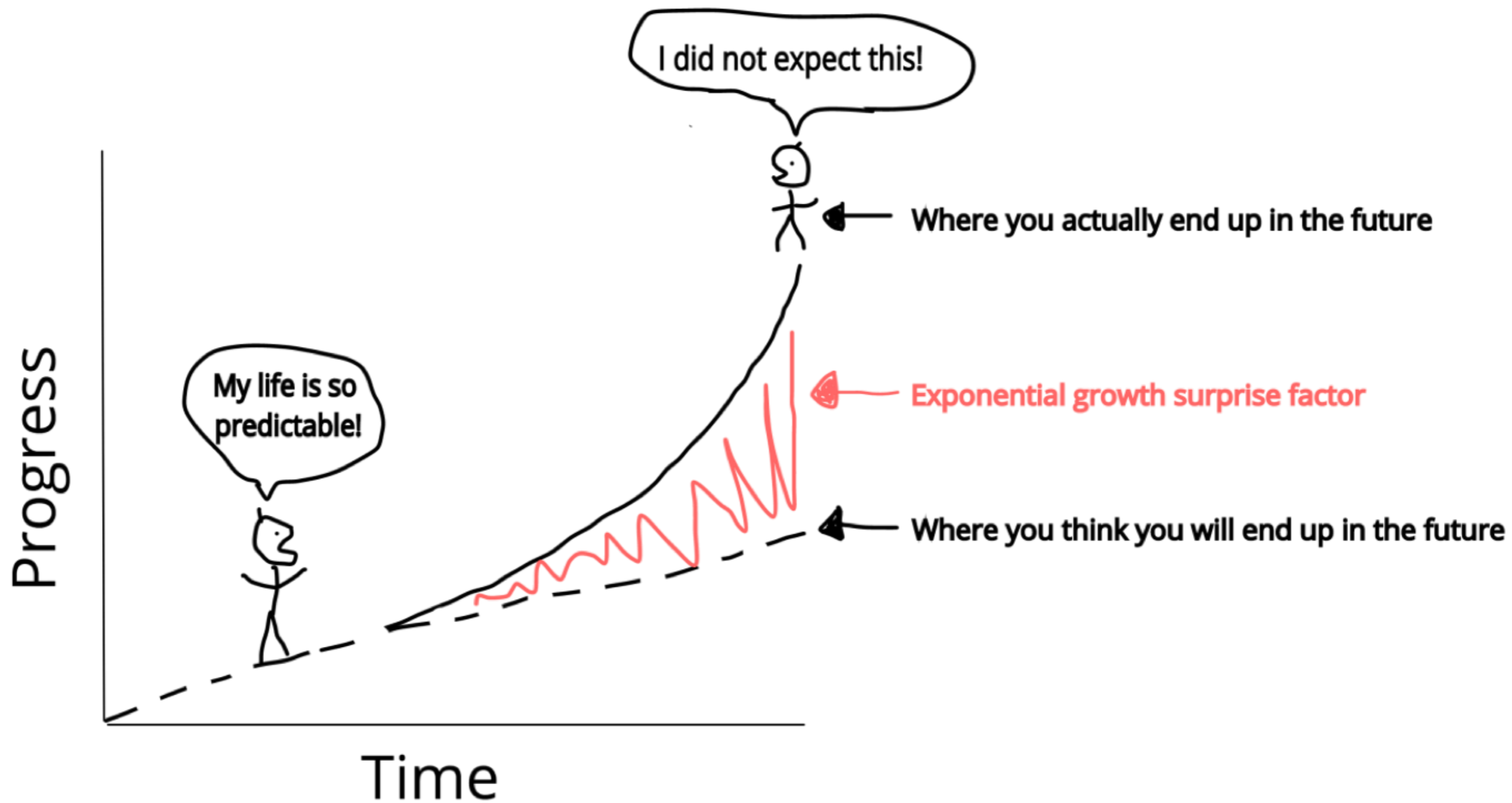
**Aprende** a aprovechar las tecnologías **exponenciales**

6

**Descubre** tu **propósito** de transformación masiva

**Aprovecha** a la **multitud** para obtener experiencia, soluciones y capital

**Lanza** tu **visión**, **experimenta** y **desarróllate**





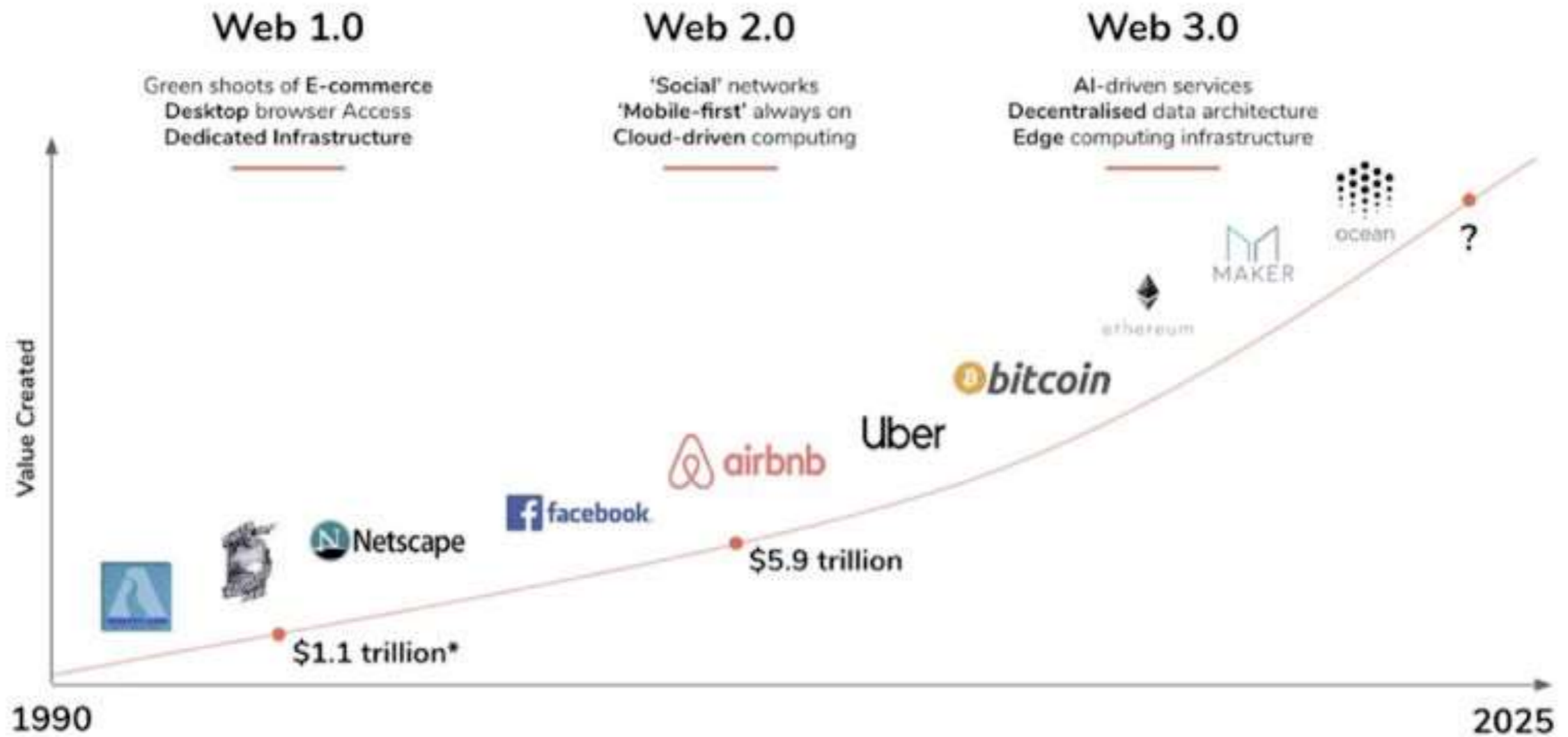
**Internet** potenciado

Realidades **extendidas (xR)**

La **revolución** de las máquinas

Internet  
**potenciado**

# The Evolution of the Web



\* Internet companies market cap as of 2000



# Los orígenes de internet

¿Qué es la **mayéutica**?

[https://www.diamandis.com/blog/metatrend\\_9\\_trillion\\_sensor\\_economy](https://www.diamandis.com/blog/metatrend_9_trillion_sensor_economy)

En este futuro, lo más importante

no será "lo que sabes", sino

más bien "la calidad de las

preguntas que haces".

<https://www.diamandis.com/>

DÉJÀ VU

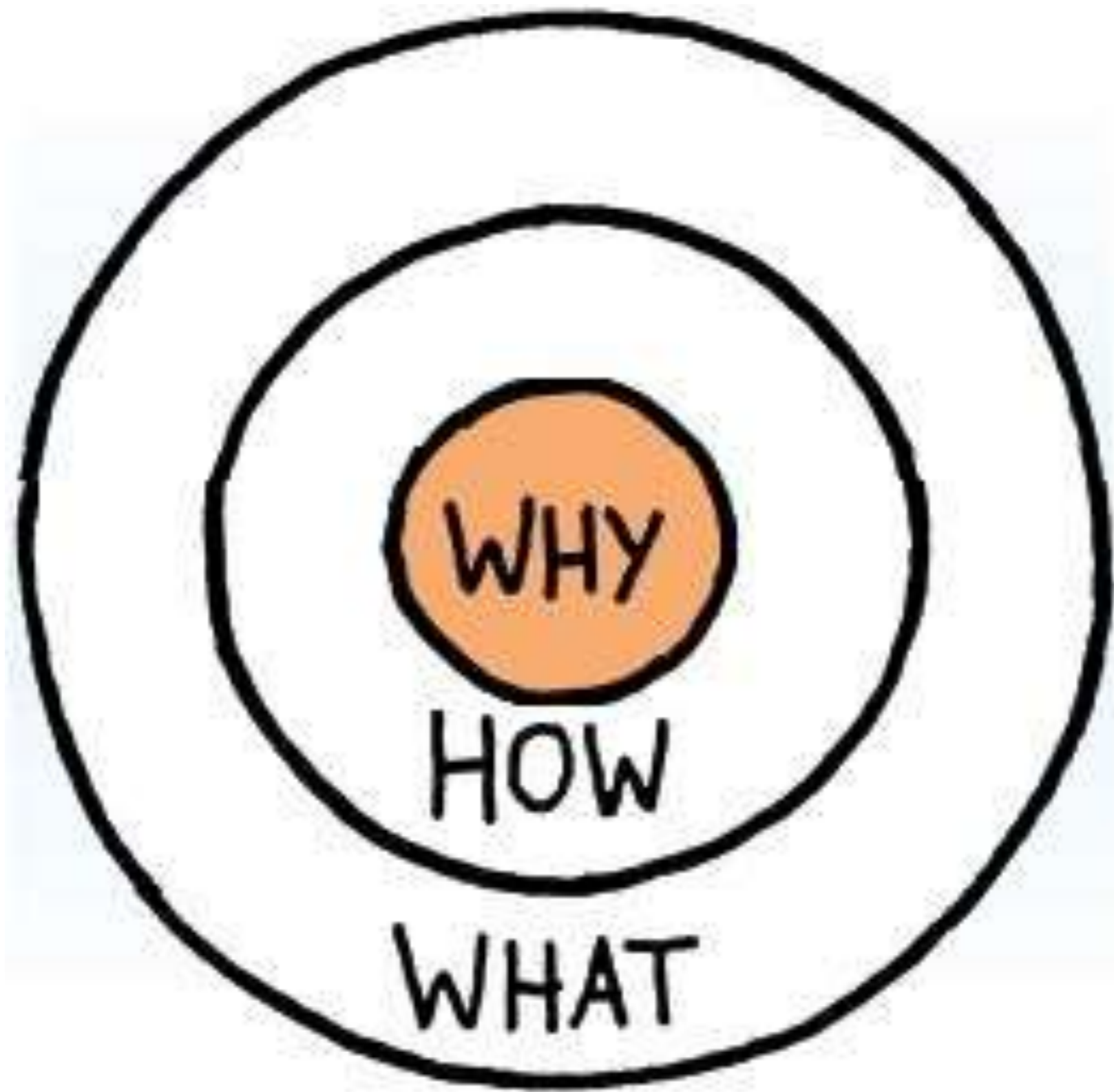
vuij à dé



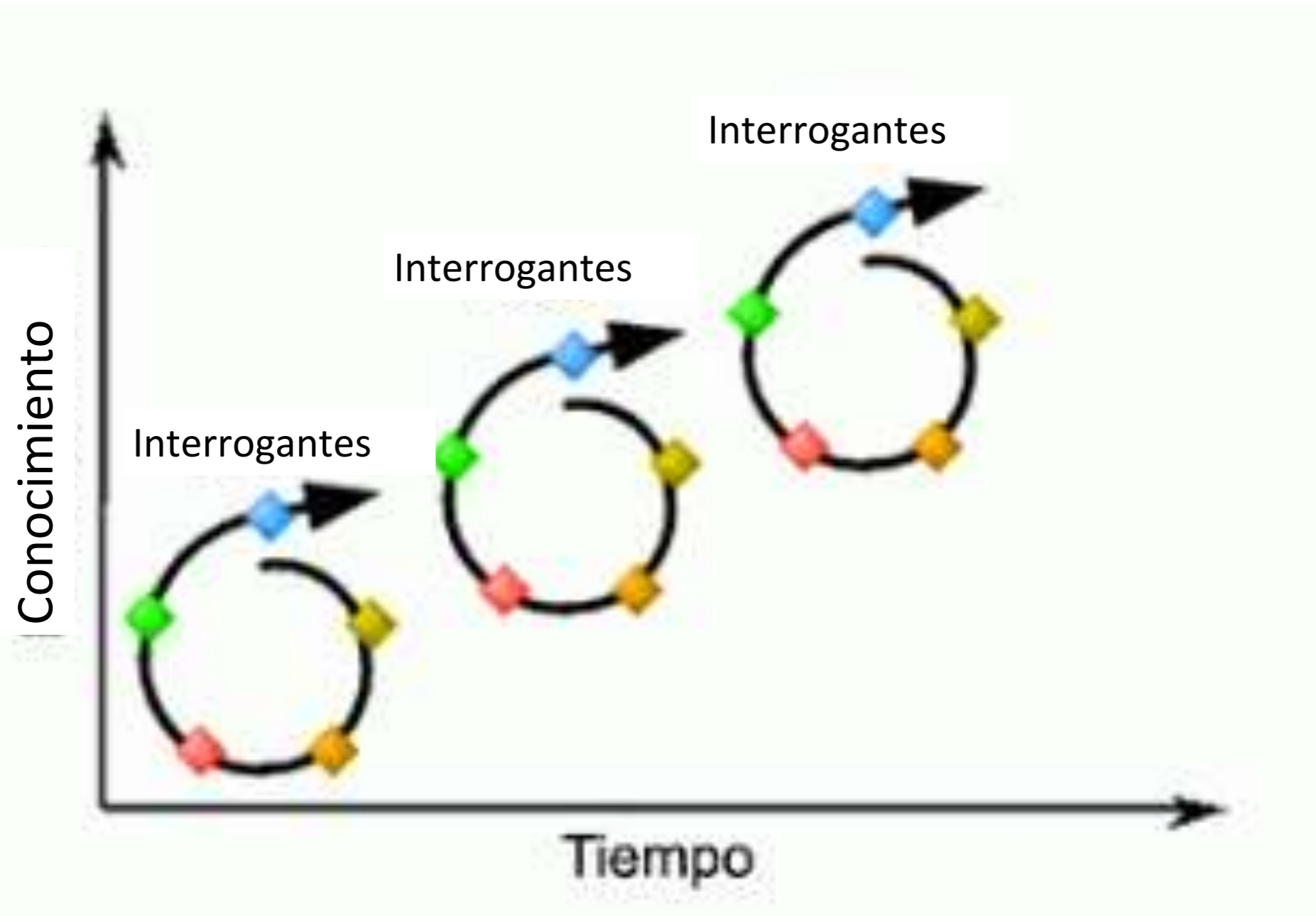
El verdadero  
viaje de descubrimiento  
no consiste en buscar  
nuevos paisajes,  
sino en mirar con  
ojos nuevos

- Marcel Proust





Esta etapa de la cátedra será **iterativa**





1960s



1970s



1980s



1990s





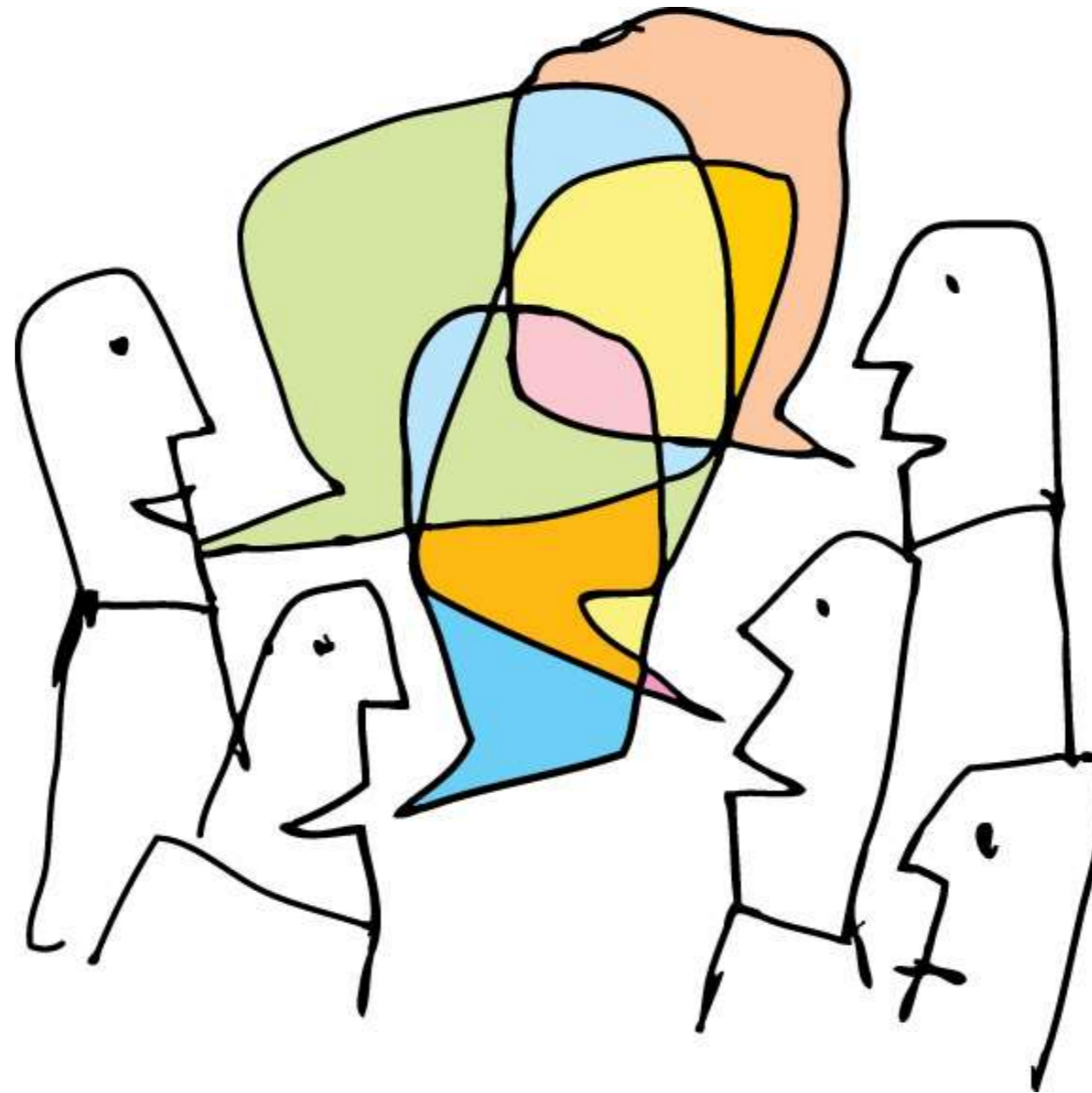
A photograph of a dirt path in a forest. The path is made of reddish-brown soil and is flanked by lush green undergrowth. Several large trees with thick trunks are visible in the background. The lighting is bright, suggesting a sunny day.

*Grupos  
familiares  
pequeños*

*Sociedades  
cooperativas*



# El lenguaje



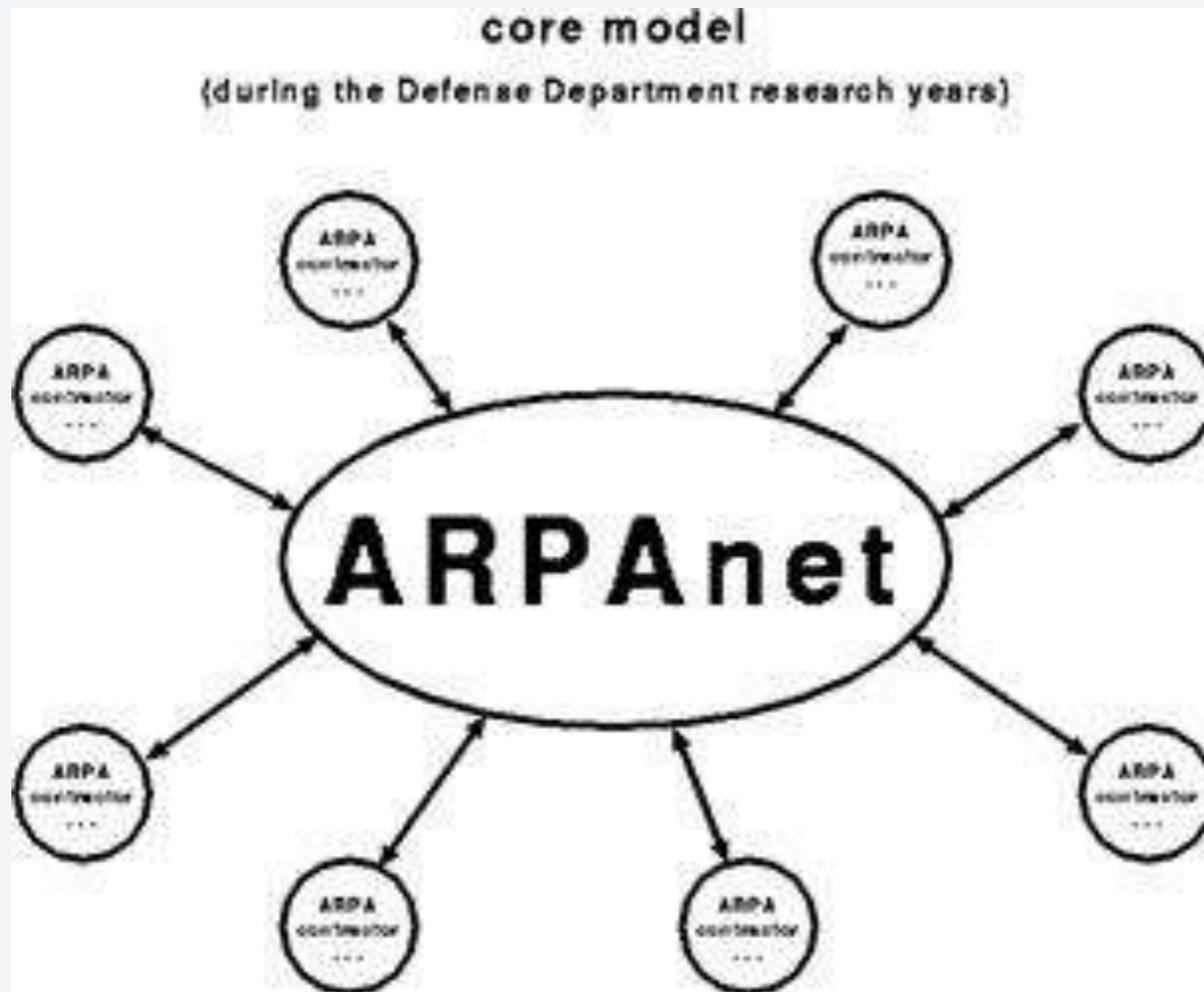
Tecnología social para **cooperar**



Bletchley Park



# ARPANET



Defense Advanced Research Projects Agency  
(1962)



# 1982 Cerf y Kahn: **TCP / IP**





# Problemática





# Problemática



# Principios **aplicados**



**BIGGER  
STRONGER  
FASTER**





Eficiencia







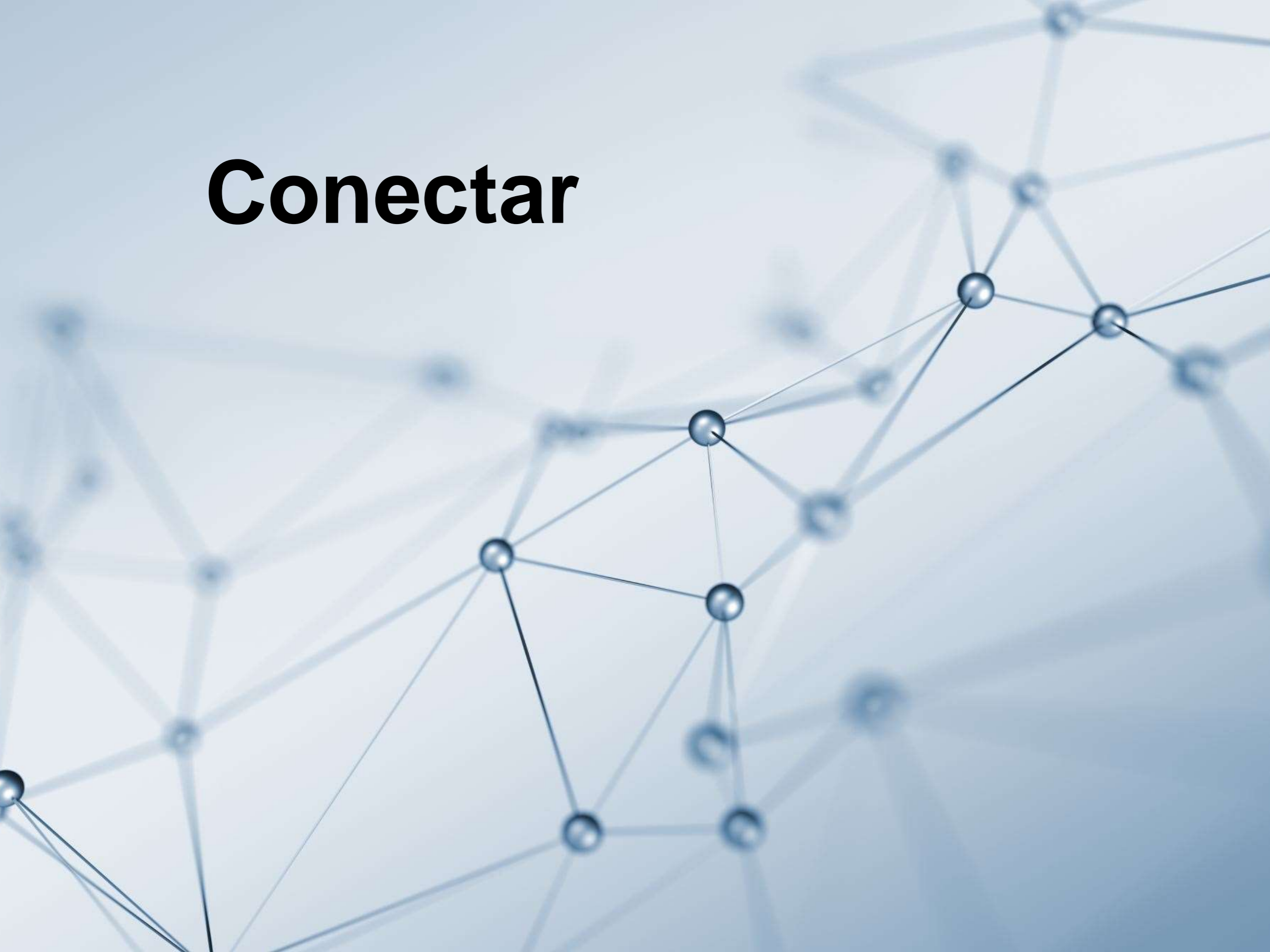


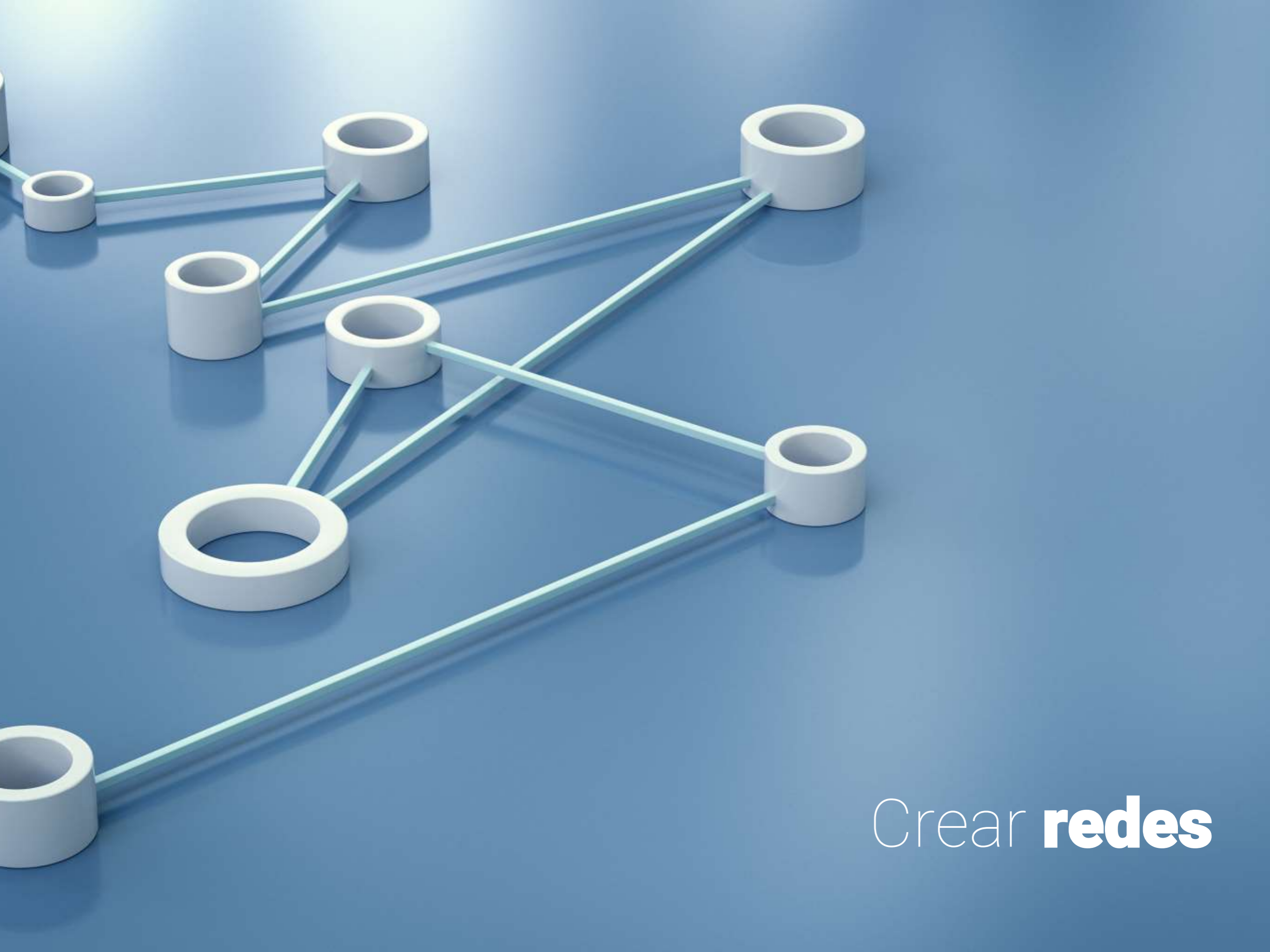
Compartir **Distribuir**



**Analizar**

# Conectar





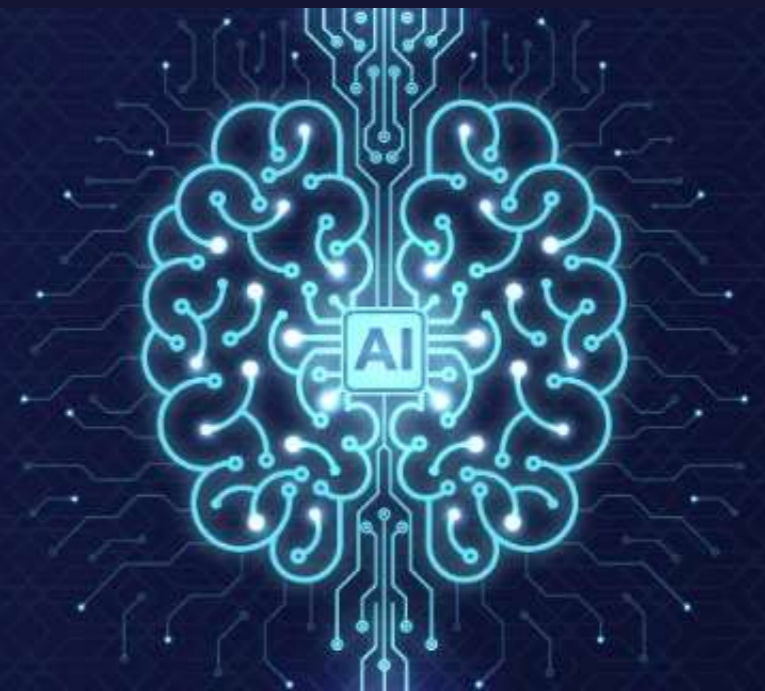
Crear **redes**



Sacándole provecho a las **tecnologías exponenciales** parte 2:

