

The Hidden Cost of AI-Assisted Creativity

Léonard Boussioux



Joint work with Anil Doshi, Oliver Hauser, Kartik Hosanagar

83%
of senior executives rank
innovation among their top three
priorities.



Source: BCG



Individually, AI makes us more creative.
Collectively, it makes us more alike.

The three dimensions of creativity



Novelty

Is the idea original or rare?
Does it depart from what's
already been done?



Usefulness

Is it valuable, feasible,
effective at achieving its
purpose?



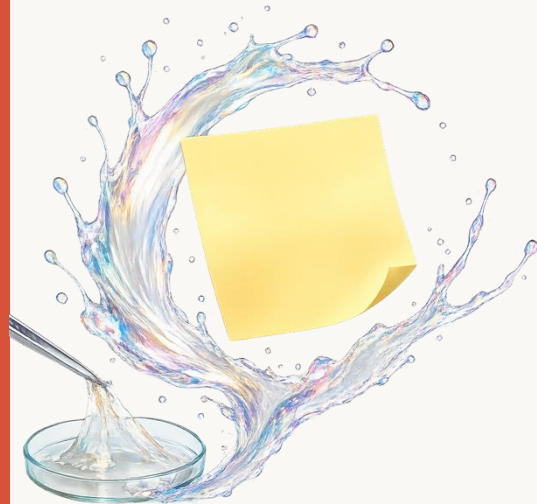
Diversity

Across a portfolio of ideas,
how spread out and
different are they?

Why diversity matters: Breakthroughs hide in the long tail of weird ideas

Creativity requires diversity. Casting a wider net prevents premature convergence on safe, conventional options and provides the raw material for breakthrough innovations.

Post-it Note (1968)



3M chemist Spencer Silver invented an adhesive that wouldn't stay stuck. Useless, until a colleague wanted bookmarks that wouldn't damage paper.

Slack (2009)

Stewart Butterfield's team built an internal chat tool while building a multiplayer game called Glitch. The game flopped. The communication tool became a \$27B company.



Four studies in four creative domains. Same pattern.

AI assistance increases the average similarity.

01



Story writing

Doshi & Hauser

Writers given AI seeds produce more novel individual stories but groups converge on similar arcs.

02



Circular-economy ideation

Boussioux, Lane, Zhang, Jacimovic, Lakhani

A single human + AI beats a human crowd on quality but loses to it on novelty and variance.

03



Humor caption contest

Salas & Hosanagar

When AI is used matters: AI in selection preserves variety; AI in ideation collapses it.

04



Story writing collab modes

Hosanagar & Ahn

Across human-led, copilot, and AI-led modes: the more humans cede, the more diversity drops.

The Crowdless Future?

