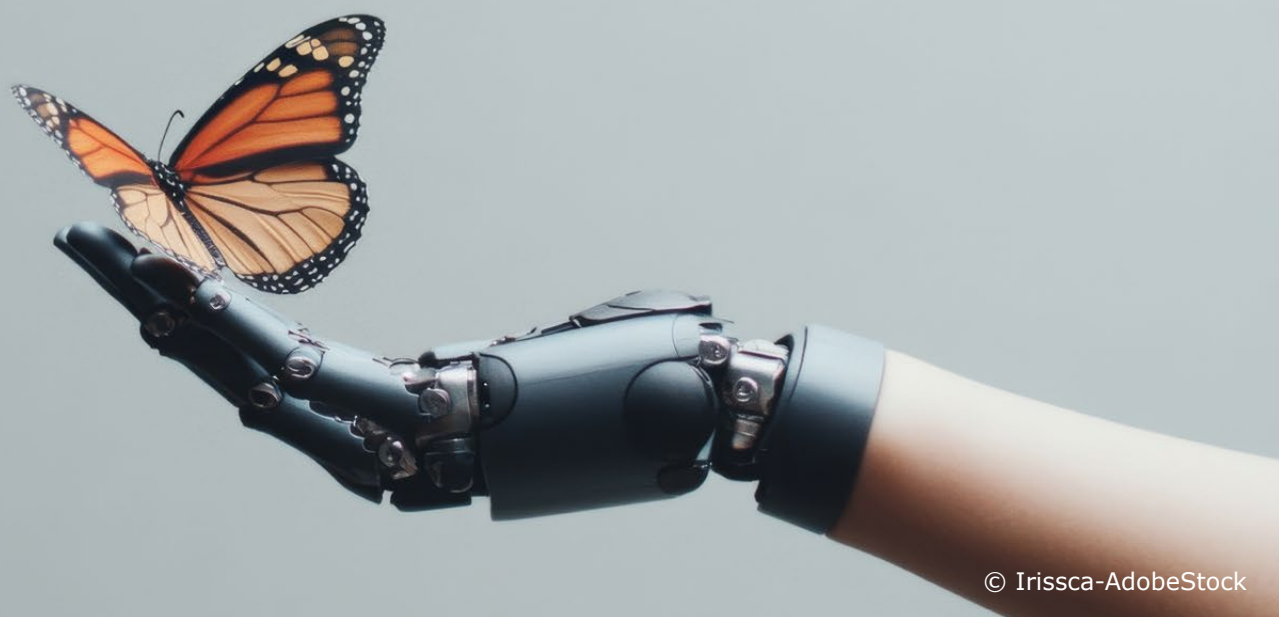




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Expectation Inflation: LLMs, knowledge work and human agency

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Benjamin G. VOYER
ESCP Business School

Vishal KAPADIA

[**Expectation Inflation: LLMs, knowledge work and human agency**

Benjamin G. Voyer*

Vishal Kapadia**

ESCP Business School

Abstract

The rapid integration of Large Language Models (LLMs) into knowledge-intensive industries has significant economic and social implications. While LLMs excel in linguistic tasks, rapid prototyping, and content generation, they struggle with true innovation, reasoning, empathy, and serendipity. The widespread use of LLMs has paradoxically raised productivity expectations, reducing tolerance for mistakes. This shifts human roles toward critical thinking, nuanced questioning, and creativity rather than mere information processing. Ethical concerns also emerge, particularly related to biases, academic dishonesty, and dependency risks. The rise of generative AI tools like ChatGPT and DeepSeek redefines human agency, prompting debates about credit, control, and accountability in human-AI collaborations. Ultimately, success in the LLM-driven knowledge economy will hinge on upskilling workers, reshaping educational practices, fostering critical thinking, and maintaining human-driven innovation. While AI technologies hold enormous promise, their actual impact will depend on managing increased expectations and reshaping organisational landscapes accordingly.

Keywords: Artificial Intelligence, Large Language Models (LLMs), knowledge creation, agency

*Professor, ESCP Business School

**Independent consultant and researcher

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Expectation inflation: LLMs, knowledge work and human agency

Introduction

Artificial intelligence (AI) is rapidly transforming the global knowledge economy, reshaping how organisations across sectors such as professional services, finance, and healthcare operate and innovate. Recent research from McKinsey indicates that by early 2024, approximately 65% of global enterprises regularly utilised generative AI technologies, marking a substantial increase compared to prior years (Singla, Sukharevsky, Yee, Chui, & Hall, 2024). This widespread adoption is projected to have profound economic implications; for example, strategic AI integration in India alone could add approximately £500 billion to the nation's GDP by 2035, representing an annual growth boost of around 1.3% (Khan, 2025).