**Internet:** la gran maravilla de nuestros  
tiempos: **anatomía**

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**Mindset innovador a**  
**prueba de futuro**



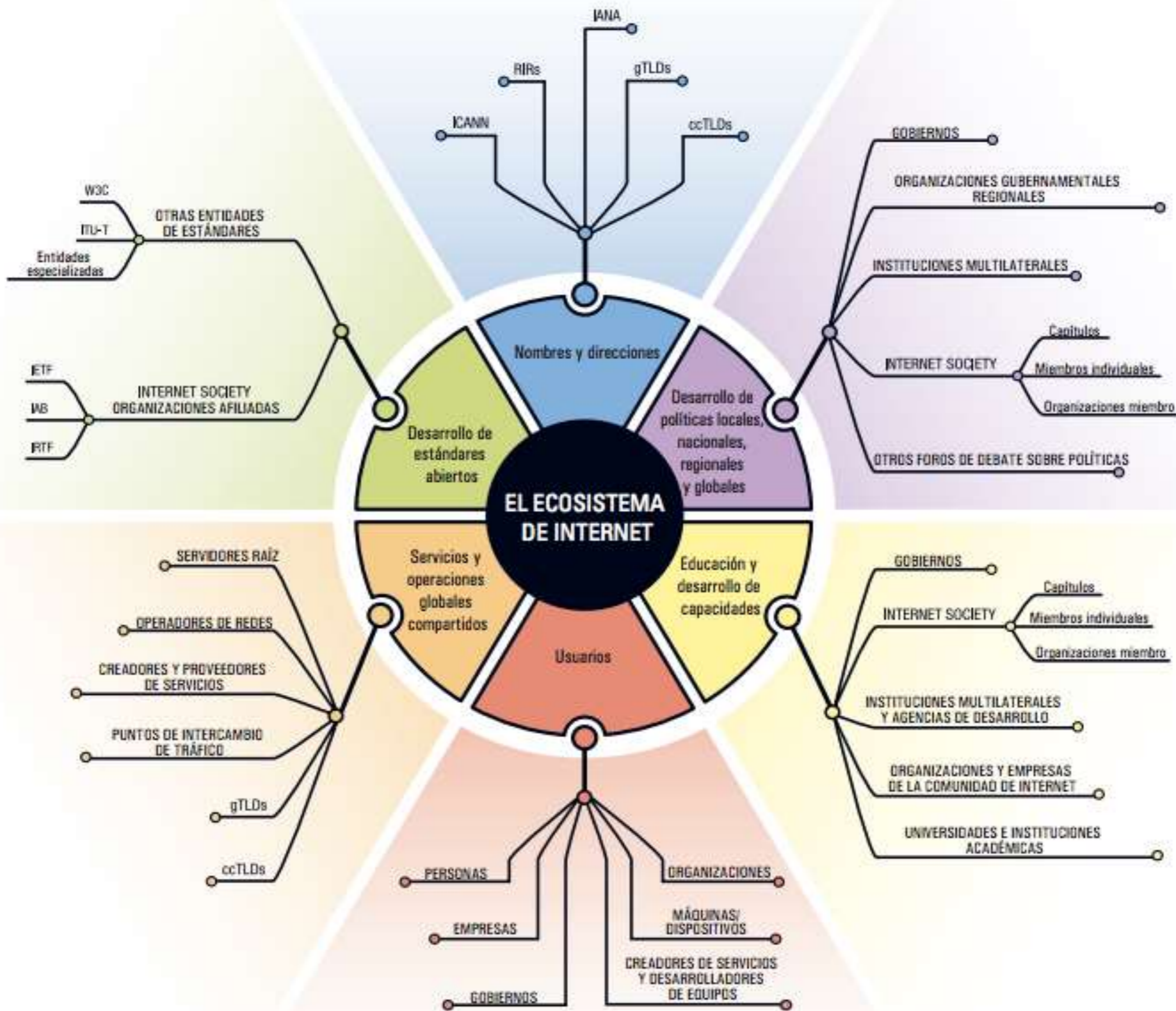


A microscopic view of various immune cells and pathogens. In the center, a large, light blue, irregularly shaped cell (likely a macrophage or neutrophil) is shown with a prominent, dark purple, spherical nucleus. Surrounding it are numerous smaller, spherical cells, some of which are covered in fine, radiating filaments, resembling viruses or bacteria. The background is a deep blue, with many small, glowing white and blue particles scattered throughout, suggesting a complex cellular environment.

# Sistema inmunológico

# Ecosistema





ADN

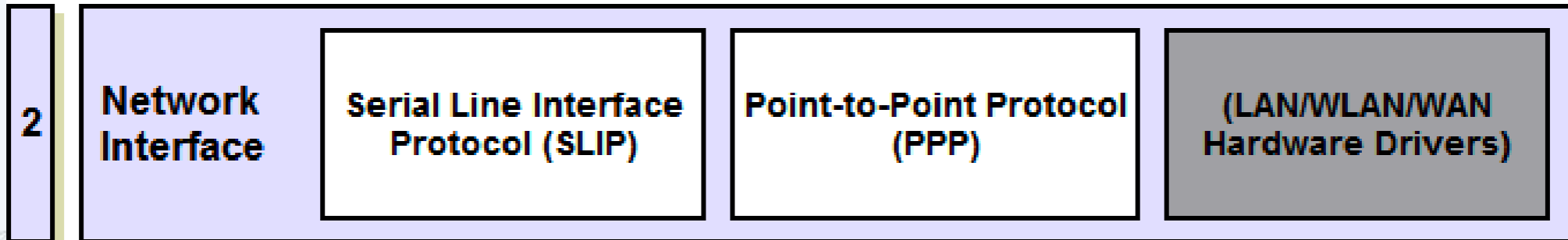
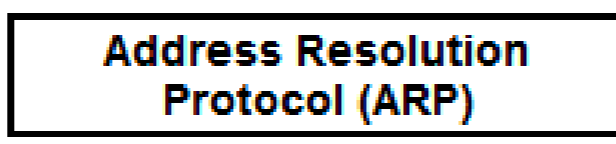
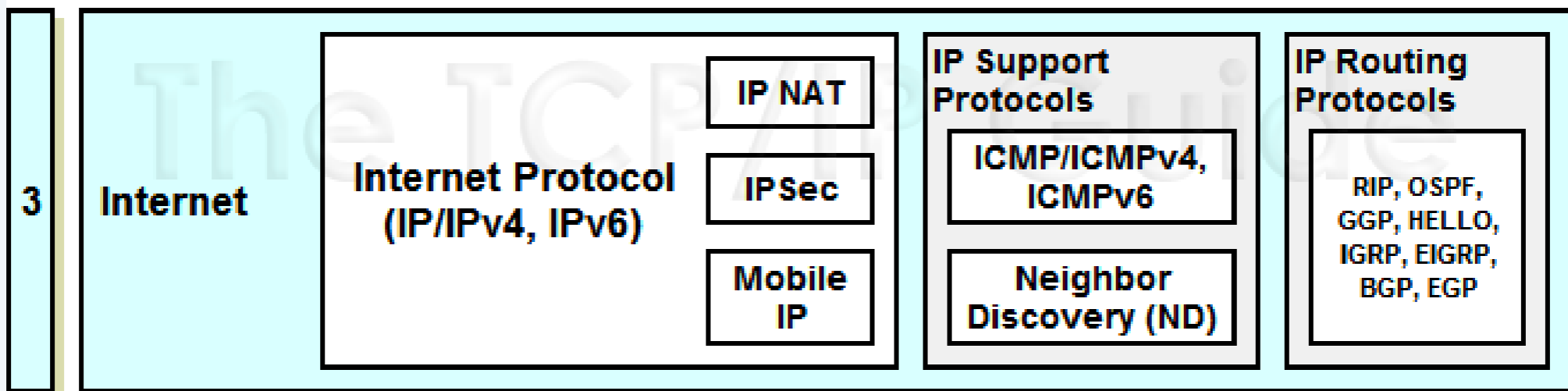
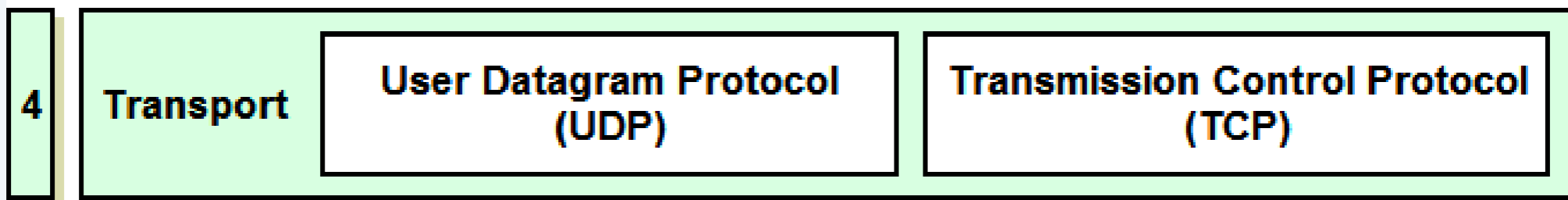
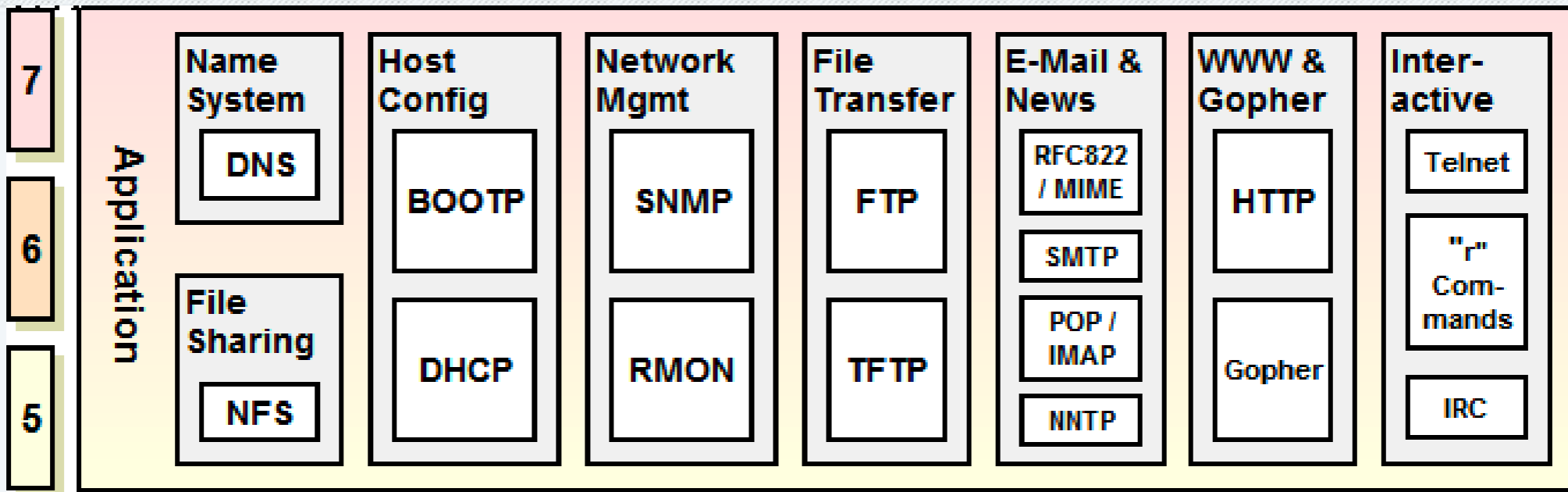


# Protocolos

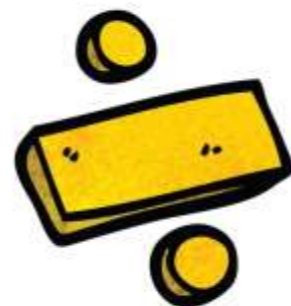
(Familia, Arquitectura, Modelo)

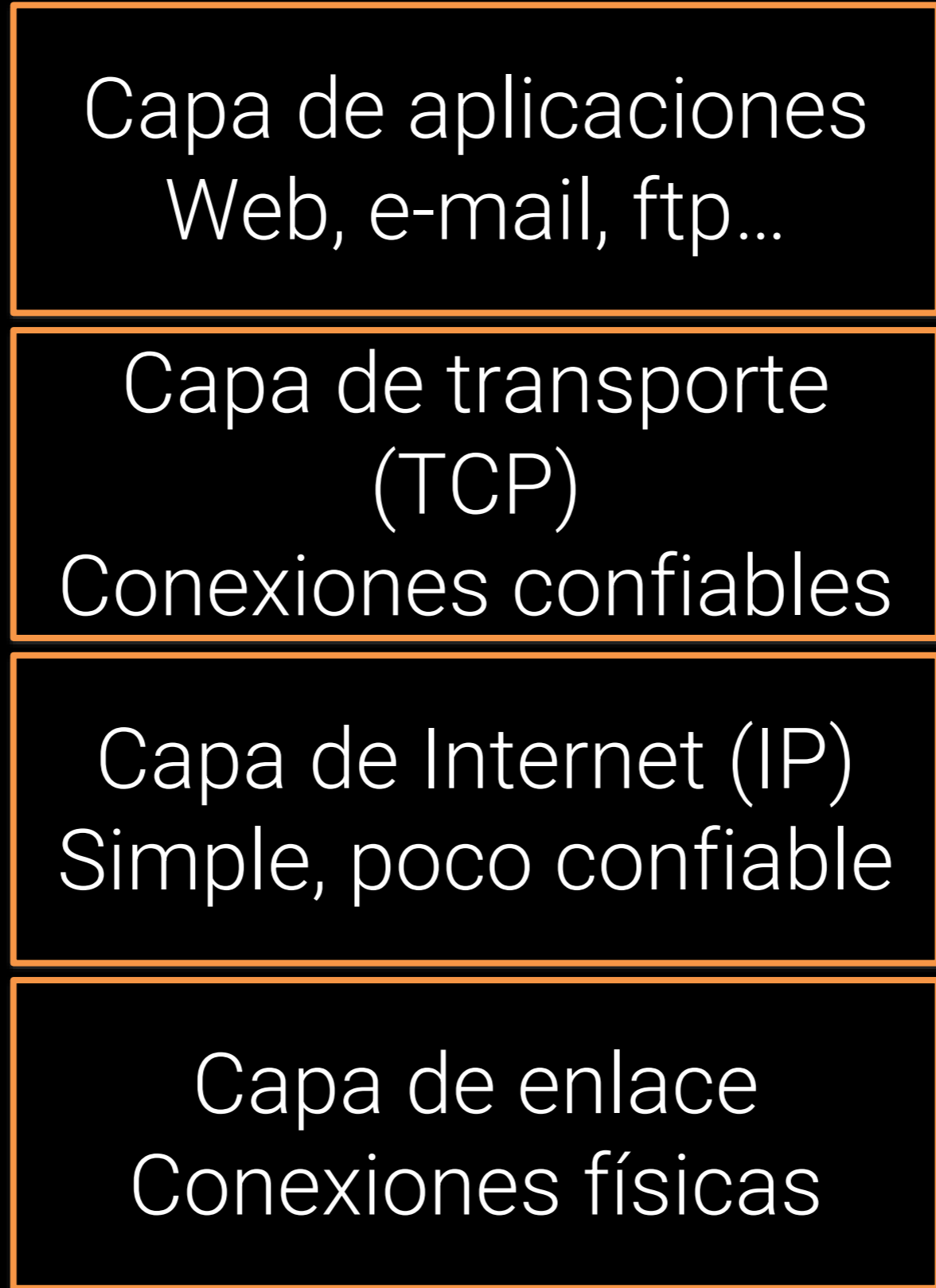






Enorme  
desafío  
técnico







# **Simplicidad** apilada



Principios aplicables



A person is silhouetted against a sunset sky, with their arms raised in a gesture of openness or freedom. The word "Apertura" is overlaid in a black box with white text. The background shows a beach, the ocean, and a bright sun setting on the horizon, creating a warm, golden glow. The sky is filled with soft, wispy clouds.

Apertura



## The Internet Engineering Task Force (IETF)

The goal of the IETF is to make the Internet work better.

The mission of the IETF is to make the Internet work better by producing high quality, relevant technical documents that influence the way people design, use, and manage the Internet. Newcomers to the IETF should [start here](#).

### News

Next Meeting: [IETF 88, November 3-8, 2013](#)



- [Chair's Blog](#)
- [IETF Daily Dose](#)
- [IETF Regional Attendance Data](#)
- [IETF 86 Orlando Session Videos](#)
- [Internet Engineering Task Force and Internet Architecture Board Announce New Leadership Teams](#)
- [IETF Journal](#)
- [Leading Global Standards Organizations Endorse 'OpenStand' Principles that Drive Innovation and Borderless Commerce](#)

[IETF 88, Vancouver, BC, Canada](#)

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- [Meeting Materials](#)
- [Venue](#)
- [Sponsor Website](#)
- [Remote Participation](#)



Photo courtesy of Brian Campbell

# Estándar Abierto



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# Sistema virtuoso

## ¿QUÉ ES UN ECOSISTEMA?

**MEDIO FÍSICO** + **SERES VIVOS**



RFC

Colaboración



A magnifying glass with a silver handle and a large, clear lens. The word "Transparencia" is written in a black, sans-serif font across the center of the lens. The background is a soft, out-of-focus light blue and white gradient.

Transparencia

A photograph showing two pairs of hands. The top pair of hands is cupped together and pouring a stream of small, yellow, spherical beads downwards. The bottom pair of hands is held open, ready to receive the beads. The background is a plain, light color. The word "Generosidad" is overlaid in the center in white text on a black rectangular background.

Generosidad



Empoderamiento:  
Distribución de conocimiento y poder





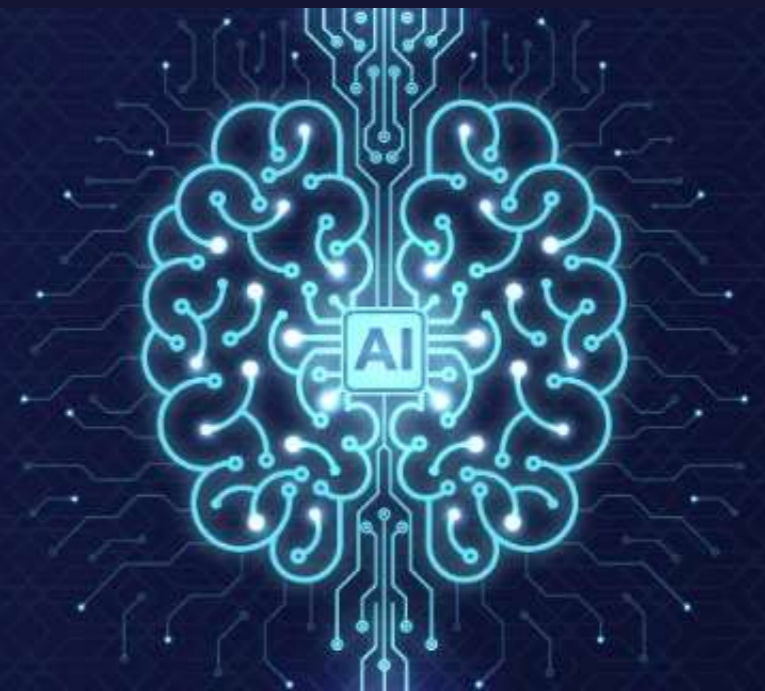
Interdependencia



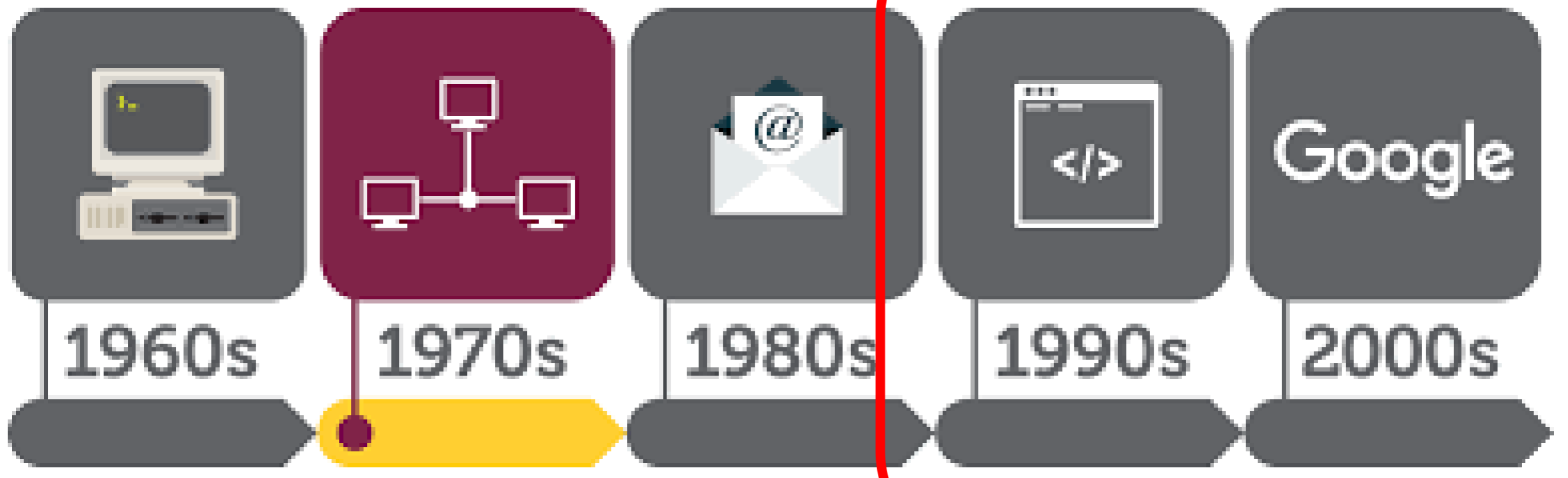
Sacándole provecho a las **tecnologías exponenciales** parte 3:

**Internet:** la gran maravilla de nuestros tiempos: **Internet moderno**

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**Pedro Nel Gómez:**  
**Mindset innovador a**  
**prueba de futuro**



# Internet moderno







<http://en.wikipedia.org/wiki/CERN>

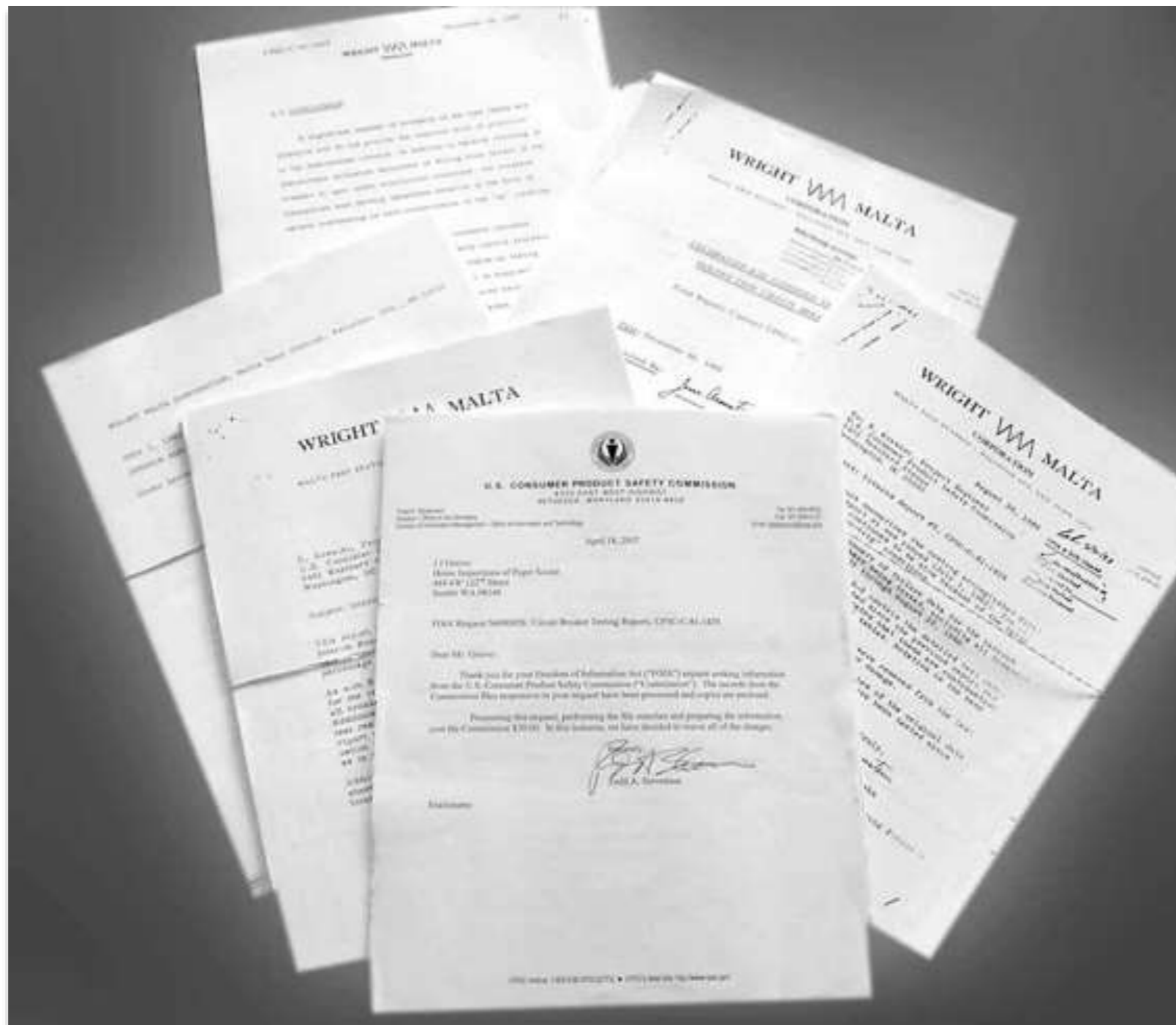


Tim Berners-Lee - Robert Cailliau





# Documentación Científica







**TIMBERNERS-LEE**

(click to play)

Cuando creas algo grande, se requiere de un  
diseño técnico y de un diseño social

