



THE CENTAUR ECONOMY

INTRODUCTION

The ascent of LLMs (large language models) caught governments, businesses and individuals unprepared. With GPT's 100 million users just 2 months after launch, the world had changed course by February 2023.

Google estimates a prize of £400bn in the UK alone from capturing the benefits from AI. McKinsey puts the global number at over £3 trillion¹. AI has our attention.

Work, skills and talent are set to transform. Equity will be determined by choices made now. Every leader is now a learner.

And every worker will now need to become a Centaur - a human powered by AI.

This paper lays out our thoughts on how Generative AI will affect work, skills and equality. We set out our vision for a 'Centaur Economy' - where those who thrive will seamlessly blend human and artificial intelligence.

We set out how Centaurs use AI both to save time and unleash capability. Their enduring quality is LQ (Learning Quotient). Already McKinsey surveys show that companies delivering financial returns from AI are those investing in the most broad based skills transformations².

We believe that the long term winners and losers are not yet written but that action must now be taken by government to mitigate the risks in terms of equity. This paper is intended as one contribution to the fascinating, complex debate.

CONTENTS

1 / SCANNING THE HORIZON	2
2 / TECH TALENT WILL ENDURE	3
3 / THE RISE OF THE CENTAUR	4
4 / HOW TO PREPARE	5
5 / IMPACT ON EQUITY	5/6

¹<https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier>

²<https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year#leading>

1 / SCANNING THE HORIZON

“It came in two ways, gradually and then suddenly.”

We think that Hemingway’s description of bankruptcy, recently cited by Joseph Fuller, Professor at HBS³, is the most compelling description of how industry will change with AI in the coming years.

Today we are in the gradual phase. Experiments are being conducted, people are working out where and how far they can reimagine industries, and what changes they can make to jobs. Risk is being evaluated. At some point a few companies will have run enough experiments. They will be confident to act at scale and they will transform how a particular sector or industry is run. The starting gun will sound and companies everywhere will scramble to adopt the new normal.

The new normal will have different eras. The first is the replacement era in which the structure of society and the economy will remain roughly the same, but the way that tasks are delivered evolves. The second will be a reimagining of how society works - how the economy functions, how we spend time. This will take place where instead of swapping AI in, we re-imagine industry, work, society. In its early use cases in the 1870s, electricity displaced coal power in transport yielding some productivity gains. But it was 3 decades later, once industry reimagined what a factory could be in the electric era - freed from co-located power creation and organised into production lines - that work and growth were transformed⁴.

McKinsey estimates that half of today’s work activities could be automated between 2030 and 2060.

**All leaders are now learners. And learners with no textbook.
The future is being written live by practitioners.**



**TO SUPPORT
LEADERS ON THIS
JOURNEY, WE HAVE
LAUNCHED MAKERS
AI LABS.**

We will explore live business challenges and conduct practicals with leaders from industry.

³<https://hbswk.hbs.edu/item/is-ai-coming-for-your-job>

⁴Power and Prediction, Agrawal, Gans and GoldFarb, 2022. The electricity example is from this book. The book uses the notion of a ‘point’ solution followed by a ‘system’ solution’.

2 / TECH TALENT WILL ENDURE

Much has been made of the risk that AI poses to the profession of software engineering. If AI can both write and correct code, what role for software engineers in the future, if any? Productivity gains for software engineering are already being estimated at 50%⁵.

We believe that as costs fall we will see demand increase. The profession will evolve but the need for people will not reduce. This is what is known as the Jevons paradox. The cost of producing software will fall but we will need much more of it.

Benedict Evans⁶ brings this to life with a history of industrial revolutions. **Typewriters 10xed the impact of clerks - but clerical work increased as businesses could sustain more complex operations with that new clerical support.** Adding machines 10xed the impact of book keepers but the demand for bookkeepers grew as businesses benefited from more complex analytical work and inventory management. Excel 10xed the impact of accountants but demand for accountants grew as accounting increased in sophistication and insight.

As software engineers become 10x more effective, the expectations and demands from software will also increase.