Generative AI and Creative Problem Solving



Create good business ideas in the circular economy

Open call to human solvers

Human crowd

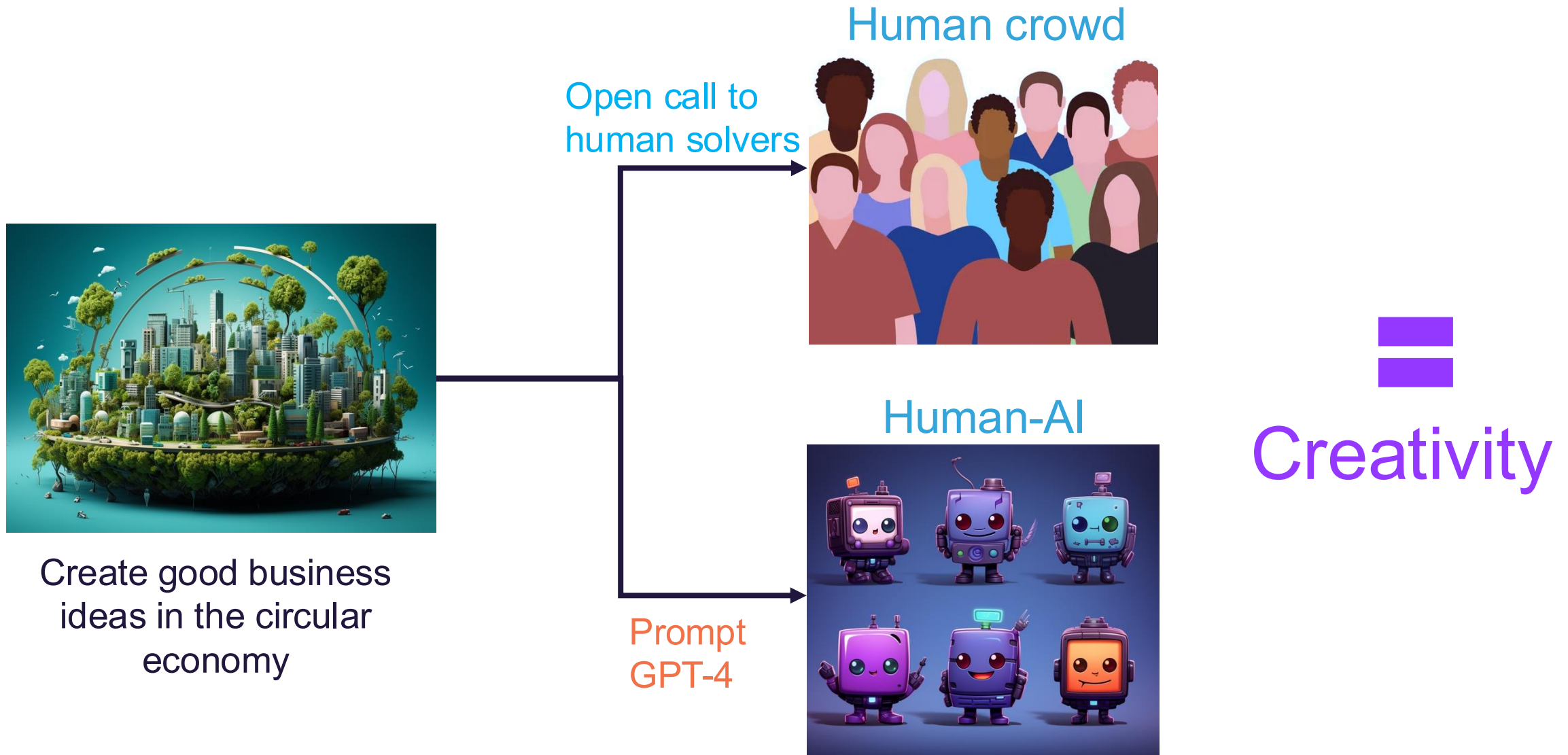


Human-AI

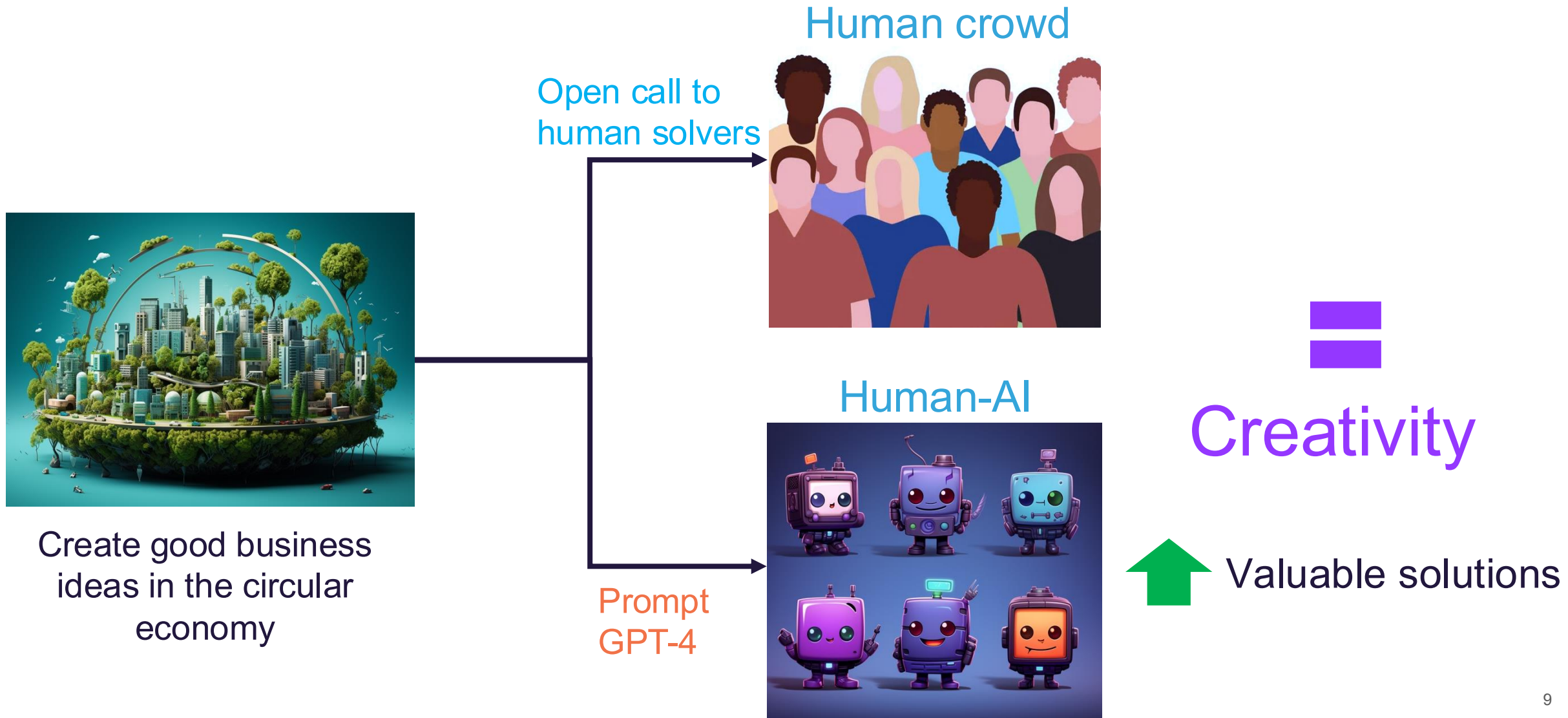


Prompt GPT-4

The Crowdless Future? Generative AI and Creative Problem Solving