המחשבים של

# HTML

*HyperText*

*Markup*

*Languaje*

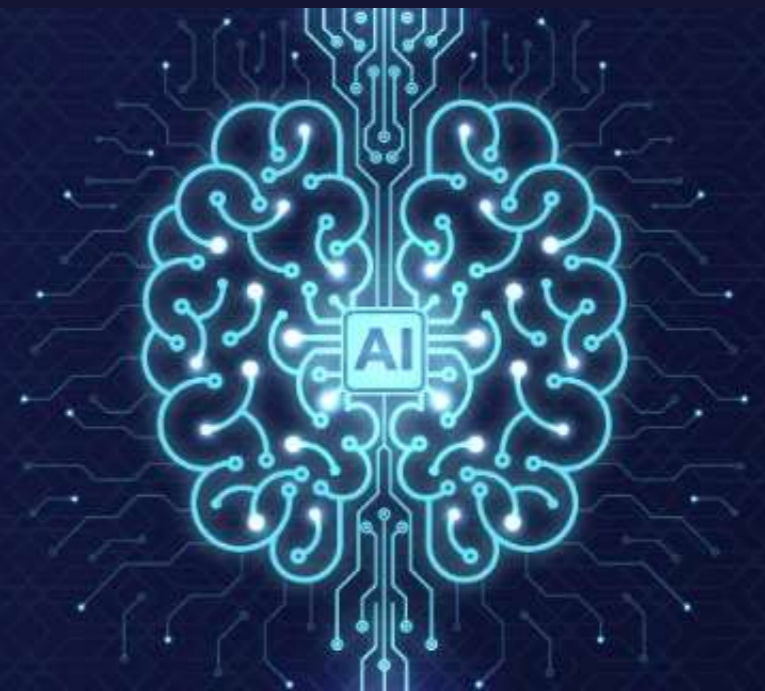




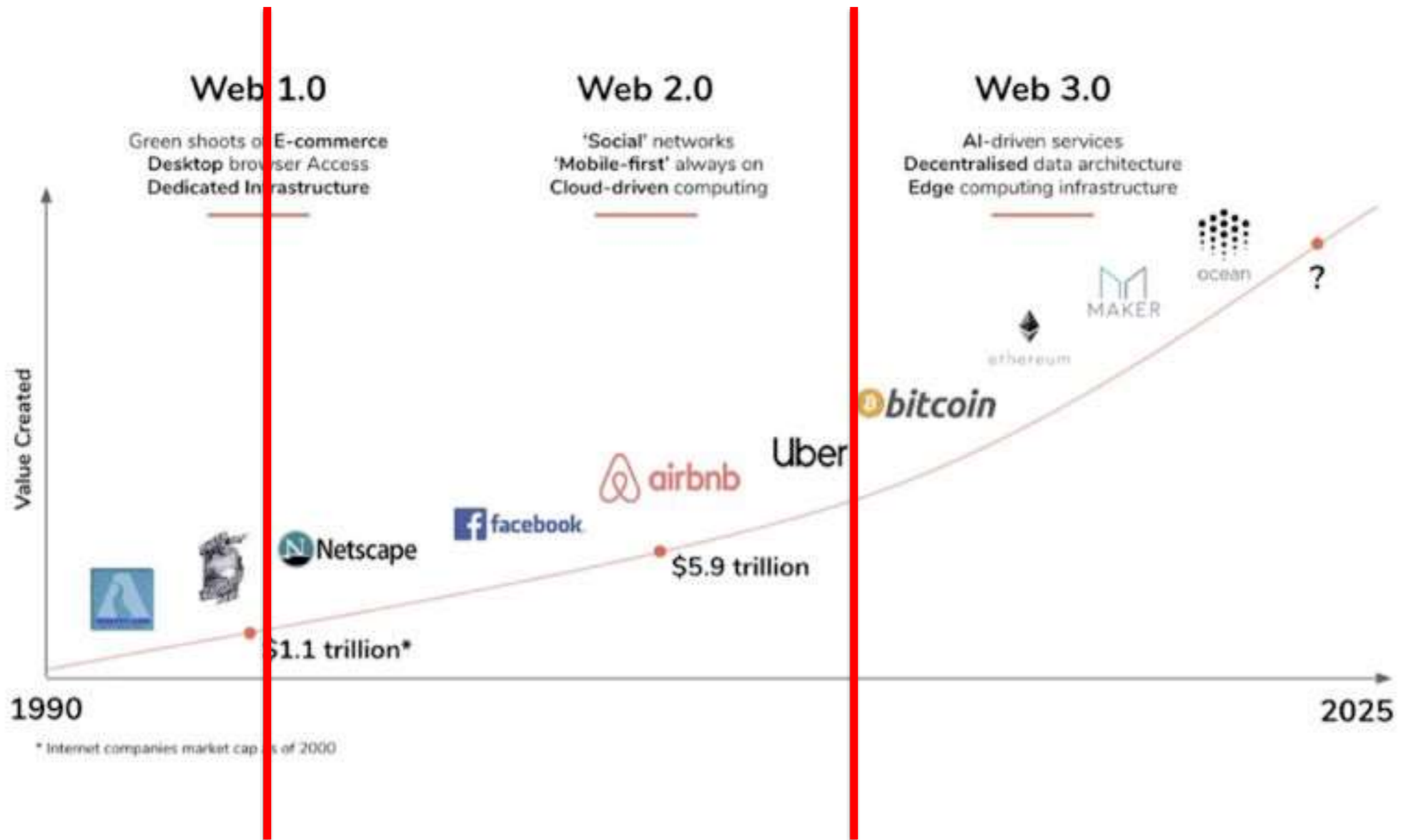
Sacándole provecho a las **tecnologías exponenciales** parte 4:

**Internet:** la gran maravilla de nuestros tiempos: **la revolución social de la web**

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**Mindset innovador a**  
**prueba de futuro**



# The Evolution of the Web





# San Francisco Daly City

# Silicon Valley







[https://en.wikipedia.org/wiki/John\\_Heilemann](https://en.wikipedia.org/wiki/John_Heilemann)

A close-up photograph of a hand moving a black chess piece on a chessboard. The hand is positioned at the top left, with the thumb and index finger gripping a black pawn. The chessboard is in the foreground, showing a checkered pattern of light and dark squares. Other chess pieces are visible in the background, slightly out of focus. A dark blue rectangular box is overlaid on the image, containing the text "Una guerra" in white. The word "Una" is in a thin, white, sans-serif font, and "guerra" is in a bold, white, sans-serif font.

Una **guerra**





Easy!

El triunfo de la **usabilidad**



A close-up photograph of a brick wall. The bricks are reddish-brown with some variations in color and texture. A dark blue horizontal band is superimposed across the middle of the image, containing the text "De ladrillos a bits" in white. The word "bits" is in a bold, sans-serif font, while the rest of the text is in a regular, sans-serif font.

De ladrillos a **bits**





El inicio de una  
**revolución**



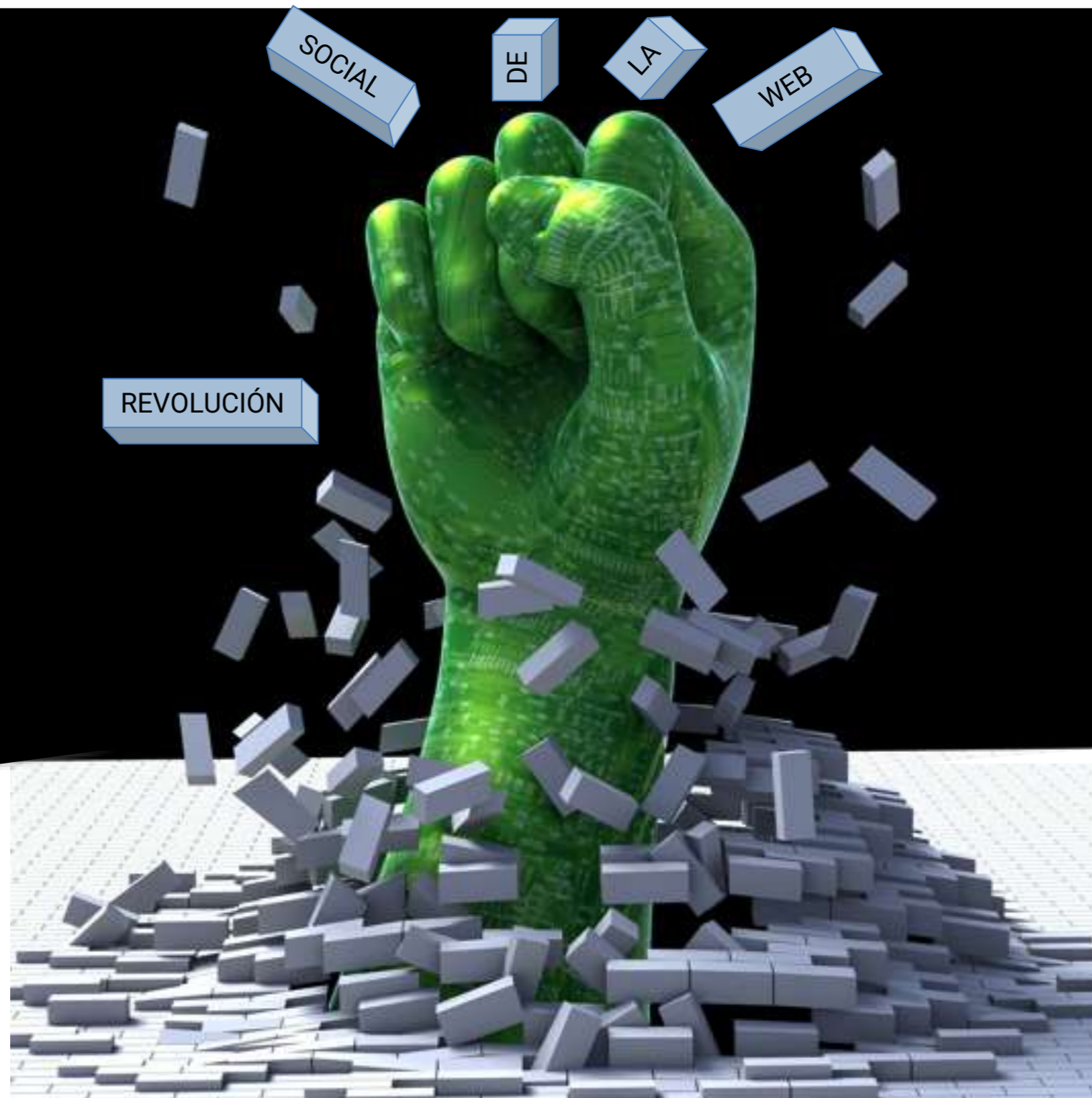




A crowd of people at a concert with their hands raised against a sunset background. The scene is filled with energy and movement, with many hands reaching up towards the bright, orange sky. The silhouettes of the people are dark against the glowing light of the setting sun.

# La **revolución social** de la web

Que fue una **revolución profunda** y a **gran escala**





Con fundamentos **importantes**



**Internet:** El nuevo campo de batalla

Revolución basada en **principios activos**

Cambios **generacionales, culturales** y en la forma de **comunicarnos**



# El nuevo **campo de batalla** la nueva **gran herramienta política**

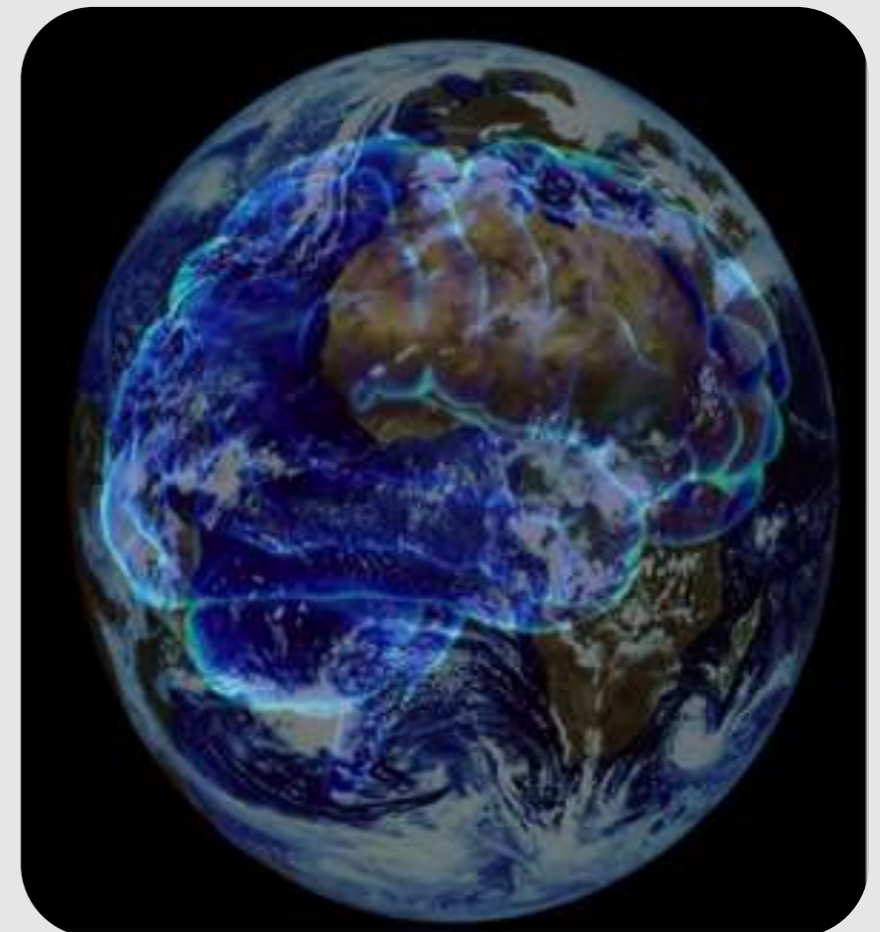




# Principios **activos**



# Construcción de la **inteligencia colectiva**





La riqueza está en **los datos**,  
en **los contenidos**, en **las conversaciones**





# La web como verdadero entorno de **interacción social**





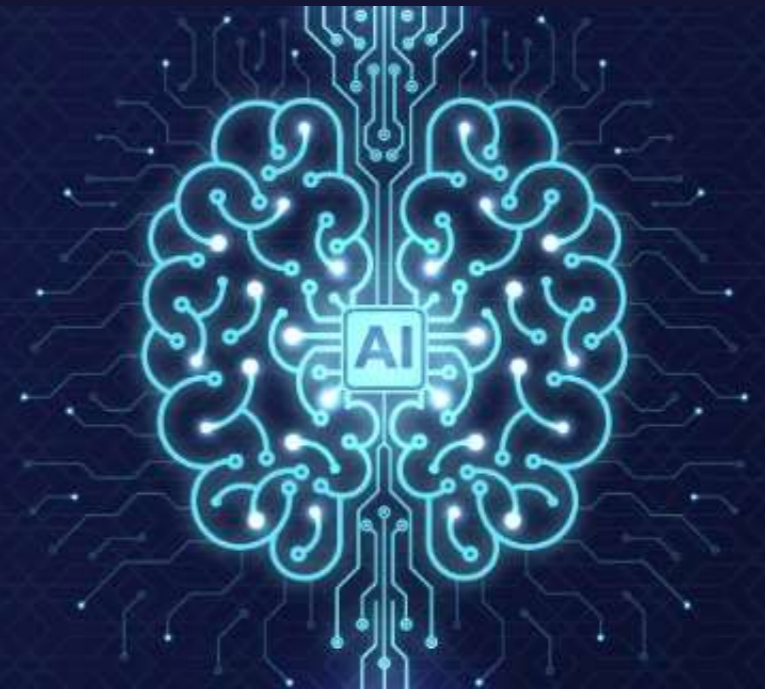
# Arquitectura centrada en el usuario: ¡ Hay un nuevo rey !



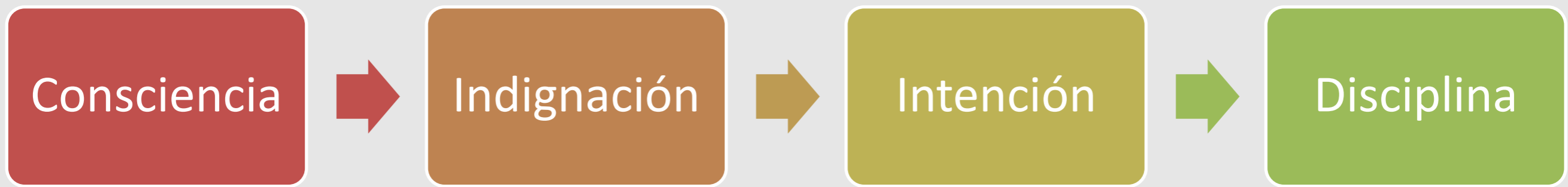
Sacándole provecho a las **tecnologías exponenciales** parte 5:

**Internet:** la gran maravilla de nuestros  
tiempos: **el lado oscuro**

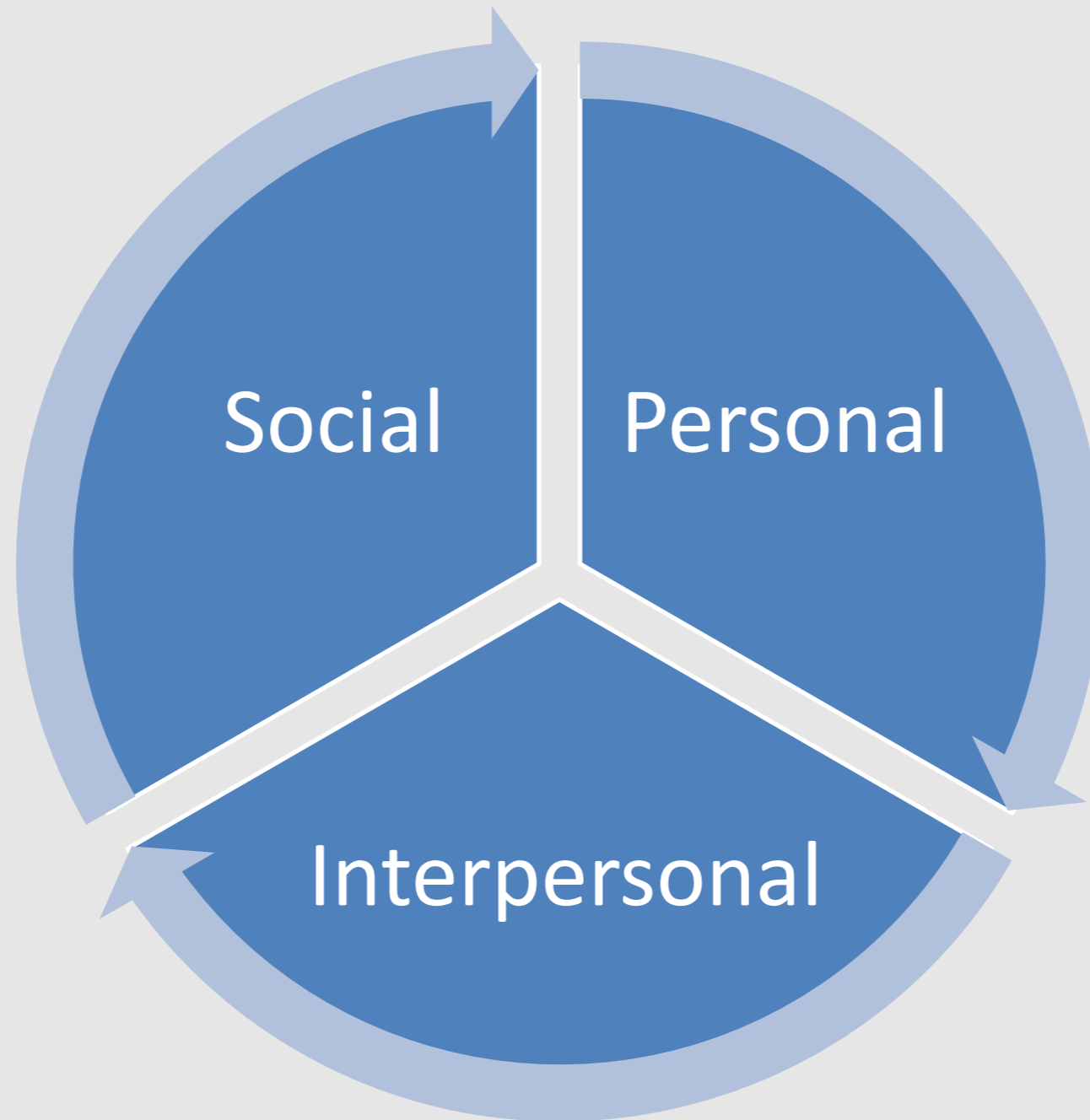
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**Mindset innovador a**  
**prueba de futuro**



