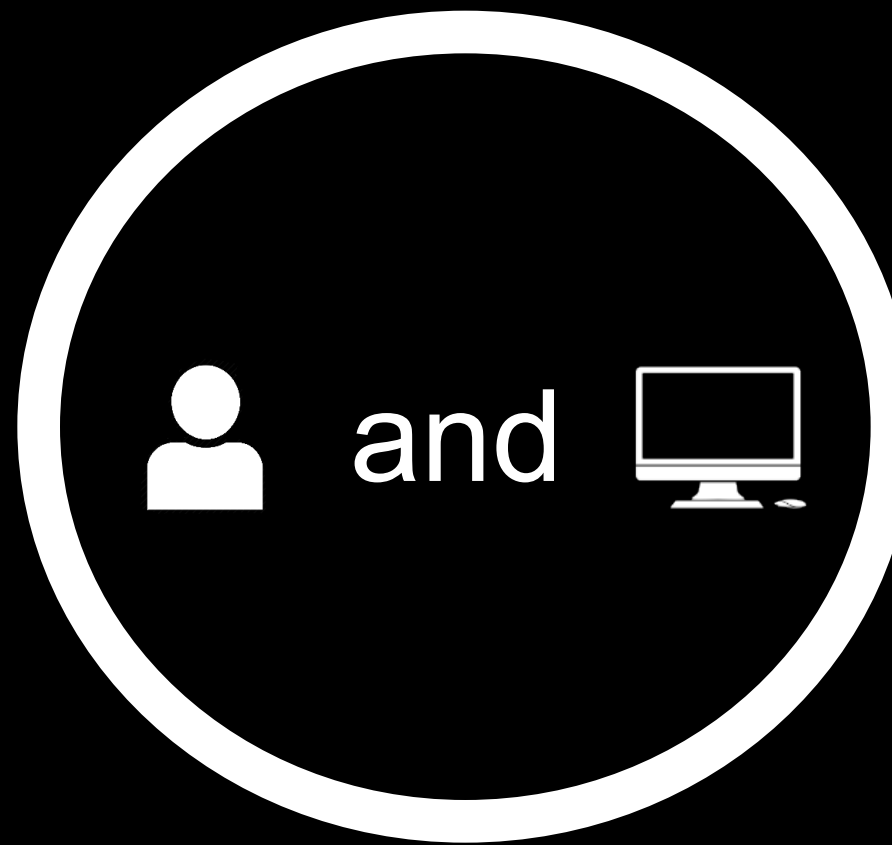


Creating human-AI superminds

Thomas W. Malone

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Superminds –

Groups of individuals acting together
in ways that seem intelligent

(i.e., “collectively intelligent groups”)











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From today's featured article



Western Mediterranean at the start of the Second Punic War

The **Second Punic War** (218–201 BC) was the second of **three wars** fought between **Carthage** and **Rome**, the two main powers of the western **Mediterranean** in the 3rd century BC. For 17 years the two states struggled for supremacy. After immense **materiel** and human losses on both sides the Carthaginians were defeated. **Macedonia**, **Syracuse** and several **Numidian** kingdoms were drawn into the fighting, and **Iberian** and **Gallic** forces fought on both sides. There were three main **military theatres** during the war: Italy, where **Hannibal**

defeated the Roman legions repeatedly, with occasional subsidiary campaigns on the islands of **Sicily** and **Sardinia** and in Greece; Iberia, where **Hasdrubal**, a younger brother of Hannibal, defended the Carthaginian colonial cities with mixed success before moving into Italy; and North Africa, where Rome finally won the war. A peace treaty stripped the Carthaginians of all overseas territories, and prohibited them from waging war outside Africa. (***This article** is part of a featured topic: **Punic Wars**.*)

Recently featured: [Sayfo](#) · [Adiantum viridimontanum](#) · [Operation Sandwedge](#)
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Did you know ...

- ... that two days after it had ignited, the **Tiger Fire** (*pictured*) had already burned 5,567 acres (2,253 ha) of land near **Black Canyon City, Arizona**?
- ... that in the **2022 Berlin Marathon**, **Tigist Assefa** won by running



In the news

- **Hurricane Julia** (*satellite image shown*) leaves more than 80 people dead across **South** and **Central America**.
- After **an explosion** damages the **Crimean Bridge**, Russia **attacks** many Ukrainian cities with missiles.
- In motor racing, **Max Verstappen** wins **the Formula One World Championship**.
- The Nobel Prize in Chemistry is awarded to **Carolyn Bertozzi**, **Karl Barry Sharpless**, and **Morten P. Meldal** for their work on [click chemistry](#) and [bioorthogonal chemistry](#).



