Special Issue: Article

CONVERGENCE

Deep new: The shifting narratives of artificial intelligence from Deep Blue to AlphaGo

Convergence: The International Journal of Research into New Media Technologies
2019, Vol. 25(4) 627–642

DOI: 10.1177/1354856519829679
journals.sagepub.com/home/con
SAGE

Paolo Bory
USI Università della Svizzera italiana, Switzerland

Abstract

The article compares two key events that marked the narratives around the emergence of artificial intelligence (AI) in two different time frames: the game series between the Russian world champion Garry Kasparov and the IBM supercomputer Deep Blue held in New York in 1997, and the Go game series between the South Korean champion Lee Sedol and DeepMind's AI AlphaGo held in Seoul in 2016. Relying on a corpus of primary and secondary sources such as newspapers and specialized magazines, biographic books, the live broadcasts and the main documentaries reporting the challenges, the article investigates the way in which IBM and Google DeepMind used the human–machine competition to narrate the emergence of a new, deeper, form of AI. On the one hand, the Kasparov–Deep Blue match was presented by broadcasting media and IBM itself as a conflictual and competitive form of struggle between human kind and a *hardware-based*, *obscure* and *humanlike* player. While on the other hand, the social and symbolic message promoted by DeepMind and the media conveyed a cooperative and fruitful interaction with a new *software-based*, *transparent* and *un-humanlike* form of AI. The analysis of the case studies reveals how AI companies mix narrative tropes, gaming and spectacle in order to promote the newness and the main features of their products. In particular, recent narratives of AI based on human feelings and values such as beauty and trust can shape the way in which the presence of intelligent systems is accepted and integrated in everyday life.

Keywords

AlphaGo, Artificial intelligence, Deep Blue, Google DeepMind, IBM, newness, new media, narratives of AI

Corresponding author:
Paolo Bory, USI Università della Svizzera italiana, Istituto Media e Giornalismo (IMeG). Via G. Buffi 13, CH-6900 Lugano, Switzerland.
Email: paolo.bory@usi.ch

Introduction: Board games, spectacle and machines

'Beauty will save the world'

Fëdor Dostoevskij

Since the birth of computer sciences, artificial intelligence (AI) has been studied, tested and imagined through the practice of gaming, especially by means of board games. Yet, humans and machines were playing board games long before the creation of the first computer program coded by Alan Turing, not by chance, to play chess. As early as the late 19th century, new playing machines were publicly exposed and tested in Europe. The famous *Maelzel's Mechanical Turk* went around European courts challenging expert and non-expert chess players. This mechanical player, like its many imitations, shocked the European aristocracy by combining gaming, spectacle, art and illusionism. The machine was almost unbeatable, and its mysterious secret obsessed even poets and writers like in the case of Edgar Allan Poe (1836), who wrote a long paper to demonstrate that there was a trick behind the machine. The trick was eventually discovered by Frederick II of Prussia, who unmasked the brilliant dwarf manoeuvering the machine from the inside. Since then, humans and machines, whether real or fake, continued to play chess in different parts of the world (Bory, 2016).

When computer sciences and cybernetics were born, pioneers such as Claude Shannon (1950) and Arthur L Samuel (1959) looked at chess with deep interest. According to these forerunners, board games were one of the best tools to teach intelligent systems human thinking. The idea of a thinking machine capable of solving complex problems was part of the dream of the human–machine symbiosis professed by Joseph Licklider a few years later (1960). Licklider's vision, which has in part come true with the diffusion of the so-called artificial narrow intelligence, has persisted until the present. During the 1980s, David Levy, the founder of the *Computer Olympiades* and one of the first professional chess players to lose against a chess program, argued that an advanced chess machine would serve to solve human problems in long-range planning. Levy questioned:

> Is it more difficult to win the World Chess Championship than it is to plan the year's budget for a nation or to solve a difficult diplomatic crisis with the flair of Kissinger? I doubt it. (Levy and Newborn, 1982: ix)

Such claims are part of a long-standing controversy on what intelligence is, or should be (e.g. Dreyfus, 1972; Russell and Norvig, 2014). Chess and the ancient game of Go in the Asian context have always been at the heart of the scientific and philosophical debate around the very meaning of the term intelligence and the potential impact of intelligent systems on societies. For example, one of the main oppositions to Levy's assumption, as John Searle argued in 1980, is that an AI capable of playing chess would never understand the meaning of play and the game itself. Notwithstanding its long history (see Ensmenger, 2012; McCorduck, 2004: 171–184), this complex debate re-emerges periodically in public and scientific discourses thanks also to the circulation of fictional narratives based on the narrative trope of the AI playing chess.

Beside science, pop culture is probably the main arena in which the intelligence controversy has been addressed and represented over time. Sci-fi movies and literature have frequently narrated the human–machine chess challenge in order to depict the future birth of a superior intelligent being (Bory and Bory, 2015). Starting from the 1960s, in fact, several cult sci-fi movies adopted this narrative trope. Think for instance of the chess games played by HAL 9000 in *2001 A Space*

Odyssey (Kubrick, 1968), or the supercomputer Joshua asking for a chess game in the last scene of *Wargames* (Badham, 1989), or think about the mortal chess game between the android Roy Batty and its creator in *Blade Runner* (Scott, 1982).

Drawing on such a fixed imaginary, not only researchers and sci-fi stories, but also digital media companies have recently adopted board games to test and especially to show the progress of intelligent systems. In this context, the challenges between human champions and new prototypes of AI are often portrayed as watershed moments in which a new and powerful artificial mind has come into being. Gaming, coupled with spectacle, becomes a distinctive narrative tool to expose not only new technological artefacts, but also emerging forms of human–machine interaction.

As the media historian Gabriele Balbi (2015) has aptly shown, disruptive narratives can create forms of collective astonishment through which a new medium breaks into social reality:

> The new becomes new through a phase of astonishment in which society sees a new medium as something disruptive with no ties with the past; this phase, often polarized between hopes and fears, helps to bring attention to the new as new. (Balbi, 2015: 239)

The victory of machines over human players is a clear example of a narrative strategy apt to astonish the public and drive attention towards a specific narrative of newness and technological change. In this regard, board games such as chess and Go can be seen as an elective territory for scientific and philosophical debates as much as an ideal frame through which private and public actors can promote, disseminate and provide a collective narrative around technological novelties. In brief, games contribute to the consolidation and the construction of an imaginary of the future, or, in the words of Marshall McLuhan, they can 'shift familiar experience into new forms, giving the bleak and the blear side of things sudden luminosity' (McLuhan, 1964: 267).

