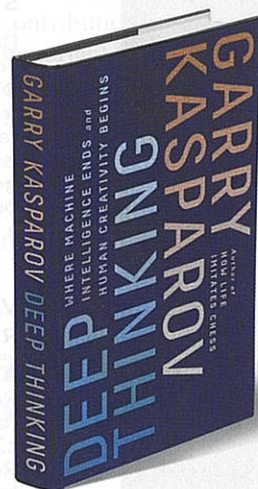


Deep Thinking?

Garry Kasparov has written a masterful book that inevitably invites discussion.

With his new book *Deep Thinking*, Garry Kasparov returns to his epic matches with super-computer Deep Blue and looks at the future of Artificial Intelligence. In an enthralling and thought-provoking review, **JONATHAN ROWSON** emphasises the book's achievement ('It's extremely good'), but also asks some pertinent questions.



Every chess player has some kind of relationship with Garry Kasparov and most of them are based on projection. His world of eager global communication, relentless achievement and world historical drama is not ours, but we are implicated. He tacitly represents chess players, so naturally we imagine all sorts of things about him that are really about us.

Intentionally or not, Kasparov seems to invite projective identification. The American Mythologist Joseph Campbell suggested we should all ask ourselves the question: 'Which myth are you living by?' I imagine Kasparov would

answer with the myth of the heroic quest – of roads travelled, enemies conquered, challenges overcome, and an example for others to follow. His early autobiography (1987) *Child of Change*, co-written with Donald Trelford, certainly suggests that. He describes qualifying to play Karpov by defeating Beliavsky, Kortchnoi and Smyslov in candidates matches as follows:

'In the USSR there is a fairy-tale monster called Kaschai Immortal, who hides deep in his kingdom and sends out his emissaries to kill off all invaders. If this fails, he sends out more... Only as a very last resort, when his kingdom is seriously at risk, does Kaschai deign to come down from his

castle and fight the intruder himself. It is like the mythical black riders sent by Sauron in *The Lord of the Rings*. The hero has to go through many fights before he meets the super-super-creature of extraordinary strength. Only by winning one victory after another can he face that battle and still hope to stand... I knew by now I had entered his homeland... I had felt the brute force of my enemy's power, but I had yet to see his face. A confrontation could not be long delayed.'

Is he talking about chess? Yes, and beautifully so. This turbulent passion lives on in the writing three decades later in *Deep Thinking*, where Mig Greengard helps give

voice to Kasparov's thoughts as only he – an 'aide-de-camp' for almost two decades – can. The resulting voice is credible and compelling, and the pages turn easily. Just as we admire, for instance, President Obama's speeches while knowing somebody else drafted parts of them before they were signed off, you can sense the voice of *Deep Thinking* is Kasparov's by comparing it to how he speaks. Mig may be the writer, but Kasparov is definitely the author.

Trusting the authenticity of the author's voice is important because what Kasparov's unique intensity brought to the chess world was not just moves but *meaning*. The psychotherapist Carl Rogers famously said that 'What is most personal is most universal.' In that sense chess is deeply personal, and *because of that* it's much more than personal too. By sublimating the perennial human struggles of all of us, Kasparov's chess career communicated symbolically, culturally, scientifically, artistically and politically. As writer Martin Amis put it: 'Chess is his amplitude, not his trap.'

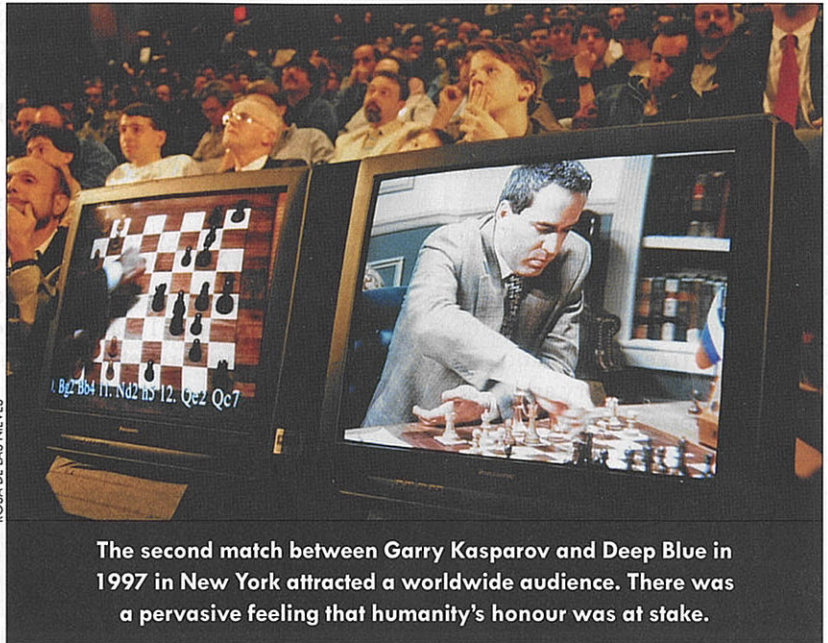
While chess appears to be game of *logos* – the scientific application of reason, for Kasparov chess moves always seem to be part of a deeper story of meaningful personal unfolding in historical context. Chess has certainly lost some *mythos* since Kasparov's retirement – something I was reminded of while reading *Deep Thinking*.

