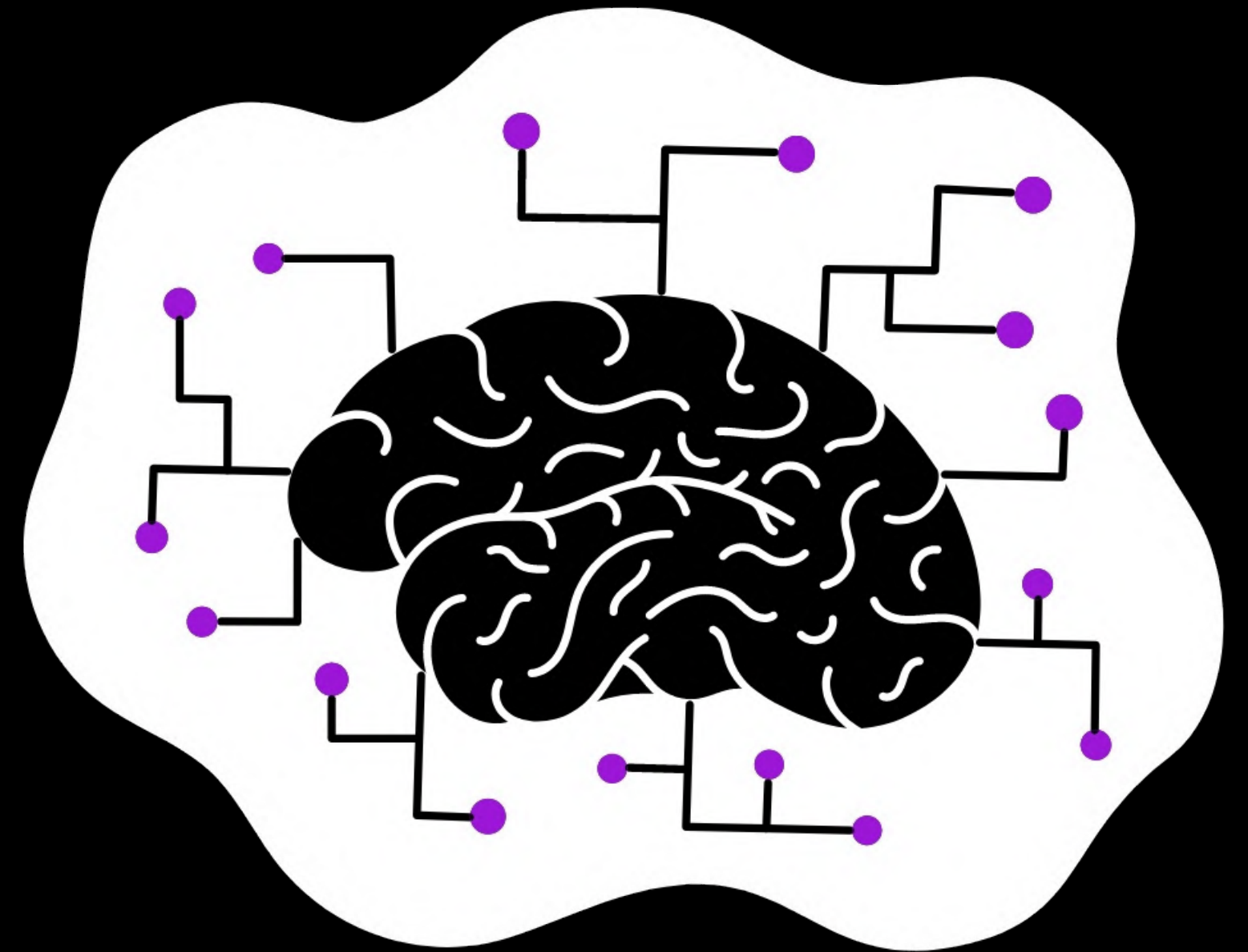# Behavioural Science x AI

UNLOCKING BETTER DECISION-MAKING

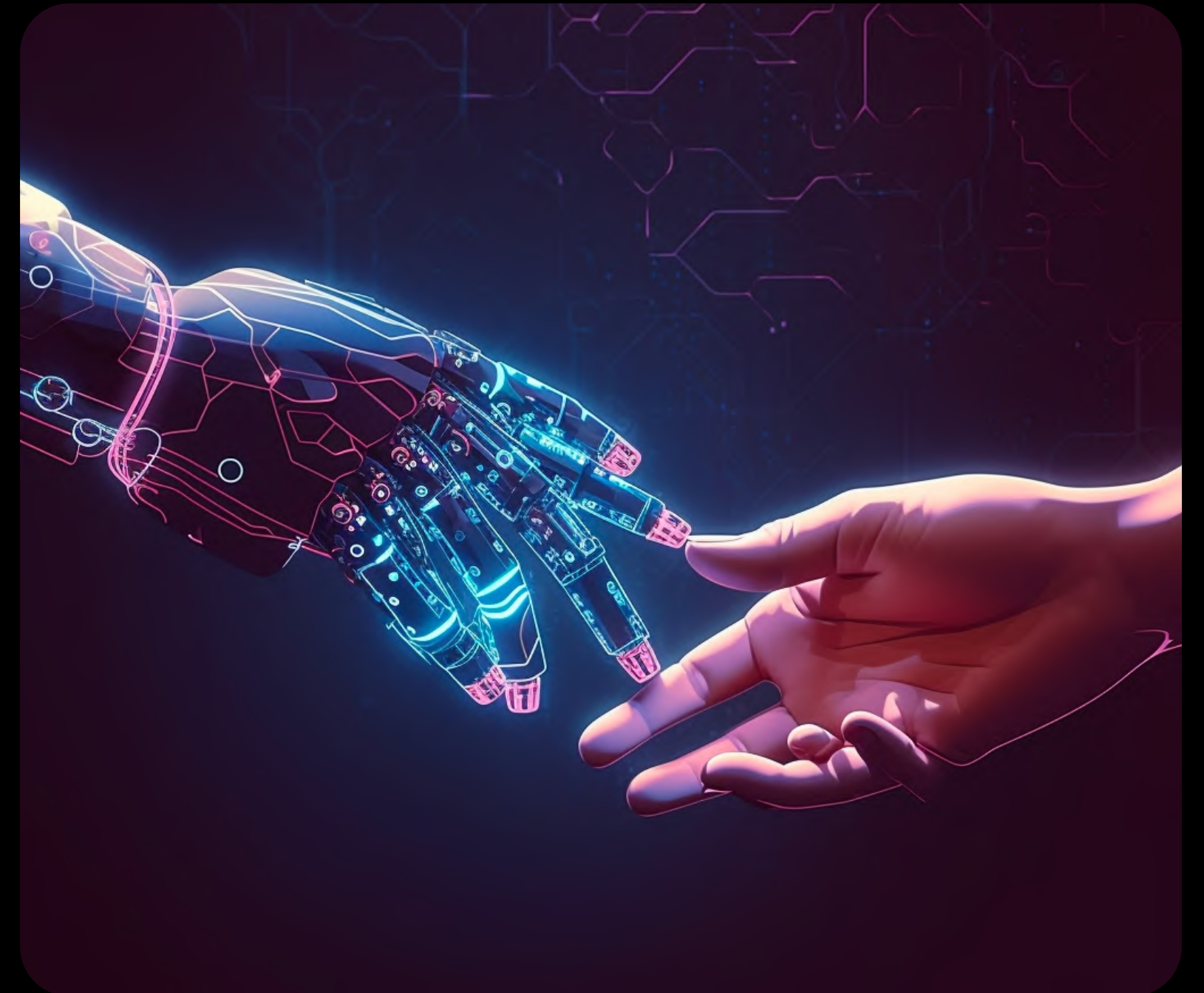Laura de Molière   Samuel Salzer

Mind meets Machine

The aim of this presentation is to help improve your decision-making. More specifically;

- Part 1: **How to make good decisions about AI**

- Part 2: **How to make better decisions about humans**
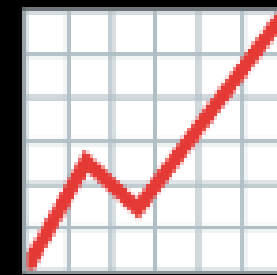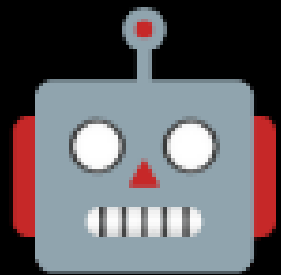
Make good decisions about AI.

Establishing your mental model

The key variables in the AI equation

How we can use AI to generate a positive impact

AI model   **+**   **Human**   **=**   **Potential**

GPT-4 by Open AI is impressive*

Word Limit

25,000

3,000

GPT-3   GPT-4

College level performance

GPT-4 outperforms ChatGPT by scoring in higher approximate percentiles among test-takers.