Hurricane Julia impacting Nicaragua

Ongoing: [Mahsa Amini protests](#) · [Russian invasion of Ukraine](#)

Recent deaths: [Marion Boyd](#) · [Bruce Paireudeau](#) · [Joe Crozier](#) · [Dick Ellsworth](#) · [Chuck Deardorf](#) · [Jeff Barnaby](#)

[Nominate an article](#)

On this day

October 15

- 1529 – **Ottoman–Habsburg wars**: The **Siege of Vienna** ended with Austrian forces repelling the invading Turks, turning the tide against almost a century of conquest in Europe by the **Ottoman Empire**



DOW JONES NASDAQ FTSE 100 CAC 40 DAX NIKKEI 225

BRL CHF DKK IRL BHD IND ISK ZAR NOK XAU CNY BBD



4.02

9.02

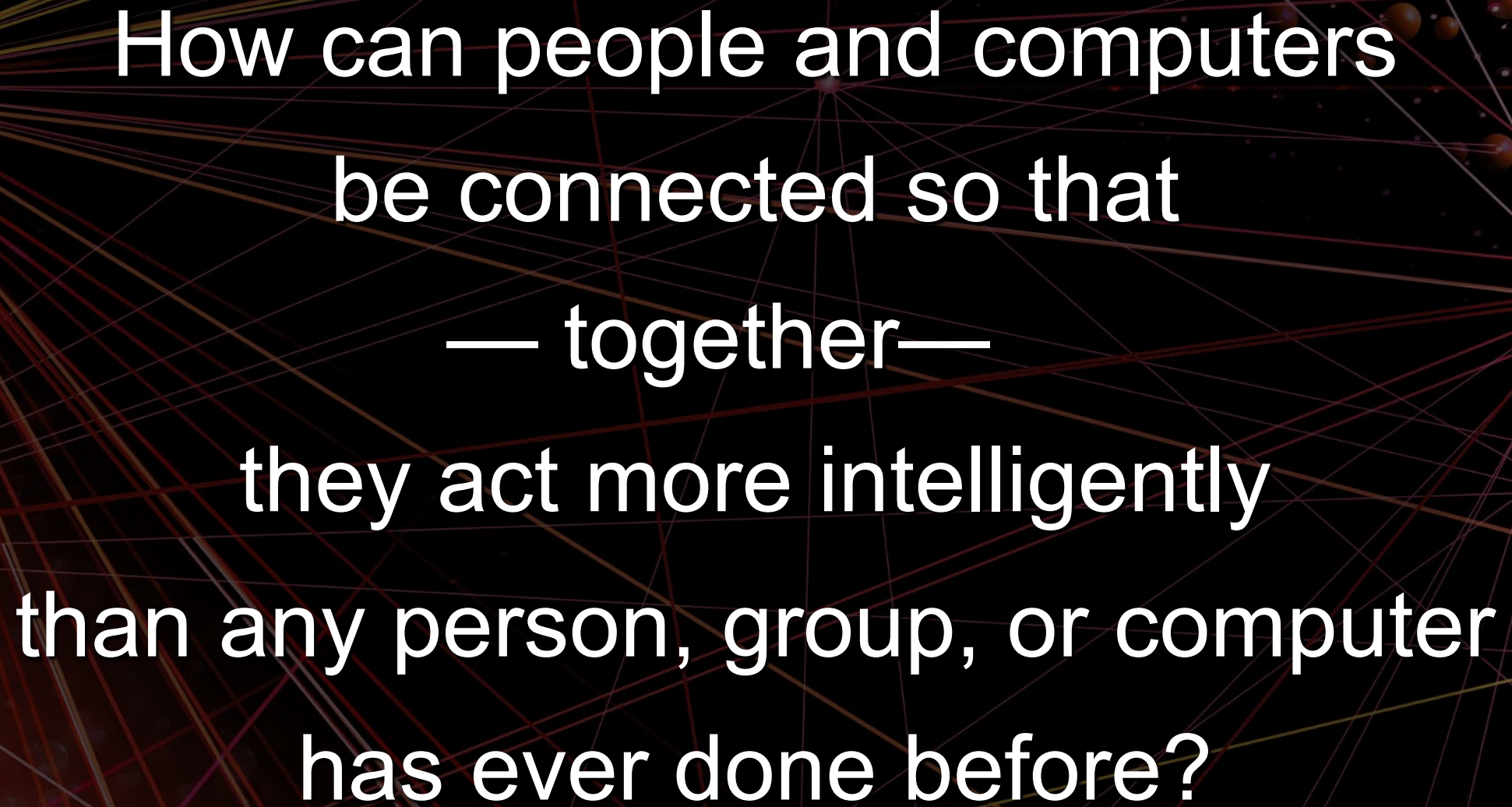
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EUR

JPY



OPEN SETT PRICE CHANGE HIGH LOW EST. VOL



How can people and computers
be connected so that
— together—
they act more intelligently
than any person, group, or computer
has ever done before?