When it comes to AI, the concept of newness does not just imply technological change; the birth of a new intelligent form entails the emergence of unexplored societal and sociotechnical landscapes. Notably, intelligent systems are the main characters of a future social sphere in which humans and machines would not only coexist, but also dialogue, empathize or even, in the worst-case scenario, run into conflict. In this regard, narrative tropes, gaming and spectacle act as narrative vehicles to imagine and forecast the new. Such spectacular *plays* set up a discursive arena in which the future relationship between humans and AI is at the same time narrated and tested, thus concurrently imagined and experienced. Board games such as chess and Go are in fact by themselves 'interactive environments' apt to show the potential newness of AI systems and new forms of human–AI interaction. Furthermore, as a symbolic simulation of the future, the human–machine challenge becomes a narrative bridge by which leading companies can inject positive values and social trust in AI, facilitating the social acceptance of artificial companions in everyday life. In order to become 'habitual media' (Chun, 2016), AIs must be seen not only as new and desirable media, but also as harmless, cooperative and empathic companions (McStay, 2018).

This article compares two main events that cast a new light on the revolutionary power and the newness of AI through the spectacularization of the human–machine competition: the second game series between the Russian world champion Garry Kasparov and the IBM supercomputer Deep Blue held in New York in May 1997, and the Go game series between the South Korean champion Lee Sedol and Google DeepMind's AI AlphaGo held in Seoul in March 2016. Situated respectively in the 'golden age' of personal computing and in a new 'summer' (Natale and Ballatore, 2017) of the AI myth, these two events transcended the thresholds of scientific and professional milieus, presenting the state of the art of a new, disruptive, technology on a global scale.

More specifically, after a brief description of the common narrative structure characterizing the events, this work will highlight the differences between the narratives that IBM and Google DeepMind deployed to convey the newness and the distinctive features of their respective products. This narrative shift is summarized in the juxtaposition of the following concepts: *hardware versus software*, *opacity versus transparency* and a *humanlike versus un-humanlike* characterization of the AI. On the one hand, the Kasparov–Deep Blue challenge was presented by news media and the IBM itself as a conflictual and competitive struggle between mankind and a *hardware-based*, *inscrutable* prototype of AI that was eventually *humanized* after its unexpected disposal. On the other hand, in 2016 Google DeepMind's AlphaGo was narrated quite differently, as an emergent *software-based*, *transparent* and *un-humanlike* form of intelligence.

The description of the narrative shifts relies on the analysis of primary and secondary sources such as: the two main documentaries reporting the story of the matches, one released in theatres in 2003 and one in 2017 on Netflix, respectively (Jayanti, 2003; Kohs, 2017); the live broadcast on US and South Korean TV; specialized and general interest magazines' digital archives (e.g. *Wired* and *Newsweek*); newspapers' digital archives (e.g. *The Washington Post* and *The Guardian*); media interviews with the players; IBM and DeepMind's official statement and scientific papers (e.g. Hassabis, 2017; Silver et al., 2016); and biographic books (Hsu, 2004; Kasparov, 2008, 2017). The selection of relevant sources took into consideration the following criteria: the size and the typologies of reference audiences (e.g. prestigious specialized magazines and newspapers were selected because of their wide expert and non-expert readership while the two documentaries circulated on mainstream media such as cinema and television shortly after the events); the authorship of the literature (primary sources such as biographic books authored by the protagonists of the matches were privileged over external sources); the availability of archival digital sources (the live broadcasts of the matches are often fragmented and difficult to retrieve, whereas some key articles and chronological coverages of the events are more available).

Through the analysis of this corpus of sources, the work will scrutinize how the game series of chess and Go conveyed the potential impact of a 'new' artificial mind on societies both at technological and cultural level. Eventually, the conclusive paragraph interrogates critically these narratives in order to stimulate further reflections around the way in which corporate players promote the emergence of AI on a global scale.

The shifting narratives of AI from Deep Blue to AlphaGo

As a long tradition of game theorists has aptly shown (e.g. Caillois, 1961; Fink, 1960), games create a specific environment that stands out from ordinary life. In this neutral arena, the so-called 'magic circle' (Huizinga, 1950), players, rules and gameplay can construct a specific, self-ending story with its own narrative structure. Furthermore, games can be inspired by reality, transferring a variety of *serious* human activities such as war and economic exchanges into fictional worlds. Notably, board games like chess and Go are inspired by the surrounding and positional strategies of war and are bearer of a specific narrative of competition between minds. As the game scholar Eric Zimmerman argues:

> A game of chess could be also considered a narrative by this scheme. Chess certainly has a beginning state (the setup of the game), changes to that state (the gameplay), and a resulting insight (the outcome of the game). It is a representation, a stylized representation of war, complete with a cast of colorful characters. And the game takes place in highly patterned structures of time (turns), and space (the checkerboard grid). (Zimmerman, 2004: 157)

Although Chess and Go share the metaphor of war, a crucial difference between the two games lies in the larger degrees of freedom of Go compared to chess. It is because of the infinity of possible moves and scenarios that in Asian culture Go is more associated with imaginative, creative thinking than with rigorous and logical reasoning. Furthermore, in AI theory, this imaginative and intuitive dimension of Go is also the distinctive feature that makes this game extremely difficult for machines to play, if compared to chess.

From a narratological perspective, the Kasparov–Deep Blue and Sedol–AlphaGo challenges followed a common structure during both the game play and the showing of the game, starting from the 'setup of the game'. First, both game series were organized and promoted by a leading company in the digital media market: IBM was one of the leaders of the computer industry in 1997, while Google was one of the main investors in AI research and development in 2016, especially after the acquisition of DeepMind in January 2014 (Gibbs, 2015). Furthermore, both events involved two Western companies and two non-Western world champions, a Russian and a South Korean master. Third, the events were massively promoted in newspapers, on TV and specialized websites also involving the participation of professional players, scientists, philosophers and journalists during the live broadcast of the challenges. Finally, the gameplay of the matches was characterized by two key moments that symbolized the superiority of the machine over the human mind. These key-moves, as I will show in the next paragraphs, drove the matches towards the defeat of Garry Kasparov and Lee Sedol.