Uniform Bar Exam

10th	90th
ChatGPT	GPT-4

Biology Olympiad

31st	99th
ChatGPT	GPT-4 (with vision)

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*The current AI hype is driven by interfaces.

NOT JUST BETTER MODELS.

ChatGPT

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The key variables in the AI equation
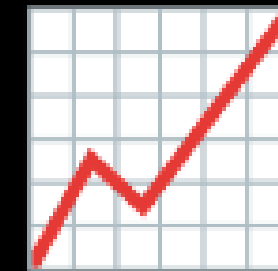
How we can use AI to generate a positive impact

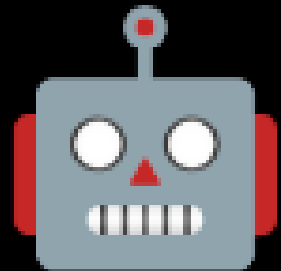**AI model** + **Interface** + **Human** = **Potential**

2. Interfaces 🖥️

LLM   Interface
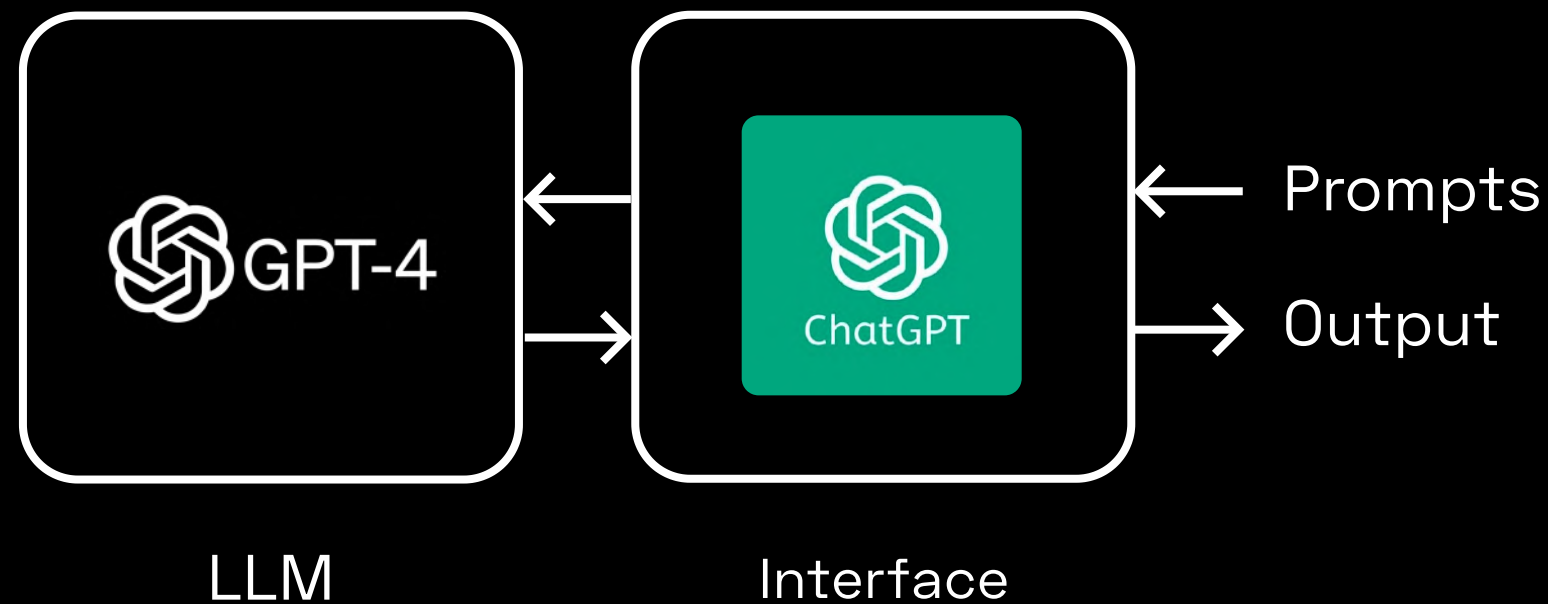
ChatGPT is an AI tool built on OpenAI's GPT-4, a Large Language Model (LLM).

The GPT-4 API can be used independently (widely used in other AI tools).

Prompts enable human communication with LLMs. Prompt engineering improves output by providing detailed instructions and context.

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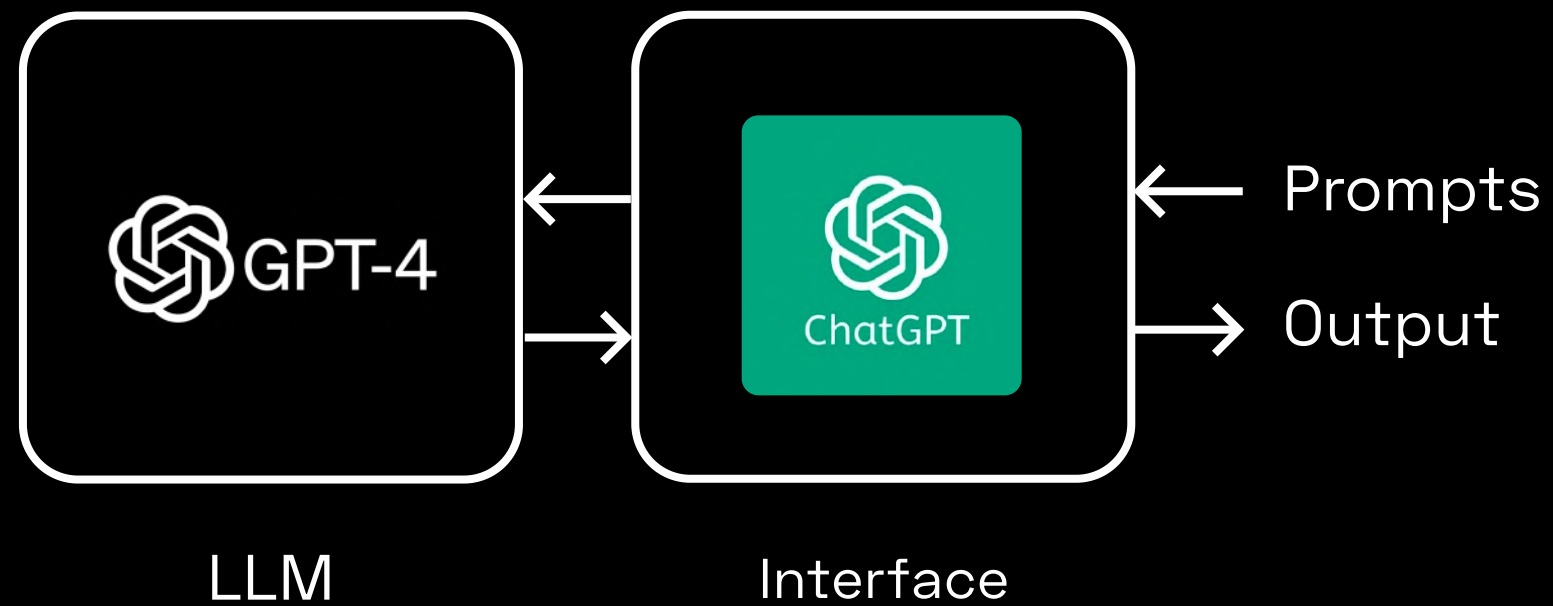
Interfaces help us overcome

~~Information~~ context asymmetry

GPT-4

ChatGPT

← Prompts

→ Output

LLM   Interface

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So, what about us? 😅

THE ROLE OF HUMANS IN THE AI EQUATION

3. Humans 🙋‍♀️

Competitive Advantage: Human vs AI

	Human Expert	AI
Breath	🟥	🟩🟩🟩
Speed	🟥	🟩🟩🟩
Cost	💵 💵 💵	💵
Availability	🟥	🟩🟩🟩
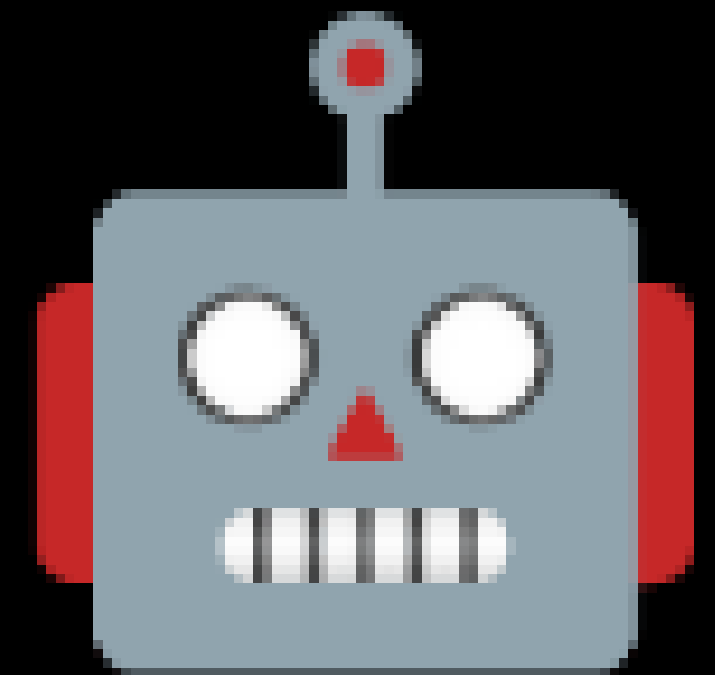
3. Humans 🙋‍♀️

Human-**level** intelligence.