We believe the profession will increase in demand but the nature of the work will change. Just as the ability to write fast became a defunct skill for clerks with typewriters, so software engineering skills will evolve. On the one hand, new AI tools will make it easier and faster to build software by serving as intelligent assistants and thought partners. On the other hand, software developers will need to learn to build software in a different paradigm, building AI-first systems instead of seeing AI as an add-on. Architecture and code design will matter more. Ten years of experience in the current approach will be beaten by rapid learning about the new approach, much like the tech industry today is dominated by internet-native companies founded since 1995, and not by businesses from the previous era.

New types of engineers will emerge. The demand for Data Engineers will radically increase. New jobs could also emerge - such as those laid out by Jensen Huang, Nvidia's CEO in his National Taiwan University Commencement speech 2023⁷: AI Safety engineers, Prompt Engineers - or become new parts of the generalist toolkit.



FOR THIS REASON WE ARE EVOLVING ALL OF OUR TRAINING TO ENCOMPASS THE NEW AI-ENABLED SKILLS THAT WILL INCREASE EFFICIENCY AND EFFECTIVENESS OF ENGINEERS.

It is rooted in an understanding of the risks and opportunities involved in using the tools. We are building bridge programmes to deliver AI specific skills demanded by our clients. Our use of AI as a learning tool in our course follows the logic of Harvard's CS50⁸ bot - aiding understanding rather than shortcutting answers.

⁵ <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier>

⁶ <https://www.ben-evans.com/benedictevans/2023/7/2/working-with-ai>

⁷ <https://fortune.com/2023/05/31/nvidia-ceo-jensen-huang-graduation-speech-future-of-work-ai/>

⁸ <https://www.thecrimson.com/article/2023/6/21/cs50-artificial-intelligence/>

3 / THE RISE OF THE CENTAUR

To be an effective clerk once typewriters evolved, penmanship was no longer of value. What mattered was mastery of the typewriter. We believe this analogy helps set out how we see all careers now evolving.



In 1998 Kasparov coined the term 'Centaur' to describe a man/machine combination that was able to beat either man or machine in a game of chess.

TO SUCCEED IN THE FUTURE ECONOMY, AT MAKERS WE BELIEVE WE MUST ALL LEARN TO BE CENTAURS⁹. THOSE WHO THRIVE WILL SEAMLESSLY BLEND HUMAN AND ARTIFICIAL INTELLIGENCE.

Working properly with AI is an operating system change. Unlike the technologies of the past which required structured data entry and adherence to rules, AI responds to the most capricious and human tendencies. It is in natural language and it is unstructured. It is a true extension of our capabilities and it will affect all aspects of how we work.

Jobs that sound familiar will require new skills. This will be most immediately obvious in those industries and sectors where there are obvious replacement benefits from AI - where tasks that are part of today's existing workflows can be swapped. McKinsey's recent report¹⁰ flags Customer Operations, Marketing and Sales, Software Engineering, and Product R&D as areas of greatest immediate potential. Use cases for Customer Operations include faster retrieval of personal information, consistency in high quality issue resolution, faster resolution and more effective upsell. Interestingly it sees the benefit as bringing all colleagues up to the effectiveness of the most effective person today - which speaks to the replacement rather than reimagining effect.

Working alongside these new tools to maximise impact will require a different set of skills and mindset for people in every pocket of the economy. Centaurs will need to be willing to abandon those skills that made them successful in the past, learn and deploy new skills, and manage their emotional wellbeing through a process of continuous change.

LQ (Learning Quotient) and resilience will emerge as two of the most important qualities of Centaur workers.

As the economy reshapes, there will inevitably be the growth and shrinkage of different sectors and industries. So just as upskilling will take place on a huge scale within industries, there will also be an enormous growth in career switching between industries.

In this, we feel there are few signals that the government has truly grasped the scale of the change coming. **It is our view that every single one of the UK's 30 million workforce will now need to be upskilled or supported through a career shift. This is a change in our workforce of almost unimaginable proportions.** Many people will instinctively know how to do this or will be part of organisations that take them on the journey. But many will not. And this is why we think government intervention is critical - to manage the equity in the outcome of this reshape. Decisions now will profoundly effect the shape of society in the years to come.