During the setup of both stories, a common sense of fear and curiosity towards a potential victory of the machine characterized the narratives of news media. Notably, the days before the human struggle against Deep Blue and AlphaGo, journalists, philosophers and scientists tried to forecast the potential effects of an AI's success over a human mind. In an article published in *Newsweek* a few days before the match, the Yale professor of computer sciences David Gelernter compared a potential victory of Deep Blue to the day in which Charles Lindbergh flew the first solo flight from New York to Paris (Levy, 1997). The morning of the first game, the CBS anchor opened the news asking: 'The future of humanity is on the line?' (CBS, 11 May 1997). Similarly, the day before the first game between Lee Sedol and AlphaGo, an article in *The Guardian* pointed out:

> If AlphaGo wins its match against Lee Sedol, it will mean much more than just a stepping stone in DeepMind's own progress. One of the last areas of mental competition in which humanity had an advantage over machines will have been vanquished. (Hern, 2016)

A shared feeling of the *uncanny*, in this case a mixture of fear and fascination towards the emergence of a new technological artefact (Gunning, 1998), characterized the media coverage of the two challenges. As Luke Goode has recently (2018) pointed out, the *uncanny* effect has always invested narratives of AI both in fictional and real stories. According to Goode, new forms like humanoid robots 'are too lifelike to perceive as merely a safely inanimate object, yet insufficiently lifelike to appear fully "alive"' (Goode, 2018: 195). As it emerges from the narratives surrounding the two case studies of this work, the *uncanny* effect does not only concern the material manifestations of artificial agents; the thin line separating human and non-humans can be even more blurred when it comes to immaterial, or invisible, intelligent agents.

In this regard, as noted before, Deep Blue and AlphaGo were not only depicted as new powerful artificial players, they could be disrupting innovations capable of revolutionizing the way in which humans and machines would interact in the near future.

This recurrent 'imaginary future' (Barbrook, 2007) of a super intelligence was narrated in both the pregame commentaries; it was an imaginary future on the edge between the contrasting feelings of hope and fear, characterized by the attraction towards the new and the threats of a new 'being' capable of surpassing human intelligence.

From a media history perspective, beside the shared expectations towards the potential outcome of the battle, both matches were played in two crucial phases of the domestication process (Silverstone and Haddon, 1996) of computers and AI, respectively. During the 1990s, personal computers were crossing the thresholds of millions of households and IBM was one of the main hardware producers worldwide. For example, only in the United States, the percentage of households owning a computer grew from 12% in 1991 to 42% in 1998 (ITU, 2016). In 1997, when Garry Kasparov lost the game series against Deep Blue, computer industry was in its heyday, and metaphors such as the *information superhighway* and the *cyberspace* were circulating as symbols of a sociotechnical change that was made possible thanks to the global penetration of personal computers in Western countries. Similarly, when in 2016 Google DeepMind invited Lee Sedol to play against AlphaGo, AI was becoming one of the strategic sectors for tech giants like Google, Facebook and Amazon, among others. Notably, over the last decade, these companies, and especially Google that is primarily a software producer, have been investing more and more on R&D AI units to improve new services such as semantic search engines, targeted advertising, self-driving cars and AI assistants.

However, notwithstanding these points in common, the way in which Deep Blue and AlphaGo were depicted, especially during and after the matches, diverges significantly in terms of narratives of technological change and corporate identity. As the following paragraphs aim to show, there are at least three shifting and conflicting elements of the narratives of AI adopted by IBM and Google DeepMind to promote and represent their new intelligent machines. Firstly, IBM's Deep Blue was a hardware-based machine, whereas AlphaGo has been depicted as a body-less intelligence: on one hand a powerful calculative machine and a self-learning, body-less intelligence on the other. Secondly, whereas the strategy of IBM was to hide the machine's thinking and the machine's body from the eyes of the public and those of its opponent, Google DeepMind decided to expose the functioning of its artificial mind by describing the way in which AlphaGo thinks and also the role of the research team working behind the scenes. Finally, both the narratives of AI can be traced through the turning point created by an unusual, shocking move played by the artificial system during the games. I will argue that the symbolic value of these key-moves conveyed different representations of Deep Blue and AlphaGo: a humanlike mind and an un-humanlike being, respectively.

Hardware versus software

The first clear difference between the narratives surrounding Deep Blue and AlphaGo lies in the presence or absence of a *machine body*. Even if it was depicted as a 'faceless monster' by Kasparov himself (Jayanti, 2003: min 5:00), Deep Blue had no human traits but it had a real, physical, body: a big, heavy, black box. The voice-over in the documentary *Game Over: Kasparov and the Machine* describes Deep Blue as follows:

> IBM produced something which was completely different. It was a program put into a hardware. They put 200 chips and made it work in parallel. [. . .] Deep Blue was running 200 million positions per second. (Jayanti, 2003: min 13:30)

The sci-tech journalist Steven Levy described the machine with even more emphasis:

> IBM's Deep Blue – a customized RS/6000 SP supercomputer, much improved since last year's dustup. Weighing in at 1.4 tons, it stands in twin black cabinets suggesting two Darth Vader Portosans. Inside are 32 nodes (computing engines in themselves) that work together to make it a computational terror. (Levy, 1997)

As these quotes show, *hardware* was the key component of Deep Blue's technological shape and novelty. Indeed, in line with the technological imaginary of the 1990s, this giant box containing hundreds of chips working in parallel was more reminiscent of the old mainframes and modern supercomputer for high performance computing than of the recent, supposedly invisible, cloud-based software. Furthermore, symbols like the red eye of HAL 9000 on the main poster of the event (with the wording *'Hot to make a computer blink?'*) emphasized the way in which IBM played with the sci-fi imaginary of computers as superbrains.