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The Crowdless Future?

Generative AI and Creative Problem Solving



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Extreme, highly novel solutions



Novel solutions



Human-AI



Creativity

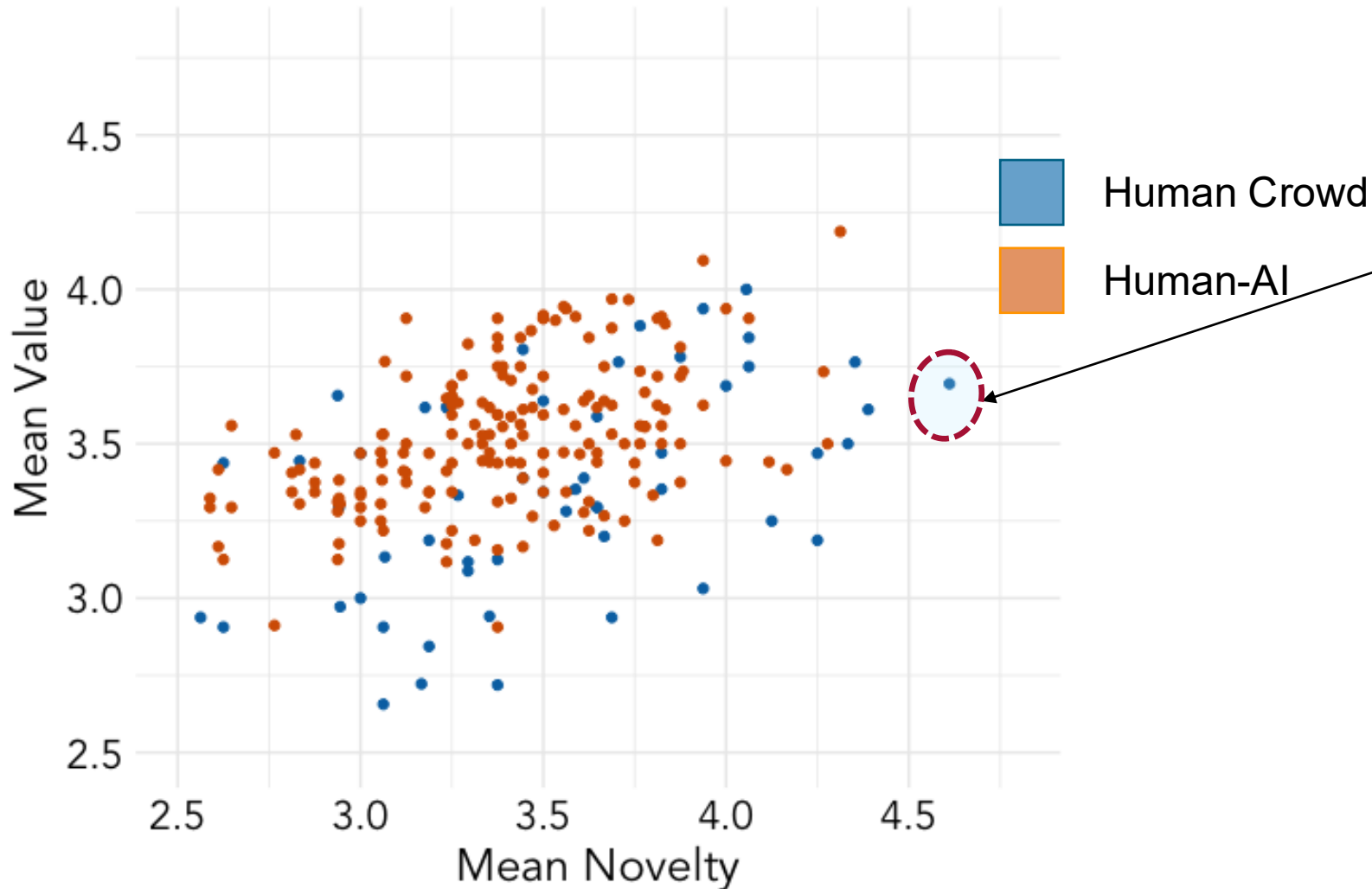


Valuable solutions

Prompt GPT-4

Who generates more **novel** ideas?