But not human-**like** intelligence.

3. Humans 🙋‍♀️

Competitive Advantage: Human vs AI

	Human Expert	AI
Memory	🟨🟨	🟥→🟨🟨
Depth	🟩🟩🟩	🟨🟨
Contextual understanding	🟩🟩🟩	🟥
'Breakthrough Insight'	🟩🟩🟩	🟥

Your <u>expertise</u> determines your AI potential

Your expertise determines your AI potential

Domain Expertise

Domain Expert

High domain, low AI expertise

Expert^

High domain, High AI expertise

Novice

Low domain, Low AI expertise

AI Enthusiast

Low domain, High AI expertise

AI Expertise

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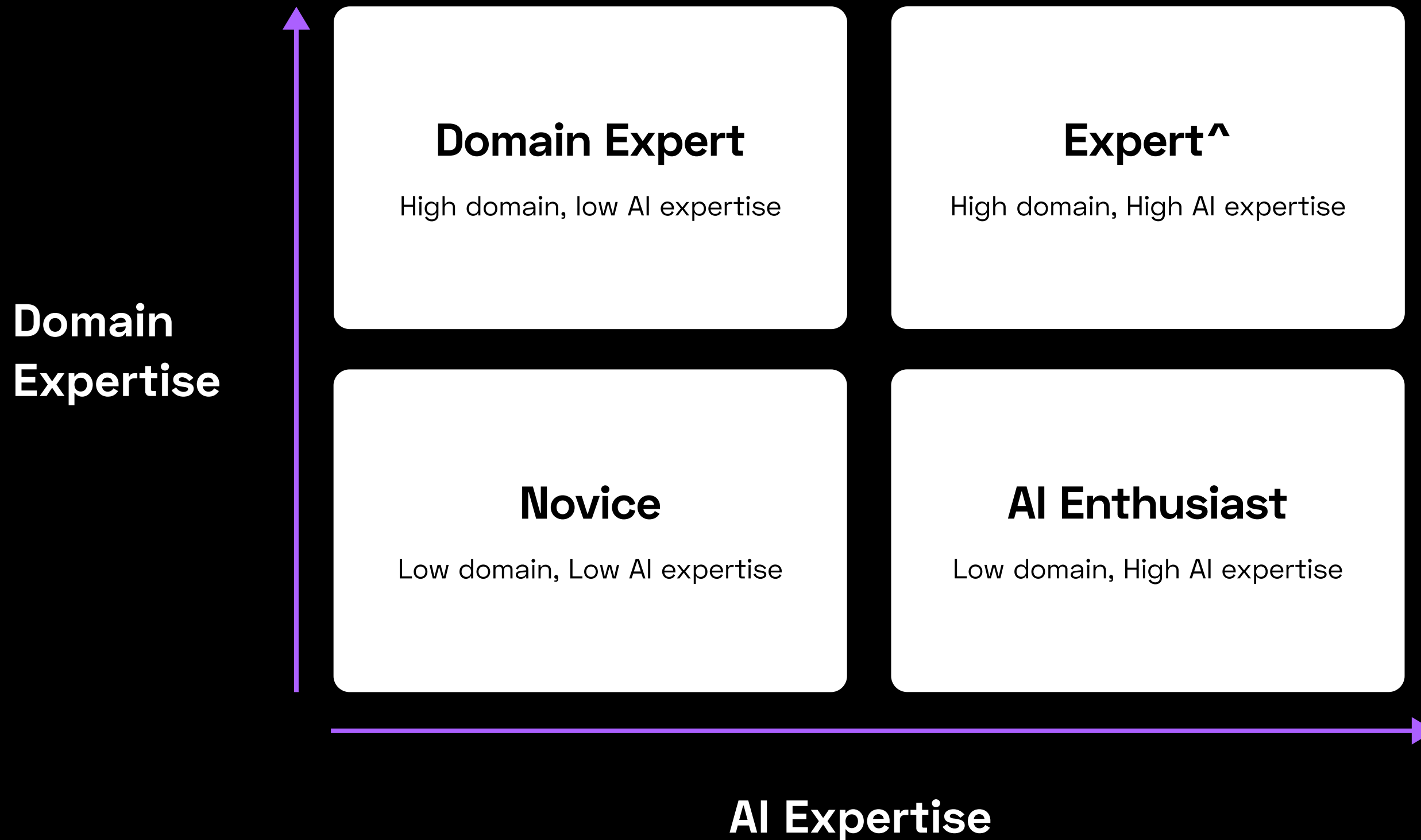
How much value can you generate?

Output Quality

Domain Experts

Novices

Experts^

AI Enthusiasts

Output Quantity

How much can AI boost quality?