When combinations of humans and AI are useful: A systematic review and meta-analysis

Received: 6 April 2023

Accepted: 23 September 2024

Published online: 28 October 2024

Check for updates

Michelle Vaccaro ^{1,2}, Abdullah Almaatouq ¹ & Thomas Malone ¹

Inspired by the increasing use of artificial intelligence (AI) to augment humans, researchers have studied human–AI systems involving different tasks, systems and populations. Despite such a large body of work, we lack a broad conceptual understanding of when combinations of humans and AI are better than either alone. Here we addressed this question by conducting a preregistered systematic review and meta-analysis of 106 experimental studies reporting 370 effect sizes. We searched an interdisciplinary set of

Meta-analysis

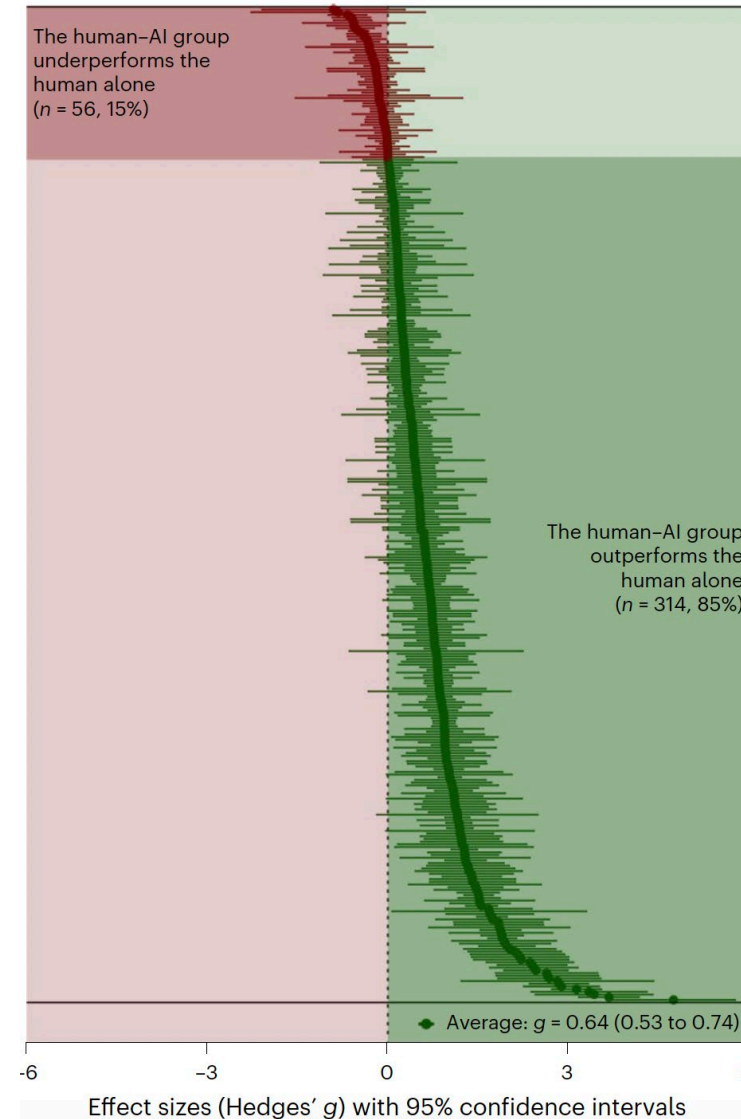
- **106 studies published in 3.5 years ending June 2023**
- **370 effect sizes**

- **Original experiments comparing performance of**
 - **humans alone**
 - **AI alone**
 - **Human-AI combinations**

Did the human-AI combinations do better than humans alone?