On the contrary, AlphaGo, in its dedicated documentary *AlphaGo*, as in any TV shows and news broadcast during the match, has been presented as a body-less, immaterial software. In all these media representations, AlphaGo's thinking is displayed on the tens of screens full of graphs, matrices and oscillating lines, or through the chaotic schemes drawn on the dashboards of DeepMind's headquarters' offices.

In line with this immaterial representation, and with the cultural representations of cloud computing in the 2010s, the official website of DeepMind highlights the novelty of AlphaGo as follows:

> In order to capture the intuitive aspect of the game, we knew that we would need to take a novel approach. AlphaGo therefore combines an advanced tree search with deep neural networks. These neural networks take a description of the Go board as an input and process it through a number of different network layers containing millions of neuron-like connections. (DeepMind, 2018a)

No chips, no millions of moves per second. AlphaGo is a pure *network* made of neural networks, with no preferential body to inhabit. The choice of Google DeepMind to not give even a symbolic body to its creature is in line with the pervasive metaphor of the cloud adopted by digital media companies worldwide: intelligence, as data, is ubiquitous. This ubiquity goes, in DeepMind's narrative, in parallel with the AI's dynamicity. Quite differently from any device-dependent software, an independent AI can be used for a wide range of purposes. A ubiquitous system can achieve multiple tasks and operate on different data networks, just like those AI-based data services provided by Google to commercial and individual users today. Furthermore, there is another, more philosophical aspect behind the disembodiment, or even the disappearance of AlphaGo's body: the absence of a recognizable physical shape of the artificial mind enacts the imaginary construction of a *pure* intelligence. To some extent, the disembodiment of the machine facilitates its social representation as a being. This is an old and powerful idea that has been deeply rooted in sci-fi and techno-gnostic narratives for a long time: the liberation from physical and material constraints capable of enacting 'the transition from the laboring body into the symbol-processing mind' (Davis, 2015: 139). Eventually, thanks to a complex entanglement with two other shifting elements of its particular narrative, DeepMind seems to have reached its goal: to make AlphaGo an immaterial entity.

Opacity versus transparency

A second key difference between the narratives of AI lies in the different degrees of transparency that IBM and DeepMind adopted before, during and after the matches. In particular, according to

Kasparov, the match against Deep Blue in 1997 was compromised by a lack of transparency of the IBM research team that kept secret the way in which Deep Blue was thinking and processing data. Indeed, between each game of the series, IBM refused to share the machine logs. This increased the psychological stress of Kasparov who could neither study nor understand the gameplay of the machine as players usually do when analysing the game records of their human opponents. Furthermore, even when the match was over, IBM did not release the logs of Deep Blue and it declined Kasparov's request for a rematch. After the outstanding victory (3.5 game to 2.5), the big black box, the body of Deep Blue, was split into two parts, one was moved to IBM's archives and the other is still visible at the *National Museum of American History* in Washington DC. This *opacity* of IBM in terms of collaborative spirit and knowledge exchange prevented any further public experimentation of the machine, making the Russian champion furious about the waste of such an opportunity for furthering science. According to Kasparov, in fact, IBM was wasting a unique chance to go into more depth of understanding of human–machine thinking:

> For half a century chess had been considered a unique field for the comparison of the human and machine minds, of intuition vs. calculation. To this day, the six games I played with the multi-million-dollar machine are the only ones ever made public. It was as if they had gone to the moon and not taken pictures. (Kasparov, 2008: 215)

Such a protective and mysterious approach spread doubts about IBM's fair play, although Feng-hsiung Hsu, the system architect of Deep Blue, denied any form of cheating, claiming also that an eventual rematch would cost too much to the company (Hsu, 2004).

However, the idea of a hidden human hand manoeuvering the machine during the games, like the *Mechanical Turk* did in the 19th century, not only affected Kasparov's self-control; it also stimulated a sort of conspiracy theory among game analysts, fans and commentators. This vision was also fed by IBM's decision to lock the machine in a room of the hotel where the match was held, a room to which access was restricted to IBM members, in Kasparov terms 'a pentagon secret room' (Jayanti, 2003: min 27:26). Twenty years after his coverage of the matches for *Newsweek*, Steven Levy argued on *Wired*:

> Two decades later, it's clear that the significance of that outcome rests as much on how Kasparov was defeated. [. . .] When I covered Kasparov-Deep Blue match, I thought the drama came from a battle between computer and human. But it was really a story of people, with brutal capitalist impulse, teaming up with AI to destroy the confidence and dignity of the greatest champion the world had seen. That leads me to believe it's not Skynet that should worry us about AI, but rather the homo sapiens who build, implement, and employ those systems. (Levy, 2017)

Aware of this risky precedent, DeepMind's promotional strategy was much more transparent in 2016. Actually, before the match with Sedol, the team led by the computer scientist Demis Hassabis had already published in *Nature* (Silver et al., 2016) the results of the games won by AlphaGo against the European Go champion Fan Hui. Again at academic level, another paper describing the recent developments of AlphaGo was published a few months after the victory in the game series with the South Korean champion (Silver et al., 2017). At public level, Hassabis and colleagues released interviews and gave cameras access to their offices, thus programming a public disclosure of the genealogy of AlphaGo from the beginning. The resulting documentary *AlphaGo* contains details and accessible demonstrations of the functioning and the decisional processes lying behind AlphaGo's choices. In this movie, which relies also on several live streams of the game, DeepMind' scientists, managers and researchers answer questions, reveal personal emotions

and literally open the doors to the world of DeepMind; the rooms where AlphaGo was created and the different steps of its development are open, clear and visible to the audience. Furthermore, the constant involvement of external researchers and Go experts, people who did not work for DeepMind, increased the supposed neutrality of the narration. Overall, this transparent approach conveys an image of DeepMind as a trustable, professional and ethical company (DeepMind, 2018b). At symbolic level, the narrative results in a transfer of value from the inventor to the invention, which is a common trope of the biographies of media. Think about the unbreakable link between the World Wide Web and Tim Berners-Lee's open vision of the future, or the symbolic bond of Apple products with the rhetoric of revolution of Steve Jobs (Natale and Bory, 2017). As in these exemplary cases, AlphaGo has incorporated and introjected the transparency and trustworthiness of its creators. In sum, if on one hand the potential newness of Deep Blue was affected by the *opacity* of the machine and the strict confidentiality of IBM, on the other DeepMind's communication conveyed the idea that transparency and openness are two building blocks of both the research environment and the resulting products of this company. This gap in terms of transparency represents another important shift in the narratives of AI analysed in this work.