Yet, alongside optimistic economic projections, there are mounting concerns regarding AI's disruptive impact on employment and ethical considerations. Forecasts suggest that AI may replace up to half of entry-level white-collar roles within the next five years, significantly impacting areas such as customer service, human resources, and software development (Drago & Laine, 2025). Public sentiment around AI use is mixed, reflecting both optimism regarding its problem-solving capabilities and apprehension about ethical concerns, data privacy, and misuse (UK Department for Science, Innovation and Technology, 2024). Indeed, educators increasingly report ethical dilemmas and integrity challenges, with more than 60% encountering instances of AI-driven academic dishonesty, underscoring the urgency for robust regulatory frameworks to navigate AI's complexities (Brehm, 2025). This article discusses how the leading AI technology of the moment, Large Language Models (LLMs), may upend creative knowledge work, creating new opportunities and risks for companies in this field.

Knowledge work and the promises and pitfalls of the LLM revolution

What LLMs are and can perform well for knowledge work

The term artificial intelligence (AI) has been mystified by academics and practitioners alike (Brock & Von Wangenheim, 2019). To date, the most prominent form of AI used in a workplace or private context are Large Language Models (LLMs), with the most famous of these tools being ChatGPT, Claude, Gemini and DeepSeek. These are examples of GPTs - which stands for Generative Pre-trained Transformer, which are models that have been trained on large volumes of data and programmed to reproduce the patterns they detect. The chat format marks the transformative and impactful side of the technological revolution, allowing natural language conversations when programming skills were required before.

LLMs are sophisticated AI systems in the sense that they have been trained on extensive datasets (reaching trillions of text tokens for the currently most advanced models), enabling them to understand, generate, and contextualise human-like text, images, or videos. Their primary capability lies in semantic understanding and context management, allowing them to perform diverse linguistic tasks ranging from text summarisation, translation, and research / marketing like activities such as sentiment analysis. LLMs are also capable of complex activities such as engaging in meaningful dialogue and generating coherent narratives.

Moreover, LLMs demonstrate an advanced capability for adaptability and generalisation across varied domains, even in the absence of explicit task-specific training. This emergent ability to perform zero-shot and few-shot learning tasks reflects a form of cognitive flexibility. However, while their capacity to mimic understanding is significant, the fact that they merely mimic patterns identified in existing datasets points to their inherent limitation in creative knowledge work. This means that only a limited set of tasks can fully take advantage of the technology, and requires a strong skill set to make most of the technology in a knowledge work context.

Overall, where LLMs excel, unsurprisingly, is within the domain of language. This doesn't just extend to written words, but also codebases and writing, derivation and structure of code. Output from LLMs is not just limited to text. With video- and picture-based content and a plethora of more specialised options for production we are already seeing a new generation of memes and creative expression from AI. A single image can be used to generate a whole NFT collection, or content for an advertising campaign with the right prompt, and with it an entire market can be served. For knowledge workers, as one interviewee mentioned in ongoing research on the topic, it can generate work equivalent to a 'strong intern producing a good first draft'. In sum, LLMs may be adequate to support knowledge workers' need for rapid prototyping, editing, or ideating, but less so for delivering final products.

Where LLMs still fall short

There is a twofold issue to be aware of when using LLMs in a knowledge work context. First, LLMs, by definition, reproduce existing patterns. This leads to a reproduction of existing designs and patterns, albeit in a novel way or in new forms or combinations. Doing so, however, they also reproduce any bias built into their dataset, and cases of discrimination have been widely documented (Marinucci, Mazzuca, & Gangemi, 2023). The second issue is that models, despite what may be put forward by the companies behind them, are not great at innovating. While they can identify potential new drug classes by automating typical lab research, in more creative fields, especially the knowledge economy, the potential for innovation is lesser. Compute is inherently limited so the quality of the prompts and direction do help the models find their way. Models at the moment seem to exhibit what feels like a decent copy of human analysis and innovation - but the difference between the model-driven analogue and the human product is sometimes not sufficient for advanced creative applications.

A major area that LLMs are still developing is the ability to reason and the ability to exhibit empathy - either real or analogues which serve the user's nuanced requests. In the table below it's telling that newer models are seeing rapid jumps in scientific and empathetic aptitude.

Model evaluation scores			
	GPT-4.5	GPT-4o	OpenAI o3-mini (high)
GPQA (science)	71.4%	53.6%	79.7%
AIME '24 (math)	36.7%	9.3%	87.3%
MMMLU (multilingual)	85.1%	81.5%	81.1%
MMMU (multimodal)	74.4%	69.1%	-
SWE-Lancer Diamond (coding)*	32.6%	23.3%	10.8%
	\$186,125	\$138,750	\$89,625
SWE-Bench Verified (coding)*	38.0%	30.7%	61.0%
*Numbers shown represent best internal performance.			