Yes

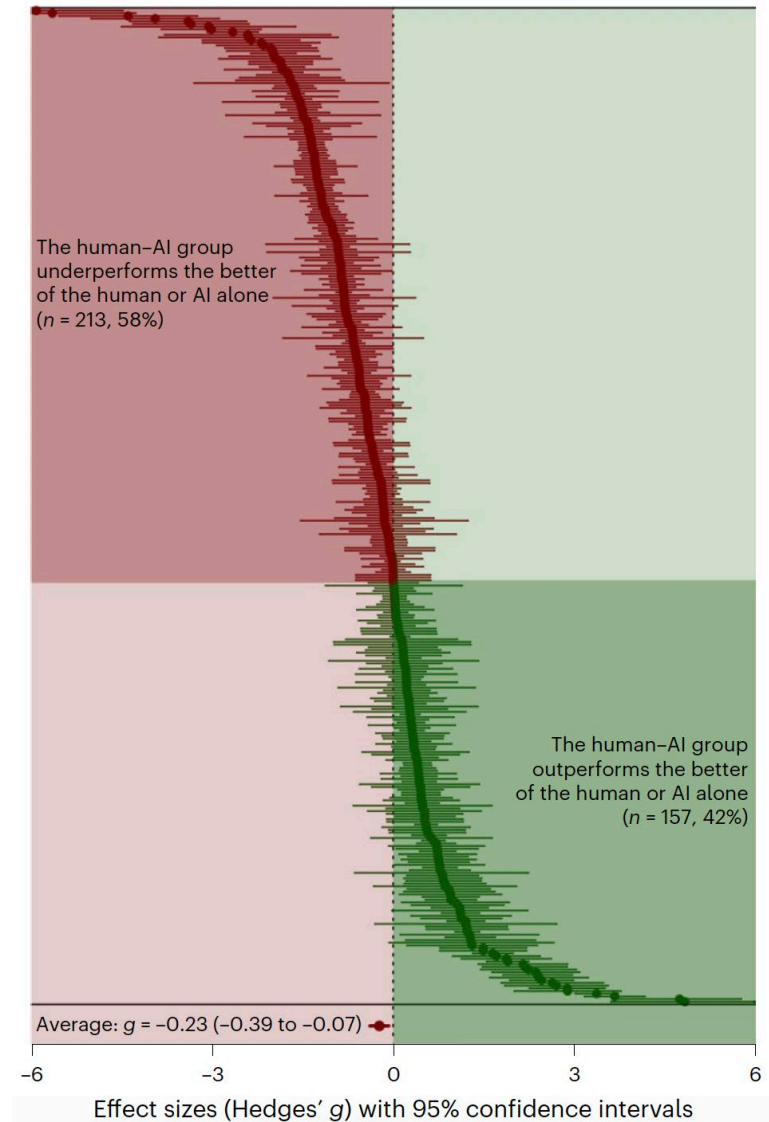
$g = 0.64, p < 0.001$



Did the human-AI combinations do better than the best of humans alone or AI alone?

No!

$g = -0.23, p = 0.005$



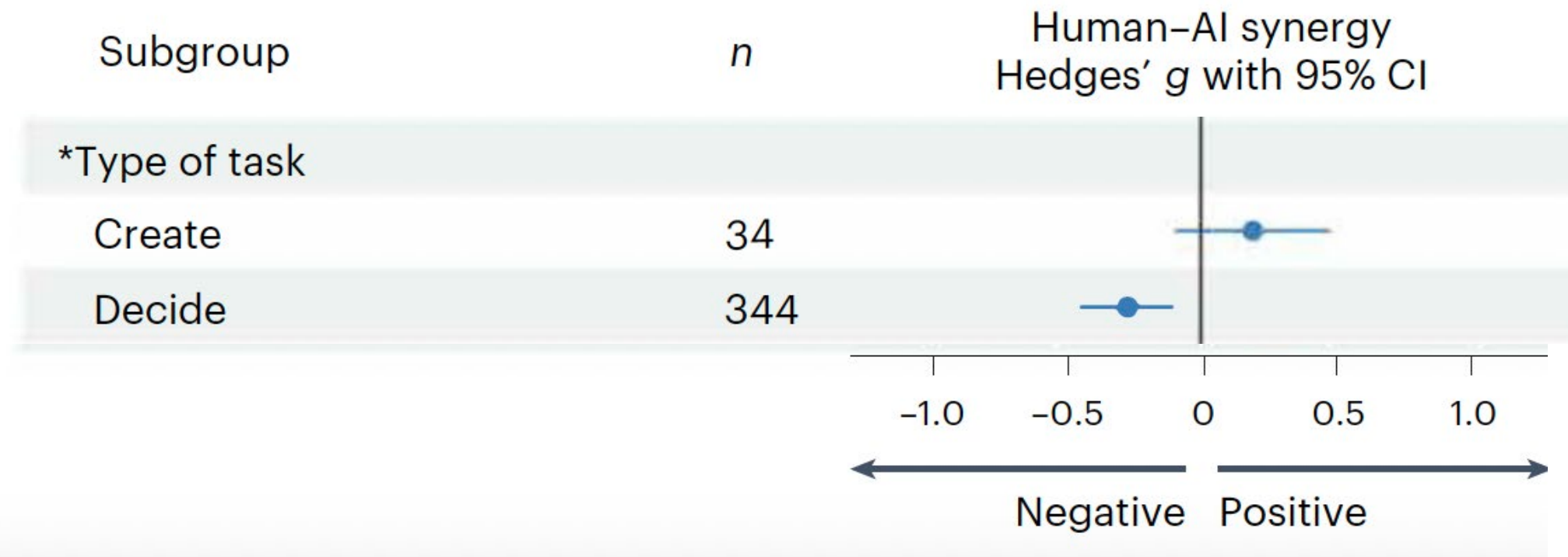
What's going on here?