Output Quality

Domain Experts

Novices

Experts^

AI Enthusiasts

What can people do here?
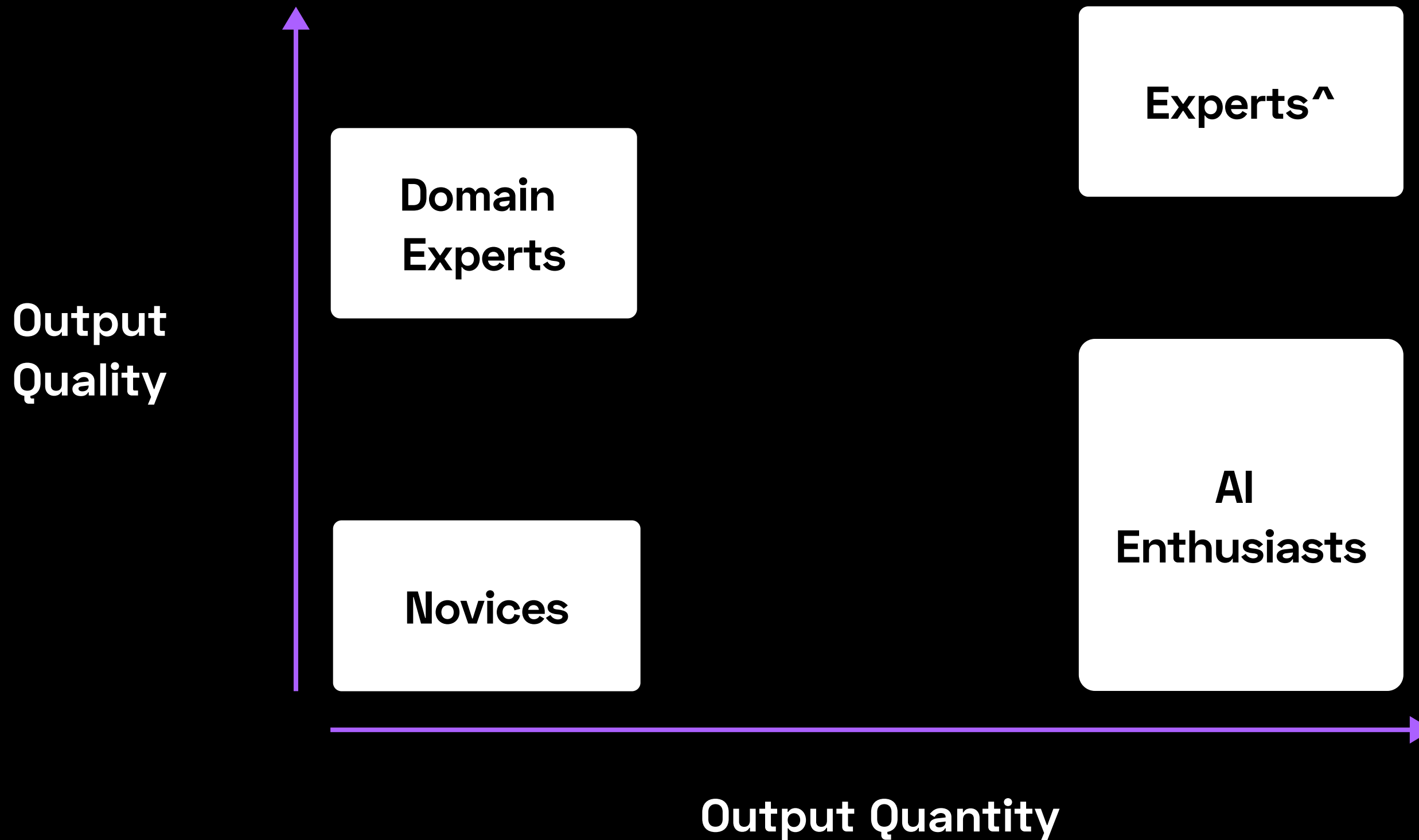
Output Quantity
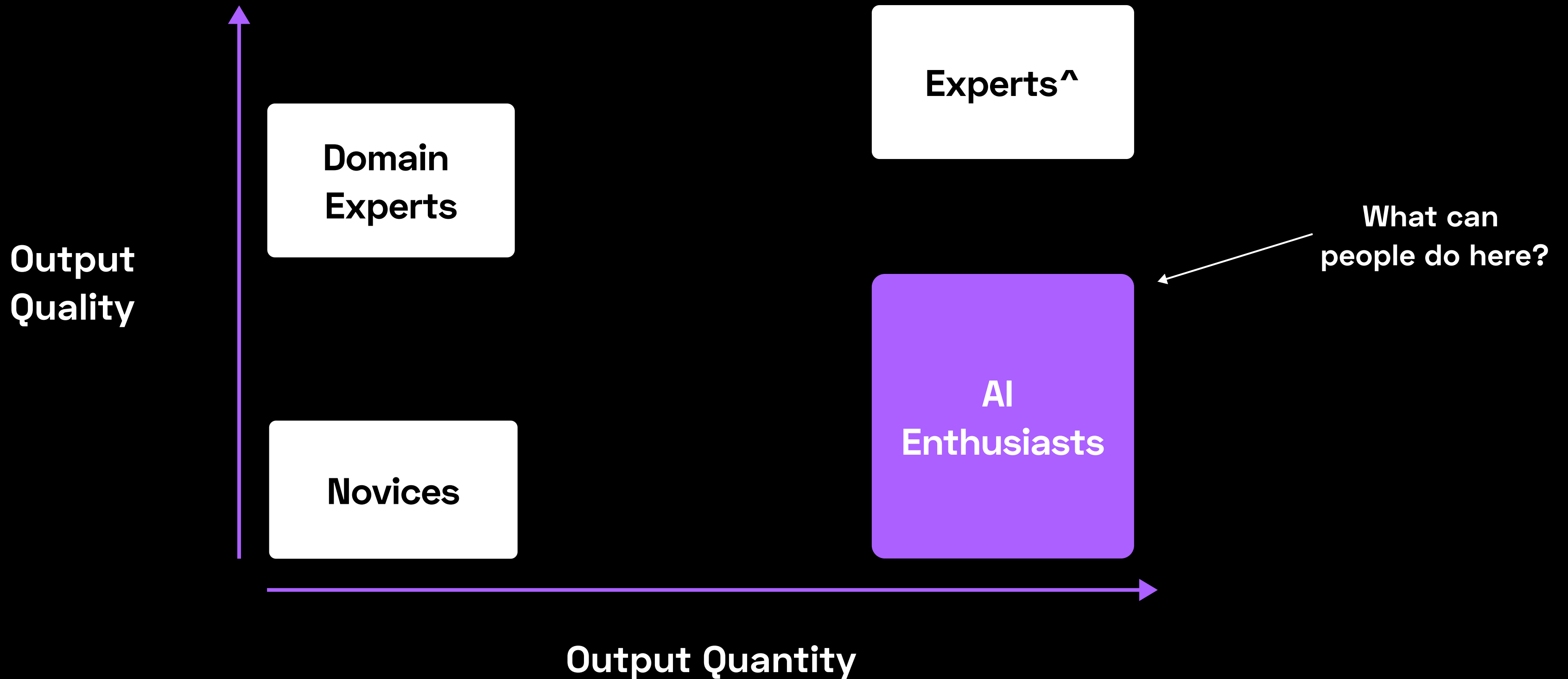
Low expertise + AI = efficiently bad

❌ Don't know what good looks like
❌ Write poor prompts or ask the wrong questions
❌ Easily fooled by hallucinations
❌ Can create A LOT of generic material

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Early research support

"Results show 20% increase in quality in ½ the time"

Results from using ChatGPT 3.5

Experimental Evidence on the Productivity Effects of Generative Artificial Intelligence

Shakked Noy
MIT

Whitney Zhang
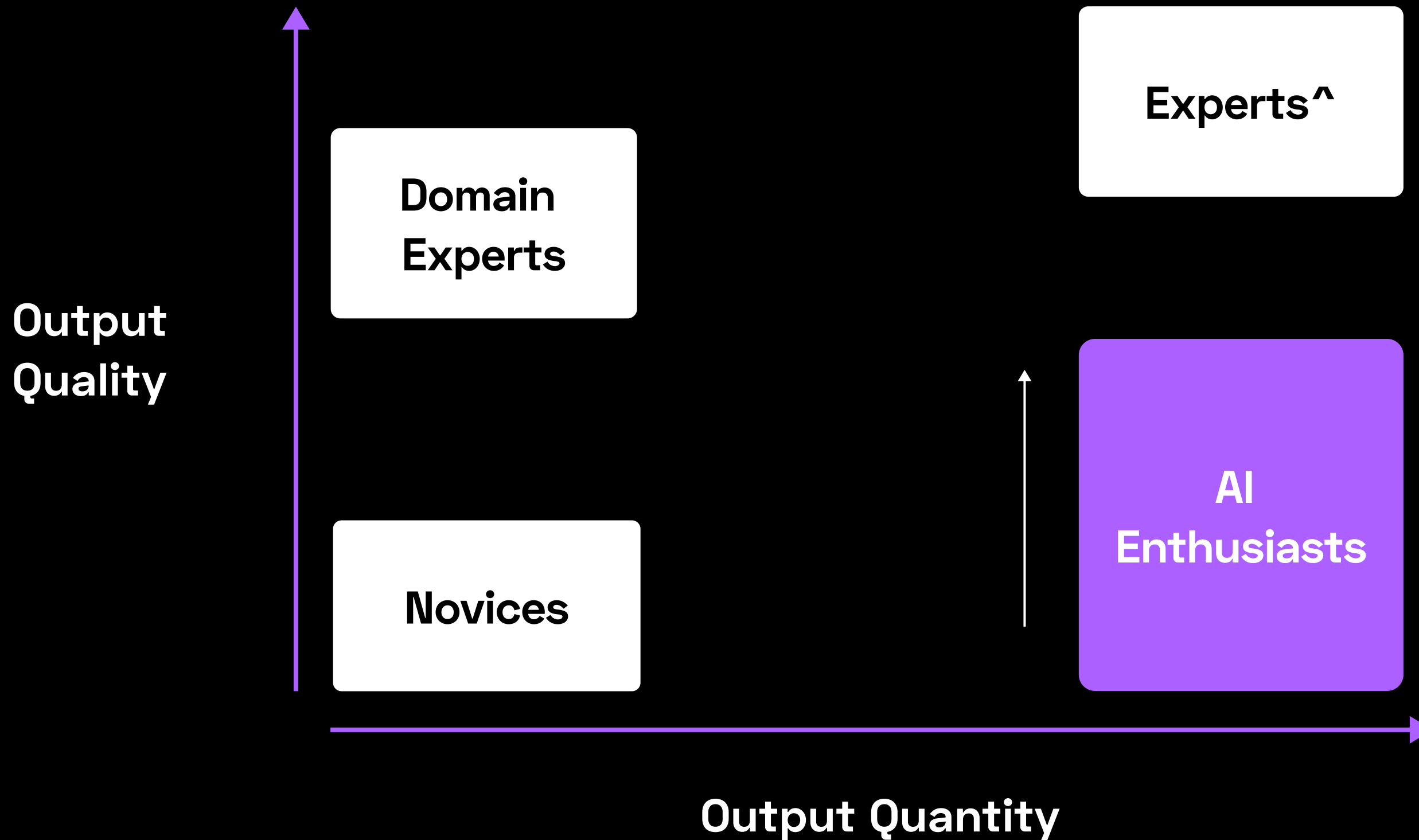MIT

March 2, 2023
Working Paper (not peer reviewed)

Abstract

We examine the productivity effects of a generative artificial intelligence technology—the assistive chatbot ChatGPT—in the context of mid-level professional writing tasks. In a preregistered online experiment, we assign occupation-specific, incentivized writing tasks to 444 college-educated professionals, and randomly expose half of them to ChatGPT. Our results show that ChatGPT substantially raises average productivity: time taken decreases by 0.8 SDs and output quality rises by 0.4 SDs. Inequality between workers decreases, as ChatGPT compresses the productivity distribution by benefiting low-ability workers more. ChatGPT mostly substitutes for worker effort rather than complementing worker skills, and restructures tasks towards idea-generation and editing and away from rough-drafting. Exposure to ChatGPT increases job satisfaction and self-efficacy and heightens both concern and excitement about automation technologies.