Source: <https://openai.com/index/introducing-gpt-4-5>

LLMs and knowledge creation: towards new equilibriums

LLMs transform expectations for knowledge workers

The paradox of LLMs and similar technologies is that, whereas they allow more productivity from a single individual, the gains can be offset by raised expectations of both quantity and quality of outputs. The playing field and expectations in the knowledge economy, like in other fields, are never set once and for all, but evolve as production capacity increases. When a limited amount of information was available and required full-time human power to process, approximations and imprecisions (e.g. in market size estimates) were commonly accepted. With LLMs making not only searching for information easier and faster, but also the processing; including summarising and drawing conclusions, the bar is raised. It also mean that the cost is lower for more junior employees to complete higher level tasks. An intern with the right skills will be able to achieve much more using LLMs. As a consequence, the tolerance for imprecisions or mistakes will become lower. With the cost of searching and summarising information becoming gradually lower, imprecisions will become more costly, as they may enable a competitor to take the lead. LLMs and associated generative AI technologies shift the mindset from a focus on avoiding imperfections to a focus on achieving perfection.

Indeed, within the tech industry there is talk of whether a competent 'ideas person' or generalist can do better than a team of engineers. It is still too early for this, but we are

moving in that direction especially in terms of the ability to rapidly prototype design, media and content.

A redefinition of agency: consequence of human-AI interactions

A primary consequences of knowledge workers's interactions with AI lie in determining the level of agency - and subsequent credit - that is owed to humans employees. Recent research (Voyer, et al. 2025) suggests that as humans interact with AI, their sense of agency in these novel forms of collaboration will vary. That is, some individuals interacting with AI may feel that the output of their work does not fully reflect their own work, whereas others may display a self-serving bias and take credit for the outputs. Understanding the effect of agency-sharing on intentions to use LLMs is important as it allows the design of novel collaborative work spaces where LLMs can supplement the work of knowledge workers. Voyer et al. (2025) suggest that the relative contribution of AI, as well as the relative control of humans, can both shape usage experience, so that humans expect a high contribution when they relinquish control / agency.

Agency in employee-AI collaborations also needs to be understood in terms of attributions for success and failure. As LLMs become more sophisticated, employees may be increasingly likely to blame the technology for errors. For companies, this means augmented teams will become the norm, and managing such teams requires a novel understanding of what productivity and skills means in the age of LLMs and subsequent iterations of the technology.

One serious concern, which is not often vaunted, is the potential for dependency on AI if and when it facilitates better outcomes. Imagine a GPT Pro subscription satisfies the 'Job Done' by a therapist. What happens when compute is limited or the model changes and dependencies have evolved for the individual, or for a business? Just like content creators are dependent on algorithms to maintain and expand their audience, LLMs and their underlying models and training tokens create potential for monopolisation alongside dependencies being cultivated.

What Skills for the post LLM knowledge worker?

Critical thinking as the key skills for knowledge workers in the LLM era

The more LLMs and associated technologies improve, moving away from hallucination and imprecisions, the more expectations will rise. Skills that will be required for knowledge economy employees collaborating with LLMs will revolve around fact checking, counter-argumentation, and giving outputs a human and believable voice. As seen with the rise of job openings for prompt engineers, asking questions becomes more important, in the age of LLMs, than finding answers.

Very few jobs have ever fully disappeared as a consequence of technological replacement. Yet, the impact of LLMs on knowledge work may be more brutal. Early data points towards some industries, such as translations, being likely to be affected as the rollout of the technology becomes ubiquitous. Live translation service are already in place on many video calls applications. As the bulk of knowledge work moves from information search and summary towards requiring advanced analytical skills, knowledge workers will need to up skill at a dramatic pace.

This has particular implications for universities looking to prepare students for the future of knowledge work, as well as companies looking to up skill knowledge workers for the LLMs era. Even more so than with the Internet revolution and the rise of free knowledge platforms such as Wikipedia, the LLMs / GenAI revolution is about asking the right questions. As discussed above, education providers, more than ever, need to focus on training their students by helping them to become thinkers. This requires rethinking teaching, and moving away from teaching pure knowledge, toward teaching critical thinking, and statistics allowing individuals to understand type 1 and type 2 errors and how these can compound as such powerful models continue to evolve. Such changes also need to be reflected in assignments - which paradoxically may be brought back in paper and pencil forms. In sum, the focus should be on creative questioning and reflective skills more than on the pure dissemination of knowledge.