Clues:

- **Tasks** affect performance
- **Processes** affect performance

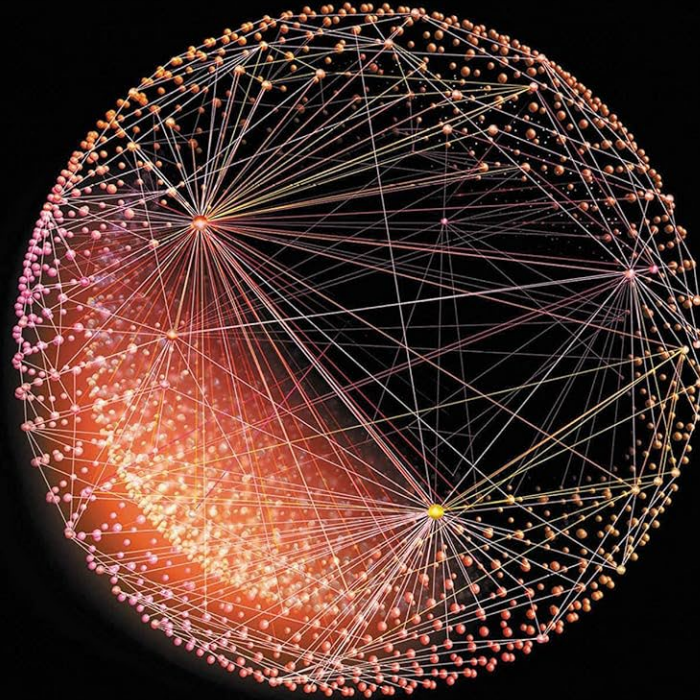
Clue 1: Tasks affect performance

**Human-AI combinations do better on
Creation tasks than on Decision tasks**



“Deeply explores the power of information technology
to enable truly new forms of human organization.
Highly recommended.” —Jimmy Wales, Wikipedia founder