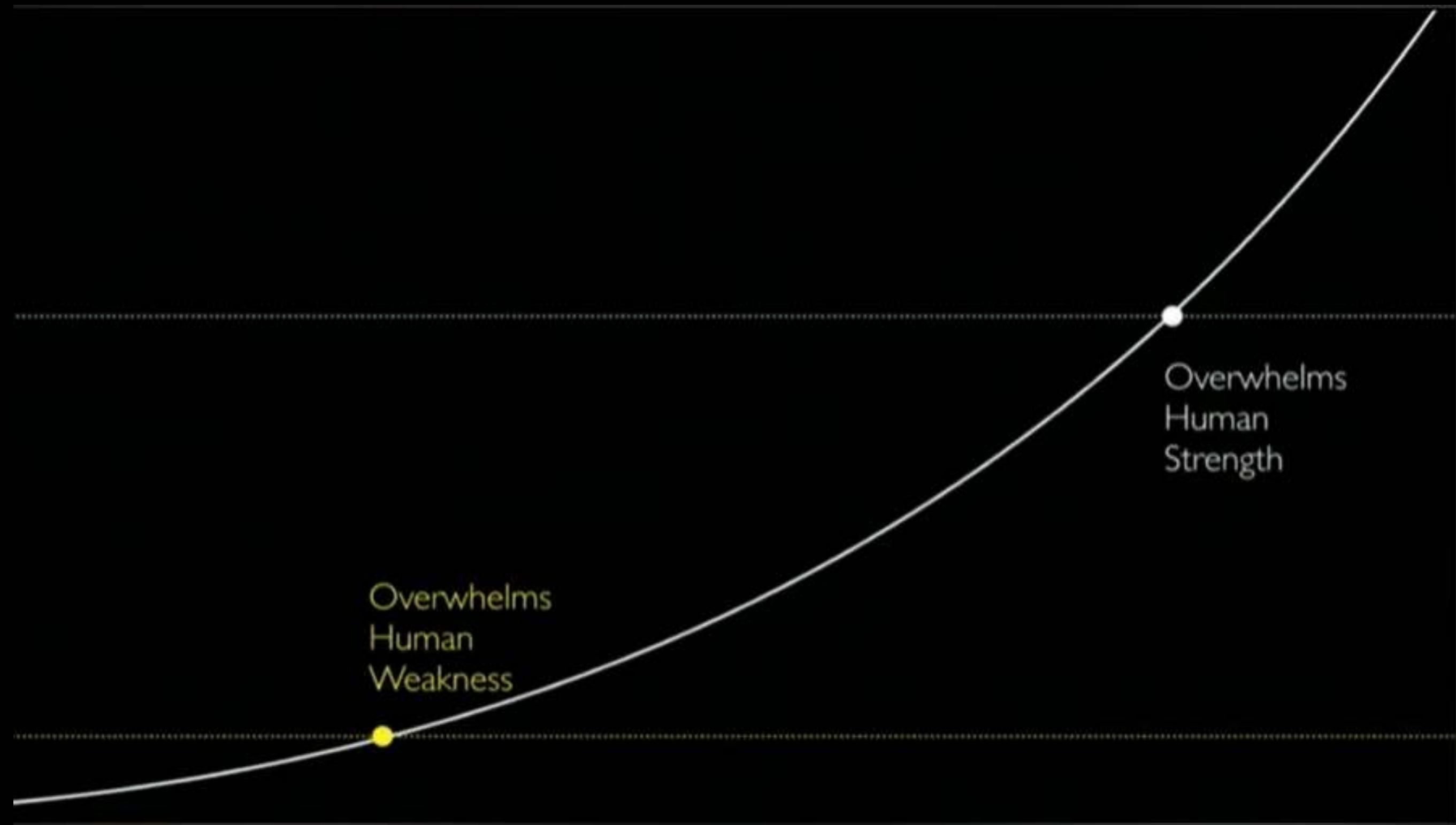




# Círculo vicioso



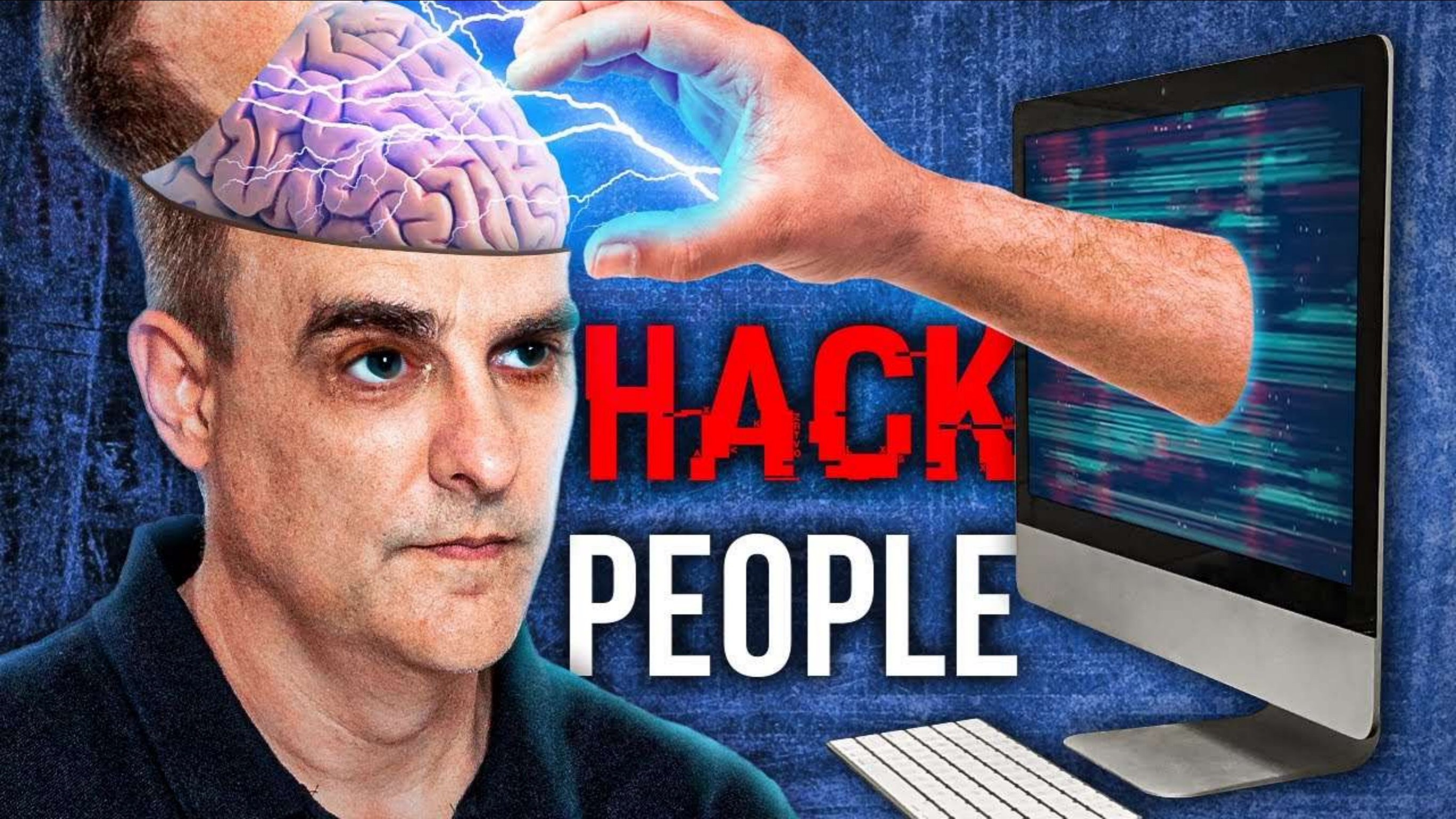




Overwhelms  
Human  
Weakness

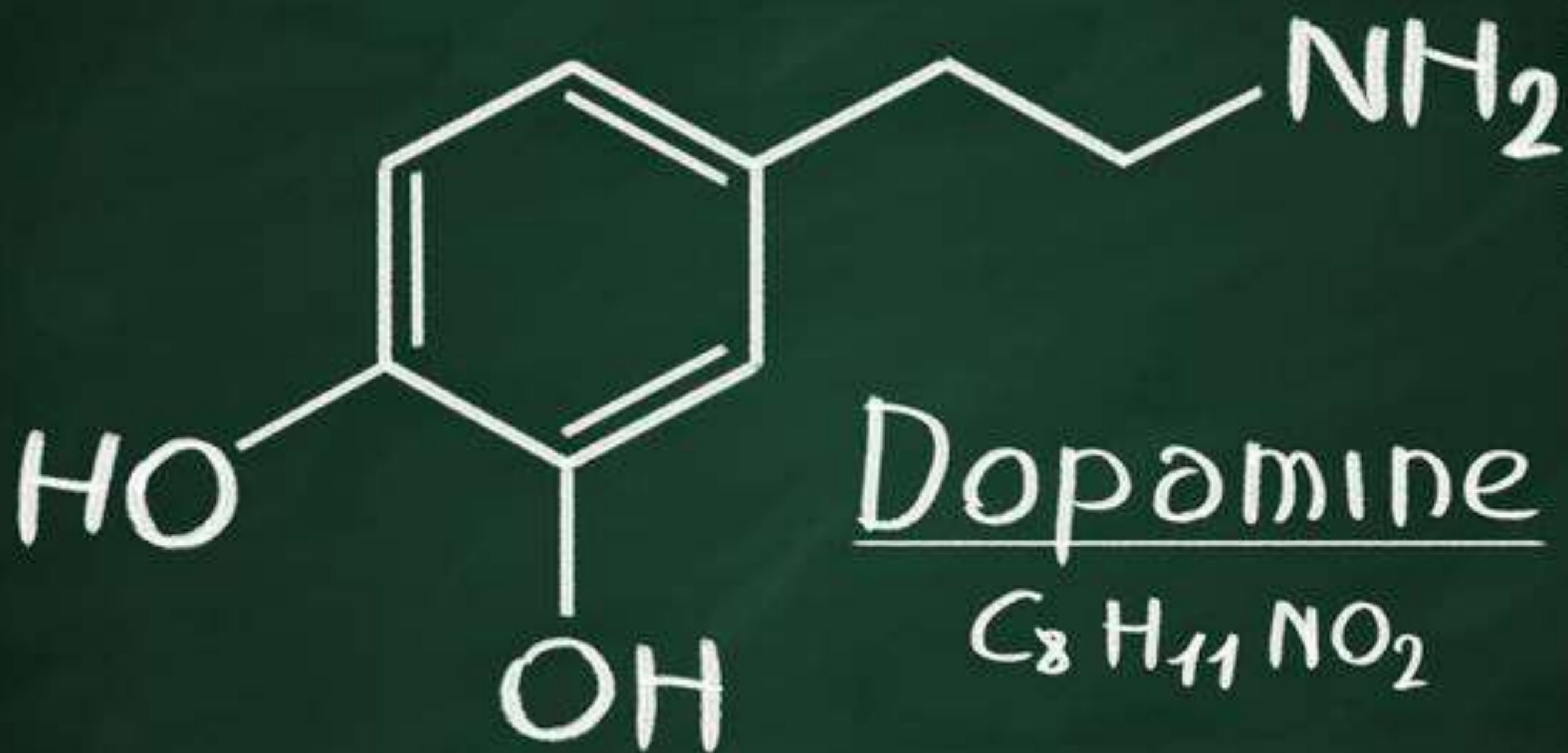
Overwhelms  
Human  
Strength





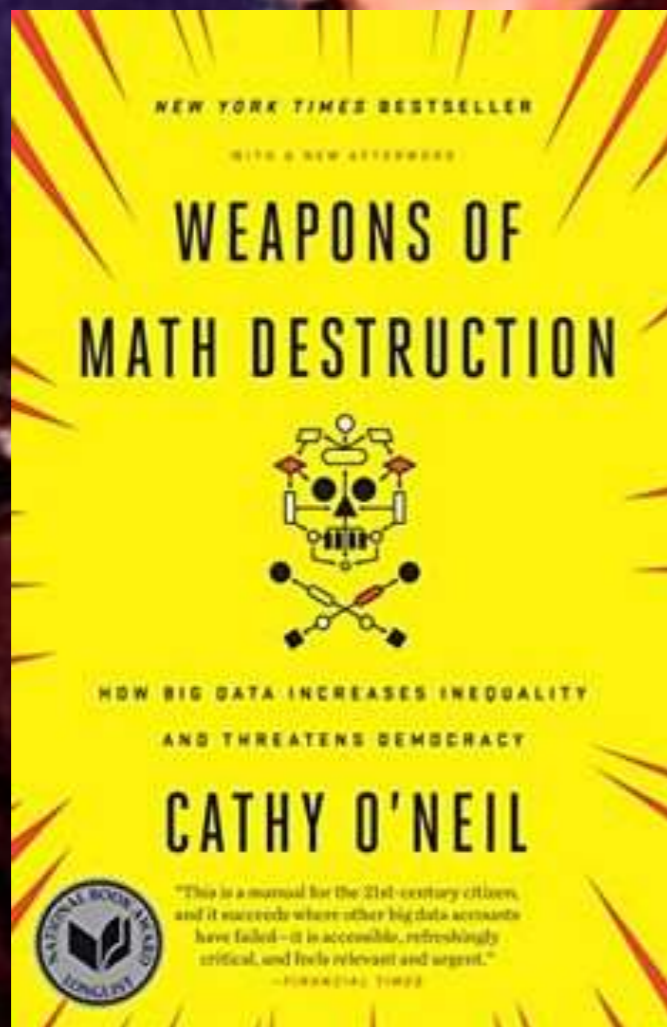
**HACK**  
**PEOPLE**











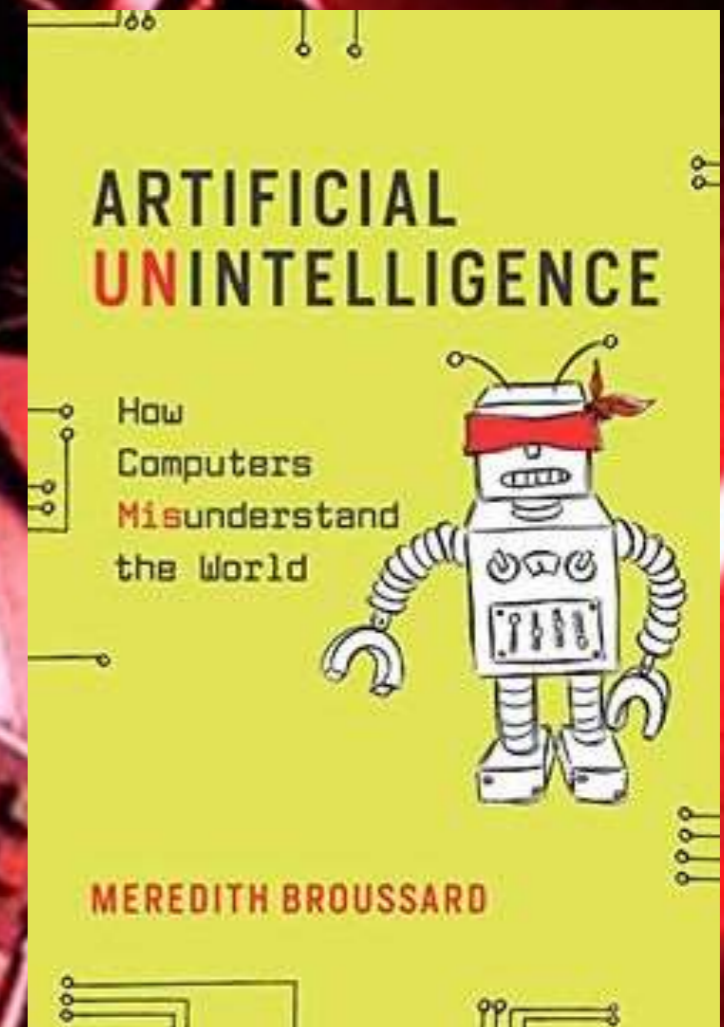
why are black women so

- why are black women so angry
- why are black women so loud
- why are black women so mean
- why are black women so attractive
- why are black women so lazy
- why are black women so annoying
- why are black women so confident
- why are black women so sassy
- why are black women so insecure

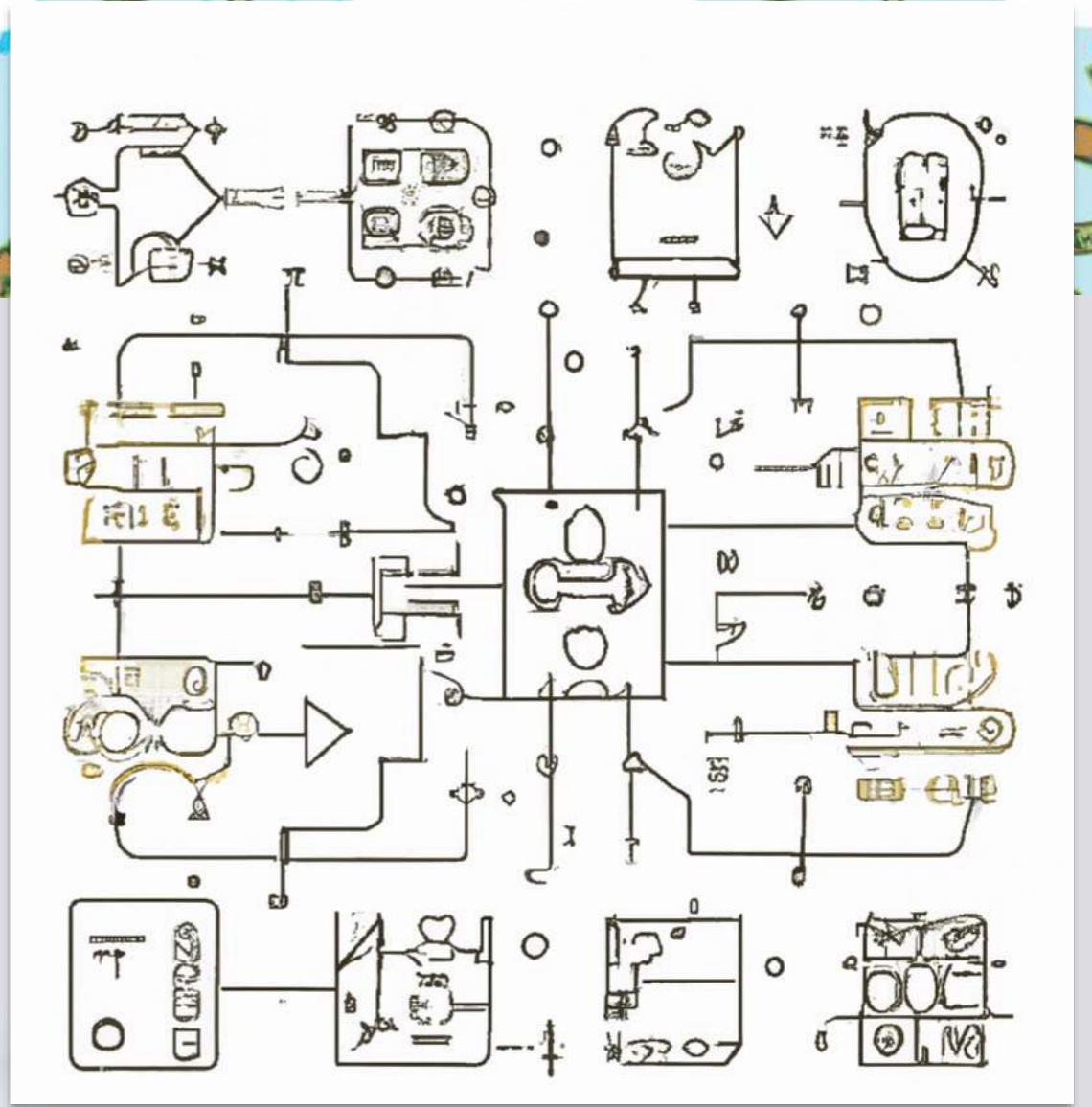
# ALGORITHMS OF OPPRESSION

HOW SEARCH ENGINES  
REINFORCE RACISM

**SAFIYA UMOJA NOBLE**

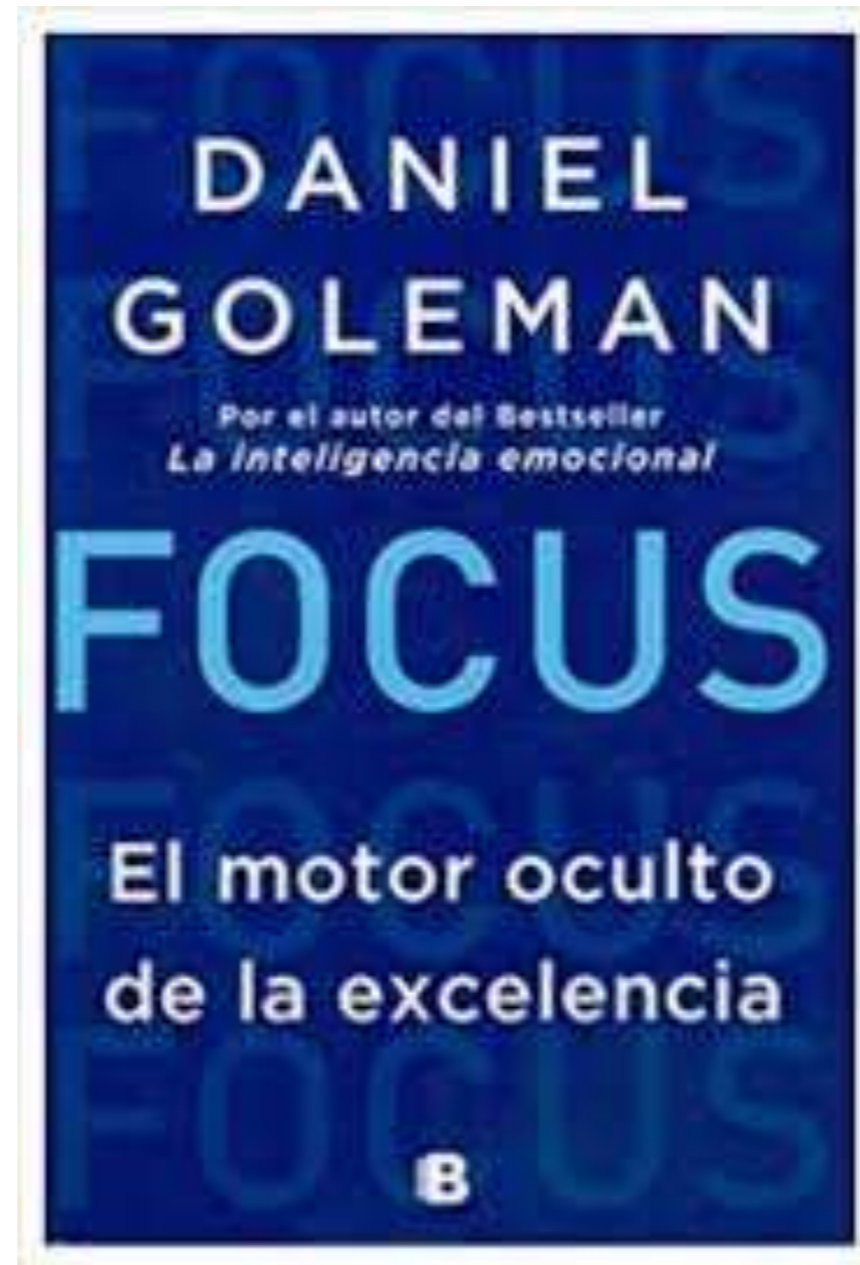
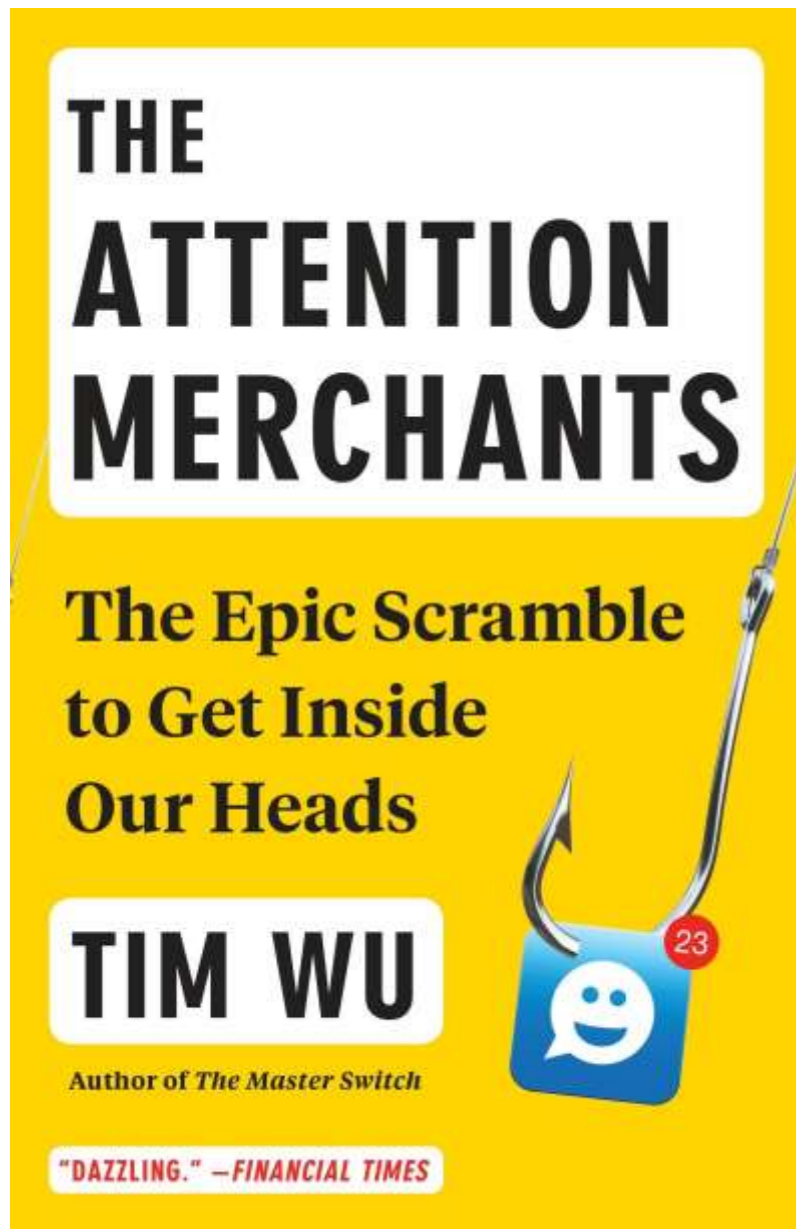








# La lucha por la **atención**



Está teniendo efectos colaterales inesperados

# El **sesgo** algorítmico



# La **burbuja** del filtro

# El reinado de la **posverdad**



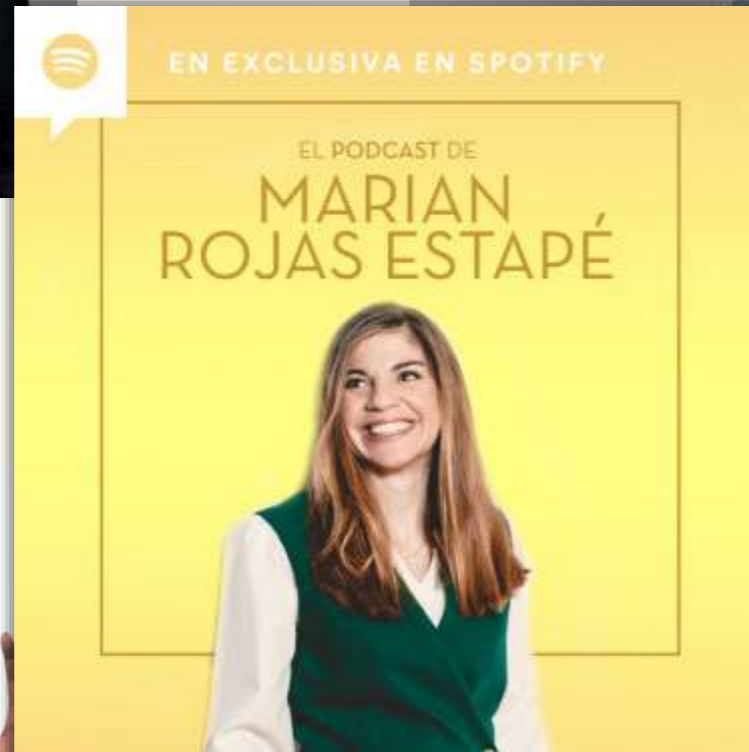
# **Manipulación** a gran escala y la **crisis de la democracia**



Ética del cuidado



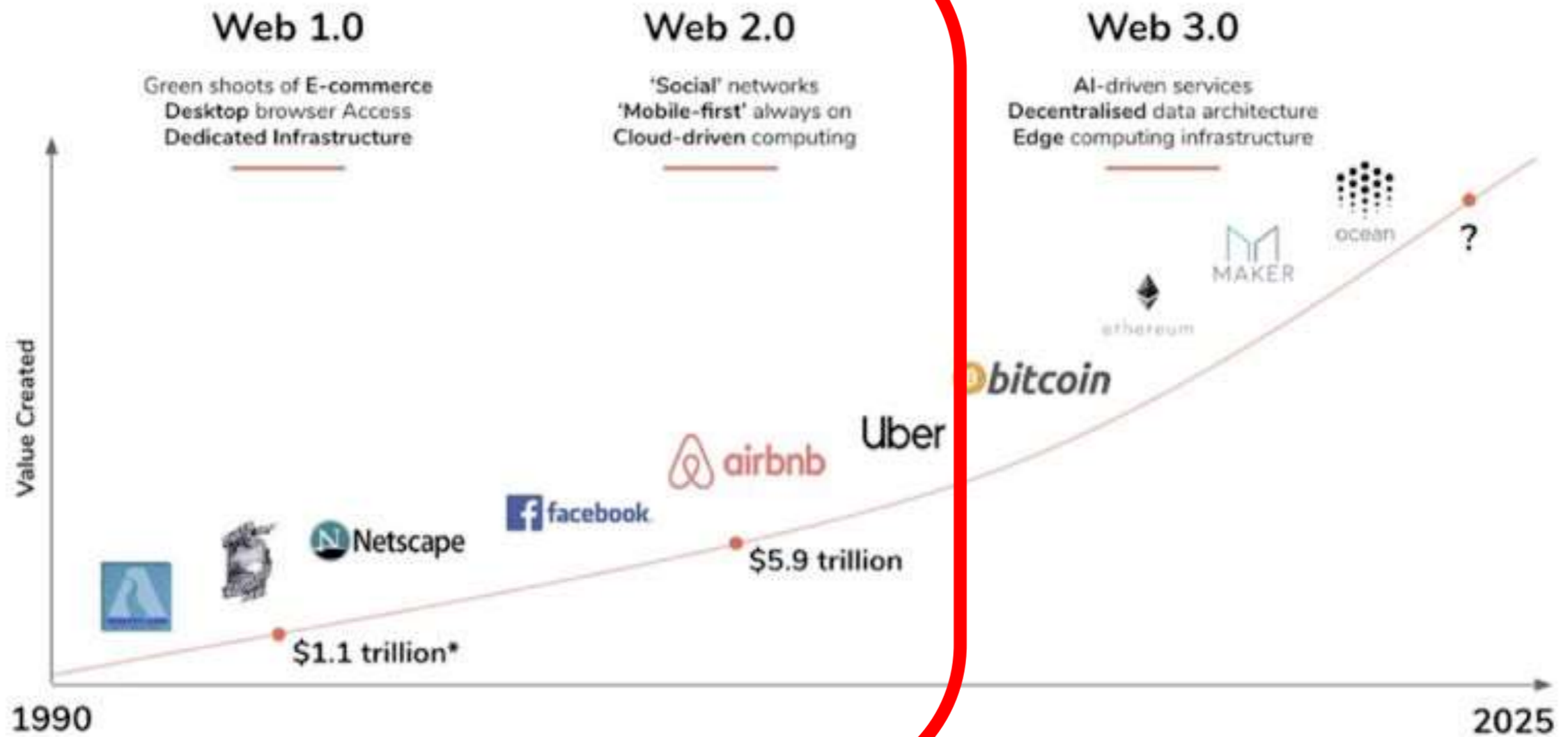
# Resalta y crea referentes significativos



Internet  
**potenciado**

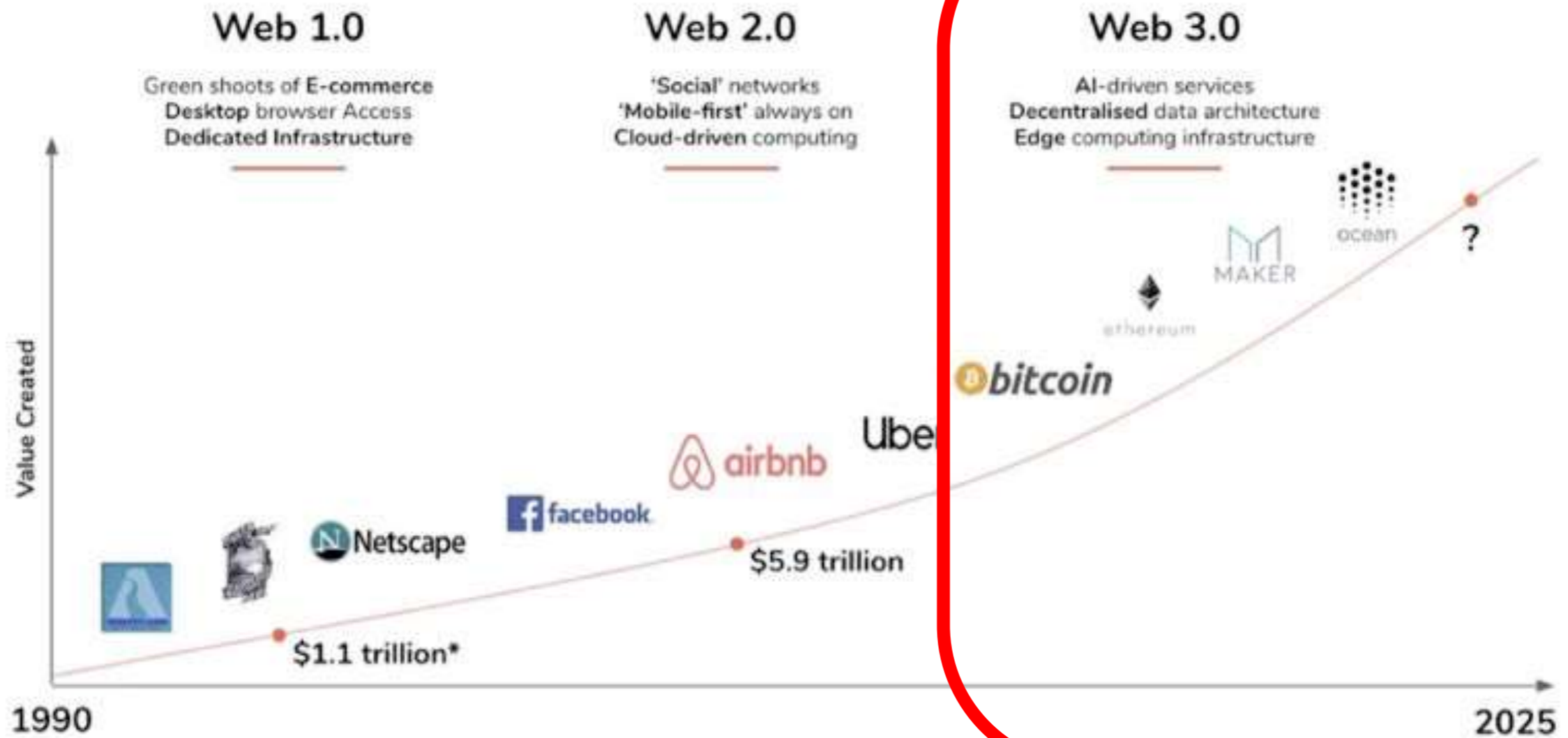


# The Evolution of the Web



\* Internet companies market cap as of 2000

# The Evolution of the Web



\* Internet companies market cap as of 2000



# El raro comienzo

Todo empezó (*en teoría*) con  
***un paper*** de **8 páginas**, y **8**  
**referencias** bibliográficas

<https://bitcoin.org/bitcoin.pdf>

[https://bitcoin.org/files/bitcoin-paper/bitcoin\\_es\\_latam.pdf](https://bitcoin.org/files/bitcoin-paper/bitcoin_es_latam.pdf)



# Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto  
satoshin@gmx.com  
www.bitcoin.org

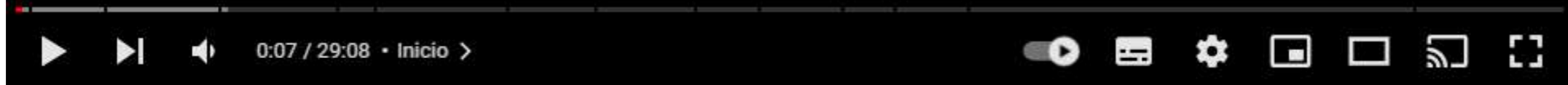
**Abstracto.** Una versión puramente electrónica de efectivo permitiría que los pagos en línea fuesen enviados directamente de un ente a otro sin tener que pasar por medio de una institución financiera. Firmas digitales proveen parte de la solución, pero los beneficios principales se pierden si existe un tercero confiable para prevenir el doble-gasto. Proponemos una solución al problema del doble gasto utilizando una red P2P (usuario-a-usuario). La red coloca estampas de tiempo a las transacciones al crear un hash de las mismas en una cadena continua de pruebas de trabajo basadas en hashes, formando un registro que no puede ser cambiado sin volver a recrear la prueba de trabajo. La cadena más larga no solo sirve como la prueba de la secuencia de los eventos testificados, sino como prueba de que vino del gremio de poder de procesamiento de CPU más grande. Siempre que la mayoría del poder de procesamiento de CPU esté bajo el control de los nodos que no cooperan para atacar la red, estos generarán la cadena más larga y le llevarán la ventaja a los atacantes. La red en sí misma requiere una estructura mínima. Los mensajes son enviados bajo la base de mejor esfuerzo, y los nodos pueden irse y volver a unirse a la red como les parezca, aceptando la cadena de prueba de trabajo de lo que sucedió durante su ausencia.

# Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto  
satoshin@gmx.com  
www.bitcoin.org

Bitcoin: un sistema de dinero en efectivo electrónico peer-to-peer

Satoshi Nakamoto  
satoshin@gmx.com



<https://youtu.be/KaJPmcswjzl>

# Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto  
satoshin@gmx.com  
www.bitcoin.org



<https://youtu.be/KaJPmcswjzl>



# Bitcoin: A Peer-to-Peer Electronic Cash System

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satoshin@gmx.com  
www.bitcoin.org

**Abstracto.** Una **versión puramente electrónica de efectivo** permitiría que los pagos en línea fuesen enviados directamente de un ente a otro **sin tener que pasar por medio de una institución financiera**. **Firmas digitales** proveen parte de la solución, pero los beneficios principales se pierden si existe un tercero confiable para prevenir el doble-gasto. Proponemos una **solución al problema del doble gasto** utilizando una **red P2P (usuario-a-usuario)**. La red coloca estampas de tiempo a las transacciones al crear un **hash** de las mismas en una **cadena continua de pruebas de trabajo basadas en hashes**, formando un registro que no puede ser cambiado sin volver a recrear la prueba de trabajo. La cadena más larga no solo sirve como la prueba de la secuencia de los eventos testificados, sino como prueba de que vino del gremio de **poder de procesamiento de CPU** más grande. Siempre que la mayoría del poder de procesamiento de CPU esté bajo el control de los nodos que no cooperan para atacar la red, estos generarán la cadena más larga y le llevarán la **ventaja a los atacantes**. La red en sí misma requiere una estructura mínima. Los mensajes son enviados bajo la base de mejor esfuerzo, y los nodos pueden irse y volver a unirse a la red como les parezca, aceptando la cadena de prueba de trabajo de lo que sucedió durante su ausencia.