Actually, from an historical perspective, IBM did not have a need to *undress* the machine or to unveil the secrets lying behind it since at the time AI was not a strategic asset on which the company would count on in the near future. In this historical phase, in fact, AI was still re-emerging from its *second winter*, a period in which investments and general interest in the AI sector were very low (Natale and Ballatore, 2017; Schank, 1991). By beating Kasparov, IBM pursued a different goal: Deep Blue emphasized the company's ability to build and assemble powerful computers. To IBM, it was more important to flex its muscles during a key moment for the computer industry, in which competition was very high, than to show the evolution of AI at a technical level. On the contrary, Google DeepMind's first goal was to promote AI as a transparent, trustworthy and harmless technology in an historical phase in which Google, as all its competitors, put AI-based products at the centre of its market strategy.

Humanlike versus un-humanlike

During the opening press conference of the matches, Garry Kasparov and Lee Sedol were convinced of the human supremacy over machine thinking. They believed, as many other did, that machines were pure calculation; their gameplay would be predictable because it would be too logical. According to the two champions, first in chess, and infinitely more in Go, AI could not play positional moves as humans do, or, in brief, machines did not possess human intuition and creative thinking.[1]

The most powerful anecdotes, the turning points, of the two stories deal with this long-standing idea that intuition is a distinctive feature of humankind not replicable by machines. Challenging this assumption, two key-moves played by Deep Blue and AlphaGo during the matches undermined the two champions' strong beliefs. The moves were move 36 played by Deep Blue in game 2 of 1997 and move 37 played by AlphaGo in game 2 of 2016 (curiously same game, only one move difference). These moves were collectively seen as two turning points in the human–machine competition history. More specifically, both moves triggered a long debate on the capacity of these machines to think *differently* from pure calculation, thus adopting a creative strategy and a positional gameplay typical of humans. However, as the stories unfold, the outcome of this controversy diverged significantly in terms of symbolic meaning.

When Deep Blue played move 36 in game 2, Kasparov's mind crashed. With this move, the computer decided to not profit from a two-piece advantage (two pawns in sequence), preferring a positional move, thus a strategy that could, not mathematically but strategically, provide an advantage in the long run. As reported during the press conference and in Kasparov's biographic book, the Russian felt a human hand controlling the machine, thus putting the fair play of IBM into contention. On the same wavelength, Jeff Kisseloff, the reporter hired by IBM to cover the match, claimed: 'It didn't play like a computer, it played like a human being'[2] (Jayanti, 2003: min 39.50). From that moment on, Kasparov could not grasp his opponent gameplay anymore, since the machine played too *human like*. Exhausted because of the mental pressure of the match, obsessed by the mystery of this anecdote and furious with IBM's reluctance to show the machine log, Kasparov lost the match, playing badly in the last game and making a series of crucial mistakes. Two decades later, in his book on the failed and successful predictions in history, Nate Silver (2012: 270–274) unveiled the secret behind move 36: it was a bug, a glitch of the machine. In the end, the *humanlike* move of the machine was the result of a bug that the American chess grandmaster Murray Campbell, who was working for the IBM team, tried to fix in vain. What appeared to be a humanlike move was thus caused by a human mistake in the machine program. However, as often happens when history revises untrue narratives, the humanlike gameplay of Deep Blue has become a recurring anecdote in the history of human–machine interaction.

This narrative trope of the key-machine-move was replayed in 2016, when AlphaGo decided to play move 37 during game 2 against Lee Sedol. In that moment, Sedol was smoking a soothing cigarette on the balcony of the *Four Seasons* hotel in Seoul (differently from the Kasparov–Deep Blue match, all games were played in South Korea and not in the United States). When Sedol sat back down at the table surrounded by the icy silence of the attendants, his face took on a distraught expression. Not only the Korean champion, but every single character of the plot (journalists, players, even DeepMind's team) was shocked. Eventually, the pathos of the scene resulted in a shared feeling: the move was beautiful. As the European Go champion and DeepMind consultant Fan Hui claimed:

> Normally humans would never play this move. [. . .] Move 37 is beautiful, beautiful, very beautiful! (Kohs, 2017: min 50:20)

This feeling of beauty was unanimously shared by Korean and U.S. Go players who agreed on the fact that not a single human player would have chosen move 37. The day after, DeepMind revealed that AlphaGo decided to play that move for this very reason since the possibility that a human player would play that move was 1:10,000. If Deep Blue's move 36 was too *humanlike*, AlphaGo's move 37 was an *un-humanlike* choice.

From this move on, the concepts of beauty and unhuman-likeness converge in the ideas of newness and change. The collective discourses surrounding the emergence of AlphaGo highlight this strong correlation:

> AlphaGo went *beyond its human guide* and it came up with something *new*, and creative, and *different.* (John Searle in Kohs, 2017: min 51:10, emphases added)
>
> I thought AlphaGo was based on calculation and that it was merely a machine. But when I saw this move, I *changed* my mind. Surely, AlphaGo is *creative*. This move was really creative and *beautiful.* (Lee Sedol in Kohs, 2017: min 52:20, emphases added)
>
> The more I see this move I feel something has *changed.* (Fan Hui in Kohs, 2017: min 53:00, emphases added)

In addition, specialized magazines and newspapers contributed to the dissemination of this narrative. In an article published on *Wired* titled *In Two Moves, AlphaGo and Lee Sedol Redefined the Future,* Cade Metz described the moment and the un-humanlike thinking of AlphaGo as follows:

> It was a heartbreaking moment. But at the same time, those of us who watched the match inside Seoul's Four Seasons hotel could feel the beauty of that one move. [. . .] AlphaGo had calculated that there was a one-in-ten-thousand chance that a human would make that move. But when it drew on all the knowledge it had accumulated by playing itself so many times – and looked ahead in the future of the game – it decided to make the move anyway. And the move was genius. (Metz, 2016)