The case for cultivating serendipity as a knowledge worker

An aspect that is often neglected about LLM technology is its lack of ability for serendipitous findings. By definition, and in the way LLMs work, they are designed to improve and become excellent at completing several tasks, and in their more advanced versions, to break down a large task (e.g. planning a holiday) into smaller tasks (searching for flights, accommodation...). Yet, major scientific discoveries, as well as industry innovations, have often come from observing failure in one area, only to bring it to another area in which it could be useful. Business school professors regularly draw from such examples, ranging from Post-it notes— a glue that didn't stick much— to the invention of penicillin, the first antibiotic.

This limitations of LLMs points to the role of human agency in creative collaborations with AI. Human agency remains essential for creative direction, and connecting research outputs. Intentional mistakes, which have their place as a creative strategy, require humans to display full control.

Personalisation and the death of search

Information search is an essential part of knowledge work. With an unprecedented amount of content and the rise of SEO-curated content - it's rare to find search functioning well in a particular vertical unless one is searching for highly localised content (e.g. a Google maps search for a restaurant). Indeed, there was a tendency for individuals to look to platforms like reddit to fix the 'broken' process of finding answers to questions or problems, where google and wikipedia were no longer sufficient due to SEO pushing accessible and useful content down in the listings. As LLMs increasingly take on richer content streams and package them with more compute, there will be greater applications for LLMs beyond simply editing and prototyping. AI and LLMs have the ability to augment our reality and experience of content entirely.

Indeed, it is relevant that Grok, xAI's model, is embedded into X / Twitter streams, where people are using the tool in public to decode and find objective commonality in real-time conversations and events. Similarly Open AI's models recently started to ingest content from Reddit, which is extremely nuanced for context and subgroups, allowing a more emotional model to be able to match content with the right prompts in the right situations. The power of this for individual and social psychological development is quite hard to fathom at this early stage. It is significant that the next buzzword in AI is generative engine optimisation or 'GEO' which is steadily becoming more important than SEO for many areas. We already see trends where TikTok or Instagram creators can reach their audience more

directly than ever before due to use of algorithms alongside user feedback - this will only grow in the age of LLMs.

The aftermath of the AI revolution & LLMs: too early to tell?

This technological revolution, like others before, will likely produce net winners and losers. People who have ideas but lack technical skills will be able to achieve more towards a successful entrepreneurial path. For instance, a graduating student with an idea for an app or digital service may use LLMs to generate a functioning prototype. A young freelance consultant will be able to bring ideas to life using a storyboard without having to hire expensive digital artists. By extension, creative people without coding skills or design abilities will be able to create more impactful websites, applications and campaigns.

This revolution will also have consequences for education and consulting services. Consulting services will need to demonstrate an added value beyond LLMs. As they sell primarily aggregated knowledge with mainstream recommendations, consulting companies will need to find a path beyond AI-generated middle-of-the-road recommendations. This will require finding ways to creatively engage in mainstream strategies, as well as exploring non-mainstream, riskier recommendations, which may help companies distinguish themselves.

For professionals who have skills but not necessarily talents, the growing use of LLMs and associated technologies may mean growing difficulties to stay in employment. For instance, this would be the case for a basic illustrator or content creator, whose job consist of simply doing listings for web-shop products. In sum, people who have skills but no talent may face an uphill battle. Companies such as Lindy.ai are increasingly offering digital employees to join Augmented Teams.

Conclusion

Overall, the deployment of LLMs has become the visible tip of the iceberg for the AI revolution in the knowledge economy. These technologies, by levelling the playing field, put creativity back at the centre of the value creation process. Yet, we highlight how the rapid deployment of AI creates a paradox: while it may speed up and increase quality, it also increases expectations and scrutiny. This may, in turn, dampen the actual net value of AI to business and society. The extent to which the technology grows exponentially or quickly reaches a plateau will determine the extent of the short-term impact on jobs and the economy. Successful LLM integration in the workplace will require new types of skills, new types of tasks, new types of teams: in sum, just about a new organisational landscape.

Similarly, the recent development and marketing of Large Reasoning Models (LRMs) create further risks that companies will believe that they may forego human agency. Yet, such illusions collapse for advanced complex reasoning tasks, as none of the most advanced models are able to perform at the required level, yet.

Finally, the dangers of AI use in the workplace revolve around the potential loneliness in the workplace as large human teams are increasingly replaced by small or solo teams, where AI fulfils the role of junior employees. The complete outsourcing of certain tasks, as some companies have been experimenting with, raises the risk of creating disconnection, within organisations, between those who program and design LLMs and those who merely operate them. If an entry-level analyst job becomes unnecessary due to LLMs, it also means that some skills may never be acquired by employees who eventually become senior analysts and eventually partners of larger knowledge economy consulting firms.

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