The book is generally excellent and it is tempting to just gush away with evocative quotes from every chapter. For instance, 'As a believer in chess as a form of psychological, not just intellectual warfare, playing against something with no psyche was troubling from the start.' Or 'It's not enough to know the best moves, you must also know why those moves are the best.' But rather than gush away, I would rather say: read the book – it's extremely good.

Instead, since Kasparov is renowned for permanently wanting to improve himself through new challenges I'm going to use a provocative analogy to help. I would say the book is like the 1996 version of Deep Blue that Kasparov defeated in Philadelphia, not the much stronger version in 1997 that defeated him in New York. I'm going to try to focus on what, to my mind, this 2700 or so book needed to get to 2850 and beyond.

In outline: First, the welcome admission that IBM didn't cheat is undermined by lingering resentment. Secondly, some feelings are generously shared, but others are conspicuous by their absence. Third, the cultural analysis of artificial intelligence tries to be balanced but ultimately comes across as naïvely optimistic. Fourth, although the material hangs together well, there was scope for a richer integration of the implicit political views and the explicit historical reflection.

But first let me emphasise the book's achievement. The inactive Grandmaster in me felt nostalgic for chess when reading the drama of the human encounters with machines –



The second match between Garry Kasparov and Deep Blue in 1997 in New York attracted a worldwide audience. There was a pervasive feeling that humanity's honour was at stake.

these are all great stories, elegantly told. The narrative arc follows Kasparov's early fascination and preparation with computers, his exhibition games where he defeats them easily, all the way towards his eventual loss to Deep Blue in 1997 – the climax of the book. There are also reflections on subsequent advanced chess matches with humans and

Dr **Jonathan Rowson** is a Grandmaster from Scotland and three-time British Chess Champion. He is the author of *The Seven Deadly Chess Sins* and *Chess for Zebras* and currently finishing a book on what chess taught him about being human, written for a general audience. He wrote 50 review columns for *New In Chess* from 2004-2010. He has degrees from Bristol, Harvard and Oxford in a range of disciplines and since 2009 has published widely in public policy research as an applied philosopher. He has a special interest in climate change and is co-founder and Director of *Perspectiva*, a research institute in London that examines complex global challenges by integrating perspectives from systems, souls and society. He was recently awarded an Open Society Fellowship. He tweets @Jonathan.rowson.

computers cooperating as a metaphor for the wider story of cooperation Kasparov advocates. At every stage the technical aspects of this evolution are lucidly described – I learnt a lot, and there are discerning reflections on artificial intelligence in general.

I was always ready for the next chapter and felt the introduction and first chapter were particularly good. You don't get that sustained luminous and cliché-free clarity about the place of chess in history and culture without laboriously going through several drafts. As American poet John Ciardi famously put it, 'spontaneous is what you get after the 17th draft.' There is real effort and artistry here.

Kasparov is also typically open and candid, and there is a new level of maturity. I particularly enjoyed his emphatic confession at the start of chapter seven:

'I am a sore loser. I want to clear that up right at the start. I hate losing. I hated losing bad games and I hated losing good ones. I hated losing to weak players and I hated losing to world champions. I have had sleepless nights after losses. I have had angry outbursts at award ceremonies after a bad defeat. I have been annoyed to discover that I missed a good move in a game I lost twenty years ago when analysing it for this book. I hate to lose, and not just at chess... Being a sore loser is not the attribute I am most proud of, nor am I ashamed of it. To be the best in any competitive endeavour you have to hate losing more than you are afraid of it.'