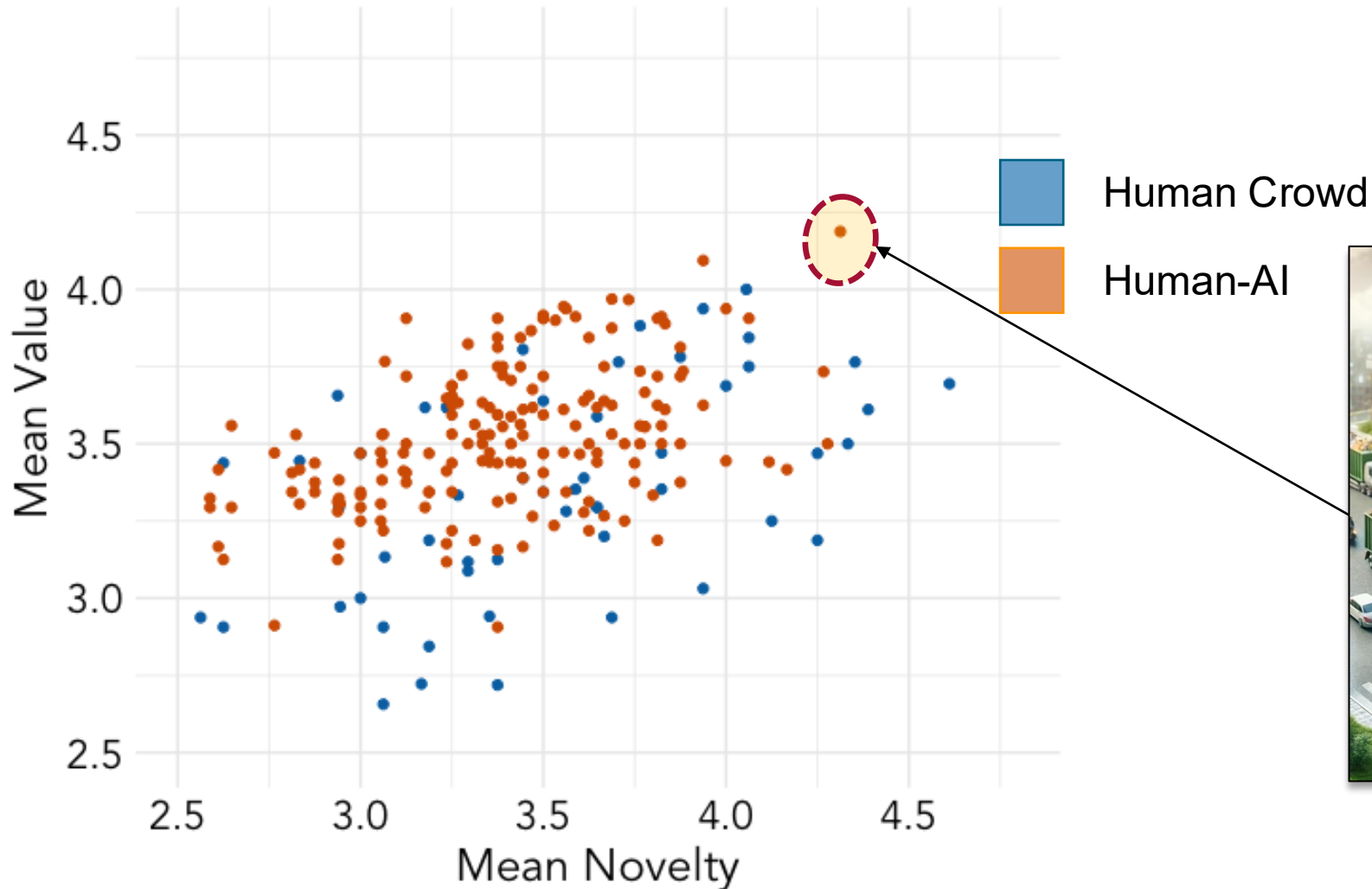
Scatter plot of mean value and novelty evaluator ratings by solution source.



Innovative bricks made of foundry dust and waste plastic featuring a Lego-like interlocking design to reduce air pollution from construction.

Who generates more **valuable** ideas?

