Towards Cognitive transformation

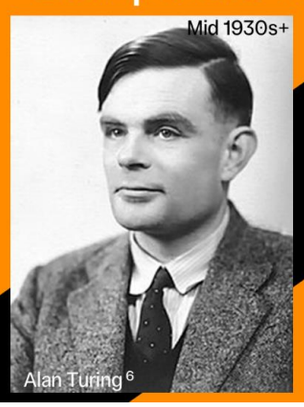
A tale of fortunate, and unplanned, events

AI was conceived in an analogue world on the brink of a digital one.

The path that would unfold to deliver both the necessary algorithms and data to bring AI closer to reality would be near inconceivable at that time. Inconceivable, unplanned and, sometimes, unintended.

Alan Turing sat at the centre of the conception of both computation ("Turing Machine" & Bombe) and AI (and "Turing Test").

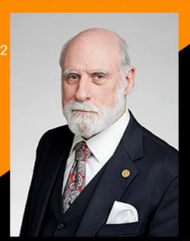
Computers happen



....and AI conceived and **digitisation** begins!

Internet happens

Vint Cerf [12]



Robert Kahn [13]

1970s-1980+

....and sharing begins

Web happens

Tim Berners-Lee [8]

....and usability goes wild

Search happens

Sergey Brin [9]

Larry Page [14]

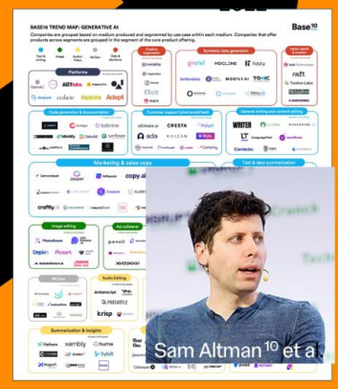
....and indexing provokes translation needs

Late 1990s+

Attention happens [2]

....and "Modern AI" is born [1 2 3]

Modern AI happens [4]



"Attention is all you need" Paper [2]

Digitisation

"The authors started with a thriving and improving technology—a variety of AI called neural networks—and made it into something else: a digital system so powerful that its output can feel like the product of an alien intelligence. Called transformers, *this architecture is the not-so-secret sauce behind all those mind- blowing AI products, including ChatGPT and graphic generators such as Dall-E and Midjourney.*" [3]

8 Google Employees Invented Modern AI. Here's the Inside Story'
Wired 20 March 2024 [3]

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[13] Robert Kahn https://commons.wikimedia.org/wiki/File:Bob_Kahn.jpg
[14] Larry Page File:Larry_Page_in_the_European_Parliament,_17.06.2009_(cropped).jp

Sources
[1] Financial Times 23rd July 2023 **'Transformers: the Google scientists who pioneered an AI revolution',**
[2] **Attention Is All You Need** by Ashish Vaswani, et al. arXiv:1706.03762
[3] **"8 Google Employees Invented Modern AI. Here's the Inside Story'** Wired Magazine 20th March 2024
[4] BASE10 TREND MAP: GENERATIVE AI https://base10.vc/post/generative-ai-mission-critical/

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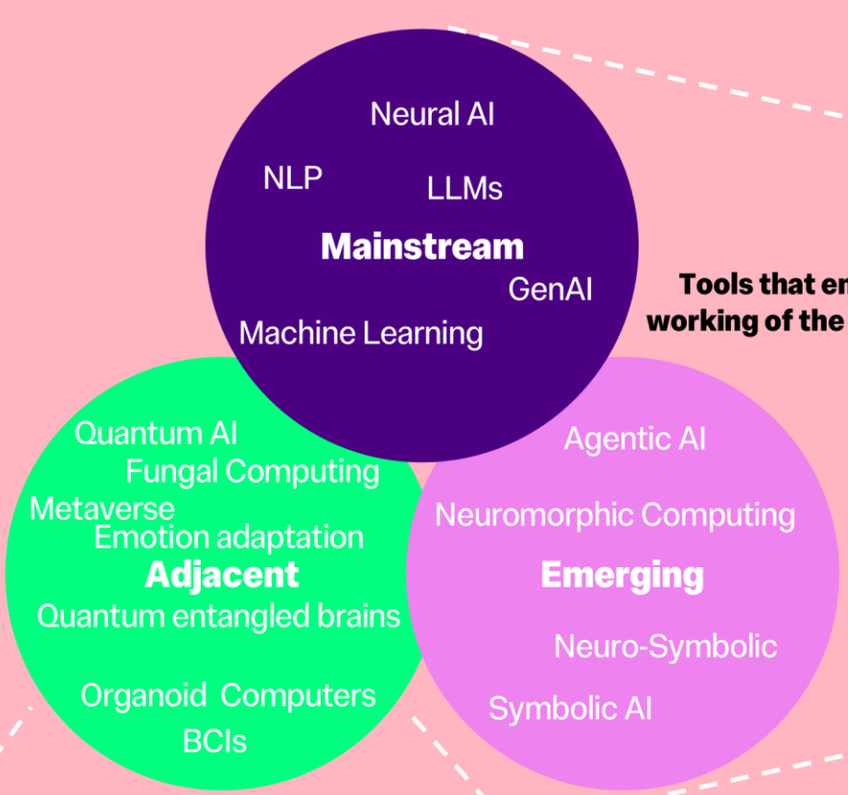
More than technologies: Cognitive Transformation