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How much can AI boost quality?

Output Quality

Output Quantity

Domain Experts

Novices

Experts^

AI Enthusiasts

Why having domain expertise + AI expertise pays off
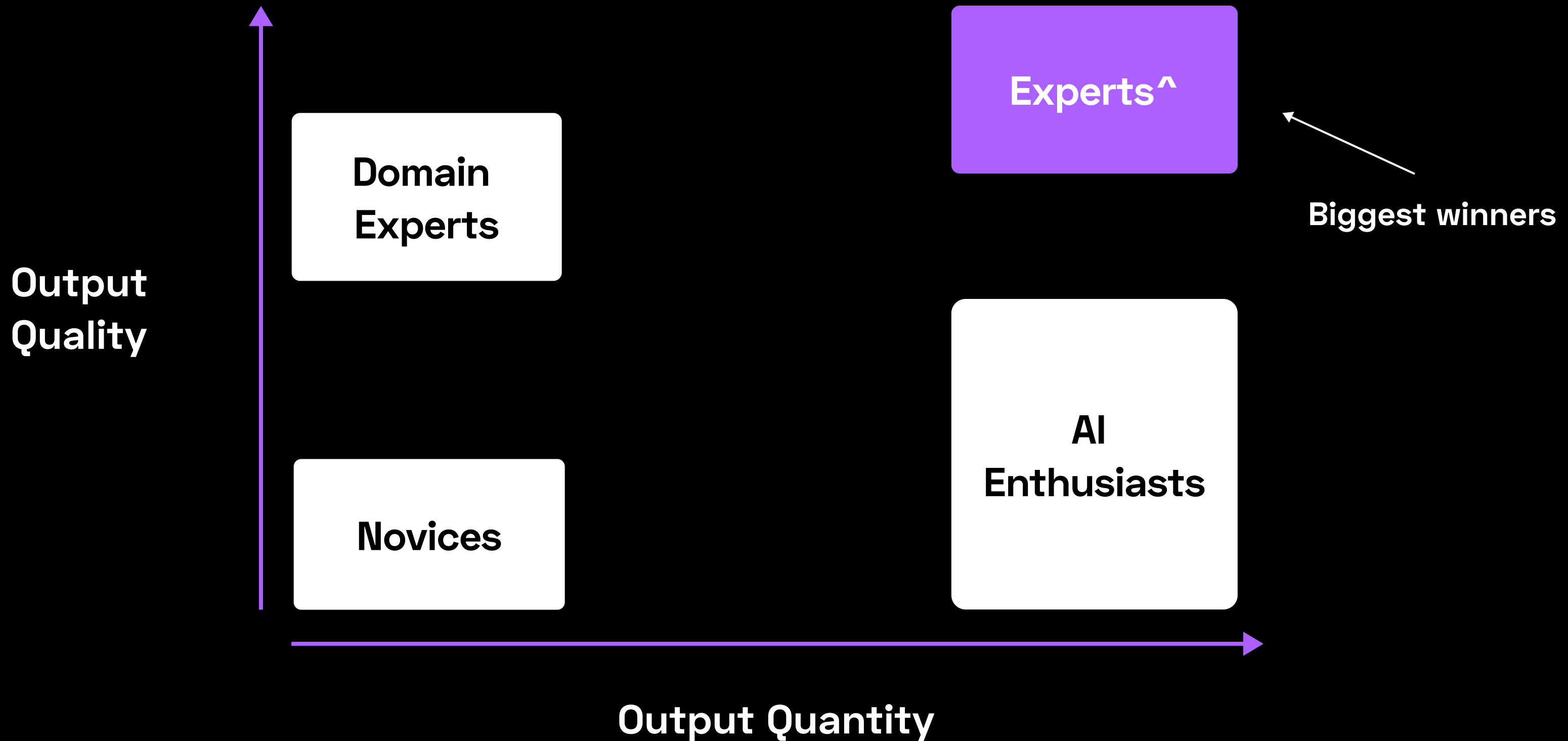
Output Quality

Domain Experts

Novices

Experts^

Biggest winners

AI Enthusiasts

Output Quantity

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High expertise + AI
= More and better

✅ Better feedback loop: know what good output looks like
✅ Ask questions that extends expertise
✅ Easily spots hallucinations or generic output
✅ Can spend more time on hard (impactful) problems

Domain expertise risk

Output Quality

Domain Experts

Experts^

Great starting point

Novices

AI Enthusiasts

Output Quantity
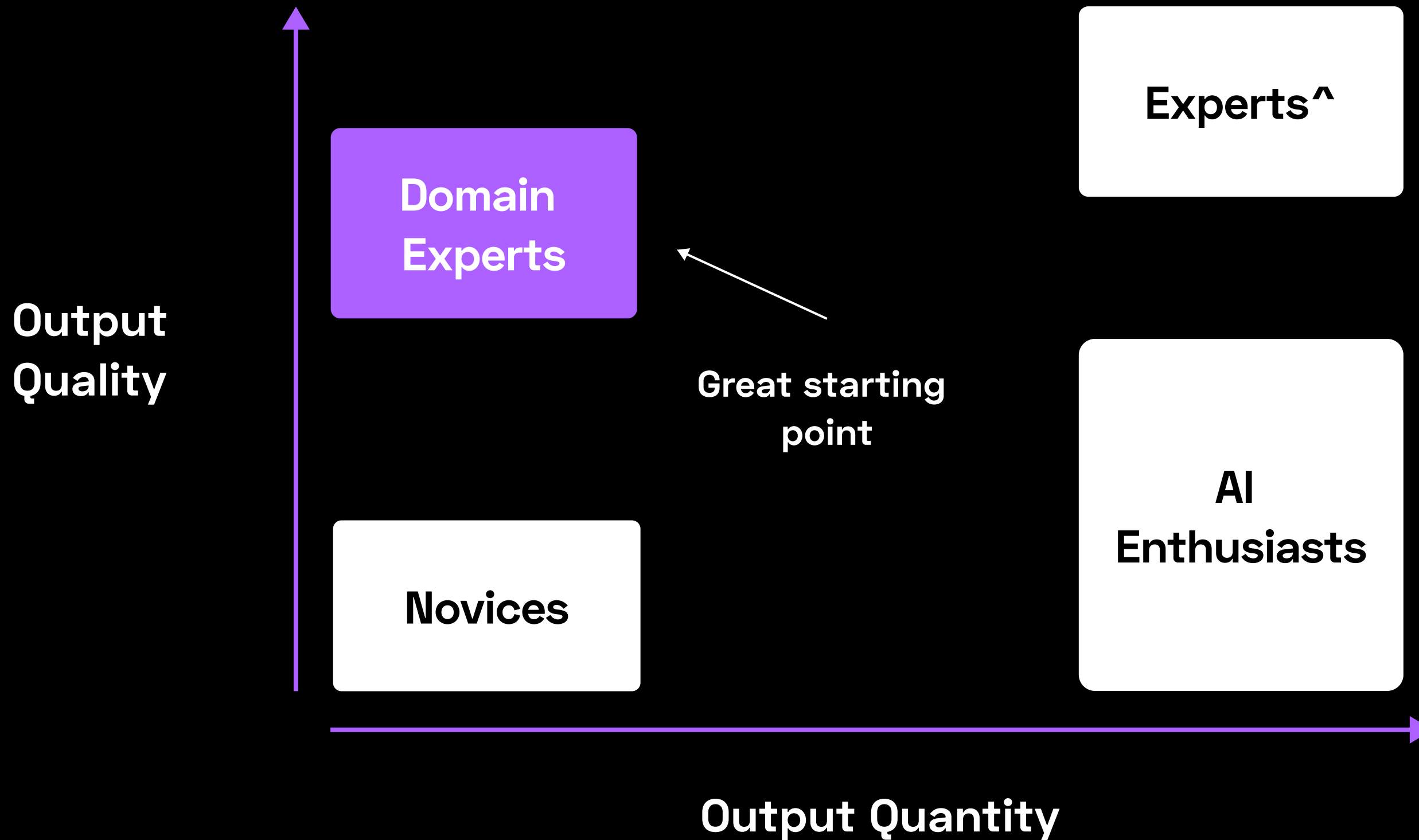
Wrapping up Part 1

How to make good decisions about AI

1. **Outsourcing tasks is a skill. Start practicing.**

Time to leverage your expertise. Opportunity Cost > Switching Cost.