Superminds

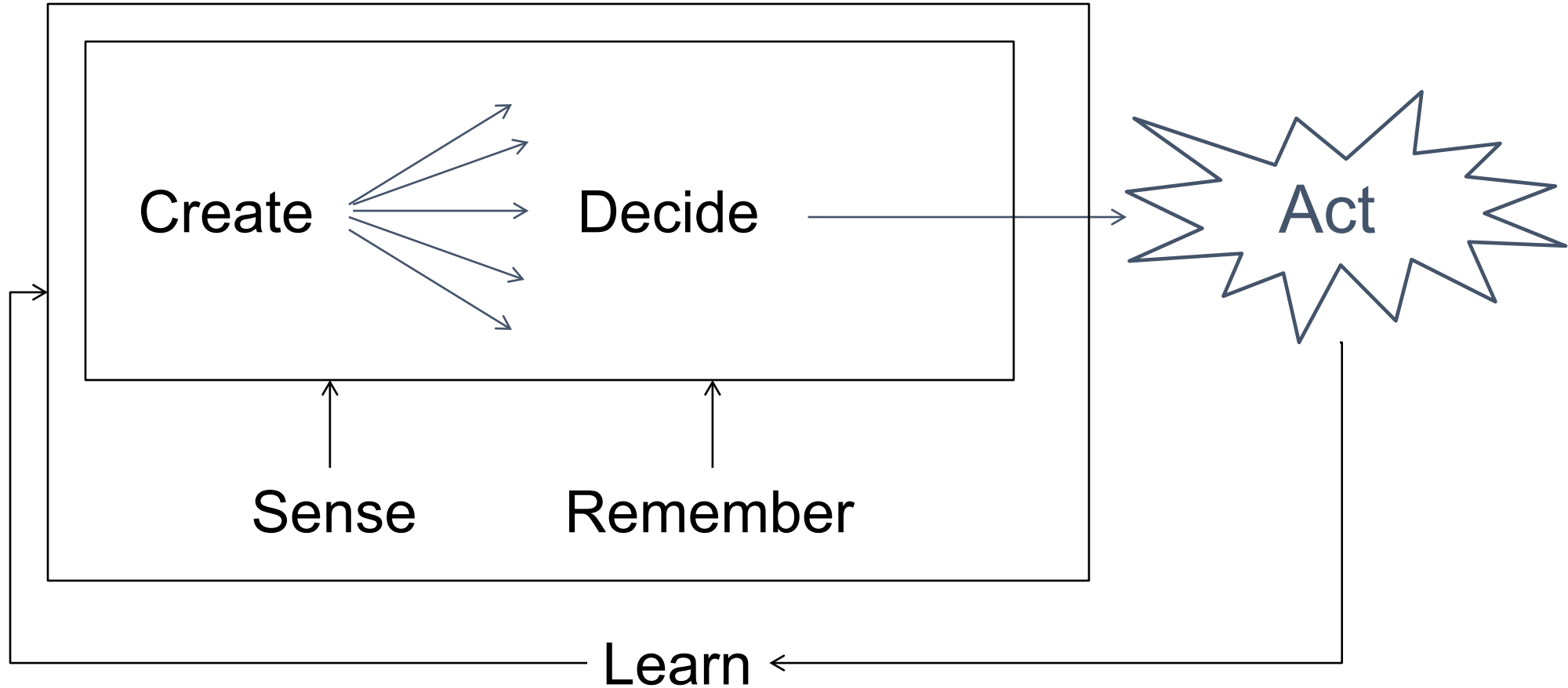


THE SURPRISING POWER OF PEOPLE
AND COMPUTERS THINKING TOGETHER

THOMAS W. MALONE

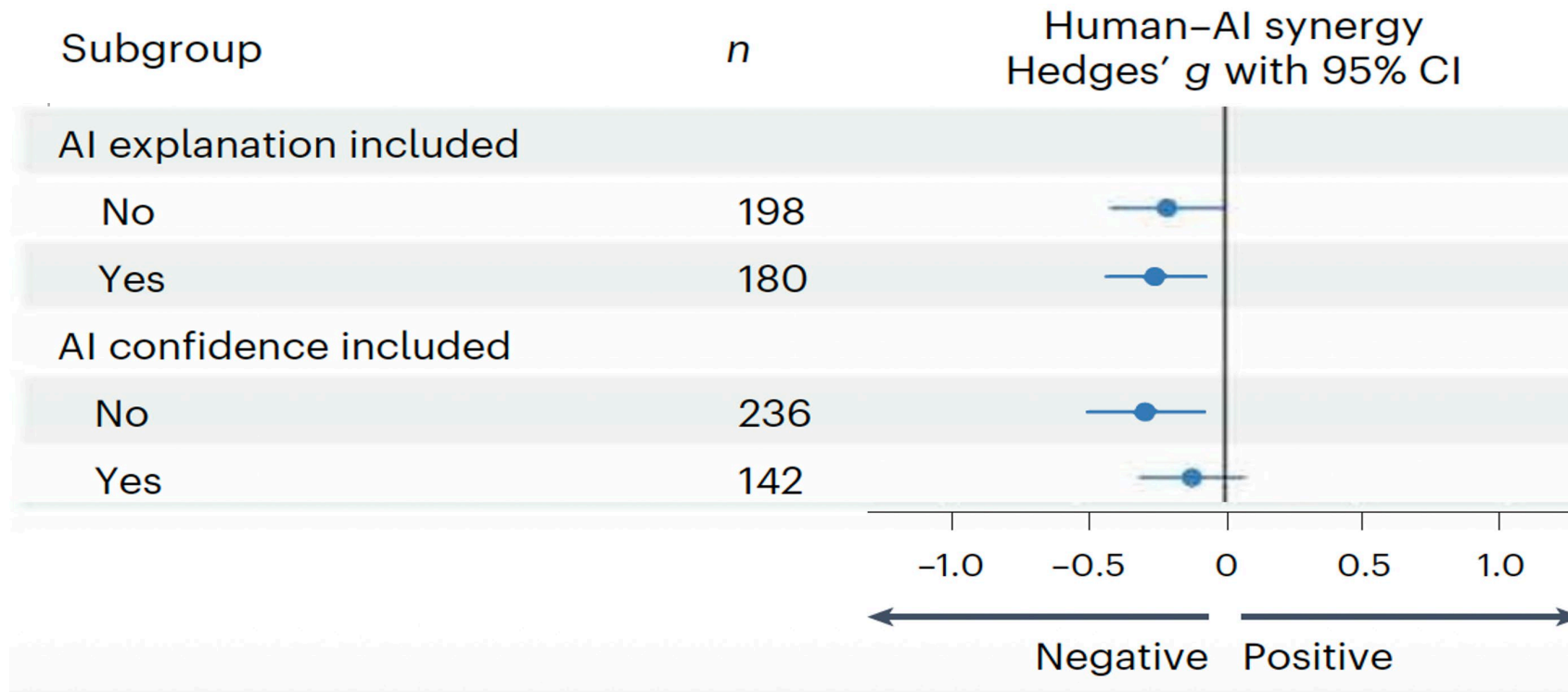
• 2018

Five types of cognitive tasks



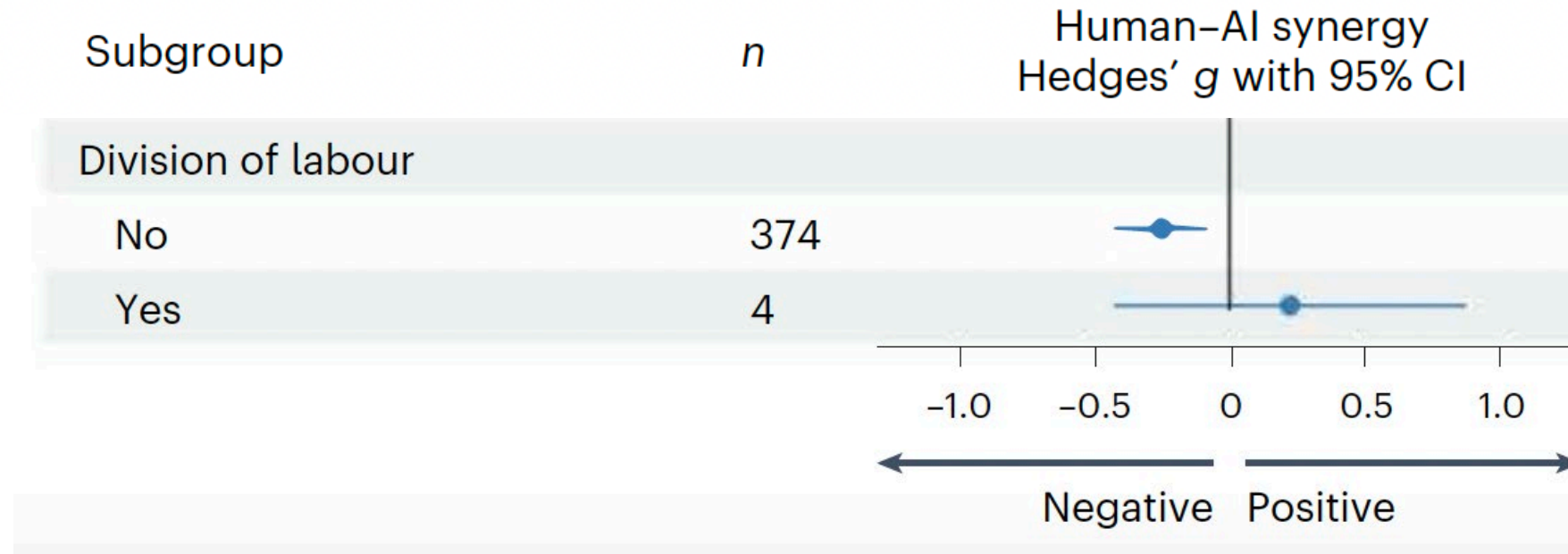
Clue 2:

Processes affect performance



**Explanations and confidence levels
don't help much**

Clue 2: Processes affect performance



Division of labor seems promising!

What roles can AI systems play in the human-AI processes?



- **Tools**

- Human always in control (e.g., ChatGPT)



- **Assistants**

- May take initiative (e.g., suggested replies to messages)



- **Peers**

- Interact with humans as peers (e.g., AI agents doing customer service or other transactions)



- **Managers**

- Delegate tasks, give directions, evaluate work (e.g., call routing to human customer service agents)