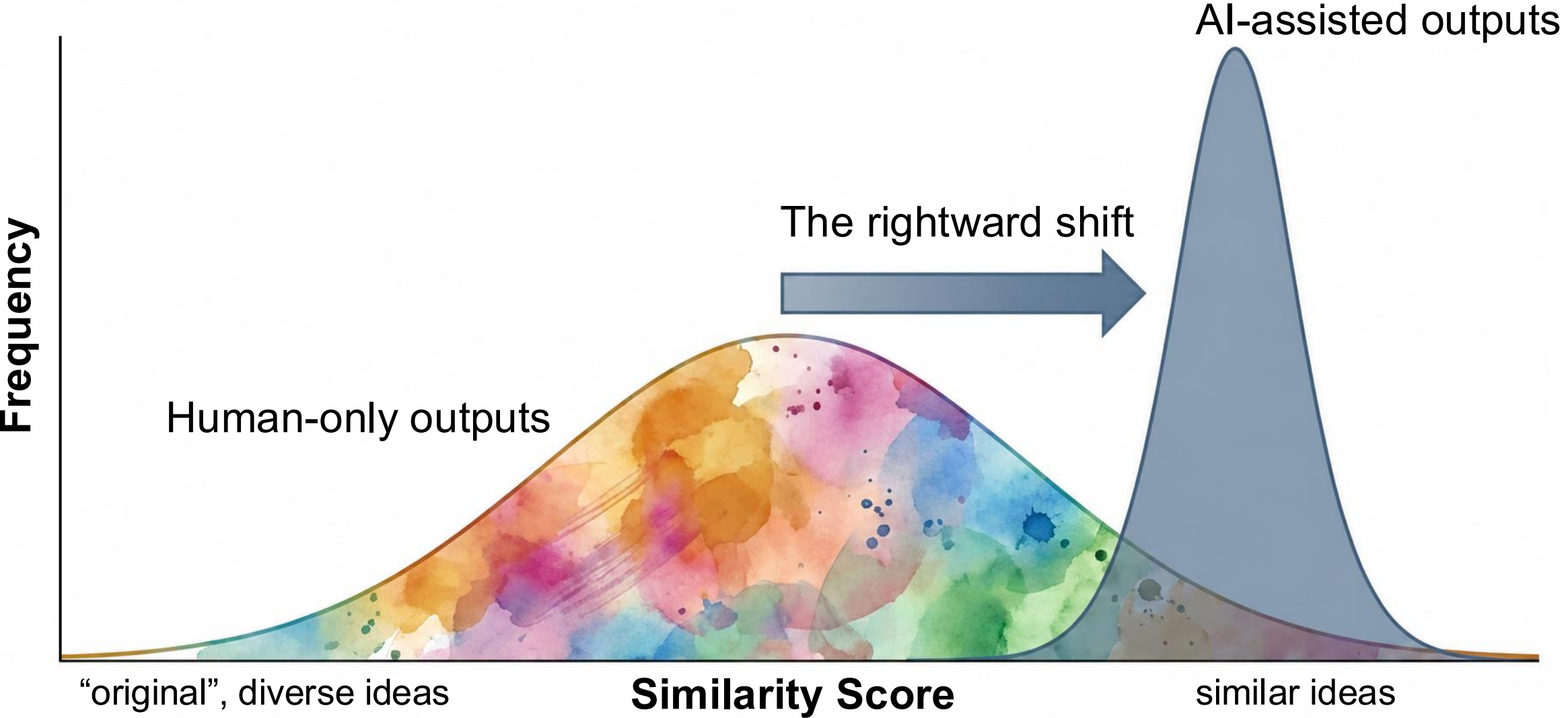
Scatter plot of mean value and novelty evaluator ratings by solution source.



Convert food waste from restaurants and households into biogas for electricity and fertilizer through bio-energy centers.



Overall, AI raises the quality but compresses the idea space.



The challenge is not whether to use AI, but how and when





A U D I E N C E P O L L

In your team or organization, how is generative AI most often used in creative work?