2. **Make AI do things, not think for you.**

Provide a specific objective for output, format for answer, and list of things to avoid

3. **Your output will only be as good as your prompt**

Prompts provide context. Context is how you help the AI model understand what you need.

Wrapping up Part 1

Past, present and future of AI

AI outperforming average human in most tasks

Solution → Aim for Einstein
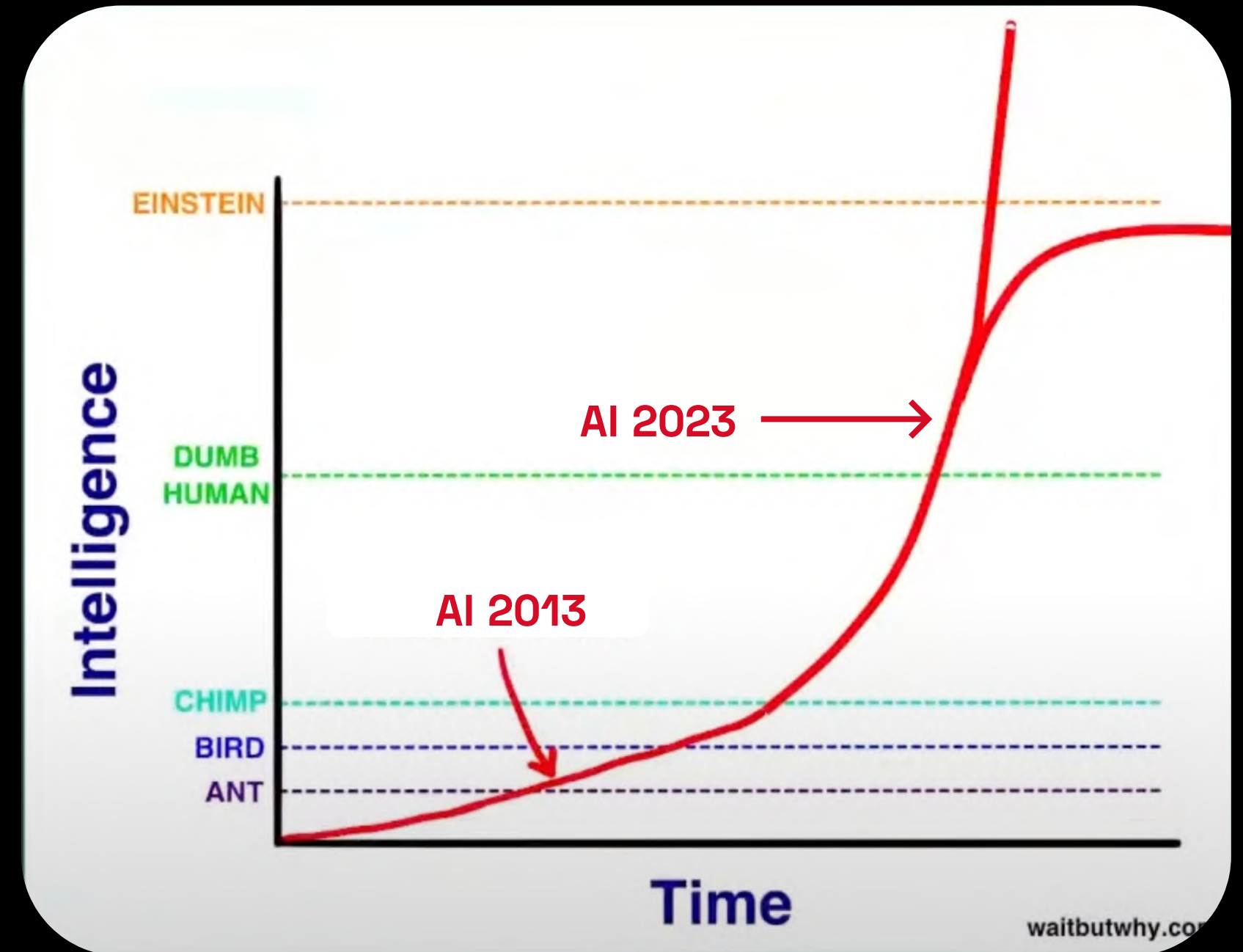
Make good decisions about AI. Make better decisions about humans.

What is applied behavioural science?

Making better assumptions about behaviours as part of decision and design processes

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What do applied behavioural scientists do?

| Define the problem | Define behaviours | Understand barriers | Design solutions | Monitor & evaluate behaviours |

1. Defining the problem

Divergent thinking

Convergent thinking

1. Defining the problem

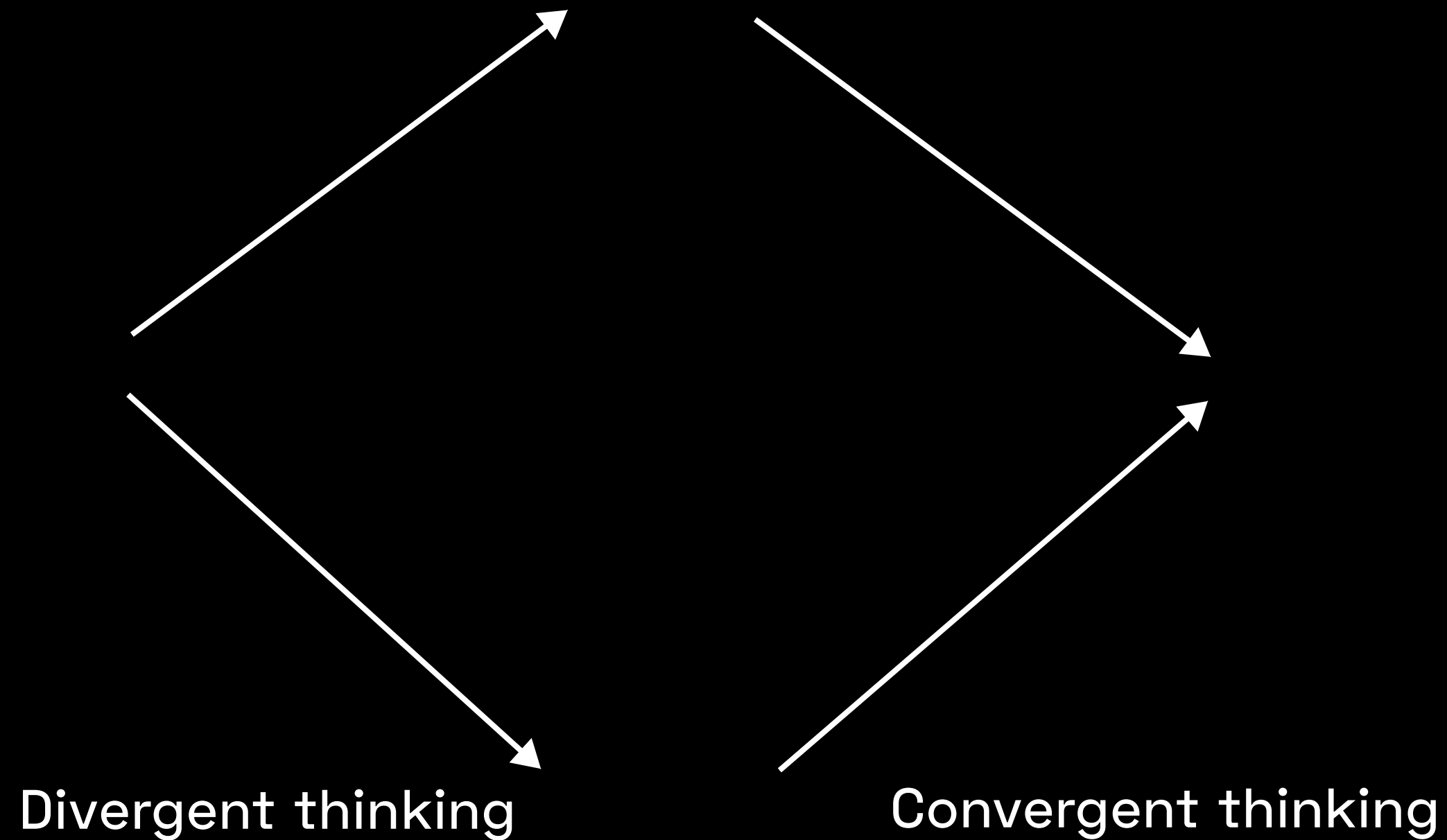| Academic Field	How it Relates to the Problem	Questions Posed
Economics	Economists view tax evasion as a cost-benefit analysis problem. They study financial incentives and disincentives for tax compliance.	Why do individuals choose to evade taxes despite the risk? How does the economic system encourage or discourage tax evasion?
Sociology	Sociologists look at tax evasion in the context of social norms, group behavior, and societal structures.	What societal norms or pressures lead people to evade taxes? How do social structures influence an individual's decision to pay or not pay taxes?
Psychology	Psychologists delve into individual motivations, perceptions, and cognitive biases that may lead to tax evasion.	How does an individual's perception of fairness, risk, and reward influence their decision to evade taxes? What cognitive biases are at play?
Law	Law studies the legal systems, rules, and regulations surrounding tax collection, and their enforcement.	Are the current tax laws adequate in discouraging evasion? How effective is law enforcement in deterring tax evasion?
Anthropology	Anthropologists examine cultural attitudes towards taxation, such as the perceived role of the individual versus the community, or attitudes towards government and societal obligations.	How do cultural attitudes influence tax compliance? Are there cultural norms or values that promote tax evasion?