# 12. Conclusion

Hemos propuesto un sistema para transacciones electrónicas sin depender en confianza. Comenzamos con el marco habitual de monedas hechas de firmas digitales, el cual provee un control fuerte de propiedad, pero es incompleto sino existe una forma de prevenir doble-gasto. Para solucionar esto, hemos propuesto una red usuario-a-usuario que utiliza prueba-de-trabajo para registrar una historia pública de transacciones la cual rápidamente se convierte impráctica computacionalmente para que un atacante pueda cambiar si nodos honestos controlan la mayoría del poder de CPU. La red es robusta en su simplicidad no estructurada. Los nodos pueden trabajar todos al mismo tiempo con poca coordinación. No necesitan ser identificados, dado que los mensajes no son enrutados a ningún lugar en particular y solo necesitan ser entregados bajo la base de un mejor esfuerzo. Los nodos pueden irse y volver a la red a voluntad, aceptando la cadena de prueba-de-trabajo como prueba de lo que sucedió mientras estuvieron ausentes. Votan con su poder de CPU, expresando su aceptación de los bloques válidos al trabajar extendiéndose y rechazando bloques inválidos al refutar trabajar en ellos. Cualquier reglas necesarias e incentivos se pueden hacer cumplir con este mecanismo de consenso.



# Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto  
satoshin@gmx.com  
www.bitcoin.org

Conclusión



26:18 / 29:08 • Conclusiones >



<https://youtu.be/KaJPmcswjzl?t=1578>



# Bitcoin: A Peer-to-Peer Electronic Cash System

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satoshin@gmx.com  
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# 12. Conclusion

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**WHO IS?**

**SATOSHI NAKAMOTO** 



Si quiero lograr entender esto, **¿por dónde empezar?**

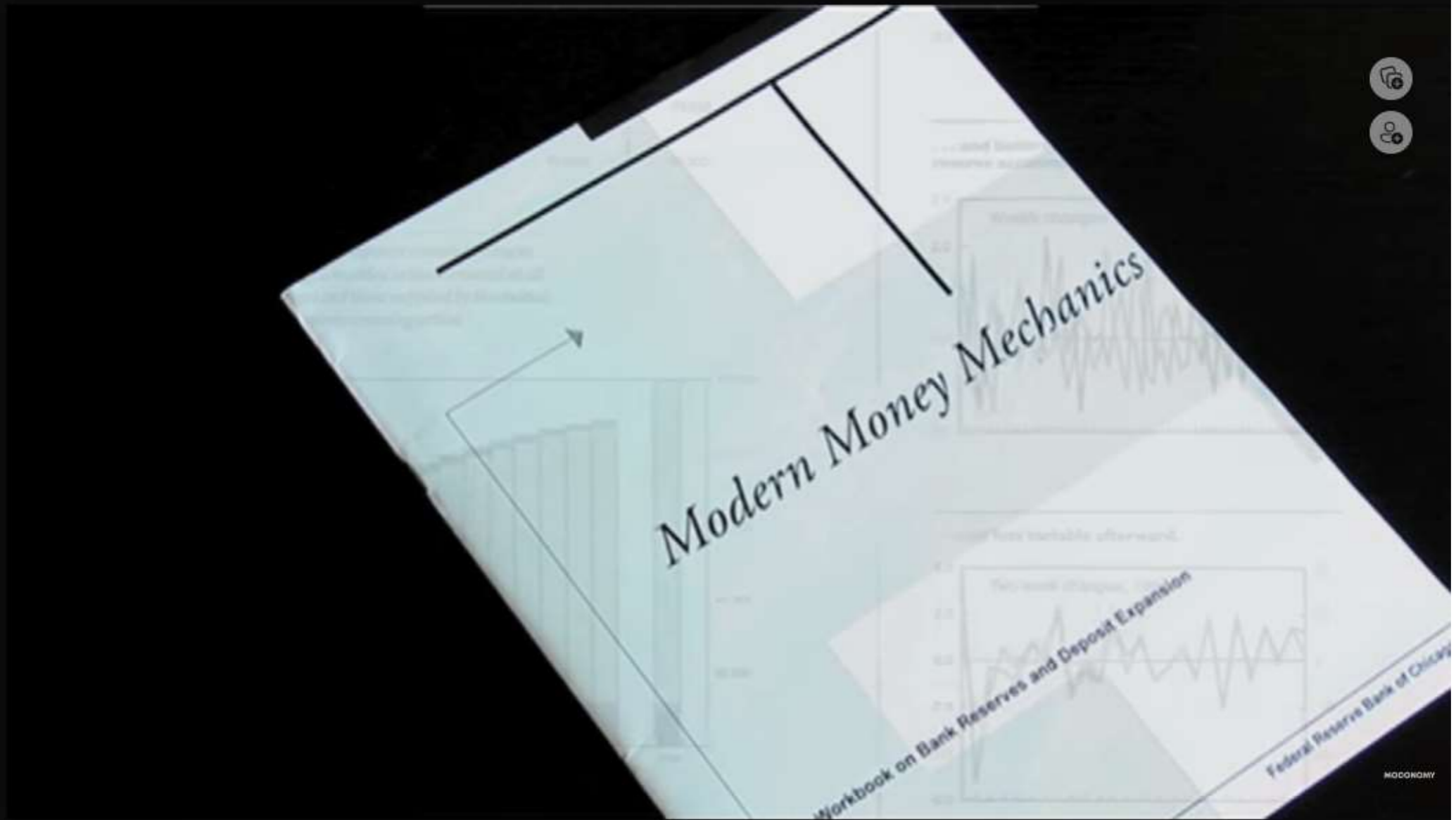






**¿Qué es el dinero?**

**¿De dónde proviene su valor?**



Zeitgeist - Addendum | Documental de economía en español | Peter Joseph

<https://youtu.be/oXgjHZK9RIY?t=418>





<https://youtu.be/oXgjHZK9RIY?t=418>



# COMPARING THE WORLD'S MONEY & MARKETS

2020

How this visualization works:



Each square this size  
is worth **\$100 billion**

Context on each category  
can be found here



<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>



Silver



Cryptocurrency

Bitcoin  Other 5,463 coins 

Military Spending

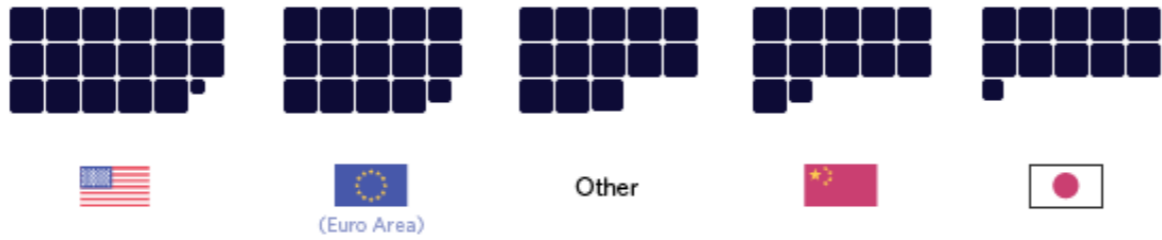


<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>

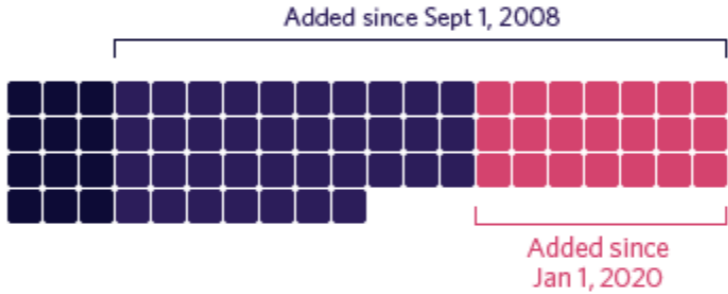
### U.S. Budget Deficit (FY2020)



### Coins and Banknotes



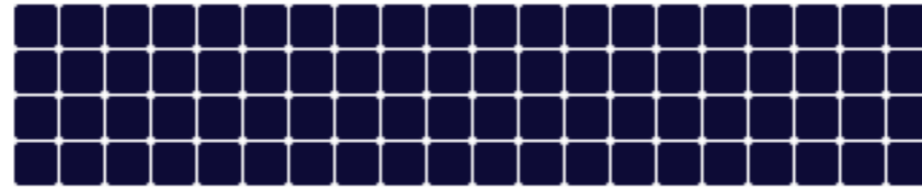
### Fed's Balance Sheet



<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>



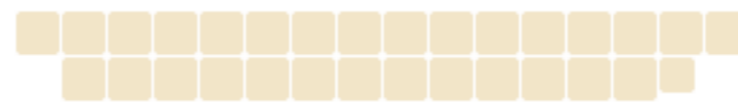
Billionaires



Gold



Jewelry

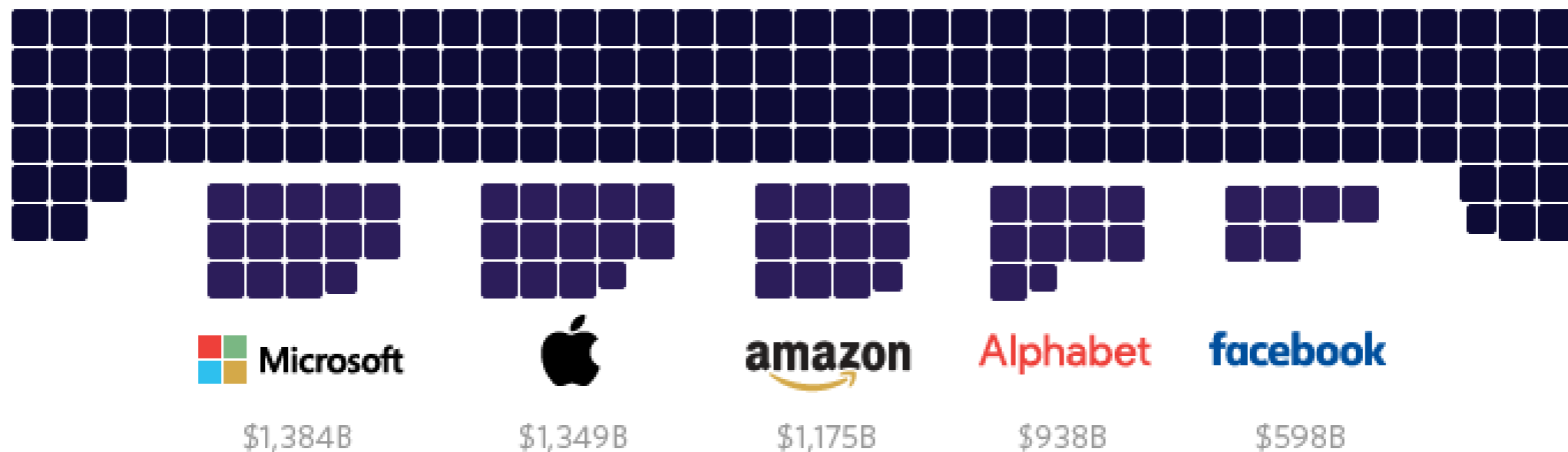


Below ground reserves

<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>

# Fortune 500

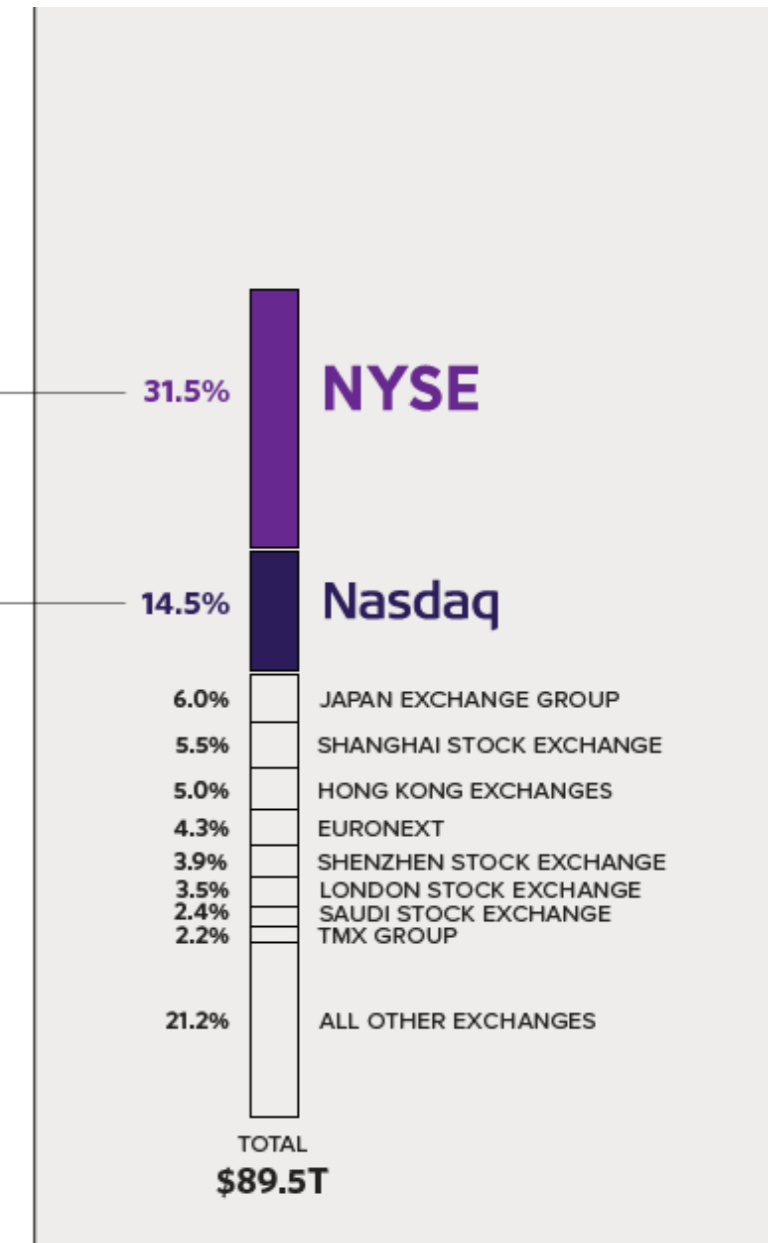
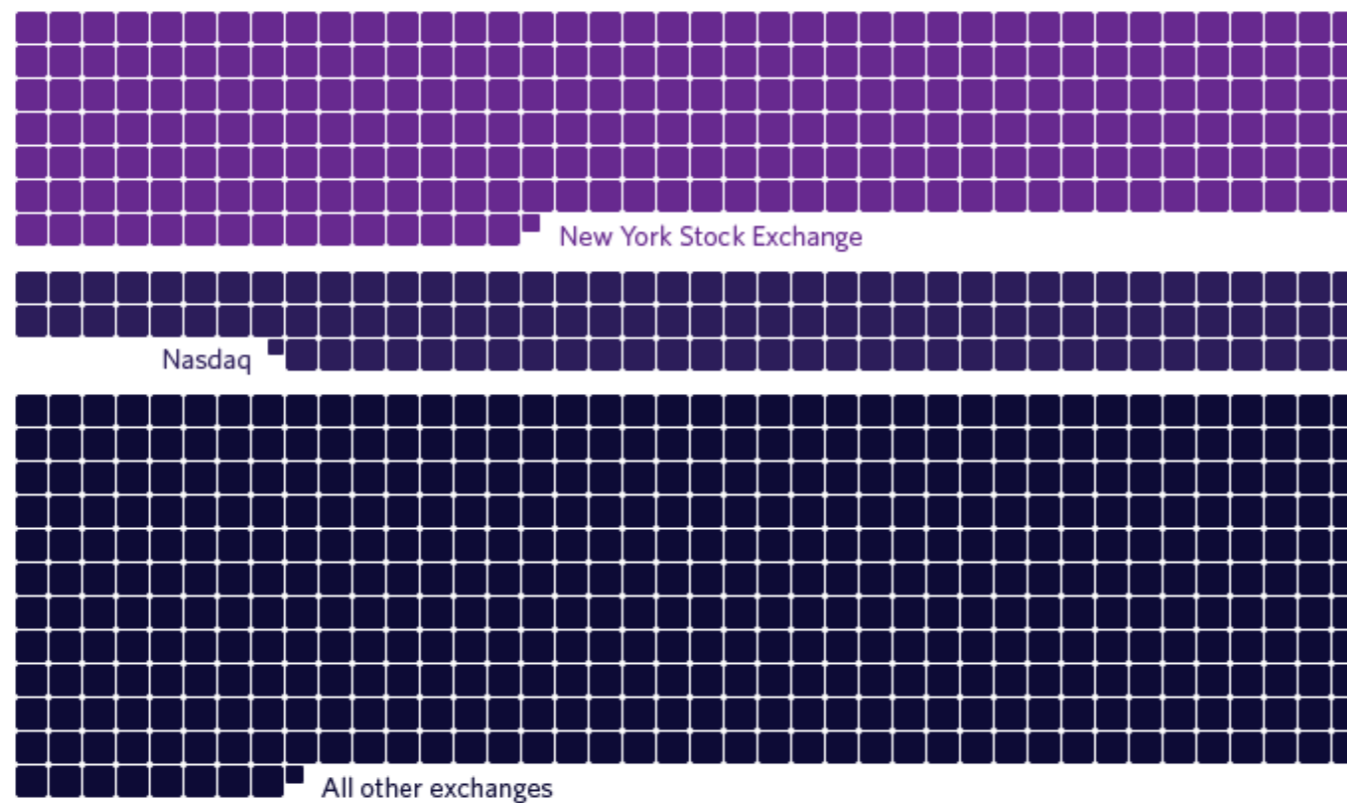
Market Capitalizations as of May 12, 2020



<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>

## Stock Markets

Market Capitalizations as of April, 2020

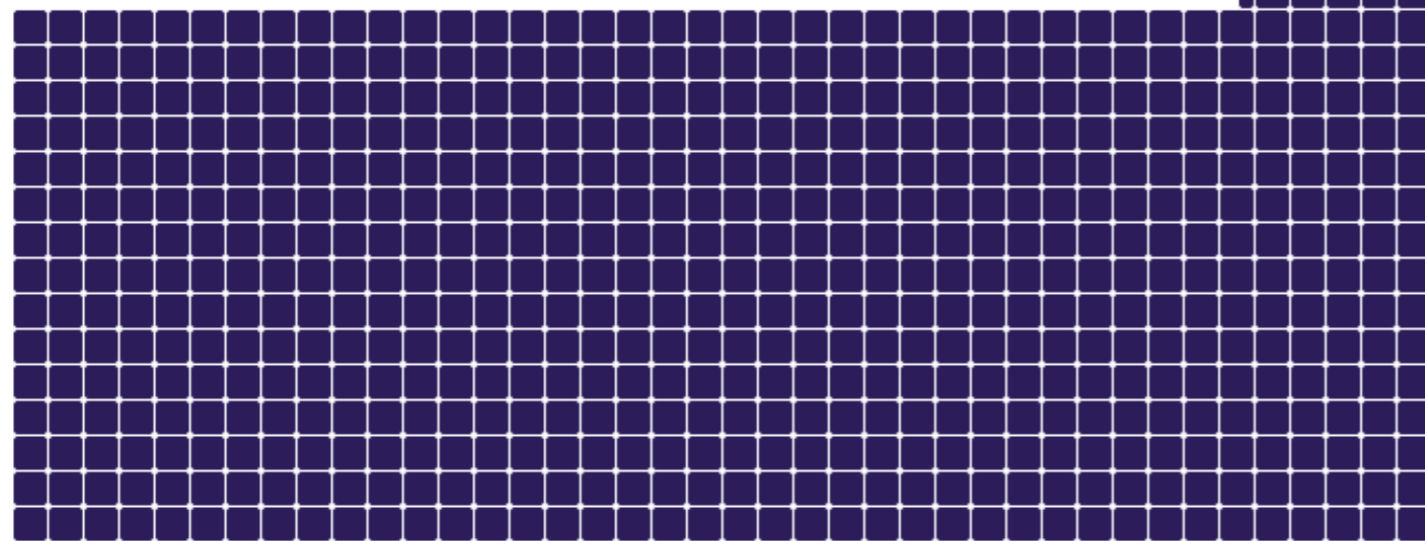
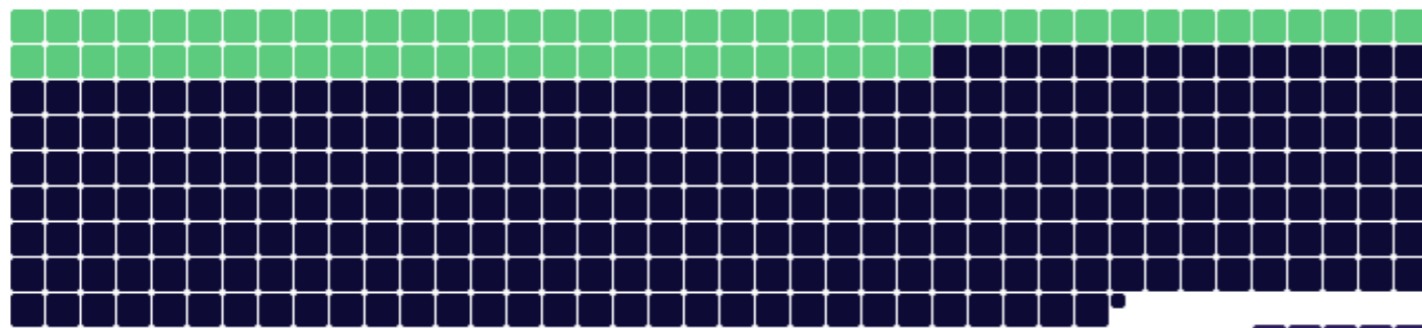


<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>



## Money Supply


### M1 - Narrow Money Supply

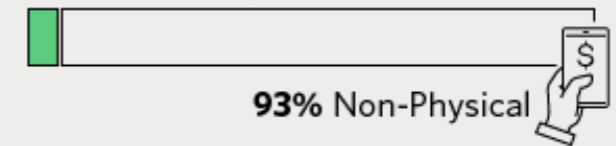


### M2 - Broad Money Supply

### Narrow Money

The total value of the world's easily accessible money is **\$35.2 trillion**. This includes the world's coins, banknotes, and checking deposits.

7% Physical 

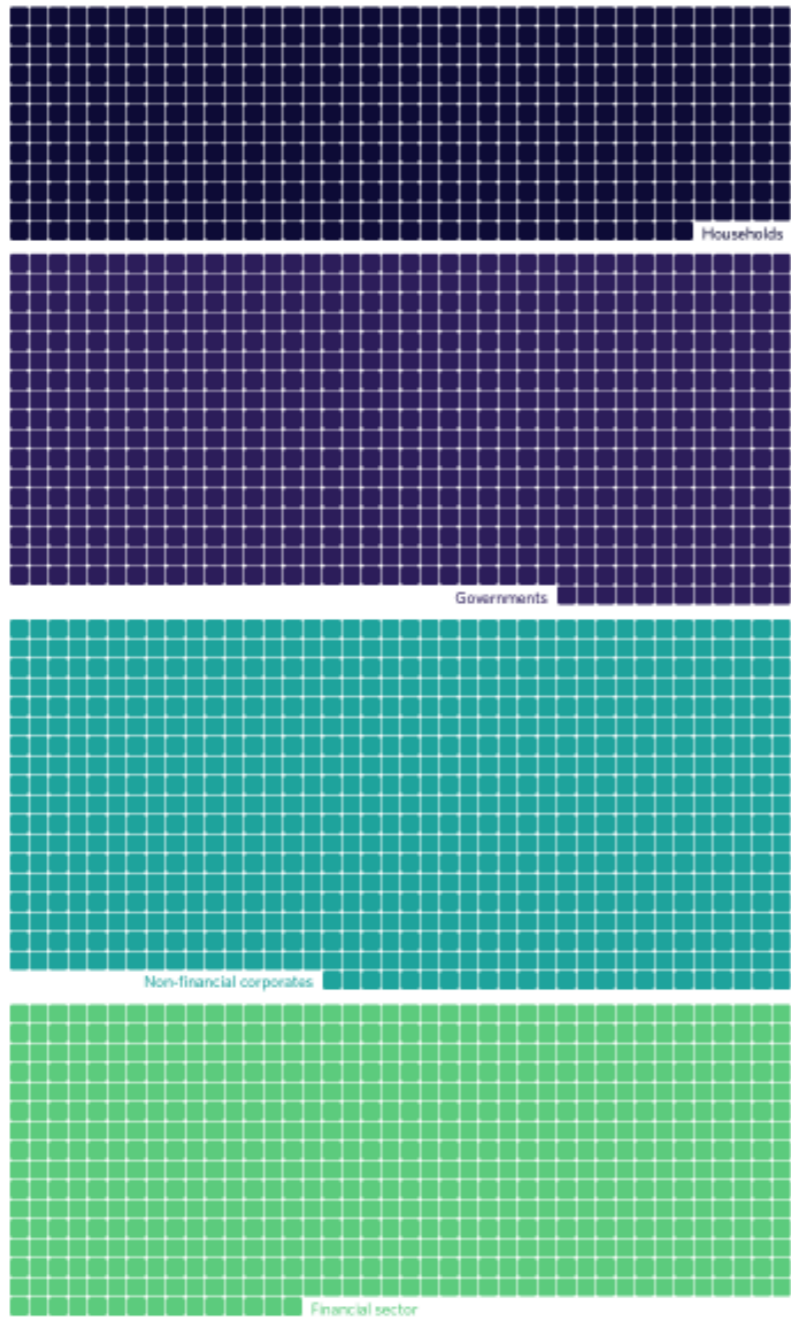


### Broad Money

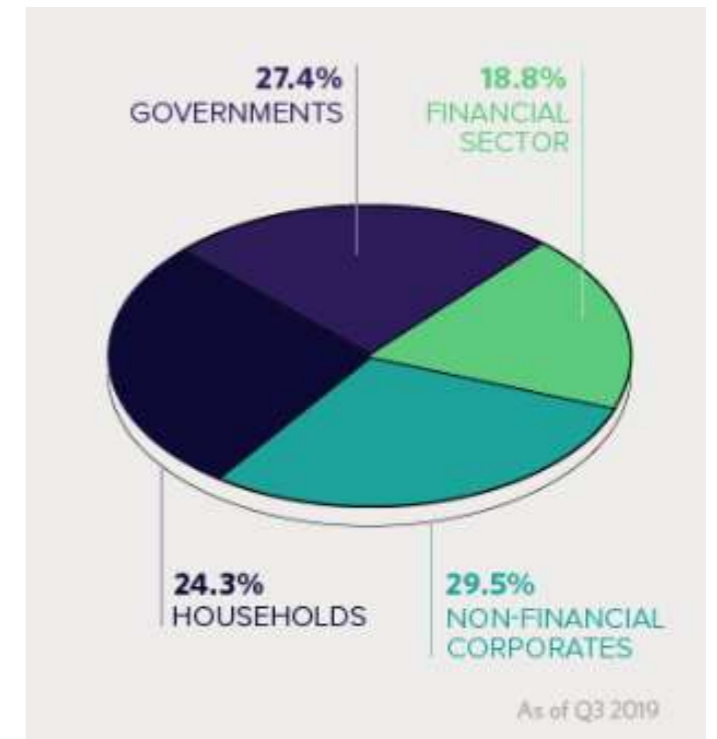
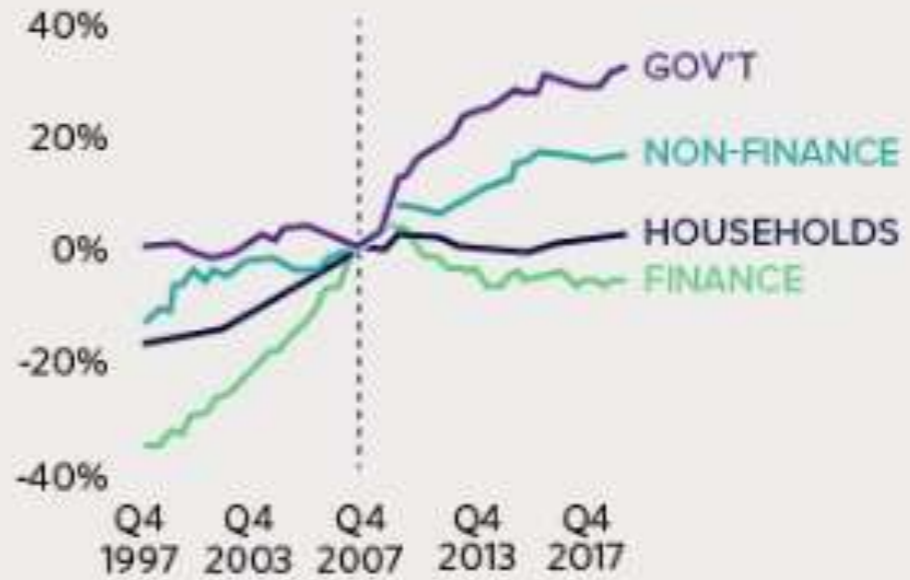
The total value of the world's money is **\$95.7 trillion**. This includes coins, banknotes, money market accounts, as well as saving, checking, and time deposits.