A Idea generation: we ask AI for first drafts, options, brainstorming









B Idea selection / refinement: humans propose, AI helps choose or polish

C Continuous copilot: AI is in the loop the whole time

D Mostly human: AI is occasional, not central

E We don't yet use AI in creative work

It's not whether you use AI: it's where

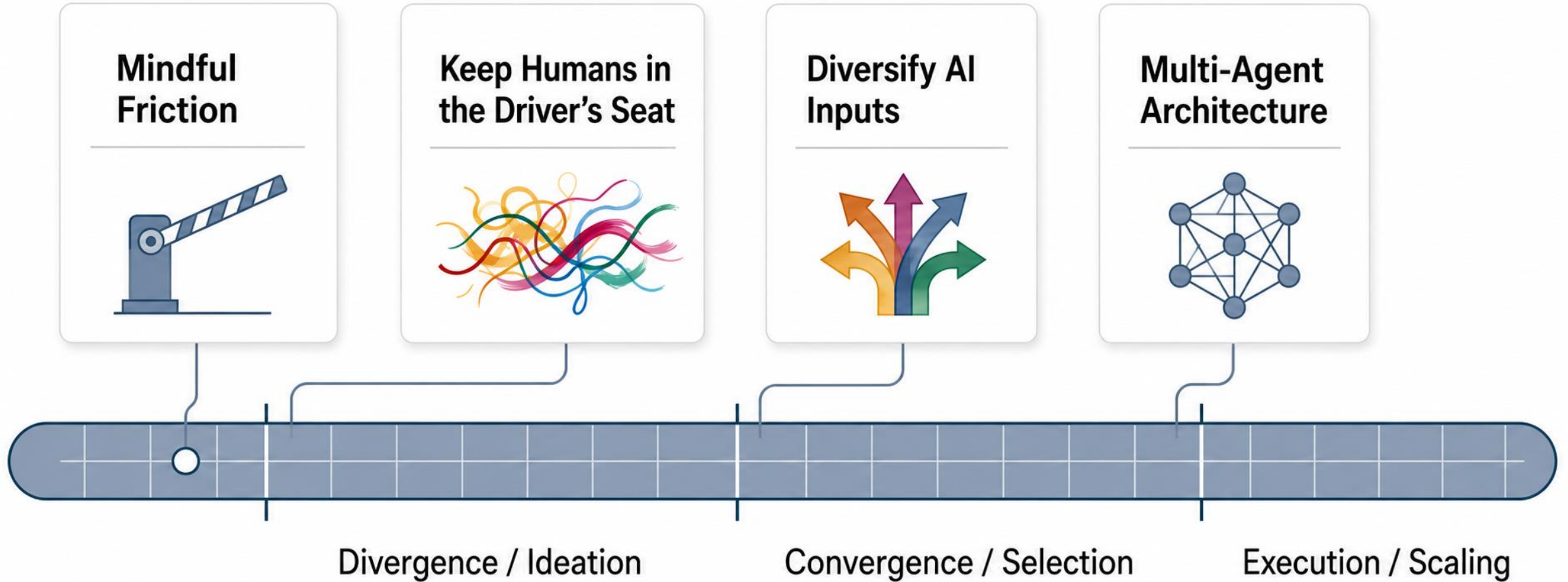
| Workflow Model | Average Output Quality | Idea Diversity |
|-------------------------------------|---|--|
| Human-Only |  Baseline |  Highest |
| AI in Ideation |  High |  Destroyed (Severe Homogenization) |
| AI in Selection (Human Ideation) |  High |  Preserved (Comparable to Human) |
| AI in Both |  Highest |  Narrowed |

Key Takeaway: AI used in idea generation consistently reduces diversity. AI used strictly in idea selection preserves variety at human levels.

A large, glowing golden sphere, resembling a planet or a sun, is the central focus. It is surrounded by a dense field of dandelion seeds, which are scattered across the black background. The seeds are illuminated from behind, creating a bright, golden glow. The overall composition is artistic and evocative, suggesting themes of creation, collaboration, and the future of technology.

So how do we ensure a creative
human-AI collaboration?

Four strategies to keep ideas diverse while keeping AI's edge



Keep humans in the driver's seat for ideation

Let AI enter after the divergent thinking is done, not before.



THE PRINCIPLE

Sketch first. Storyboard first. Outline first. Only then bring in AI.

This sequencing preserves variety while still capturing efficiency and ensures AI complements, rather than substitutes for, the messy human capacity for surprising leaps. **Diversity tends to collapse in proportion to control ceded to AI.**

CASE · UBISOFT GHOSTWRITER

Scriptwriters define character and context first.

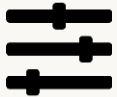
Only then does Ubisoft's in-house AI tool, Ghostwriter, draft the high-volume side dialogue spoken by NPCs in open-world games.



Image: Ubisoft

Diversify AI inputs

Homogenization comes from everyone using the same tools, the same way, and models trained to provide “average”, good answers. We have to push the models out of their typical output distribution!

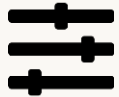


VARY HOW AI IS USED

- Rotate prompts. Ask the model to “argue against this idea.”
- Role-play perspectives. Critic, Gen-Z consumer, competitor.
- Use sophisticated prompting and context engineering. It substantially increases idea variance.
- Inject company-specific or external data.