Supermind types for group decision-making

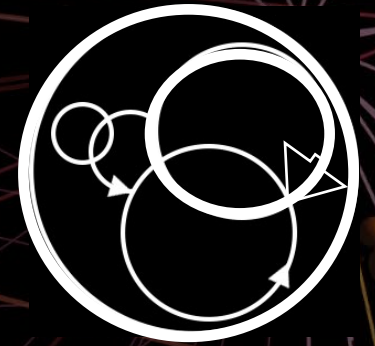
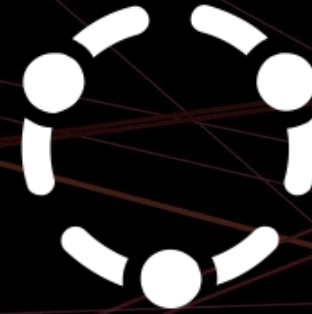
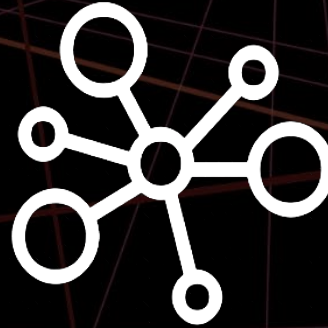
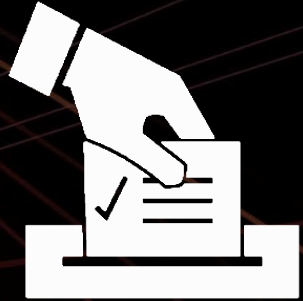
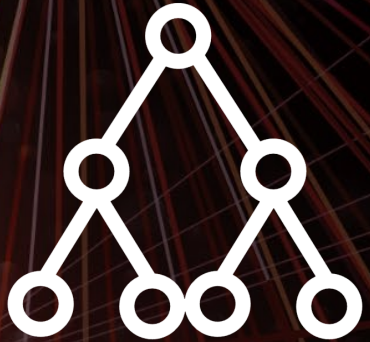
Hierarchies

Democracies

Markets

Communities

Ecosystems



Group decisions are made by:

delegating
them to
individuals in
the group

Debate and
voting

all the pairwise
agreements
between
individual buyers
and sellers

informal
consensus
based on
shared norms
and reputations

the law of the
jungle and the
survival of the
fittest

Supermind types

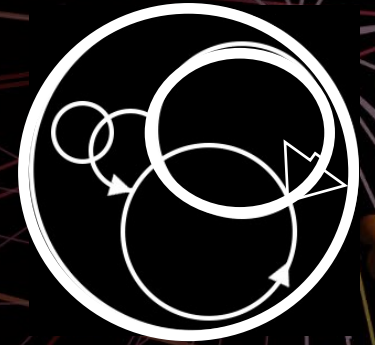
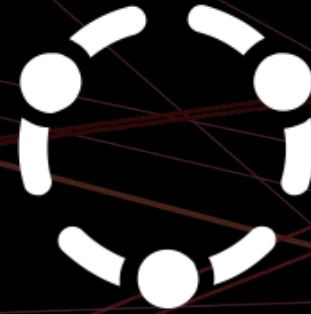
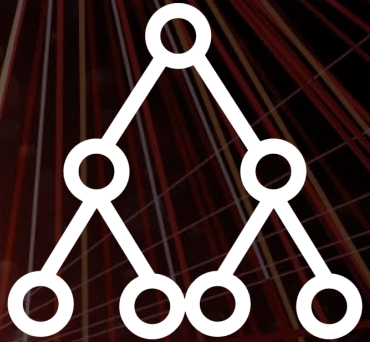
Hierarchies

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Ecosystems



AI bots as gig workers on the web

Supermind types

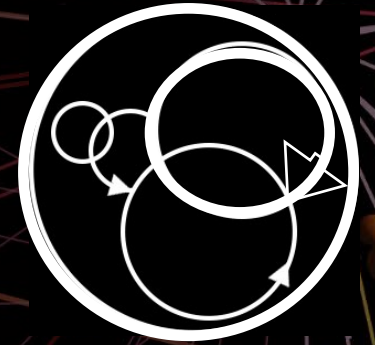
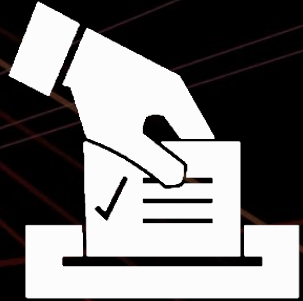
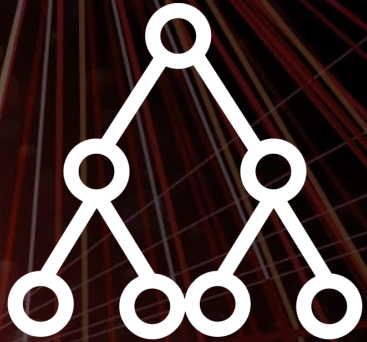
Hierarchies

Democracies

Markets

Communities

Ecosystems



Groups of people and AI systems
jointly editing documents

Conclusions

- **AI should not just replace people; it should help people do things that were never possible before.**
- **Tasks and processes are important.**
- **We will need to learn how to live with a new “species” of intelligence on our planet.**