<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>

Global Debt

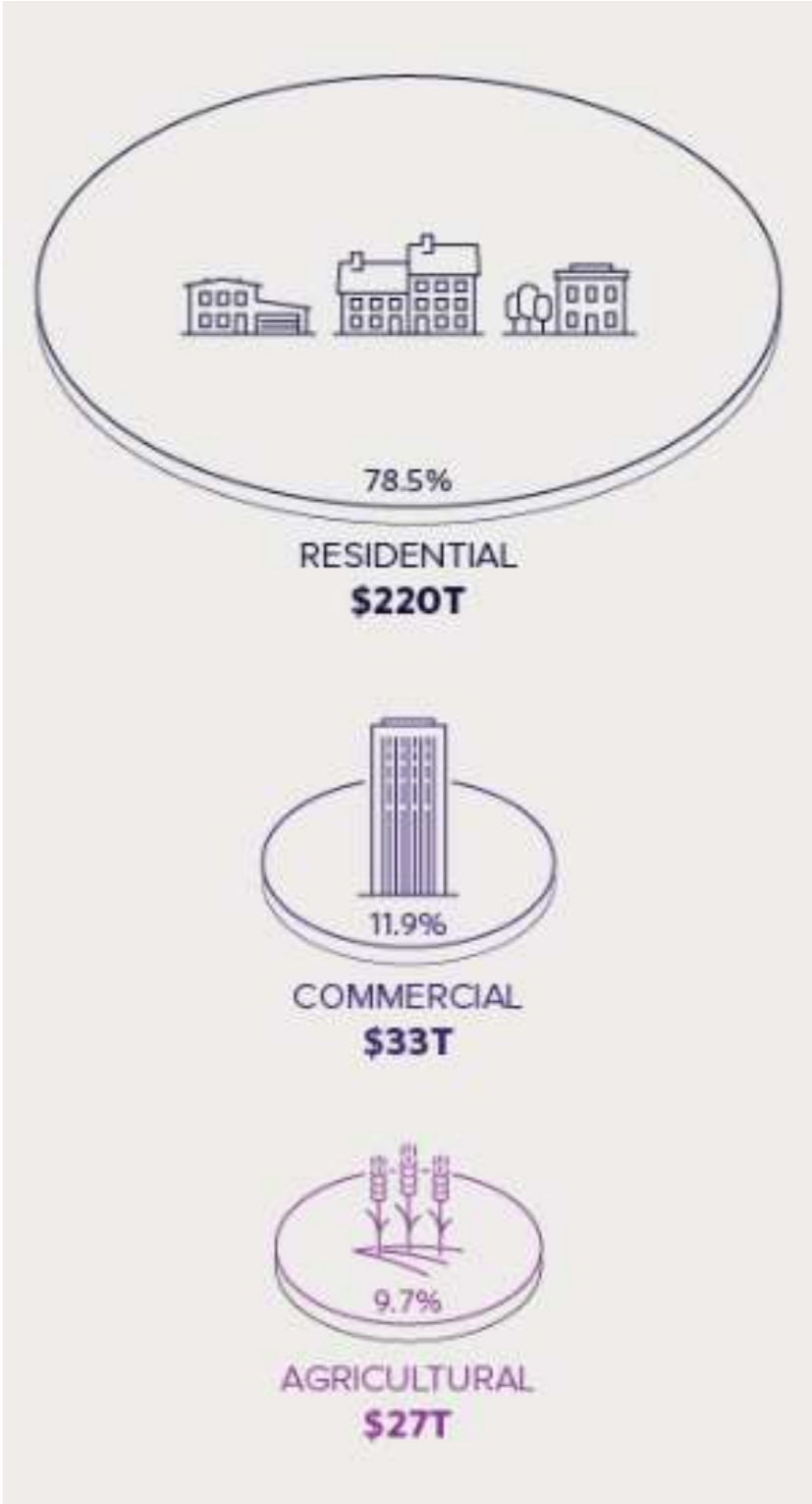
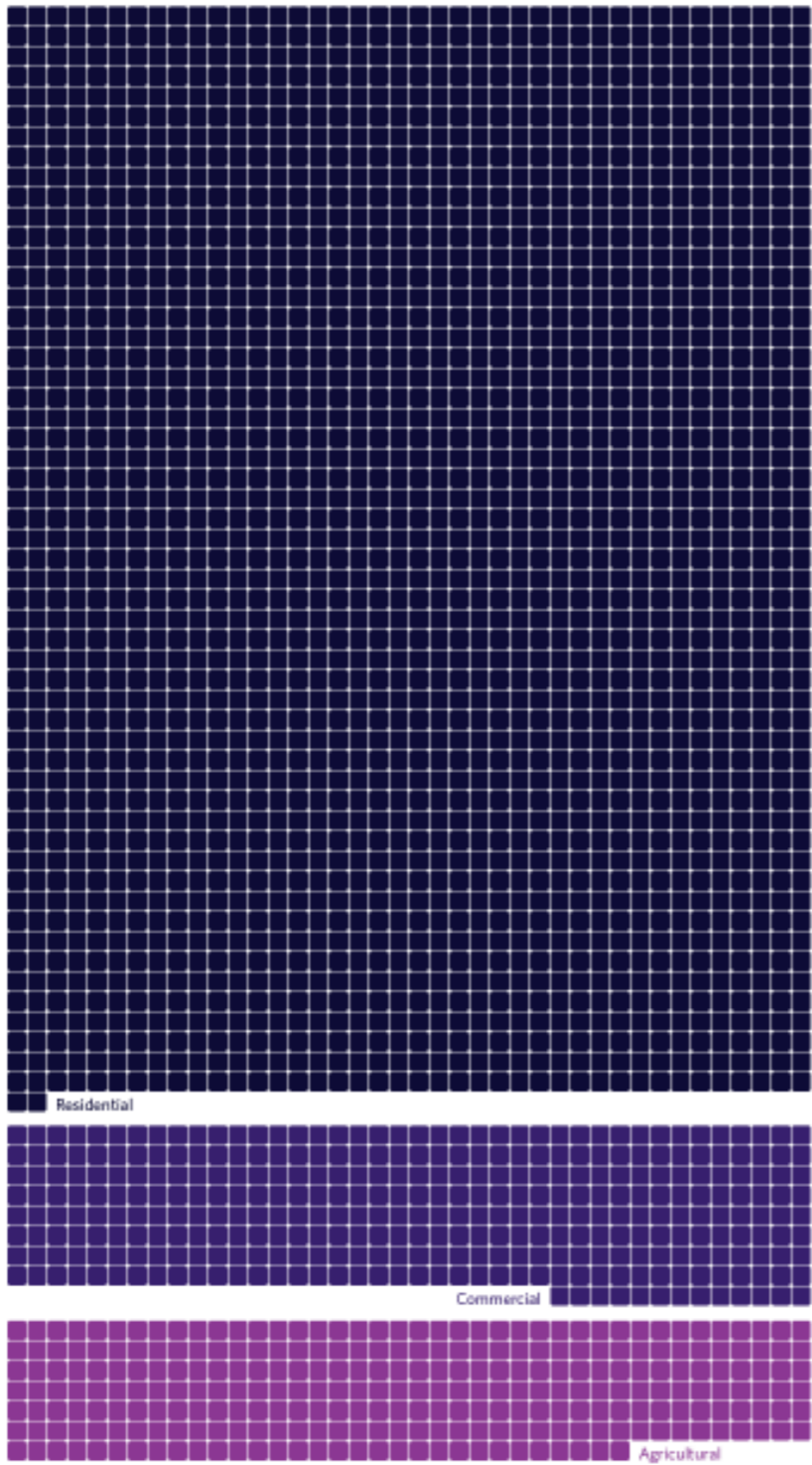


% of GDP, change in global debt relative to Q4 2007



<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>

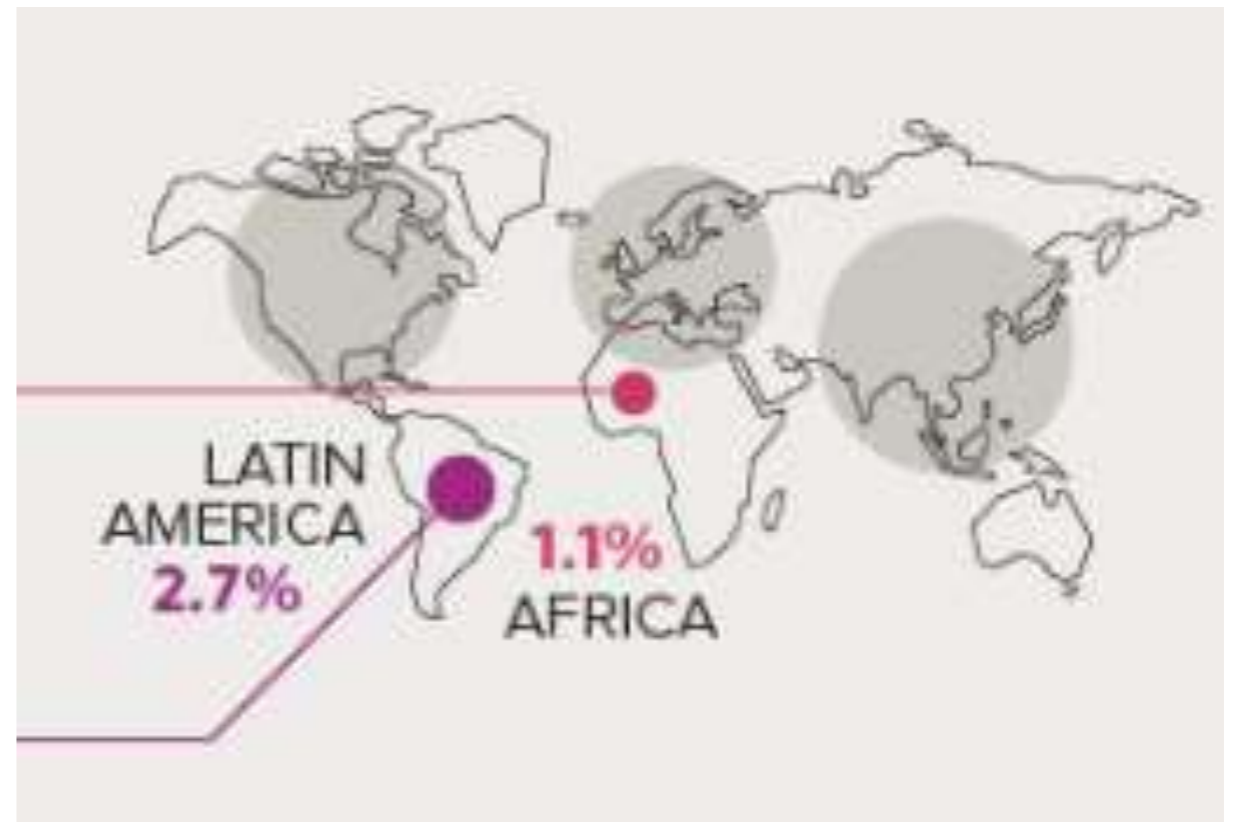
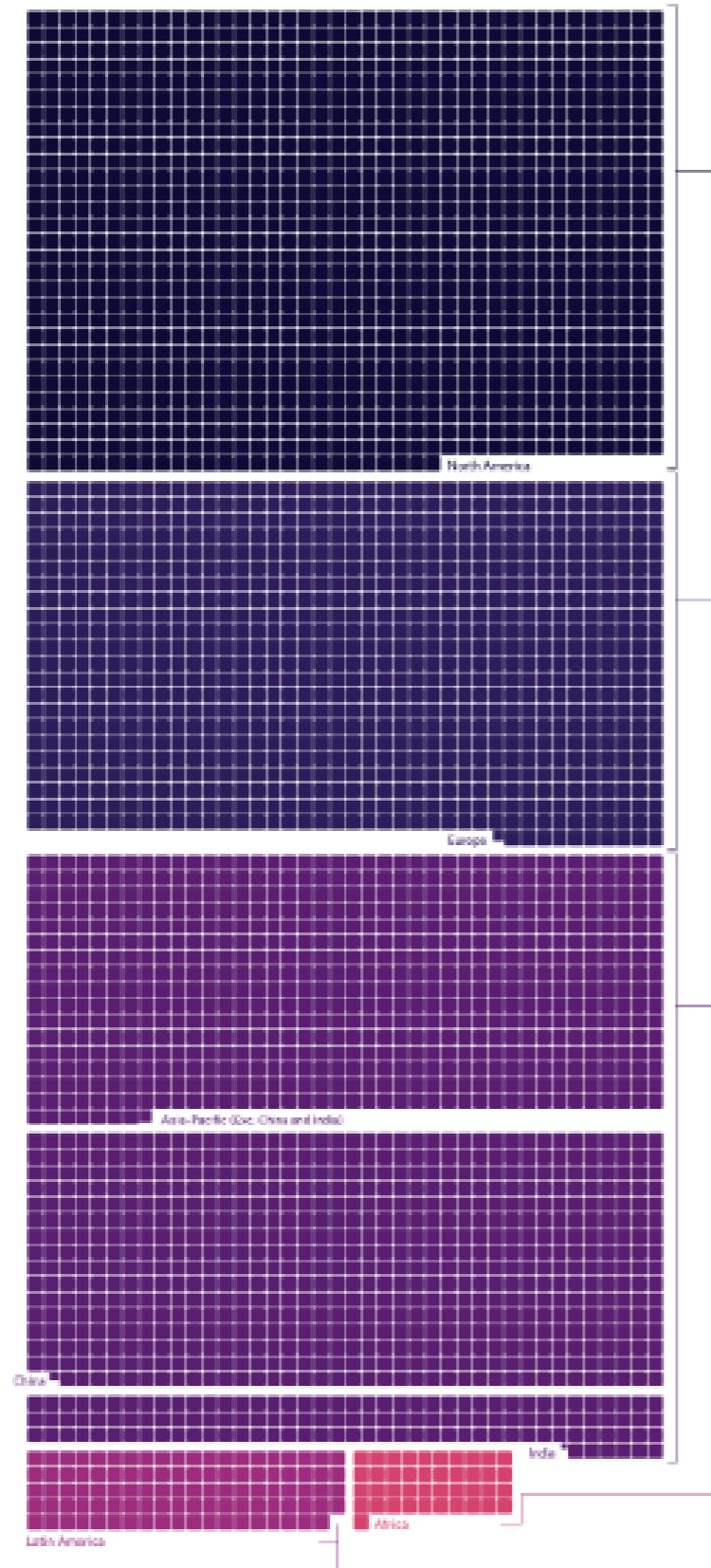
Global Real Estate



<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>



Global Wealth



<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>

## What's a derivative?

A derivative is a contract between two or more parties that derives its value from the performance of an underlying asset, index, or entity.

## Examples of derivatives

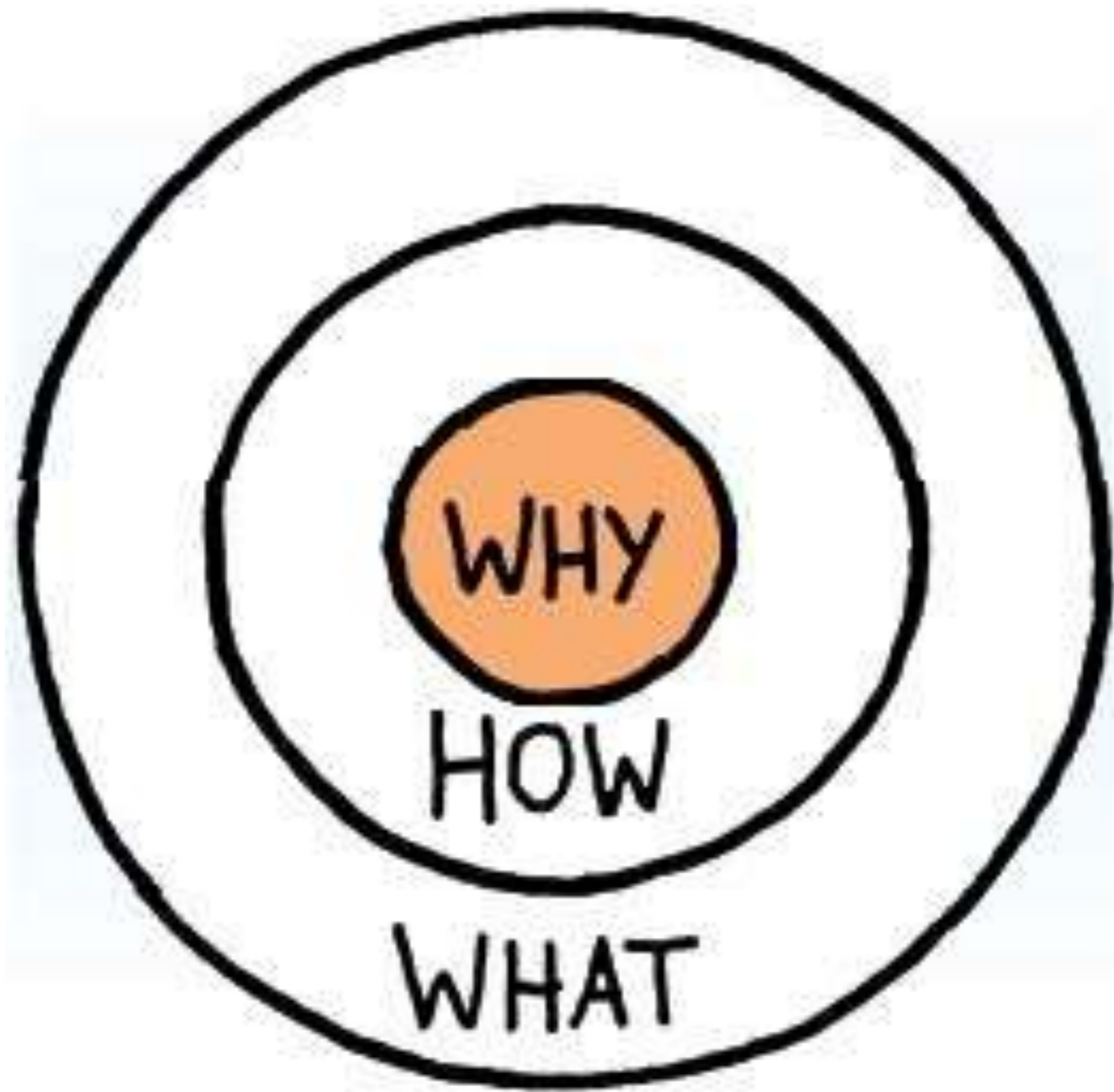
- Futures contracts
- Forward contracts
- Options
- Warrants
- Swaps


<http://money.visualcapitalist.com/all-of-the-worlds-money-and-markets-in-one-visualization/>





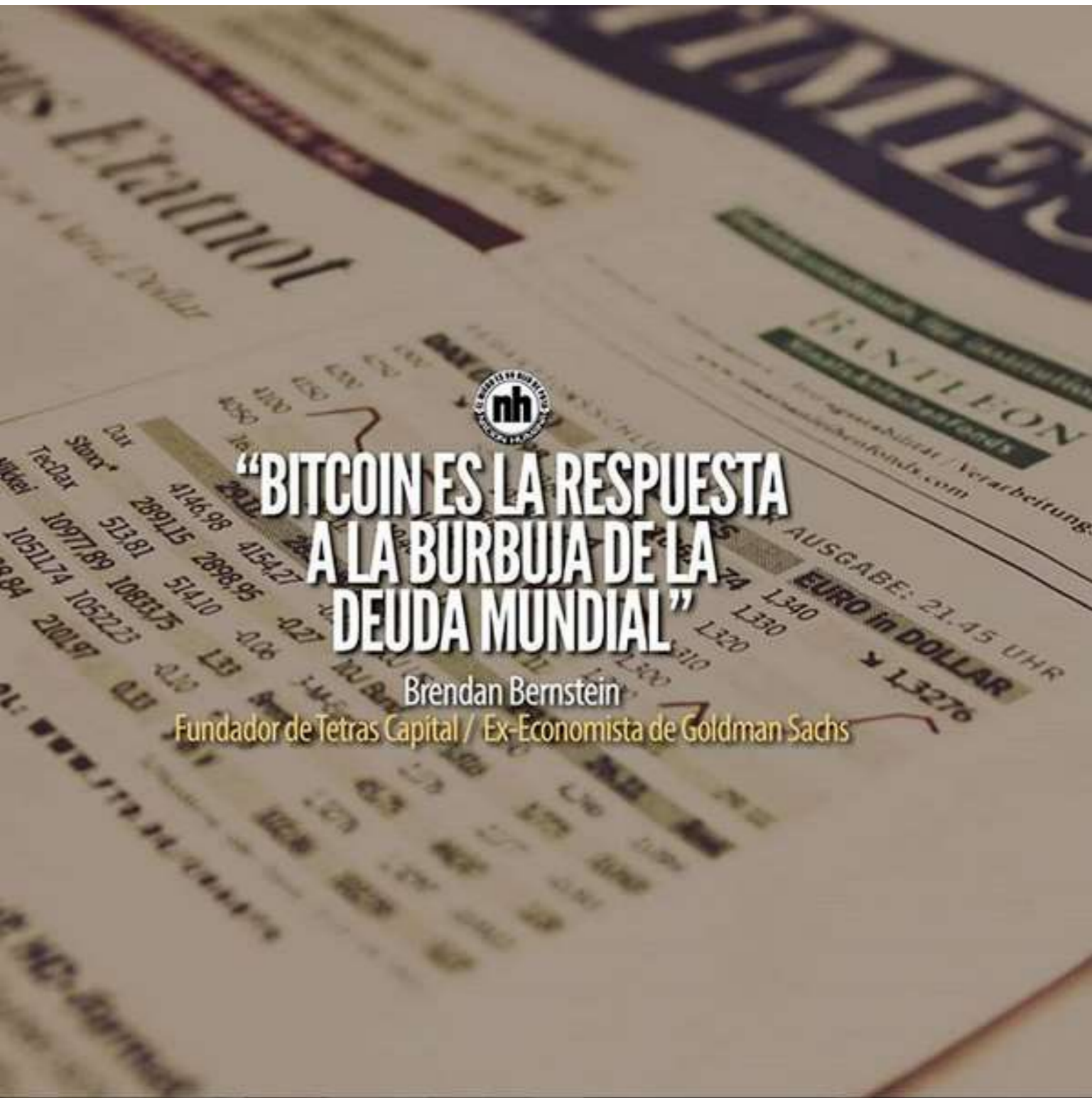




A close-up photograph of several gold Bitcoin coins. The coins are stacked and slightly offset, showing their intricate embossed designs. The lighting is warm and directional, creating strong highlights and deep shadows that emphasize the metallic texture and the relief of the Bitcoin logo and circuit-like patterns. A bright green rectangular box is superimposed over the center of the image, containing two lines of bold black text.

**¿Por qué?**  
**¿Para qué?**





<http://bitcoinist.com/ex-goldman-sachs-economist-bitcoin-response-world-debt-bubble/>



**SATOSHI NAKAMOTO**  
begins working  
on the concept

**Oct 2008**  
Bitcoin  
whitepaper  
published

**May 2010**  
First real world  
transaction is  
10,000 BTC for  
a pizza. A  
\$3.8mn pizza  
today!

**Feb 2011**  
Bitcoin  
reaches  
parity with  
the US dollar

**2011/2012**  
Fraud & illicit  
behavior gains  
momentum.  
Silk Road opens.  
Mt. Gox is  
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positive

**Sep 2014**  
PayPal  
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Bitcoin  
integration

**Aug 2015**  
Bloomberg  
Markets magazine  
Blythe Masters  
feature on  
blockchain &  
financials.  
Suddenly,  
blockchain is hot.

LEHMAN BROTHERS ›

# 15 de septiembre, el día maldito que nadie quiere recordar en Wall Street

La quiebra del gigante financiero Lehman Brothers en 2008 incendió los mercados y aceleró la crisis mundial

SATOSHI NAKAMOTO begins working on the concept



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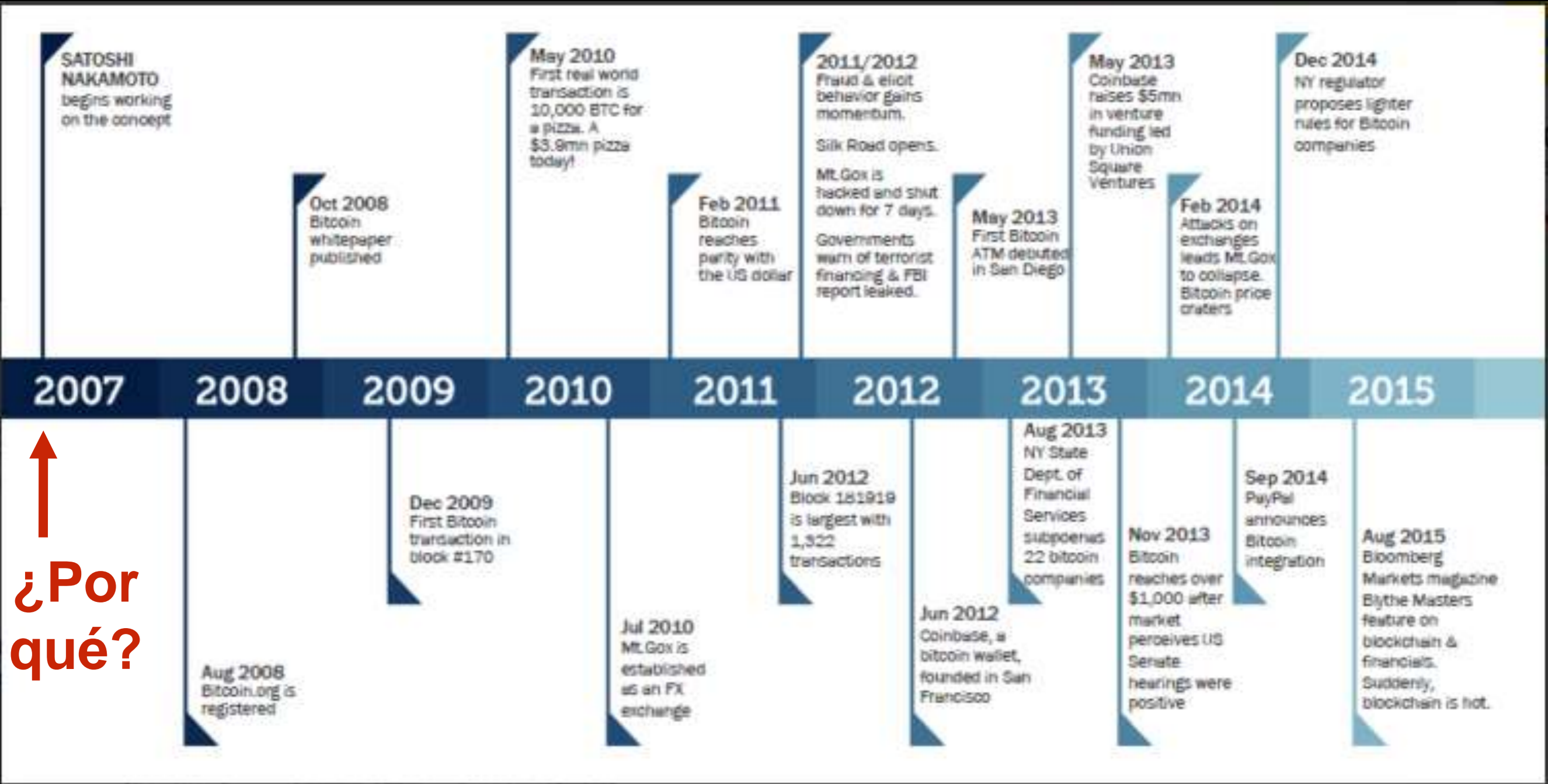
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Suddenly,  
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↑  
¿Por qué?



¿Qué pasó **antes**?

# Algo de **historia**



*70s*

[https://es.wikipedia.org/wiki/Historia\\_de\\_la\\_criptograf%C3%ADa](https://es.wikipedia.org/wiki/Historia_de_la_criptograf%C3%ADa)

Quizás la invención más importante en la historia de la **criptografía** llegó a ser en 1973: el cifrado de clave pública, o el cifrado "**no secreto**", como lo llamaron sus inventores.

[https://es.wikipedia.org/wiki/Criptograf%C3%ADa\\_asim%C3%A9trica](https://es.wikipedia.org/wiki/Criptograf%C3%ADa_asim%C3%A9trica)

# Martin Hellman - Whitfield Diffie



intercambio de claves Diffie-Hellman => Clave pública



80s – 90s



# CYBERPUNK

uno de los subgéneros más oscuros  
de la ciencia ficción





Conflictos

entre hackers, inteligencias artificiales y megacorporaciones



A dystopian cityscape with a bright sun or fire in the sky and a large satellite dish in the foreground.

**Futuro distópico**

**DYSTOPIA**





Control



# Brechas sociales



# Orígenes de la **computación personal**



# 1982 Cerf y Kahn: **TCP / IP**





# 1983 David Cham (Universidad de California): Sistema de pagos electrónico

## BLIND SIGNATURES FOR UNTRACEABLE PAYMENTS

David Chaum


Department of Computer Science  
University of California  
Santa Barbara, CA

### INTRODUCTION

Automation of the way we pay for goods and services is already underway, as can be seen by the variety and growth of electronic banking services available to consumers. The ultimate structure of the new electronic payments system may have a substantial impact on personal privacy as well as on the nature and extent of criminal use of payments. Ideally a new payments system should address both of these seemingly conflicting sets of concerns.







# Guerra fría - Criptografía



**MAGAZINE**

**Impulso democratizador de la **Criptografía****

**CRYPTO  
WARS**



On April 16, 1993, the New York Times broke the story of the Clipper Chip, an encryption technology developed by the National Security Agency that allows government to eavesdrop on the communications of criminals, spies, and, unfortunately, law-abiding citizens alike.

On February 9, 1994, the US Department of Commerce and Vice President of the United States summarily announced that the Clipper Chip is the US Government standard, and that the Government will do everything possible to ensure its use in the private sector and

**Sink Cliper: RSA**

They'll catch us if we don't wish them luck.