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Key prompt-engineering techniques



Persona-based prompting & Role-playing



Context (relevant background to answer)



Few-shot prompting



Chain-of-thought (“think step-by-step”)

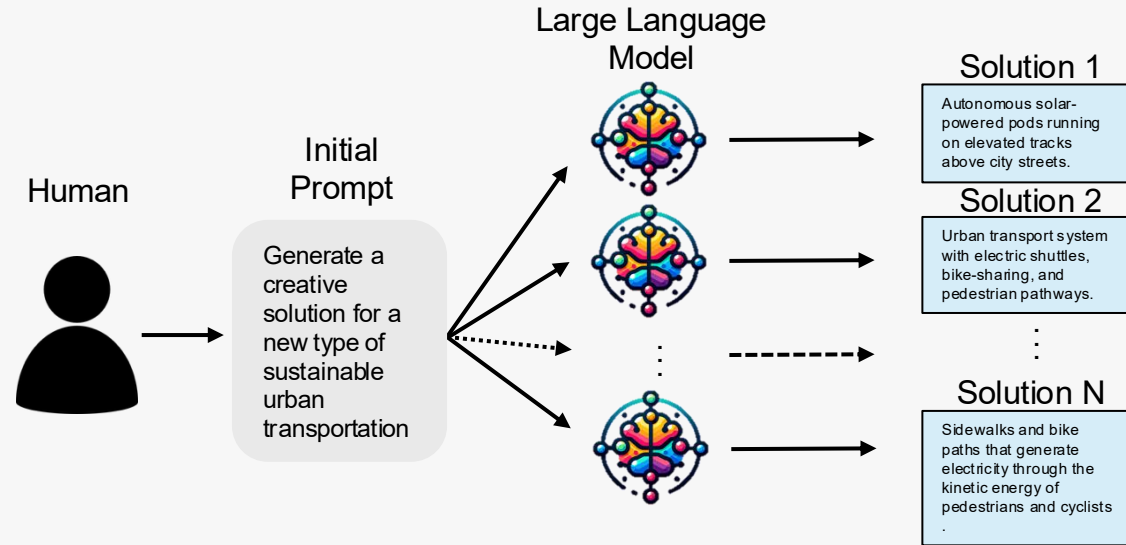


Priming (additional context and instructions for superior results)

Prompting technique for human-guided search

Independent Search

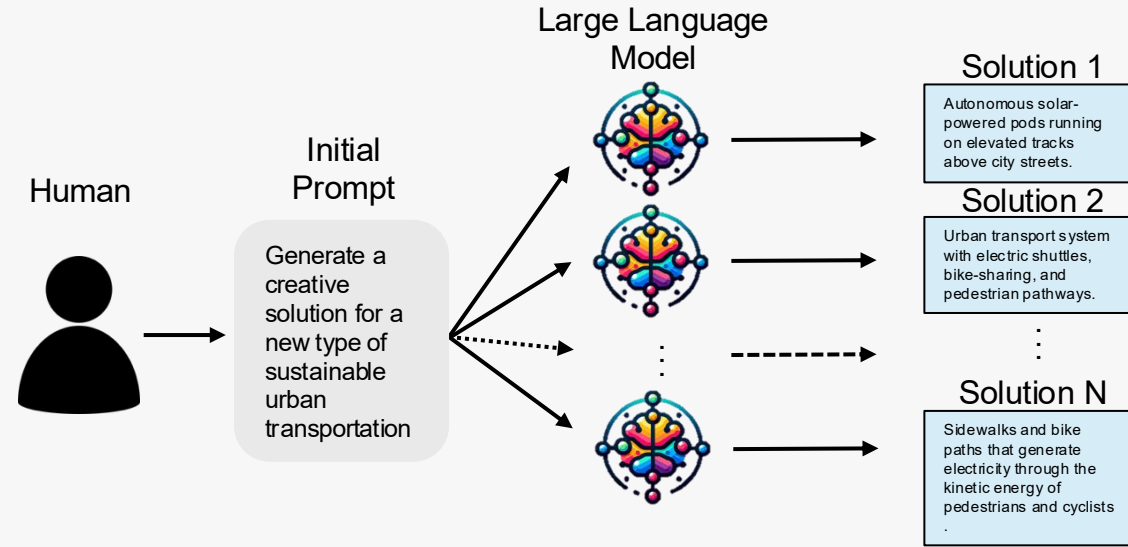
The human user provides the initial prompt, and the LLM generates multiple independent solutions.