One year later, after a series of 50 games won online against Go champions, AlphaGo defeated the Chinese Go champion Ke Jie during *The Future of Go Summit* held in Wuzhen, China.[3] After the match, Ke Jie, who is considered the greatest Go player ever, defined AlphaGo as a *God*:

> To me, AlphaGo is a god, a being that can defeat anyone or anything. What he sees is the whole universe, while what we see is just a pond in front of us. (CGTN America, 2017)

The narrative shift from a *humanlike* to an *un-humanlike* or even *godlike* intelligence is a radical step in the conceptualization of AI. Whereas the narrative of Deep Blue's strange move stressed the idea of a machine capable of imitating human thinking, the narrative of AlphaGo's move 37, together with the narrative surrounding the following matches, represents a step forward in the human–machine interaction: the machine can think differently, and a new form of dialogue with artificial minds is possible. Following this pattern, another important narrative emerges from the gameplay: the never-ending competition between humans and machines can turn into a collaborative interaction between *complementary* intelligences. After losing the first three games, Lee Sedol played a genius move during game 4. Thanks to this move, Sedol won for the first and last time a game against AlphaGo feeding new hope in the capacity of human intuition. According to Sedol and to DeepMind, this move resulted from a deep knowledge of the game that matured in game 2. Eventually, move 37 made Sedol 'think about go in a *new* light. It was a very meaningful move' (Lee Sedol in Kohs, 2017: 54.40, emphasis added). In the end, the human being learned from the machine.

Conclusions: Deep new

Today, despite already operating on digital devices such as smartphones and computers for at least two decades, AI is still perceived as a new, disruptive technology. The constant presence of AI applications in our everyday lives also raises new questions related to sensitive fields such as ethics, moral choices and corporate responsibility (Bostrom, 2014; Bostrom and Yudkowsky, 2014). This explosion of public discourses around a medium in transition to full maturity, as the literature on media history has largely shown (e.g. Balbi, 2015; Peters, 2009; Silverstone, 1999), coincides with an historical moment in which the medium is perceived as new. In this strategic stage, the medium differentiates itself from the *old* in terms of social uses, technological shape and cultural impact. However, when it comes to AI, the conceptual boundaries between the 'old' and 'new' become extremely blurred. First, AI, from its first conceptualization to the present, has always been imagined as a potential *new* technology. Furthermore, its connotation as *intelligence* rather than as a device, such as televisions or computers, puts into discussion the theoretical validity of the term *media* itself. If old media are those 'that we imagine as fading, superseded, or

surpassed in the particular context in which we live' (Natale, 2016: 597), AI is a new media insofar as we imagine it as *appearing, supplant, replace* not only other technologies, but even human beings in some of their reflexive and contemplative abilities. To accept and welcome this uncanny presence, societies need to put trust in it, to look at the new as something useful but especially as a harmless companion. In this context, newness, by itself, has no evil or good connotation; rather it needs to be characterized by a shared belief in its positive impact, as in its intrinsic goodness. The deeper the intelligence of AI is – more deeply it can change our technological and cultural environment – the deeper the social need for safety is from such a powerful *thing*.

As Carolyn Marvin has shown in her seminal work on the newness of old media, the spectacular was essential to integrate electricity into modern life and to imagine the future role of electric media in society (Marvin, 1988: 154–190). Recently, during the 2017 *AI Conference* in San Francisco, the co-founder of Coursera Andrew Ng claimed that AI 'is the new electricity' (Ng, 2017). According to Ng, as electricity drastically changed industry in the last century, AI is now radically changing contemporary industries, 'the only industry which will not be transformed will probably be hairdressing' (Ng, 2017). The two events analysed in this work, mixing Marvin's and Ng's narratives, are two forms of spectacularization of the new electricity of the 21st century.

Nevertheless, as stressed before, the Kasparov–Deep Blue matches happened during a time in which AI was much more a *future* rather than a *contemporary* new media. What was initially perceived as a potential 'blow against humanity' (Jayanti, 2003: min 5:32) turned into a well-orchestrated drama more than in an effective shock for humankind. In the end, as Kathleen Woodward argues, despite the obscure plot in which it was situated, Deep Blue was treated by many as a person, as a human being that ultimately 'entailed the ascription of subjectivity' (Woodward, 2013: 183). Eventually, the characterization of Deep Blue as a threat disappeared with the imaginative humanization of the machine. Also because of the lack of depth in scientific analysis, the reluctance of IBM to share the machine log and because of the separation of Deep Blue's body, the enthusiasm and the fear of the machine faded away. A few months after the match, scientists and philosophers argued that the victory of Deep Blue did not bring along a real revolution. For example, an analyst of *The Washington Post* claimed:

> The truth of the matter is that Deep Blue isn't so smart. It does not for a moment function in the manner of a human brain. It is just a brute-force computational device. Deep Blue is unaware that it is playing the game of chess. It is unconscious, unaware, literally thoughtless. It is not even stupid. (Achenbach, 1997)

In the end, beside an unexpected growth of chess learning programs, Deep Blue's main impact on reality concerned the IBM' stock volume value, which doubled after the last game of the series.[4]

When it comes to the match Sedol–AlphaGo and its follow-up storytelling, it is clear that DeepMind employed the narrative structure of the Kasparov–Deep Blue story.[5] Nevertheless, if the structure of the plot is the same, some key elements of the narrative surrounding the games with AlphaGo unveil a different picture, entailing different meanings and some crucial sociocultural implications. Through this media event, the research lab owned by Google poses itself as a trustable, revolutionary actor that will use its findings in the AI sector for the good of humanity. In March 2016, besides the commercial and public promotion of its research activities, DeepMind reached another important goal: to demonstrate to the public that the presence of AI in our everyday life can be positive and that the *new* can contribute to the collective and individual growth in terms of knowledge, creativity and counterintuitive thinking. Notably, this story has

been narrated touching human feelings and emotions. Not by chance, *beauty* is the buzzword that re-emerged constantly in the Lee Sedol–AlphaGo challenge.