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Identifying relevant audiences

There has been a rise in verbal abuse of girls in schools, linked to school-aged boys in the UK viewing material online by misogynist content creators.
List all the actors relevant to the problem and their key behaviours.

1. **School-aged boys**: They are viewing misogynistic content online, which is influencing their behavior and leading to verbal abuse of girls in schools.
2. **Girls in schools**: They are the victims of the verbal abuse. Their experiences and responses are a crucial part of understanding and addressing the problem.
3. **Misogynist content creators**: They are producing and disseminating the harmful content that is influencing the boys' behavior.
4. **Online platforms**: These are the websites, social media platforms, and other digital spaces where the misogynistic content is being shared and viewed.
5. **Parents and guardians**: They have a role in monitoring and guiding the online activities of the boys, and in responding to the problem once they become aware of it.
6. **Teachers and school administrators**: They are responsible for maintaining a safe and respectful environment in schools, which includes addressing instances of verbal abuse and providing education about respect and equality.
7. **Policy makers and regulators**: They have the power to create and enforce laws or regulations that could address the problem, such as restrictions on harmful online content

Identifying relevant audiences
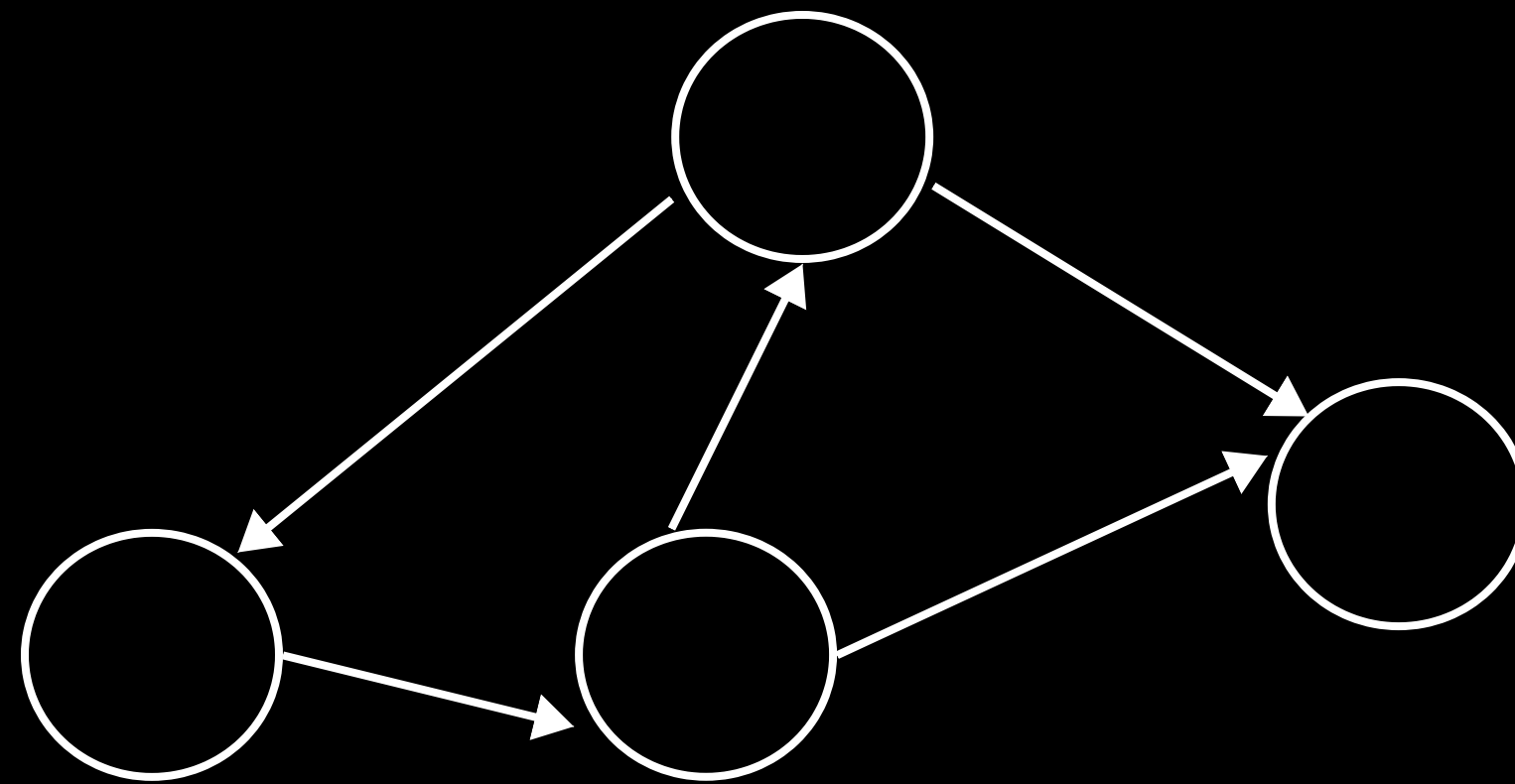
Systems thinking

1. Defining the problem
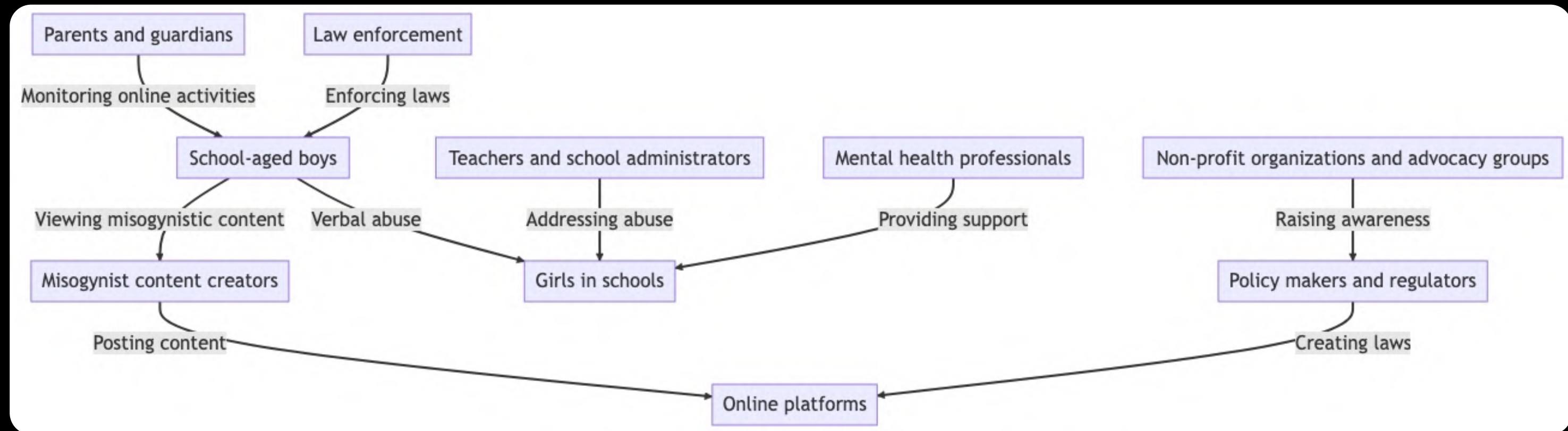
2. Defining behaviours

List potential target behaviours I could aim to impact through a campaign, together with a likelihood rating of campaign success targeting this behaviour.