Prompting technique for human-guided search

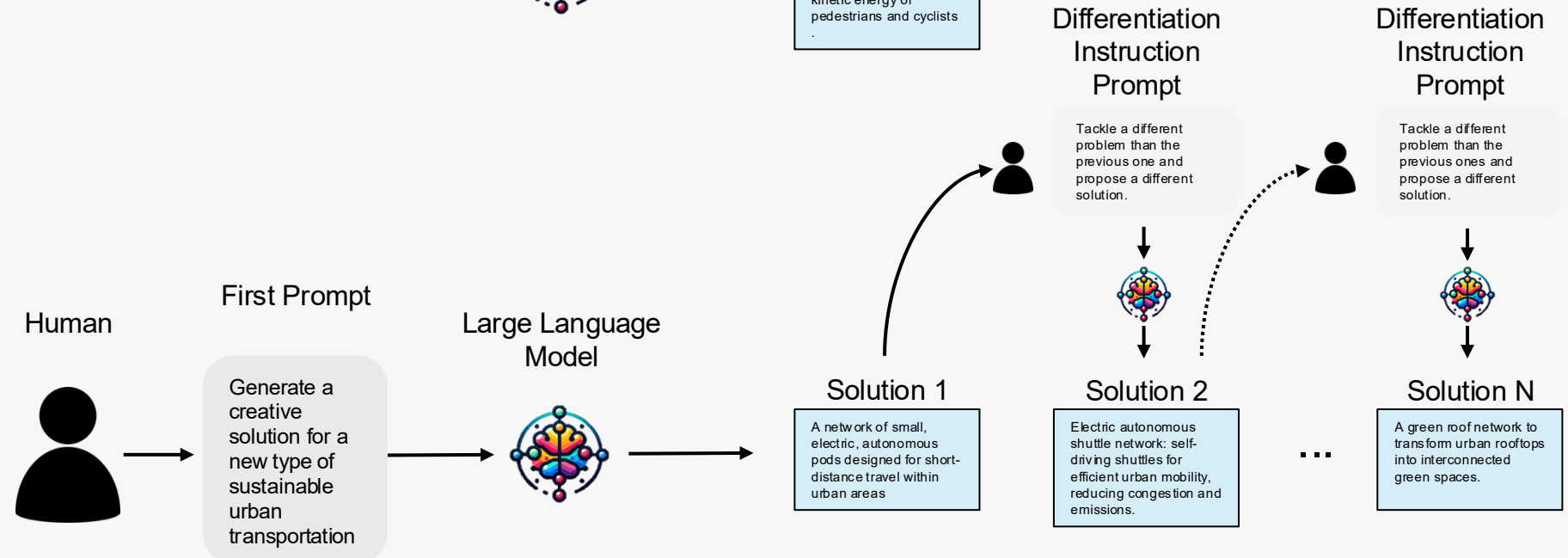
Independent Search

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Differentiated Search

The human user provides the first prompt and inserts a differentiation prompt to diversify the subsequent solution after each individual solution the LLM generates.



Leverage multi-agent, multi-model approaches Use harnesses. Train a creative model from scratch.



DIVERSIFY THE AI VOICES

Run multiple models on the same problem. Have one agent generate, another critique. Use specialized agents for different sub-problems.

This counteracts model-specific blind spots and creates productive tension across perspectives: the multi-agent equivalent of a diverse team.

CASE · COLGATE-PALMOLIVE

A pipeline of distinct AIs, not one channel.

AI #1

Mines consumer data for unmet needs.

AI #2

Proprietary model generates product concepts.

AI #3

“Digital twins” simulate consumer reactions.

Humans guide each handoff.

The GenAI Focus Shifts to Innovation at Colgate-Palmolive

The consumer products company is using generative AI for the full innovation cycle, from synthesizing consumer insights and highlighting unmet consumer needs to suggesting new product concepts.



Thomas H. Davenport and Randy Bean • January 30, 2025
Reading Time: 5 min

Build guardrails and mindful friction

Small design choices that keep people from becoming passive consumers of AI output.



DESIGN FRICTION ON PURPOSE

- Require human-generated ideas first.
- Make people justify why an AI suggestion was selected over alternatives.
- Document the rationale for AI vs. human picks.
- Periodically work AI-free to keep the muscle.

THE EVIDENCE

Without guardrails, cognition atrophies.

[Bastani et al. \(2025\)](#)

Students with unrestricted AI access performed significantly worse once the access was removed.

[Dell'Acqua et al. \(2026\)](#)

Consultants who blindly adopted AI underperformed those who maintained critical oversight.

A painting of a path through a garden. The path is made of stone and leads into a dense garden with many trees and flowers. The trees have green and yellow leaves, and the flowers are in shades of purple, blue, and red. The overall scene is peaceful and natural.

Conclusion

If everyone uses AI the same way, no one stands out.

An organization's competitive edge in the years to come will be its ability to **cultivate a diverse set of human ideas**, complemented by an efficient, research-backed workflow that uses AI's capabilities at the right time.

Three moves you can make now

01

Audit one creative workflow

Where does AI enter? Generation, selection, or both? If it's in generation, that's where diversity is leaking.

02

Add one ideation rule

Require human-first sketches, or rotating prompts, or 3 ideas before opening Claude.

03

Stress-test with a multi-voice run

Run the same brief through two different models (or two prompting styles). Measure: how different are the outputs?



Let's build the future of human-AI collaboration!

Léonard Boussioux

Foster School of Business
University of Washington

leobix@uw.edu | www.leobix.com



THE TEAM

Anil Doshi · UCL School of Management

Oliver Hauser · University of Exeter

Kartik Hosanagar · Wharton, University of Pennsylvania