The set of the last scene of the documentary *AlphaGo* is a natural landscape with no technological artefacts. The scene shows the European Go champion Fan Hui walking on a green lawn, with his child on his shoulders. Walking free, Hui reflects about the future of humanity; his voice-over closes the scene saying:

> I feel beautiful, just it. I see the world different before everything begin. Maybe it will show humans something that they never discovered. Maybe it's beautiful. (Kohs, 2017: min 1.26:30)

Through the concept of beauty, DeepMind has used a distinctive human feeling to gain trust in its new products, turning the old imaginary of a new intelligence as a potential Frankenstein's monster into a narrative of togetherness, in which AI is an essential partner for the progress of humankind.

Games, mixed with spectacle, are an extraordinary tool to promote, disseminate and symbolically integrate human values into emerging technologies. Nevertheless, the attractive narratives of beauty, cooperation and co-growth can hide the dark sides of a corporate actor that detains an immense power on economic, technological, and thus political, sectors. In this regard, media and communication scholars have the important duty to understand how corporate narratives are driving the symbolic and cultural integration of new intelligent systems in society. So far, the match with AlphaGo is the only occasion in which humanity has faced an artificial alterity capable of communicating, or at least of meta-communicating, learning and even teaching humans new forms of creative thinking. Once confronted outside of the game board, will human and machines maintain this reciprocal attitude?

Acknowledgements

The author would like to thank the anonymous reviewers for their insightful comments and suggestions. The author is also grateful to Gabriele Balbi, Stefano Bory and Philip Di Salvo who provided some crucial feedback upon earlier versions of this article.

Notes

1. The blurred concept of creativity has always been at the centre of the philosophical debate around AI. For example, the *Computational Creativity* research looks at creative machine behaviour as the 'final frontier of AI' (Colton and Wiggins, 2012). This approach considers chess and Go as marginal activities if compared to creative fields such as art, poetry and cooking. Despite the urgency of this research field, together with others such as AI research on perceptual and motor functions, board games still function as elective fields to narrate and (mis)interpret AI creative behaviours.
2. After his support to Kasparov and his criticism of IBM, Kisseloff was eventually fired. IBM also denied him access to the game room.
3. The Chinese government forbade any form of dissemination (live streams, text analysis and even score reports) of the match between Ke Jie and AlphaGo (Wade, 2017). Not by chance, Go is one of the most important symbols of Chinese culture and tradition. As Clay Shirky argued in *The New York Times,* 'Anything that demonstrates that something special about China has turned out to be just another artificial intelligence problem that Google is better solving than any other company is additionally problematic' (Mozor, 2017).

4. Between 11 May and 13 May 1997 (the days after the defeat of Kasparov), the volume of IBM stocks rose from 11,747,000 USD to 22,649,200 USD, doubling in only 2 days. Source: https://finance.yahoo.com/quote/IBM/history?period1=862437600&period2=864943200&interval=1d&filter=history&frequency=1d (accessed 29 October 2018).
5. Kasparov participated in the public debate about *AlphaGo*. After the first game lost by Lee Sedol, the Russian champion tweeted: 'Condolences to Lee Se-dol on losing game one to Alpha Go. I hope he can recover, but the writing is on the wall'. Demis Hassabis, the founder of DeepMind, was a professional player and fan of Kasparov. Recently, he has published a review of Kasparov's new book *Deep Thinking,* in which Kasparov recounts the match against Deep Blue with a more objective stance. In a chapter titled Deeper Mind, Kasparov exalts the results of DeepMind, claiming 'Deep Blue was the end; Alpha Go is the beginning' (Kasparov, 2017: 62). Hassabis also interviewed the chess champion asking questions about the future of AI. During the interview, Kasparov criticized again the choices of IBM in 1997. Source: https://www.youtube.com/watch?time_continue=2317&v=zhkTHkIZJEc (accessed 1 February 2019).

References

Achenbach J (1997) In chess battle, only the human has his wits about him. *The Washington Post*, 10 May. Available at: http://www.washingtonpost.com/wp-srv/tech/analysis/kasparov/post3.htm (accessed 1 February 2019).

Badham J (1989) *Wargames*. US: MGM/UA Entertainment.

Balbi G (2015) Old and new media. Theorizing their relationships in media historiography. In: Kinnebrock S, Schwarzenegger C, and Birkner T (eds) *Theorien des Medienwandels*. Köln: Halem, pp. 231–249.

Barbrook R (2007) *Imaginary Futures: From Thinking Machines to the Global Village*. London: Pluto Press.

Bory P (2016) Ludus ex machina: the role of play in computer history. *Comunicazioni Sociali* 2: 317–329.

Bory S and Bory P (2015) The new imaginaries of artificial intelligence. *Imago. A Journal of the Social Imaginary* 6(1): 67–83.

Bostrom N (2014) *Superintelligence: Paths, Dangers, Strategies*. Oxford: Oxford University Press.

Bostrom N and Yudkowsky P (2014) The ethics of artificial intelligence. In: Frankish K and Ramsey W (eds) *The Cambridge Handbook of Artificial Intelligence*. Cambridge: Cambridge University Press, pp. 316–334.

Caillois R (1961) *Man, Play, and Games*. Urbana: University of Illinois Press.

CGTN America (2017) *GO champ Ke Jie talks about his match with Google's AI*. Available at: https://www.youtube.com/watch?v=UHU8lCctC-Q (accessed 1 February 2019).

Chun WHK (2016) *Updating to Remain the Same: Habitual New Media*. Cambridge: MIT press.

Colton S and Wiggins GA (2012) Computational creativity: The final frontier? In: *ECAI 20th European Conference on Artificial Intelligence* (eds De Raedt L, et al.), Montpellier, France, 27–31 August, pp. 21–26. Amsterdam: IOS Press.

Davis E (2015) *TechGnosis: Myth, Magic, and Mysticism in the Age of Information*. Berkeley: North Atlantic Books.

DeepMind (2018a) *The story of AlphaGo so far*. Available at: https://deepmind.com/research/alphago/ (accessed 1 February 2019).

DeepMind (2018b) *DeepMind ethics and society*. Available at: https://deepmind.com/applied/deepmind-ethics-society/ (accessed 1 February 2019).

Dreyfus H (1972) *What Computer Still Can't Do: A Critique of Artificial Reason*. Cambridge: MIT Press.

Ensmenger N (2012) Is chess the drosophila of artificial intelligence? A social history of an algorithm. *Social Studies of Science* 42: 5–30.