⁹ <https://www.kasparov.com/the-real-threat-from-chatgpt-isnt-ai-its-centaurs-pcgamer-february-13-2023/>; <https://www.centaur-labs.io/centaurs/>

¹⁰ <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#business-value>

4 / HOW TO PREPARE

A recent global survey of executives by McKinsey¹¹ showed 40% are already planning to increase their investment in AI. So-called 'AI high performers' (companies already achieving a 20% EBIT boost from AI), focus on much broader capability building (across multiple functions) than peers; aim for upside potential alongside time saving; and are 3 x more likely to anticipate reskilling more than 30% of their workforce.

The starting gun has been fired to build winning, Centaur companies.

The key characteristic of successful Centaurs will be LQ. The ability to continue to learn as the AI revolution gains pace, as we shift from the replacement to the reimagine phase.

Today the critical path to success for those becoming Centaurs is to link this new operating system to real use cases.

Centaurs can radically free up the time to deliver existing outcomes, and shockingly unleash capability to deliver new ones.

Firstly AI has the potential to automate the tedious work in an organisation. Prompting and refining will be a much quicker way to achieving much of today's desk based work than doing that work from scratch.

Secondly AI has the potential to unleash capability. Activities which previously required the engagement of an expert are now available to individuals through the hyper simplifying tools provided by AI. From coding and data analysis to video and content creation. The natural language engagement further removes barriers to delivery, enabling people in ways they might not even imagine before being shown the tools available.

Achieving these benefits is about equipping each individual, team and function with a set of 'free up and unleash' tools - and building their LQ to continue to learn and develop as the AI revolution unfolds. That is why we have launched our AI programme. It follows the Makers philosophy of self-led learning, aiming to build the confidence and curiosity to sustain learning in this space over the long term.

Through the course of the AI programme, the learner will identify ways to free up the hours required to achieve the same outcome as they were aiming for previously - and to use that time to unleash capabilities and achieve new ambitions.

5 / IMPACT ON EQUITY

The extraordinary shifts in our workforce will bring winners and losers. The future is not yet written on the fault lines.

We think it is possible to imagine either a radical redefinition of who prospers - different from the previous 100 years - or a further entrenching of current inequalities.

One of the much-discussed characteristics of this new evolution of work is the fact that it is likely to affect 'white collar' workers more than 'blue collar' workers¹².

Those with more education or experience might find themselves rapidly leapfrogged by those with the wherewithal to upskill as Centaurs in the trade. Indeed some education and experience might be an impediment - things that must be discarded to move forward.

¹¹ <https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year#leading>

¹² <https://www.theguardian.com/technology/2023/feb/18/the-ai-industrial-revolution-puts-middle-class-workers-under-threat-this-time>

Access to knowledge is being further democratised by LLMs – as is access to learning. The LLM tools are extraordinary tutors, able to explain and re-explain ideas in different ways, from different personas and with different analogies to aid understanding. This could make historic socio-economic barriers to education start to fade.

Based on this analysis the groups that will win are perhaps faintly clear. The young who are less encumbered by old skill sets, those in industries that invest in Centaur education, those with high levels of LQ, those for whom the barrier to learning is not linked to time/housing/money but access to high quality tutoring.

While some of the forces of AI may work against historic inequalities, we see another possible outcome in which existing inequalities are further entrenched. The experience from MOOCs shows this. While the expectation was that open access to courses would democratise education, in fact those with other advantages - social capital, financial security - were better placed to take advantage of the opportunity and had resources and support to complete the courses. At Makers we know that the support of coaches and cohorts are incredibly important in staying the course on the difficult journey to retrain as a software engineer.

It may be that the personalised nature of AI enabled tuition fills some of these other needs - engagement, encouragement - to support effective reskilling and therefore democratises education more than MOOCs did. However the jury is still out on this and there is certainly a danger that this sort of learning accelerates those who are already in well supported positions in society.

In either outcome, it is easy to see an extreme concentration of wealth emerging as corporates with the scale to experiment and those in control of some of the key assets of the AI revolution gain further power. The redistribution of wealth will be essential for the productivity gains from AI to be widely enjoyed. And as the fault lines get clearer, the government must act fast to support groups that are left behind.

CONCLUSION

The shifts in work and skills that take place in the years ahead will be breathtaking. We will no doubt look back at this moment with nostalgic affection – in 2023 we know so little of the world we are about to enter. The opportunities are huge – so are the risks. Acting with integrity and thoughtfulness has never been more important for leaders.

makersleaders@makers.tech
0203 817 8870

in @makers-academy
www.makers.tech