Cognitive Transformation is a combination of cues

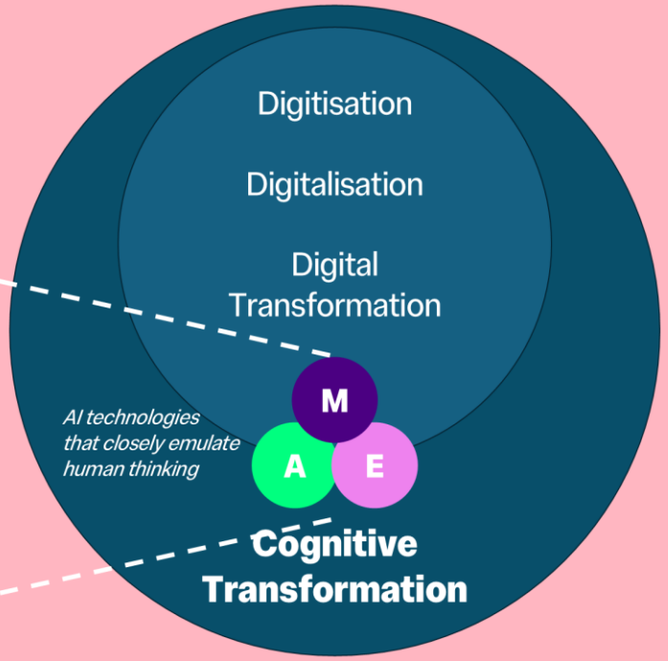
We have new tools that more closely emulate the workings of the human mind (Technology)

"We shape our tools, and our tools shape us" (Philosophy)[1 2]

Transformation of our thinking, i.e. cognition, comes from adversity (Psychology)[3]



Tools that emulate the working of the human mind



"We shape our tools, and our tools shape us" (Philosophy)[1 2]

Transformation of our thinking i.e., cognition, comes from adversity (Psychology) [3]

Adjacent: Organoid computers

In 2025, Cortical Labs launched for purchase the CL1. The world's first deployable biological computer using lab grown neurons for processing [4]

And next?

What are new words to replace 'productivity' and 'efficiency'? What a alternatives are there to 'smart'? Will new tools bring in undeniable context, like climate and demographic change, into assisted decision making?

Will our complicated, complex and even chaotic economic environments be more navigable with AI? Will we be even able to think along at the pace of AI controlled economies? What if we can't understand what they have done or are doing?

[1] Father John Culkin, SJ, a Professor of Communication at Fordham University in New York and friend of Marshall McLuhan to whom the quote is often mistakenly attributed.
[2] *Additive AI by Professor Mark Kennedy, Imperial College London*
[3] Cognitive transformation as a marker of resilience – Tebes, Irish, Puglisi Vasquez and Perkins- Pubmed
[4] Cortical Labs https://corticallabs.com

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A transformed world: Cognitive Transformation

Soon

AI systems are being commonly deployed. In line with the 'cognitive transformation' theme, we are interested in how we interact with AIs and how that in turn changes us.

Cascading change in the medium term

All the small implementations and experiments with AI technologies will aggregate and mature into larger scale change.

Far Future

Imperial Tech Foresight has created a story about the experience of being in a cognitively transformed company in the future.

Future of AI interaction

Here we look across the immediate to long-term of AI interactions with a high-level speculation of the transition of **consumer banking**

AI First Consumer Banking (Tomorrow)
• Website (flat and conversational) • Device Apps (flat and conversational) • Telephone phone banking (conversation-based navigation) • Chat interfaces (Real AI) • Humanised Help desks (AI + people) • Personal service (experience) • Agents acting on their behalf while customer not online
AI centric

Future of work

Ex Google CEO Eric Schmidt has speculated on the social impact and industry adoption of AI [5][6] Three of Schmidt's ideas on the future of work are:

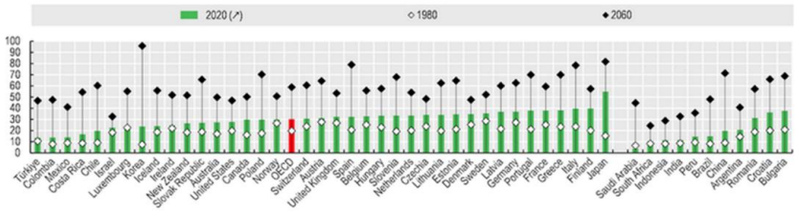
Demography – In affluent countries, Job losses through automation will be part offset by a reduction in people entering working age due to declining birth rates

Job Types – As some work is automated new jobs will emerge in, for example, the health and care industries

Industry adoption – Industries will adopt AI technologies at different rates due to the different proportion of roles that can be automated in them.