Cheating?

However, while he has grown in some ways he is clearly struggling to let go of the consoling narrative that his loss was somehow unjust – he is still subject to that. At the end of chapter ten, he concedes, albeit quite grudgingly, that IBM did not cheat as such in 1997:

'I have been asked, "Did Deep Blue cheat?" more times that I could

possibly count, and my honest answer has always been "I don't know." After twenty years of soul-searching, revelations, and analysis, my answer is now "no". As for IBM, I believe the lengths they went to win were a betrayal of fair competition, but that the real victim of this betrayal was science.'

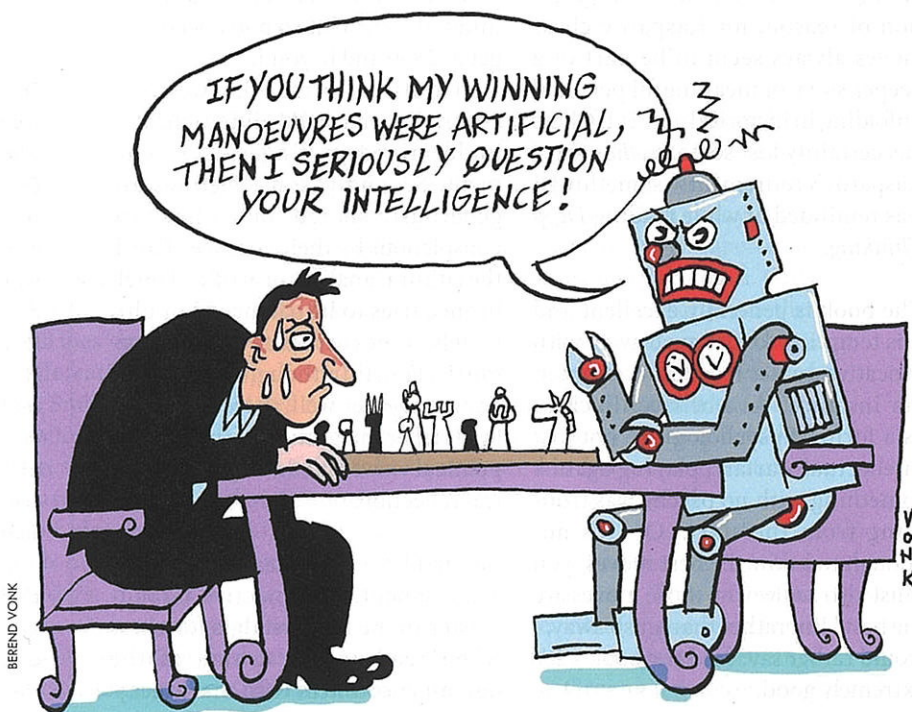
Leaving the idealisation of science to one side, I wanted to feel a sense of shared relief at this stage of the

'Kasparov is also typically open and candid, and there is a new level of maturity.'

story: Ah, he's let it go! He's come through the stages of grief helpfully described in the book; denial, anger, negotiation, depression and, finally, acceptance. But no, I couldn't feel this because his admission that IBM didn't cheat doesn't square comfort-

ably with a revelation elsewhere in the book that IBM's team asked to change Kasparov's bodyguard to someone who spoke Russian during the match.

This claim is connected to a 2009 interview with Miguel Illescas in this magazine where he also said the IBM team only entered the details of how to respond to the dodgy line of the Caro-Kann Kasparov chose, on the very morning of the final game. For those who don't recall, the opening moves were 1.e4 c6 2.d4 d5 3.♘d2 dxe4 4.♘xe4 ♘d7 5.♘g5 ♘gf6 6.♙d3 e6 7.♘gf3 h6?. Kasparov was relying on the fact that the knight sacrifice 8.♘xe6! is very strong but wouldn't be chosen because it doesn't lead directly to mate and was too long-term intuitive in appeal, even for the strongest computer in the world at the time. He was hoping for a meek retreat which would give him easy equality. On Kasparov's account, this act of subterfuge was critical: 'I will not repeat here the stream of profanities in Russian, English and languages not yet invented... Two paragraphs



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after Illescas says IBM had hired Russian speakers to spy on me, he says his team entered this critical line into Deep Blue's book that morning? An obscure variation that I had only discussed with my team in the privacy of our suite at the Plaza Hotel that week in New York?'