**SINK CLIPPER!**

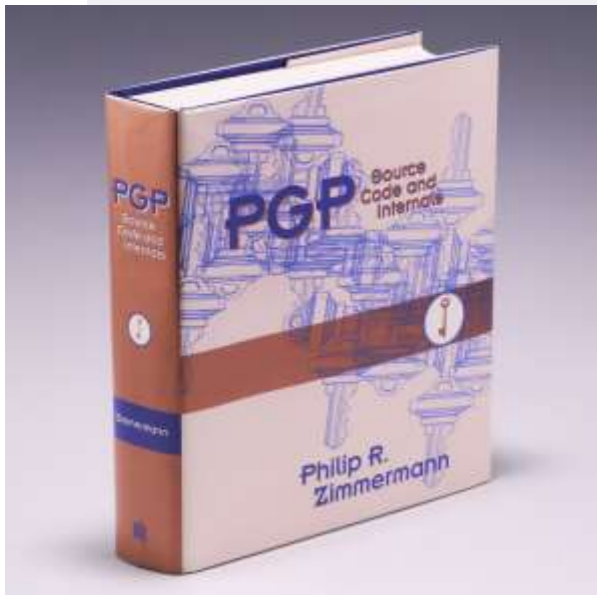




The image shows two microchips. The top chip is a VLSI chip with a circular logo and the text 'VLSI' and '156432'. The bottom chip is a MYKOTRONX chip with the text 'VM06578', 'MYK-78T', and 'MYKOTRONX'. A black banner with white and green text is overlaid on the image.

**Chip de encriptación con **puerta trasera.** NSA**

# 1991 Phil Zimmermann: **Pretty Good Privacy**





# 1990 John Gilmore : **Electronic Frontier Foundation**



---

# CYPHERPUNKS

SECRET  
MESSAGES

FRINGE  
SUBCULTURE

(Resistencia)

<https://www.youtube.com/watch?v=RTbc5qK1Tvl>





**Privacidad, criptografía y libertad**





CYBERPUNK

+

CIPHER

=

CYPHERPUNK



# *Eric Hughes*

**A CYPHERPUNK'S  
MANIFESTO**

READTHROUGH



# 1992

## Un Manifiesto Cypherpunk por Eric Hughes

La privacidad es necesaria para una sociedad abierta en la era electrónica.

La privacidad no es secretismo. Una cuestión privada es algo que no queremos que todo el mundo sepa, pero una cuestión secreta es algo que no queremos que nadie sepa. La privacidad es la capacidad de revelarse selectivamente al mundo.

<https://medium.com/@rootsec/un-manifiesto-cypherpunk-por-eric-hughes-3aa4660af977>



# Un Manifiesto Cypherpunk por Eric Hughes

Ya que deseamos la privacidad, tenemos que asegurar a cada persona que intervenga en una transacción que sólo conozca lo que es estrictamente necesario para esa transacción. Ya que cualquier información puede expresarse, tenemos que asegurarnos de que revelamos lo mínimo posible. En muchos casos, la identidad personal no es significativa. Cuando compro una revista en un quiosco y pago al contado, el quiosquero no tiene ninguna necesidad de saber quién soy.



“Un Cypherpunk es cualquier activista que aboga por el uso generalizado de la ***criptografía fuerte*** como una ruta para el ***cambio social y político***”



# WIRED

Jaron Lanier Moves On

300 - Hip or Hypo?

Seymour Papert:

Literacy Is Obsolete

May/June 1993

## Rebels with a Cause (Your Privacy)



<https://www.wired.com/1993/02/crypto-rebels/>

**Criptografía:** del griego “*krypto*” (oculto) y “*graphos*” (escribir), es la ciencia de cifrar y descifrar información



A photograph of Benedict Cumberbatch in a room filled with a large, complex machine, likely the Turing machine from the movie 'The Imitation Game'. He is wearing a light blue shirt, a dark tie, and suspenders. He has his arms crossed and is looking down with a serious expression. The machine consists of many rows of yellow and red tape on spools, connected by a network of wires and cables.

**“A VECES ES LA GENTE DE LA  
QUE NADIE ESPERA NADA LA QUE HACE  
COSAS QUE NADIE PUEDE IMAGINAR”.**

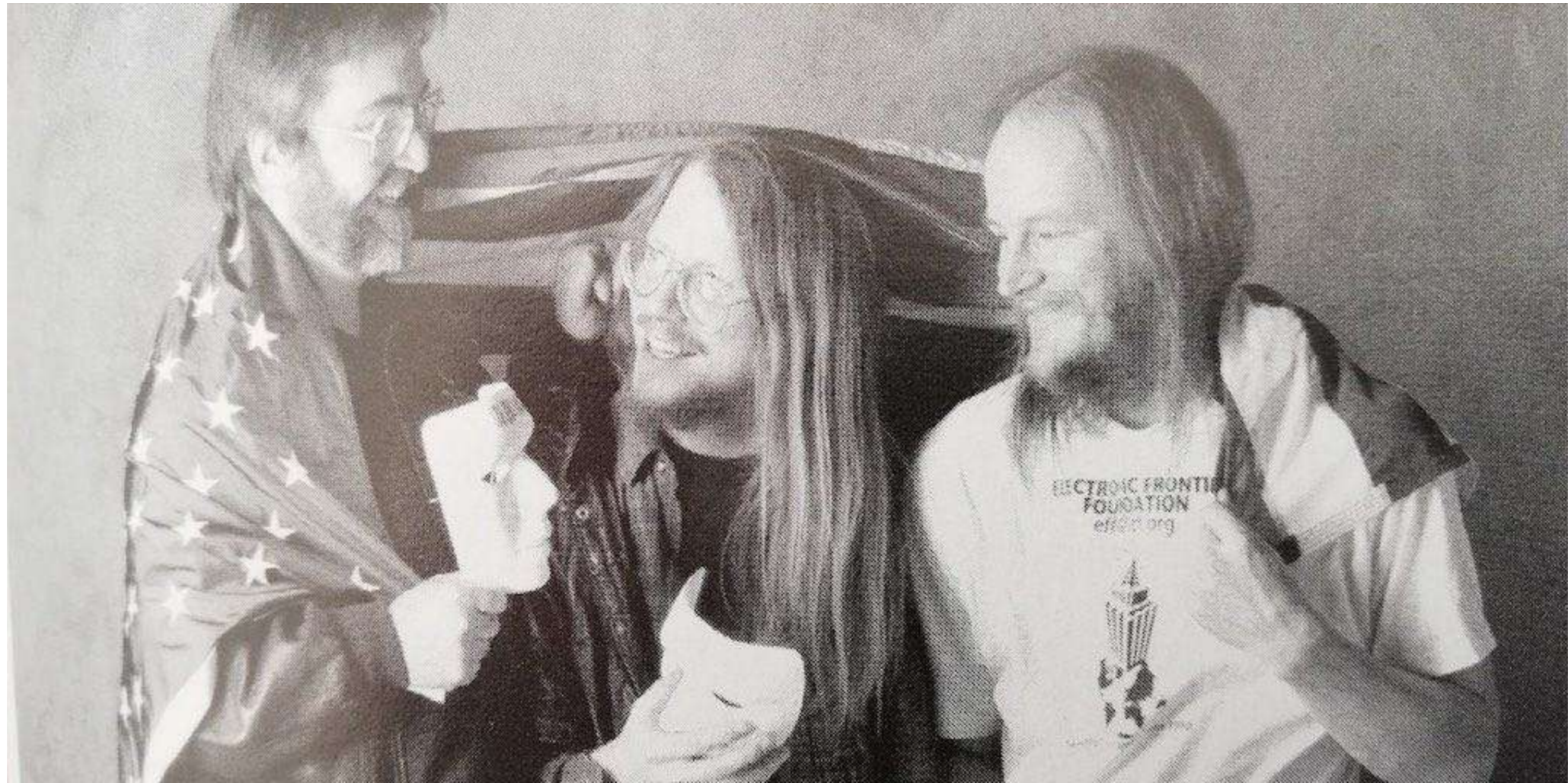
*— The Imitation Game*



“la privacidad en una sociedad abierta requiere la **criptografía**”



**1992** John Gilmore + Eric Hughes:



**Lista de correo Cypherpunks**





Lista de correos con **700 suscriptores**



**1998** Nick Szabo: **BitGold**



 BitGold™

# 1998 Wei Dai: **B-money**

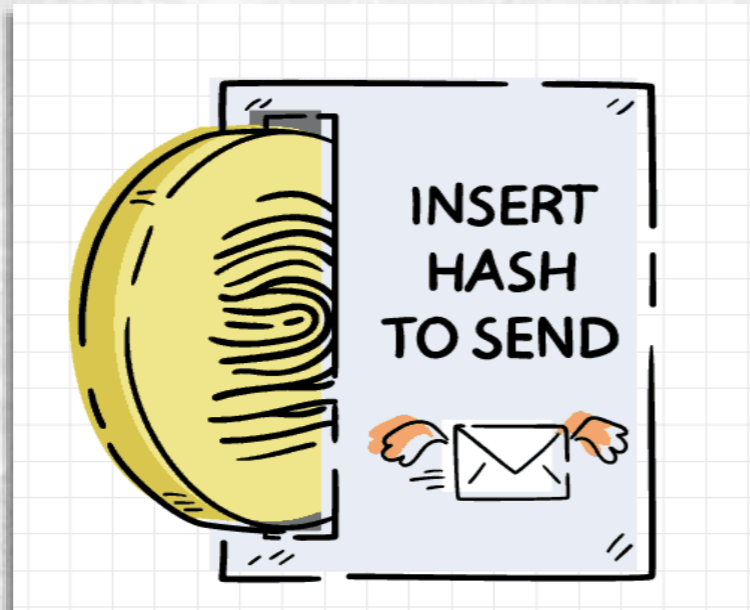


Utilización de **seudónimos** para pagos con **moneda digital descentralizada**



**2002** Adam Back: **Hashcash**

ADAM BACK'S  
*hashcash*



**Prueba de trabajo:** fácil de verificar, difícil de crear

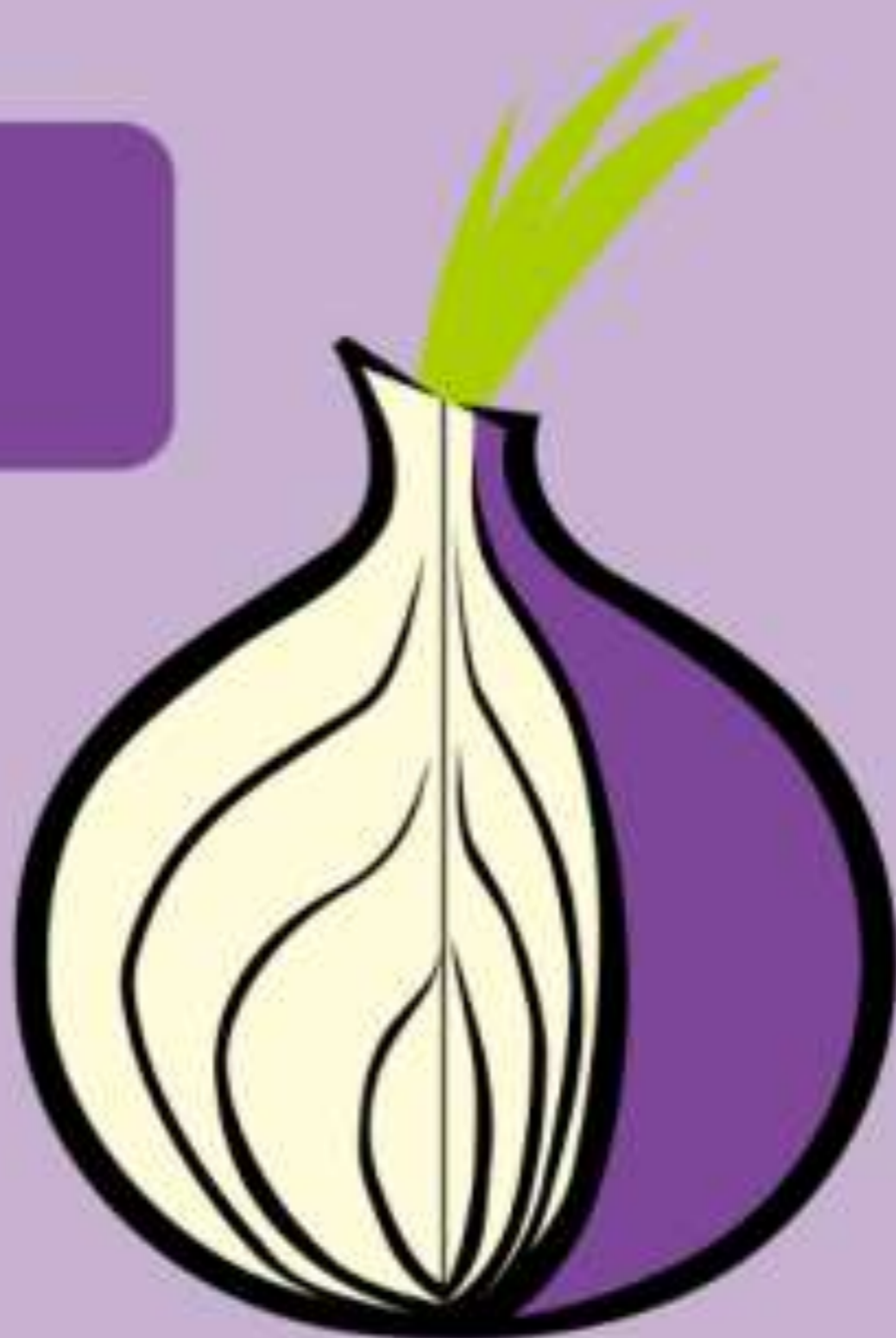
**2004** Hal Finney: **RPOW**



**Pruebas de trabajo reutilizables:** firmadas por  
una clave privada



T



r



**BitTorrent™**





# Julian Assange







**moz://a**

Internet Health Report 2018

Introduction



# How healthy is the Internet?

Our 2018 compilation of research explains what's helping and what's hurting the Internet across five issues, from personal experience to global concerns.

<https://internethealthreport.org/2018/category/privacidad-seguridad/?lang=es>



MAR 5, 2018 @ 05:04 PM 9,780

## Equifax's Enormous Data Breach Just Got Even Bigger



Nick Clements, CONTRIBUTOR  
FULL BIO

Opinions expressed by Forbes Contributors are their own.



Photographer: Michael Nagle/Bloomberg

Last Thursday, Equifax reported that another 2.4 million Americans were impacted by their already enormous data breach. That brings the total to 147.9 million Americans. The only good news from this recent announcement: the incremental 2.4 million people only had their name and part of their driver's license number revealed. Most people impacted by the breach had their Social Security Number exposed, which is much more dangerous.

## Escándalo de Cambridge Analytica: ¿debería Zuckerberg renunciar a Facebook?

Redacción  
BBC Mundo

5 abril 2018



LILY HAY NEWMAN SECURITY 10.03.17 07:29 PM

# YAHOO'S 2013 EMAIL HACK ACTUALLY COMPROMISED THREE BILLION ACCOUNTS

Lt. Commander Zuck in court after his plan to study humans in greater detail backfires



r/pics • EvanOfTheYukon • 5d ago

113571 points • 1117 comments



**“Libertad de expresión”**

**“Libertad de información”**

**“Privacidad”**

**“Transacciones anónimas”**

**“Criptografía fuerte”**







Volviendo al **origen**

SATOSHI NAKAMOTO begins working on the concept



Oct 2008 Bitcoin whitepaper published

May 2010 First real world transaction is 10,000 BTC for a pizza. A \$3.8mn pizza today!

Feb 2011 Bitcoin reaches parity with the US dollar

2011/2012 Fraud & illicit behavior gains momentum. Silk Road opens. Mt. Gox is hacked and shut down for 7 days. Governments warn of terrorist financing & FBI report leaked.

May 2013 First Bitcoin ATM debuted in San Diego

May 2013 Coinbase raises \$5mn in venture funding led by Union Square Ventures

Feb 2014 Attacks on exchanges leads Mt. Gox to collapse. Bitcoin price crashes

Dec 2014 NY regulator proposes lighter rules for Bitcoin companies

2007

2008

2009

2010

2011

2012

2013

2014

2015

Aug 2008 Bitcoin.org is registered

Dec 2009 First Bitcoin transaction in block #170

Jul 2010 Mt. Gox is established as an FX exchange

Jun 2012 Block 181919 is largest with 1,322 transactions

Jun 2012 Coinbase, a bitcoin wallet, founded in San Francisco

Aug 2013 NY State Dept. of Financial Services subpoenas 22 bitcoin companies

Nov 2013 Bitcoin reaches over \$1,000 after market perceives US Senate hearings were positive

Sep 2014 PayPal announces Bitcoin integration

Aug 2015 Bloomberg Markets magazine Blythe Masters feature on blockchain & financials. Suddenly, blockchain is hot.



LEHMAN BROTHERS ›

# 15 de septiembre, el día maldito que nadie quiere recordar en Wall Street

La quiebra del gigante financiero Lehman Brothers en 2008 incendió los mercados y aceleró la crisis mundial

# Bitcoin P2P e-cash paper

Satoshi Nakamoto [satoshi at vistomail.com](mailto:satoshi@vistomail.com)

Fri Oct 31 14:10:00 EDT 2008

- Previous message: [Fw: SHA-3 lounge](#)
- Messages sorted by: [\[ date \]](#) [\[ thread \]](#) [\[ subject \]](#) [\[ author \]](#)

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I've been working on a new electronic cash system that's fully peer-to-peer, with no trusted third party.

The paper is available at:

<http://www.bitcoin.org/bitcoin.pdf>

The main properties:

- Double-spending is prevented with a peer-to-peer network.
- No mint or other trusted parties.
- Participants can be anonymous.
- New coins are made from Hashcash style proof-of-work.
- The proof-of-work for new coin generation also powers the network to prevent double-spending.

Bitcoin: A Peer-to-Peer Electronic Cash System





**“Prevenir el gasto doble”**

**“Anonimato”**

**“Descentralización”**

ADAM BACK'S  
*hashcash*



**RPOW**

Hal Finney

A yellow rectangular graphic featuring a cartoon illustration of Hal Finney on the left, a recycling symbol in the center, and the text 'RPOW' and 'Hal Finney' on the right. The background of the graphic is yellow with faint, repeating patterns of the word 'JOURNAL' and 'DUCCN'.

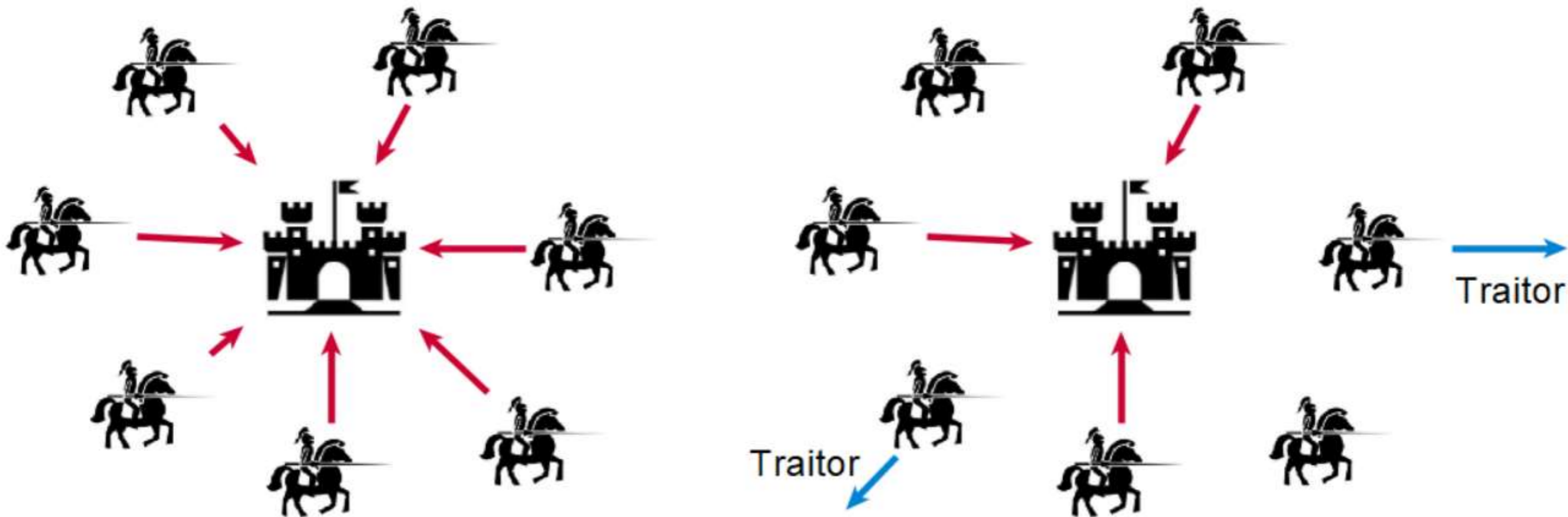








# El problema de los



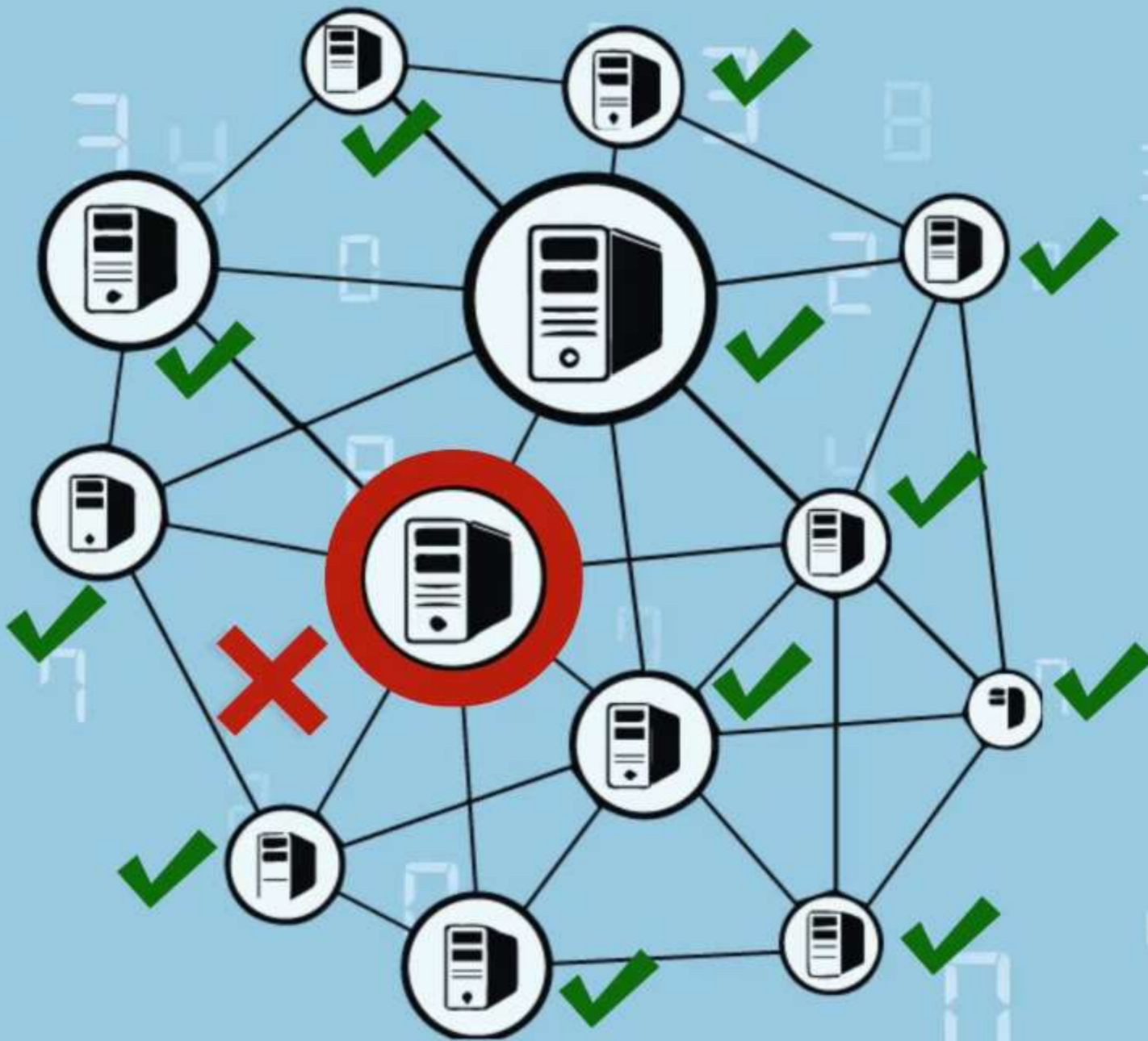
**Coordinated attack  
leading to victory**

**Uncoordinated attack  
leading to defeat**

# generales bizantinos

**“Prevenir el gasto doble”**  
**“Consenso en una red**  
**distribuida y descentralizada”**





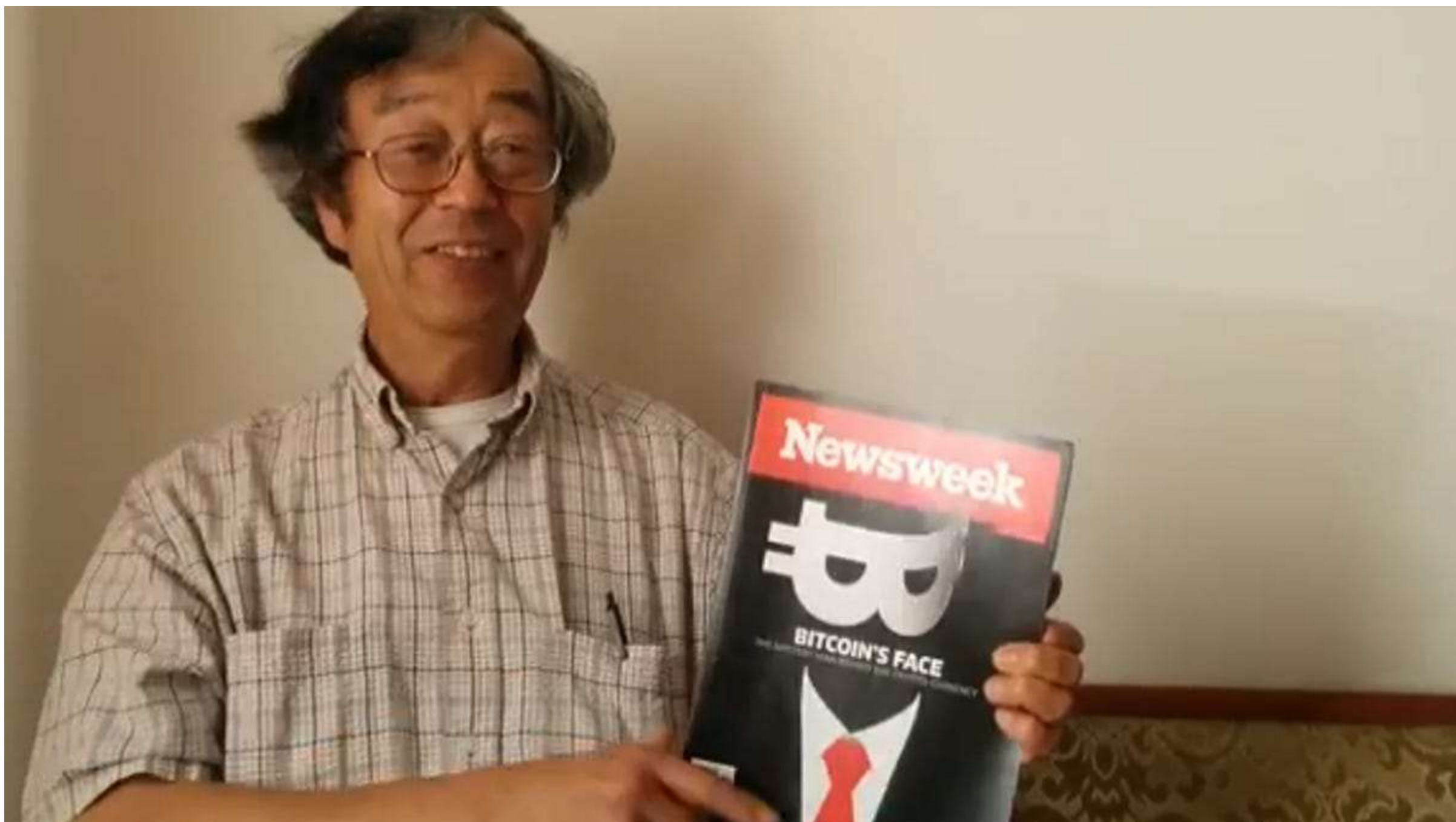
FUNCTION EVEN IF  
**CONFLICTING**  
INFORMATION IS SENT



**SATOSHI NAKAMOTO**







**Dorian Satoshi Nakamoto**

# Hal Finney



**Vecino y víctima** de la crisis financiero.  
**Primer receptor** de un bitcoin



# Hal Finney



**halfin**

@halfin

Follow

## Running bitcoin

7:33 pm - 10 Jan 2009

2,405 Retweets 5,925 Likes



239

2.4K

5.9K

# Hal Finney: 1956 - 2014





Nick Szabo



 BitGold™

¿Eres tu Satoshi?

# Nick Szabo

## BIT GOLD

Chained Proof of Work

Peer to Peer

Solving Cryptographic  
Puzzles to Earn  
Currency (coins)

Time Stamp for New Coins

Doesn't Need a Trusted  
Third Party

Consensus Needed Before  
Moving to Next Puzzle



Block Chain  
for Proof of Work

Peer to Peer

Solving Cryptographic  
Puzzles to Earn  
Currency (coins)

Time Stamp for New Coins

Doesn't Need a Trusted  
Third Party

Consensus Needed Before  
Moving to Next Block

¿Eres tu Satoshi?