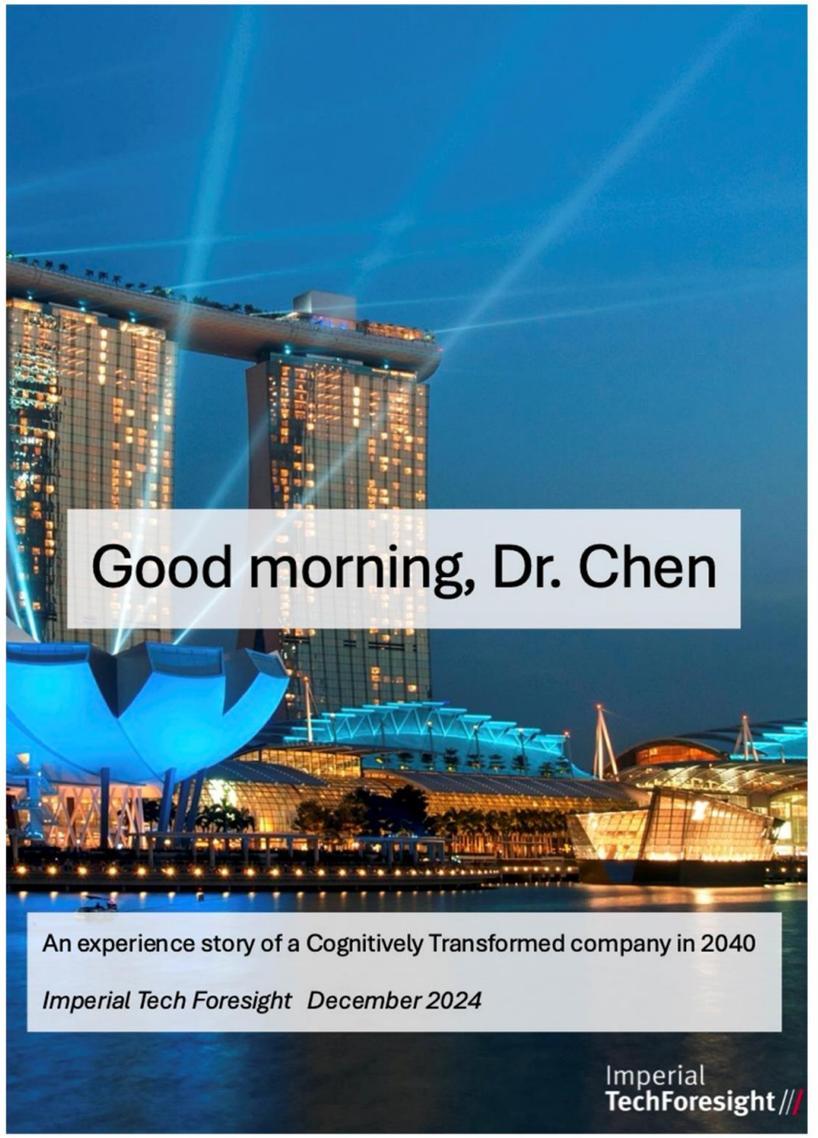
Figure 4.12. The demographic old age to working age ratio will double over the next four decades

Number of people of retirement age (65+) per 100 people of working-age (20-64), in 1980, 2020 and 2060



Source: Calculations from United Nations, World Populations Prospects – 2022 Revisions.

Society at a Glance 2024: OECD Social Indicators [8]



[1] Design breakthroughs defining AIs future - Patrick Morgan Feb 2 2025 - https://uxdesign.cc/8-design-breakthroughs-defining-ais-future-21f7941ed160
[2] For example, 'Elon Musk: Neuralink and the Future of Humanity' Lex Fridman Podcast #438 2nd August 2024
[3] 'Understanding Gibberlink Mode' The Rise of AI's Hidden Language' Mike Boese March 5th 2025. https://www.apexon.com/blog/understanding-gibberlink-mode-ais-next-leap-how-do-we-ensure-it-stays-in-check/
[4] Your call is important to us...Please hold' 1.52bn hours lost to inefficient call systems Financial Times 5th April 2025
[5] Genesis: Artificial Intelligence, Hope and the Human Spirit (2024) Eric Schmidt, Henry Kissinger and Craig Mundie ISBN 1399819100
[6] 'AI Can Create Deadly Viruses! If We See This, We Must Turn Off AI!' Diary of a CEO (interview) 14th November 2024 https://www.youtube.com/watch?v=2Zg--ouGl7c
[7] Generative Artificial Intelligence and the Workforce The Burning Glass Institute
[8] Society at a Glance 2024: OECD Social Indicators https://www.oecd.org/en/publications/society-at-a-glance-2024_918d8db3-en/full-report/demographic-trends_06973ace.html
[9] What is embodied AI? How it powers autonomous systems https://www.techtarget.com/searchenterpriseai/definition/embodied-AI

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