My impression is that Joel Benjamin's much less controversial version of events is more credible: the response to 7...h6? was already programmed before the match.

What bothers me is this. If IBM did seek out a Russian speaking bodyguard to stealthily report back on Kasparov's preparation and if they used that information to win the match then ipso facto they cheated.

But here's the thing. They almost certainly did nothing of the kind. What is pertinent in the context of *Deep Thinking* is that Kasparov still seems to want to believe the Illescas version – he still seems attached to an intangible grievance. Kasparov says IBM could resolve the apparent disparity by 'showing the printouts', but haven't we moved beyond that 20-year-old request?

Photo: David Johnson

Feelings

Kasparov's mother Klara features as an enigmatic character we are allowed to know of, but not really about. For instance on page 133:

'My mother, Klara, also attended, making sure all the conditions were correct in the playing hall, and was always seated in the front row.'

This apparently insipid factual statement jumped out at me for what it doesn't say. Clearly a huge psychological weight is being carried by his mother on his behalf. We also hear only passing references to family relationships more generally.

It is of course the author's prerogative to keep his personal life private, but given Kasparov's emotional candour elsewhere and his role as a representative of humanity as such, I felt something was missing. In *Child of Change* he describes a moment

Miguel Illescas:

'That very morning we told Deep Blue: if Garry plays h6, take on e6 and don't check the database. Just play, don't think.'

Rarely have we crossed the threshold of La Lonja or the chef of this specialty restaurant in central Barcelona appears from the kitchen to embrace Miguel Illescas. The two men exchange cordialities, stress their affection by arm-pinning and back-slapping. I know they are passionately discussing chess, but I should have with our lunch. No, this is entirely, entirely for the later...



The 2009 New In Chess interview with Miguel Illescas that highly upset Garry Kasparov: 'I will not repeat here the stream of profanities in Russian, English and languages not yet invented...'

where as a young boy he took a photograph of his late father into school to signify that he was ready to talk about him, but there is nothing of comparable affective poignancy in *Deep Thinking*. We hear a lot about the agonies of the ego, but little about the fragility of the self.

Later in the book when he speaks of being human as being more than merely being creative I thought of these missed opportunities. Kasparov presumably loves and depends on people as we all do, but we are not given access to that side of the story.

Ideology

I don't know Kasparov's politics in depth, but from his *Wall Street Journal* writings and some speeches he comes across as broadly neoliberal – a term defined by Sociologist Will Davies as 'the state-led remodelling of society around the model of the market'. Kasparov's defining experience of the transition from communism to capitalism seems to have crystallised a view of human freedom defined largely by governments getting out of the way.

The implicit default model of the

human being in *Deep Thinking* is therefore not a social worker keeping a family afloat, an inner-city teacher inspiring a generation, a climate campaigner fighting for ecological sanity or a nurse caring for the sick. It's an individual competing for survival.

If you are an ambassador for humanity in the encounter between humans and machines, your implicit political view of the human being matters. My most fundamental concern with *Deep Thinking* is therefore broadly about its tacit ideology.

These days I work in public policy research as an applied philosopher. Over the last few years I have been funded by trusts and foundations to examine the relationship between complex global challenges and the inner lives of human beings, highlighting how this plays out in society; for instance I look at how our denial of death informs our approach to climate change or how alienation shapes our attitude to human rights.

From my professional vantage point I was drawn to the promise of the subtitle: *Deep Thinking: Where machine intelligence ends and human creativity begins*.

AI doesn't come by itself. It's not just that it co-arises with synthetic biology, robotics, virtual reality, 3D printing and so forth. AI also arises in a world with acute ecological constraints, enduring economic instability, and democratic stress, and we need to relate to it in that context. So we need human creativity, yes, but I don't think we can take refuge in nebulous self-expression. The book doesn't say we can, but it doesn't really grapple with different kinds of creativity either, nor with the limitations of intelligence.

In light of the juxtaposition in the subtitle, a reference to Oxford Physicist David Deutsch's 2012 essay in *Aeon magazine* on why AI has mostly failed would have helped make the point about creativity less generic. Deutsch defines creativity as the ability to create new explanations, which is precisely what AI can't yet do, and may never be able to do. In a protean world of interconnected and increasingly complex phenomena we need that kind of creativity more than we need problem solving ability modelled on bounded systems with fixed rules like chess, or even Go. Perhaps one can lead to the other?