Target Audience	Target Behavior	Likelihood Rating
School-aged boys	Reduce consumption of misogynistic content	Medium
Girls in schools	Empowerment and self-defense education	High
Misogynist content creators	Cease production of harmful content	Low
Online platforms	Implement stricter content moderation policies	Medium
Parents and guardians	Increase monitoring of online activities	High
Teachers and school administrators	Implement comprehensive respect and equality education	High
Policy makers and regulators	Enact stricter regulations on harmful online content	Medium
Non-profit organizations and advocacy groups	Increase awareness and support campaigns	High
Law enforcement	Increase monitoring and enforcement of online harassment laws	Medium
Mental health professionals	Provide support and resources for victims of abuse	High

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3. Analysing barriers

Capability

Opportunity

Motivation

Michie, S., Atkins, L., & West, R. (2014). The behaviour change wheel. *A guide to designing interventions. 1st ed. Great Britain: Silverback Publishing, 1003,* 1010.
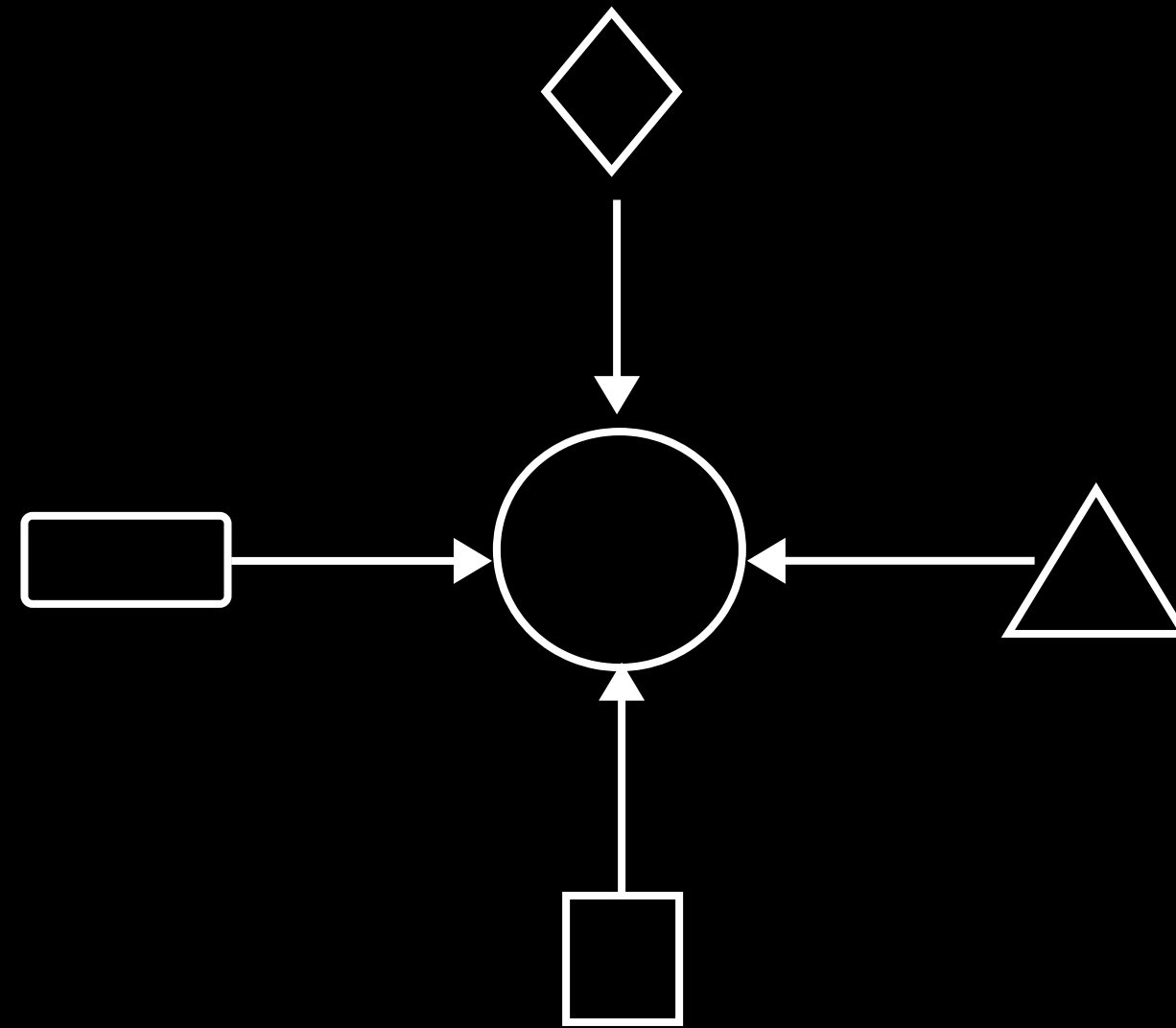
Analysing barriers

Cognitive empathy

3. Analysing barriers

Employee turnover has increased, leading to a loss of organisational knowledge and high costs associated with recruitment. We want to encourage employees to stay in their roles for at least 2 years.

Carry out a COM-B analysis of this behaviour. Give a range of possible barriers in short bullet points.

Information: This is a public sector organisation, recent pay rises have been small, there are many vacancies in the job market, turnover is higher in middle management grades.

Capability - Employee's psychological and physical capacity to remain in their roles

Possible Barriers:
- Lack of necessary skills or knowledge to perform job effectively, leading to frustration and a desire to leave.
- Perceived lack of career progression or development opportunities, causing employees to feel stagnated.
- Mental health challenges or stress from work, making it hard to stay in the role.
- Physical health issues, possibly due to workload or work conditions.

Opportunity - Factors outside individuals that make the behavior possible or prompt it

Possible Barriers:
- High number of vacancies in the job market, making it easy for employees to find alternative employment.
- Lack of competitive remuneration in comparison to market standards, causing dissatisfaction.
- Work environment or culture may be unsupportive or negative.
- Insufficient flexibility in working hours or location, not accommodating personal needs or lifestyle.

Motivation - Reflects brain processes that direct behavior, including habitual processes, emotional responding, and analytical decision-making

Possible Barriers:
- Low pay rises over the past few years, reducing the financial incentive to stay.
- Lack of recognition or reward for work, leading to decreased job satisfaction.
- Increased turnover in middle management, causing instability and loss of confidence in the organization's future.
- Perceived lack of purpose or alignment with the organization's mission or values, diminishing intrinsic motivation to stay.

3. Behavioural research

- Development of surveys
- Development of topic guides
- Development of relevant frameworks
- Persona development
- Experimental design
- Data analysis

Designing solutions
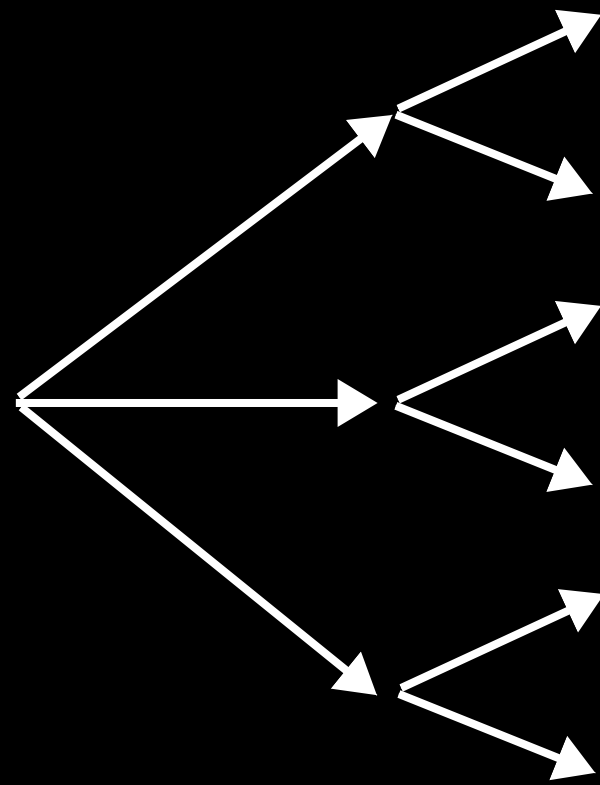
Simulating the future

4. Designing solutions

Consequence	Description
Increased aggression from harassers	If a campaign raises awareness about street harassment and encourages bystanders to intervene, it may also lead to increased aggression from the harassers towards the interveners.
Vicarious trauma	Bystanders who intervene in street harassment incidents may experience vicarious trauma as a result of witnessing or being part of a traumatic event.
Overburdening of marginalized individuals	Encouraging bystanders to intervene in street harassment incidents may overburden individuals who are already marginalized and face increased risk of harassment.
Confusion about appropriate interventions	A campaign may not provide clear guidance on what constitutes an appropriate intervention, leading to confusion and potentially harmful interventions by bystanders.
Risk to personal safety	Intervening in street harassment incidents can be dangerous, and bystanders may put themselves at risk of physical harm.
Reinforcement of harmful gender norms	A campaign that encourages bystander intervention in street harassment may reinforce harmful gender norms and reinforce the idea that it is women's responsibility to prevent harassment.
Alienation of potential allies	A campaign that focuses solely on bystander intervention may alienate potential allies who do not feel comfortable or capable of physically intervening in street harassment incidents.

What is your decision-making process?

Get smarter about AI and behavioral science, today.

Join **Behavior Bytes**, the new community for people exploring the intersection of Behavioral Science and AI.

www.behaviorbytes.ai

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