Craig **Wright**



**¿Eres quién dices ser?**



**Alguien preocupado por la privacidad y el anonimato**



# Primer bloque

## Raw Hex Version

00000000	01 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000010	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000020	00 00 00 00 3B A3 ED FD	7A 7B 12 B2 7A C7 2C 3E	....;Éíýz{.²zÇ,>
00000030	67 76 8F 61 7F C8 1B C3	88 8A 51 32 3A 9F B8 AA	gv.a.È.Ã^ŠQ2:Ÿ,ª
00000040	4B 1E 5E 4A 29 AB 5F 49	FF FF 00 1D 1D AC 2B 7C	K.^J)«_Iÿÿ...¬+
00000050	01 01 00 00 00 01 00 00	00 00 00 00 00 00 00 00	.....
00000060	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000070	00 00 00 00 00 00 FF FF	FF FF 4D 04 FF FF 00 1D	.....ÿÿÿÿM.ÿÿ..
00000080	01 04 45 54 68 65 20 54	69 6D 65 73 20 30 33 2F	...EThe Times 03/
00000090	4A 61 6E 2F 32 30 30 39	20 43 68 61 6E 63 65 6C	Jan/2009 Chancel
000000A0	6C 6F 72 20 6F 6E 20 62	72 69 6E 6B 20 6F 66 20	lor on brink of
000000B0	73 65 63 6F 6E 64 20 62	61 69 6C 6F 75 74 20 66	second bailout f
000000C0	6F 72 20 62 61 6E 6B 73	FF FF FF FF 01 00 F2 05	or banksÿÿÿÿ..ð.
000000D0	2A 01 00 00 00 43 41 04	67 8A FD B0 FE 55 48 27	*....CA.gSy`pUH
000000E0	19 67 F1 A6 71 30 B7 10	5C D6 A8 28 E0 39 09 A6	.gñ q0-. \Ö" (à9.
000000F0	79 62 E0 EA 1F 61 DE B6	49 F6 BC 3F 4C EF 38 C4	ybàê.aÞ¶IÖ¼?Lÿ8Ä
00000100	F3 55 04 E5 1E C1 12 DE	5C 38 4D F7 BA 0B 8D 57	óU.Á.Á.Þ\BM+º..W

De la cadena



# Referencia clara a la crisis financiera



## Eat Out from £5

More than 900 great restaurants, including four **Gordon Ramsay** favourites from £15

Start collecting tokens today. Pullout inside

### Israel prepares to send tanks and troops into Gaza



### Michael Sheen Frost, Nixon and me

Magazine



### Working mums So that's how she does it

Body&Soul



### Detox in style The best spas on the planet

Travel



### Salmon Rushdie I Won't Marry Again

Pages 22, 23



## Chancellor on brink of second bailout for banks

Billions may be needed as lending squeeze tightens

Francis Elliott Deputy Political Editor  
Gary Duncan Economics Editor

Allister Darling has been forced to consider a second bailout for banks as the lending drought worsens.

The Chancellor will decide within weeks whether to pump billions more

day that, despite intense pressure, the banks curbed lending in the final quarter of last year and plan even tighter restrictions in the coming months. Its findings will alarm the Treasury.

The Bank is expected to take yet more aggressive action this week by cutting the base rate from its current

on state-backed guarantees to encourage private finance, but a number of interventions are on the table, including further injections of taxpayers' cash.

Under one option, a "bad bank" would be created to dispose of bad

debts. The Treasury would take bad loans off the books of troubled banks, perhaps swapping them for government bonds. The toxic assets, blamed for poisoning the financial system, would be parked in a state vehicle or "bad bank" that would manage them and attempt to dispose of

### Giant Killing? Guide to the FA Cup Third Round

Sport



Los **primeros** **alocados** **años**





# BANKING ON BITCOIN

## **Banking on Bitcoin**

2017 | 13+ | 1h 23m

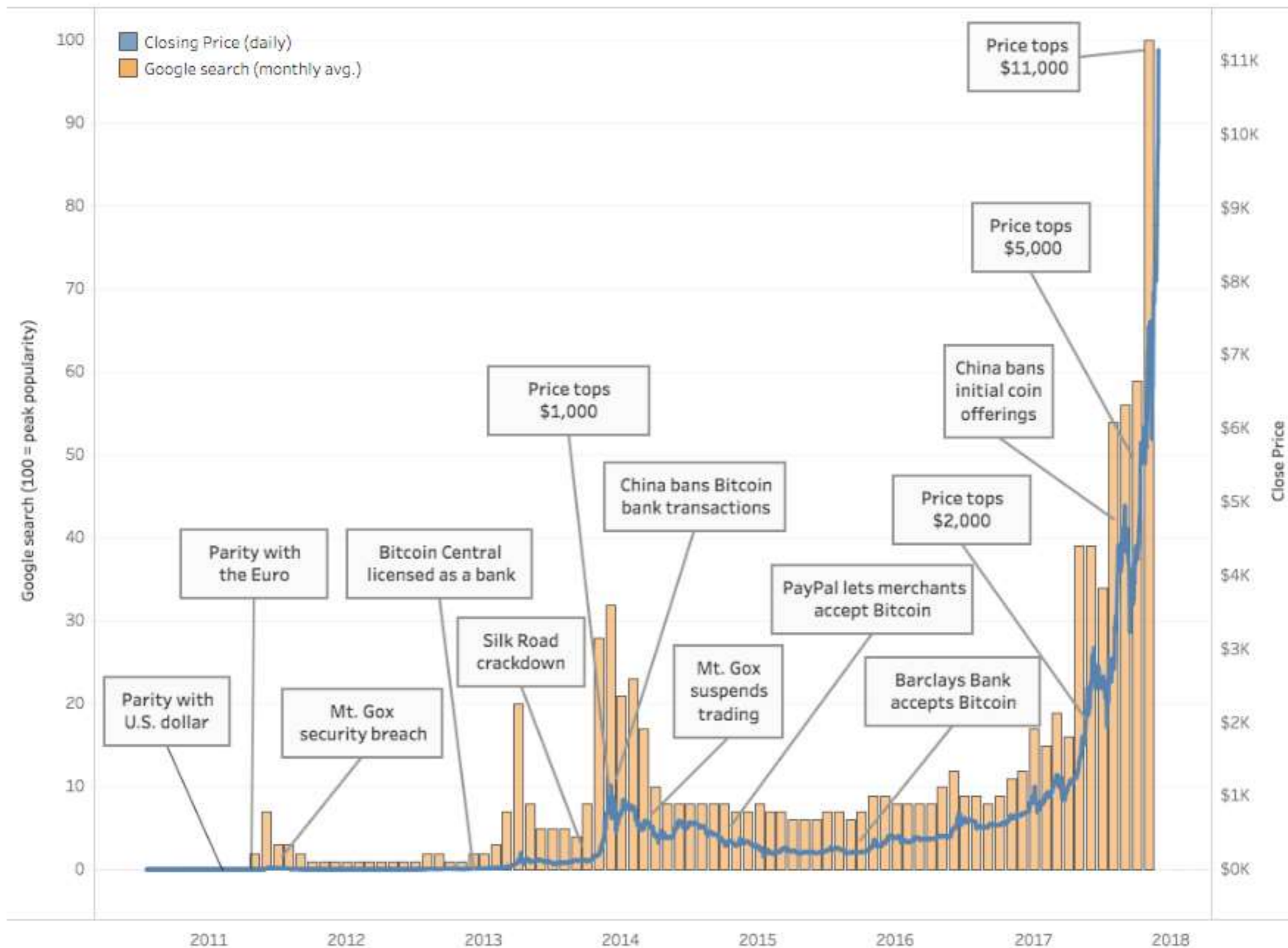
Featuring interviews with enthusiasts and experts, this documentary covers Bitcoin's roots, its future and the technology that makes it tick.

Genres: Documentaries, Social & Cultural Docs  
Director: Christopher Cannucciari

<https://youtu.be/ICNBX1vkwMk?t=159>

# Bitcoin boom

The price of the cryptocurrency surged in November, topping \$10,000 for the first time. Here's a brief history of the bitcoin boom. SOURCE: coindesk, published reports

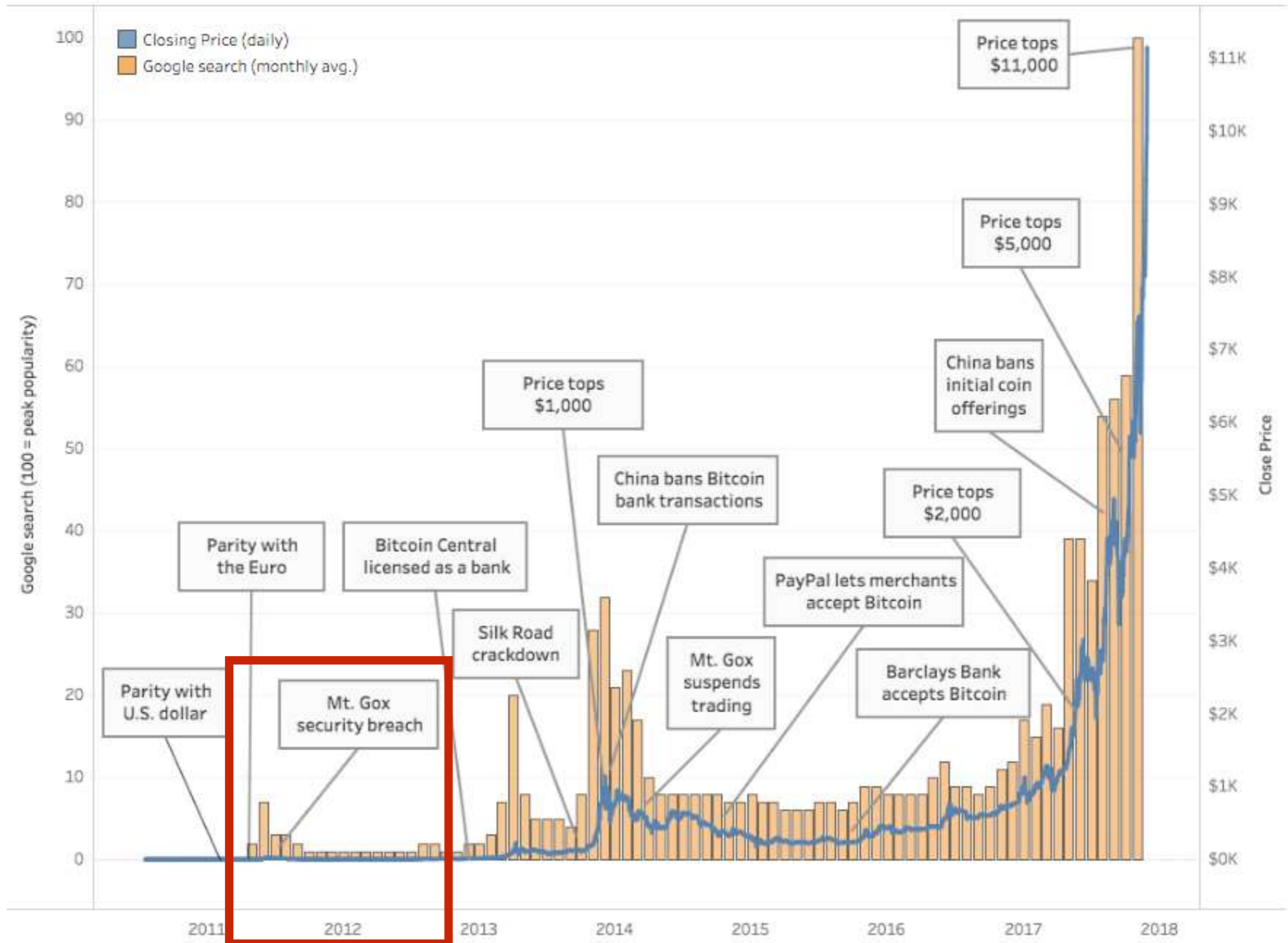


<https://www.cnbc.com/2017/11/29/this-chart-show-bitcoins-meteoric-rise-over-the-last-6-years.html>



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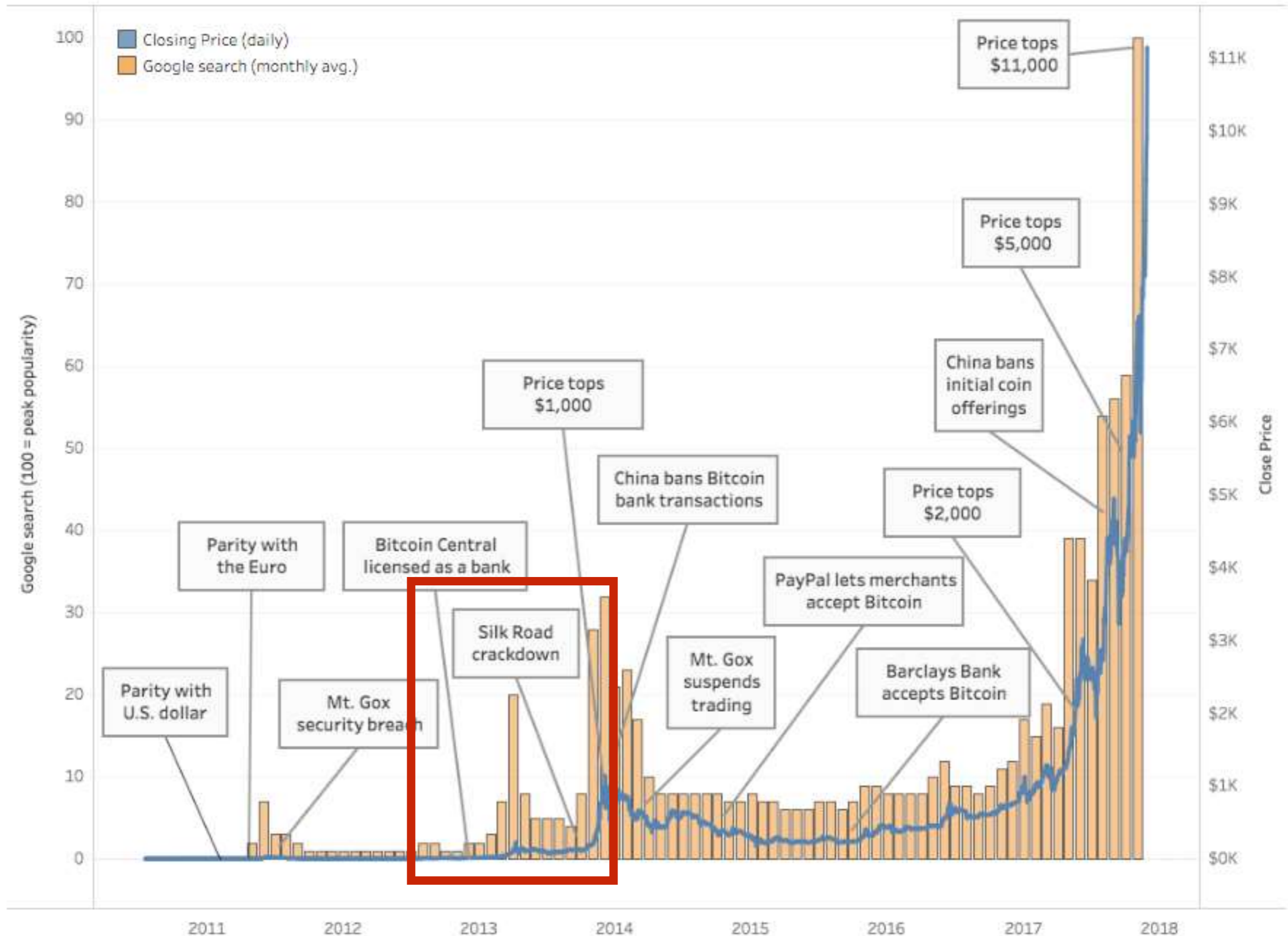


**BITCOIN**  
EXCHANGE

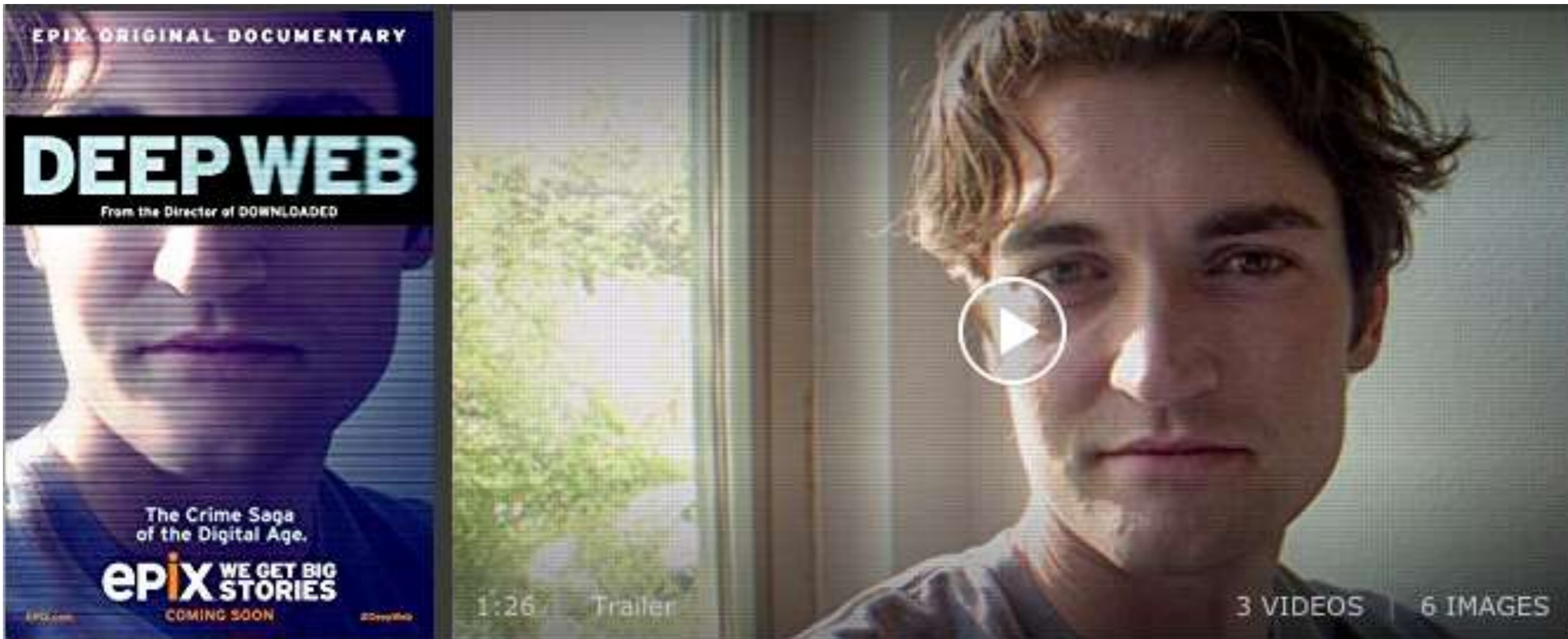


# Bitcoin boom

The price of the cryptocurrency surged in November, topping \$10,000 for the first time. Here's a brief history of the bitcoin boom. SOURCE: coindesk, published reports



# TOR + Bitcoin



<http://www.imdb.com/title/tt3312868/>



# Cadena perpetua para el creador de «Silk Road», la web que vendió 200 millones de dólares en drogas ilegales

- Ross William Ulbricht se quedaba con una comisión de un 15 por ciento y liberaba el resto para el vendedor

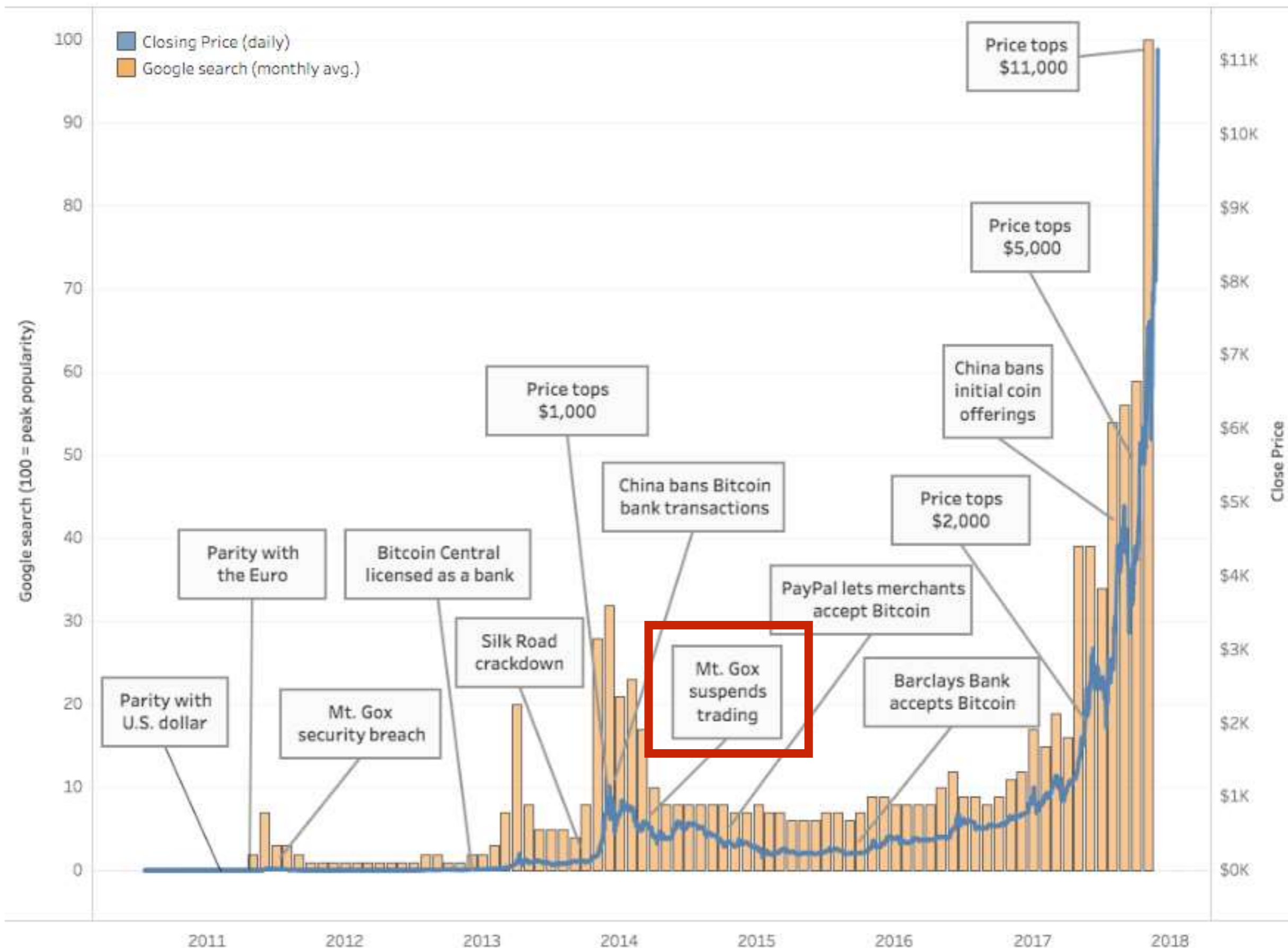


Ross William Ulbricht, condenado a cadena perpetua en Nueva York - reuters



# Bitcoin boom

The price of the cryptocurrency surged in November, topping \$10,000 for the first time. Here's a brief history of the bitcoin boom. SOURCE: coindesk, published reports





MARK KARPELES

A MT GOX PICTURE

# THE WOLF OF BITCOIN STREET





**Charlie Shrem**



**Los primeros **innovadores****



# Winklevoss brothers

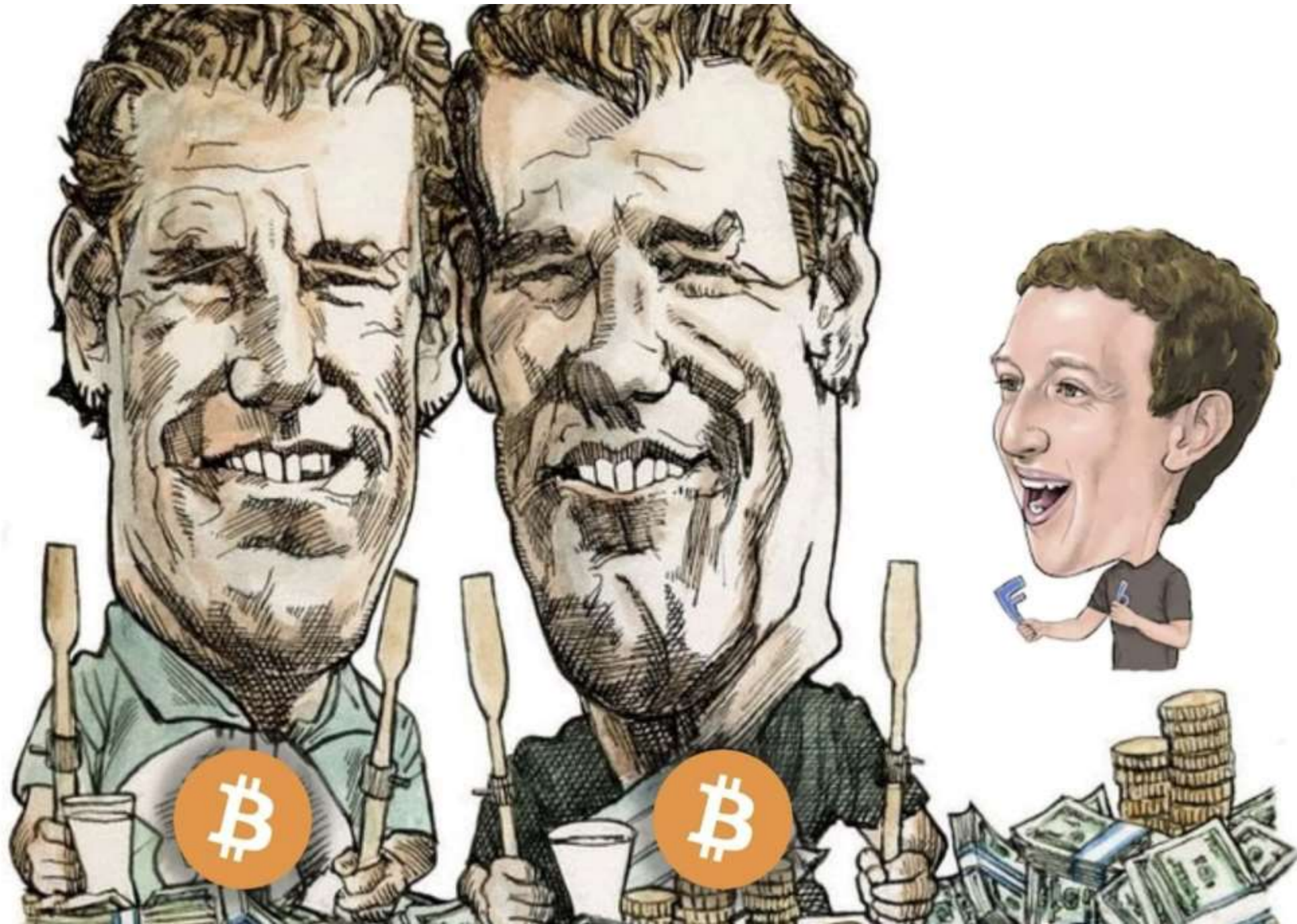


COINTELEGRAPH

Y sus primeros **inversionistas**



# Winklevoss brothers



# Charlie Shrem





# How BitInstant works:

## Deposit

You use the payment method of your choice

## BitInstant

We charge a small fee to transfer your funds

## Exchange

Funds are deposited INSTANTLY!



# Benjamin Lawsky

## Bitcoin exchange CEO arrested for money laundering

CNN Money

By Jose Pagliery @Jose\_Pagliery January 28, 2014 10:16 AM ET



**¿Chivo expiatorio?**

# Primeras audiencias



Con el **regulador**



# Benjamin Lawsky



**El regulador**

**Benjamin Lawsky**



**El regulador**



**Benjamin Lawsky**



**El consultor**

# Blythe Masters



De Wall Street a **emprendedora Bitcoin**



BLOCKCHAIN

WALL ST

FUTURE

# Algo paradójico

## Raw Hex Version

00000000	01 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000010	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000020	00 00 00 00 3B A3 ED FD	7A 7B 12 B2 7A C7 2C 3E	....;Éíýz{.²zÇ,>
00000030	67 76 8F 61 7F C8 1B C3	88 8A 51 32 3A 9F B8 AA	gv.a.È.Ã^ŠQ2:Ÿ,ª
00000040	4B 1E 5E 4A 29 AB 5F 49	FF FF 00 1D 1D AC 2B 7C	K.^J)«_Iÿÿ...¬+
00000050	01 01 00 00 00 01 00 00	00 00 00 00 00 00 00 00	.....
00000060	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000070	00 00 00 00 00 00 FF FF	FF FF 4D 04 FF FF 00 1D	.....ÿÿÿÿM.ÿÿ..
00000080	01 04 45 54 68 65 20 54	69 6D 65 73 20 30 33 2F	...EThe Times 03/
00000090	4A 61 6E 2F 32 30 30 39	20 43 68 61 6E 63 65 6C	Jan/2009 Chancel
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000000C0	6F 72 20 62 61 6E 6B 73	FF FF FF FF 01 00 F2 05	or banksÿÿÿÿ..ð.
000000D0	2A 01 00 00 00 43 41 04	67 8A FD B0 FE 55 48 27	*....CA.gSy`pUH
000000E0	19 67 F1 A6 71 30 B7 10	5C D6 A8 28 E0 39 09 A6	.gñ q0-. \Ö" (à9.
000000F0	79 62 E0 EA 1F 61 DE B6	49 F6 BC 3F 4C EF 38 C4	ybàê.aÞ¶IÖ¼?Lÿ8Ä
00000100	F3 55 04 E5 1E C1 12 DE	5C 38 4D F7 BA 0B 8D 57	óU.Á.Á.Þ\BM+º..W

¿No?



¿Qué nos depara el futuro?





Sacándole provecho a las **tecnologías exponenciales** parte 6:

***Internet del valor parte 1: orígenes y fundamentos.***

**Cátedra**  
**Pedro Nel Gómez:**  
**Mindset innovador a**  
**prueba de futuro**