Deep Thinking mentions the recent victory of Alpha Go over the Go World Champion Lee Sodol, where Deep Mind's formidable learning system created a data-driven self-improving evaluative function. This was a qualitatively different kind of artificial intelligence and showed transferable powers of computation. Deep Mind's CEO Demis Hassabis (a former chess prodigy) speaks of AI as a 'meta-solution': 'First, solve intelligence. Then use intelligence to solve everything else.'

But again, is this really the kind of breakthrough we most need? I'm not sure the idea of solving intelligence even makes sense, and I'm not sure intelligence is what we most need in any case.

In different ways, Kasparov and Hassabis both seem susceptible to 'solutionism', namely the notion that all problems can ultimately be solved with intelligence and technology. But within any complex system solutions will create new problems or surface old ones. As the filmmaker Nora Bateson puts it: 'The trouble with problem solving is the idea that a solution is an end point.'

It would therefore have been good to push the sceptical arguments a little harder, for instance by referencing Silicon Valley's heretic Jaron Lanier, who claims that genuine AI doesn't yet even exist.

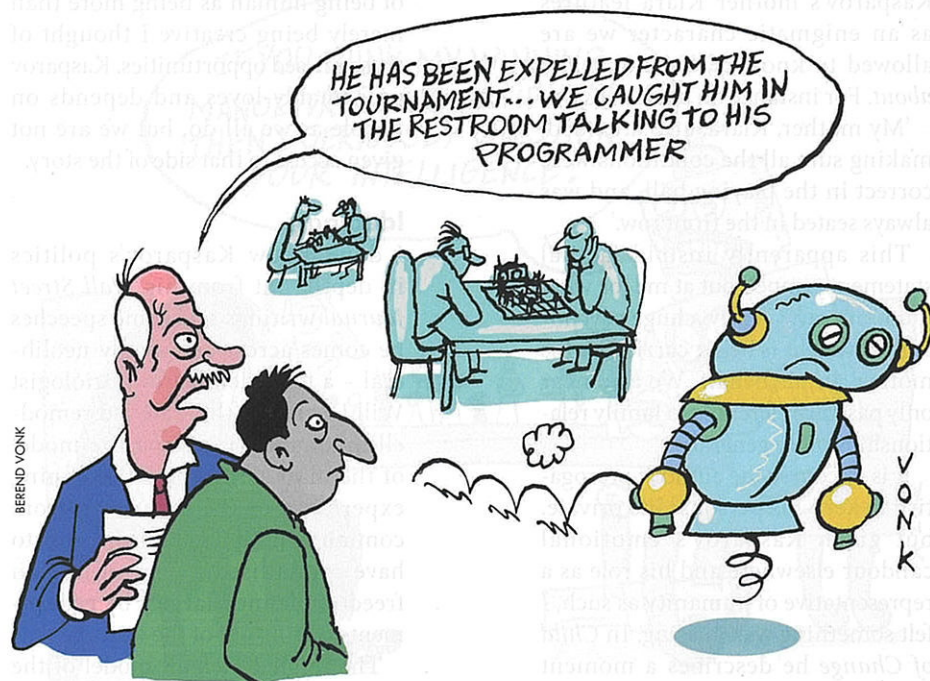
The AI systems that we venerate always aggregate human data and expertise in ways that goes mostly unacknowledged, partly because we don't have yet good micro-payment systems to financially reward people for their efforts. For example, automatic translation software updates itself with recent human translations of new terms to remain effective, but don't pay them for it. Whatever AI is – and it might just be a research funding category – it now exists in the context of 'surveillance capitalism'

in which data, power and profit are increasingly the same thing.

With Deep Blue, IBM assumed instrumental private ownership of a body of knowledge and understanding that was arguably our collective inheritance, and Deep Mind is now doing something similar. The more you look at technology, the more political it becomes.

Integration

The narrative crescendo moves towards its finale with the following remark: 'Our algorithms will continue to get smarter and our hardware faster. Machines gradually improve at a given task to the point where they no longer benefit from human partnership, the way elevators outgrew their operators. This is the way it goes, and will continue to go if we are lucky enough to enjoy a continued stream of technological advances. I assume we will, and this is very good news because the alternative is stagnation and declining living standards. To keep ahead of the machines, we must not try to slow them down because that slows



us down as well. We must speed them up. We must give them, and ourselves, plenty of room to grow. We must go forward, outward and upward.'

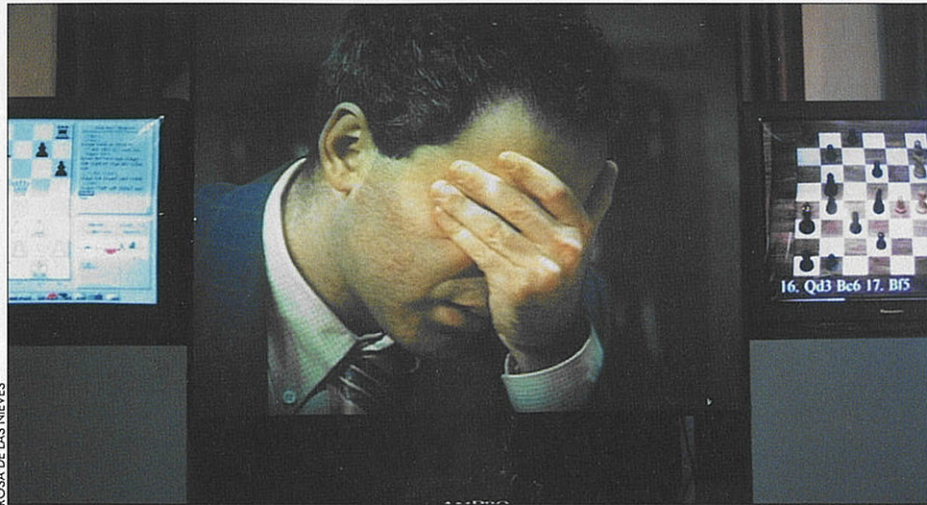
Forgive me, is this more than vacuous cheerleading? The statement is laced with ideology, hidden assumptions and naïve optimism.

The problem is not just millions of workers losing their jobs to robots without ever knowing which way is 'forward' or 'outward' or 'upward' – although we probably need more than a universal basic income to deal with that. The deeper problem is that Kasparov has not connected his enthusiasm for the work of Daniel Kahneman and Dan Ariely on human automaticity and irrationality mentioned elsewhere in the book with our vulnerability to technological change.

Alas, in the early 21st century we are not empowered citizens consciously and rationally choosing how to shape the world through our *Demos*. Mostly we are habitual consumers of, for instance, Google, Amazon, Facebook and YouTube, where algorithms about our choices are mined by digital advertisers.

Such platforms and corporations may not be malevolent, but if the economic system is driven by novelty and profit alone, they will continue to shape the world by monetising our attention. They know – because behavioural scientists tell them – which of our emotional and status-seeking buttons to press to get us to look at some things and not others, and then scroll, or press or buy, or vote a particular way. And unless we adapt psychologically and politically we will mostly – dare I say it? – be pawns in someone else's game. In other words, not free at all.

This point leads to the final exquisite irony. Kasparov's enthusiasm for embracing technological change seems genuine, but also blink-



ROSA DE LAS NIEVES

New York, May 11, 1997. The opening gamble in Game 6 has led to disaster. After a mere 18 moves Garry Kasparov's position is totally lost and of course he knows it.

'We have mostly thought of this match as a battle between human and machine, but the deeper, more consequential struggle of the match was the battle between public good and commercial interest.'

ered. The key factor in his assessment surely should be the same key factor that determined the outcome of his match with Deep Blue in 1997. Throughout the book, Kasparov shares his disappointment that IBM simply wanted to win to increase their stock price rather than pursue a shared scientific encounter. That, there, is the political front line. We have mostly thought of this match as a battle between human and

machine, but the deeper, more consequential struggle of the match was the battle between public good and commercial interest, which are by no means always aligned.

I now wonder if the reason Kasparov can't fully let go of the notion he was mistreated in the 1997 match is because facing the fuller truth would require a painful ideological adjustment. Indeed, the main lesson humanity needs to learn from the Deep Blue match in 1997 might be the one Kasparov does not seem to have learnt: corporations are not our friends.

What matters most for humanity's future is not whether a technological development is interesting. What really matters is: who owns this technology, what do they want to do with it, and how will we respond for the greater good?

We don't have to be fatalistic or pessimistic about that question, but we need extraordinary political courage and paradigmatic insight to answer it properly. If technology is going to be a humanising tool and not a dehumanising threat, we are going to need some very deep thinking indeed. ■