Fink E (1960) The ontology of play. *Philosophy Today* 4(2): 95–109.

Gibbs S (2015) Google buys UK artificial intelligence startup Deepmind for £400 m. *The Guardian*, 27 January. Available at https://www.theguardian.com/technology/2014/jan/27/google-acquires-uk-artificial-intelligence-startup-deepmind (accessed 1 Ferbuary 2019).

Goode L (2018) Life, but not as we know it: A.I. and the popular imagination. *Culture Unbound: Journal of Current Cultural Research* 10(2): 185–207.

Gunning T (1998) Re-newing old technologies: Astonishment, second nature and the uncanny in technology from the previous turn-of-the-century. In: Thorburn D and Jenkins H (eds) *Rethinking Media Change: The Aesthetics of Transition*. Cambridge: MIT Press, pp. 39–60.

Hassabis D (2017) Artificial intelligence: Chess match of the century. Demis Hassabis lauds Garry Kasparov's account of battling supercomputer Deep Blue. *Nature* 544: 413–414.

Hern A (2016) Google's artificial intelligence machine to battle human champion of 'Go'. *The Guardian*, 7 March. Available at: https://www.theguardian.com/technology/2016/mar/07/go-board-game-google-alphago-lee-se-dol (accessed 1 February 2019).

Hsu FH (2004) *Behind Deep Blue: Building the Computer That Defeated the World Chess Champion*. Princeton: Princeton University Press.

Huizinga J (1950) *Homo Ludens*. New York: Roy.

ITU (2016) *ITU World Telecommunication/ICT Indicators (WTI) database 2016*. Geneva: International Telecommunication Union.

Jayanti V (2003) *Game Over: Kasparov and the Machine*. Canada: ThinkFilm.

Kasparov G (2008) *How Life Imitate Chess*. London: Random House.

Kasparov G (2017) *Deep Thinking. Where Machine Intelligence Ends and Human Creativity Begins*. London: John Murray.

Kohs (2017) *AlphaGo*. US: Moxie Pictures.

Kubrick S (1968) *2001: A Space Odyssey*. US: Metro-Goldwyn-Mayer.

Levy S (1997) Man vs. machine. *Newsweek*, 5 April. Available at: https://www.newsweek.com/man-vs-machine-173038 (accessed 1 February 2019).

Levy S (2017) What Deep Blue tells us about AI in 2017. *Wired*, 23 May. Available at: https://www.wired.com/2017/05/what-deep-blue-tells-us-about-ai-in-2017/ (accessed 1 February 2019).

Levy D and Newborn M (1982) *All About Chess and Computers*. Berlin: Springer-Verlag.

Licklider JCR (1960) Man-computer symbiosis. *Human Factors in Electronics* 1(1): 4–11.

Marvin C (1988) *When Old Technologies Were New. Thinking About Electric Communication in the Late Nineteenth Century*. New York: Oxford University Press.

McCorduck P (2004) *Machines Who Think: A Personal Inquiry Into the History and Prospects of Artificial Intelligence*. Natick: A.K. Peters.

McLuhan M (1964) *Understanding Media: The Extensions of Man*. Toronto: McGraw-Hill.

McStay A (2018) *Emotional AI. The Rise of Empathic Media*. Los Angeles: SAGE.

Metz C (2016) In two moves, AlphaGo and Lee Sedol redefined the future. *Wired*, 16 March. Available at: https://www.wired.com/2016/03/two-moves-alphago-lee-sedol-redefined-future/ (accessed 1 February 2019).

Mozor P (2017) Google's AlphaGo defeats Chinese Go master in win for A.I. *The New York Times*, 23 May. Available at: https://www.nytimes.com/2017/05/23/business/google-deepmind-alphago-go-champion-defeat.html (accessed 1 February 2019).

Natale S (2016) There are no old media. *Journal of Communication* 66(4): 585–603.

Natale S and Ballatore A (2017) Imagining the thinking machine: Technological myths and the rise of artificial intelligence. *Convergence*, First Published 20 June 2017: 1–16. DOI: 10.1177/1354856517715164.

Natale S and Bory P (2017) Constructing the biographies of the Web: An examination of the narratives and myths around the Web's history. In: Brügger N (ed) *Web 25: Histories from the First 25 Years of the World Wide Web*. New York: Peter Lang, pp. 29–52.

Ng (2017) Artificial intelligence is the new electricity. Available at: https://www.youtube.com/watch?v=21EiKfQYZXc&feature=share (accessed 1 February 2019).

Peters B (2009) And lead us not into thinking the new is new: A bibliographic case for new media history. *New Media & Society* 11(1/2): 13–30.
Poe EA (1836) Maelzel's chess-player. *Southern Literary Messenger* 2(5): 318–326.
Russell SJ and Norvig P (2014) *Artificial Intelligence: A Modern Approach*. Harlow: Pearson.
Samuel AL (1959) Some studies in machine learning using the game of checkers. *IBM Journal of Research and Development* 3(3): 210–229.
Schank RC (1991).Where's the AI? *AI Magazine* 12(4): 38–49.
Scott R (1982) *Blade Runner*. US: Warner Bros.
Searle JR (1980) Minds, brains, and programs. *Behavioral and Brain Sciences* 3(3): 417–424.
Shannon CE (1950) XXII. Programming a computer for playing chess. *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science* 41(314): 256–275.
Silver D, Huang A, Maddison CJ, et al. (2016) Mastering the game of Go with deep neural networks and tree search. *Nature* 529: 484–503.
Silver D, Schrittwieser J, Simonyan K, et al. (2017) Mastering the game of Go without human knowledge. *Nature* 550: 354–359.
Silver N (2012) *The Signal and the Noise: Why So Many Predictions Fail but Some Don't*. New York: Penguin Books.
Silverstone R (1999) 'What's new about new media?' *New Media & Society* 1(1): 10–12.
Silverstone R and Haddon L (1996) Design and the domestication of information and communication technologies: Technical change and everyday life. In: Mansell R and Silverstone R (eds) *Communication by Design: The Politics of Information and Communication Technologies*. Oxford: Oxford University Press, pp. 44–74.
Wade S (2017) Minitrue: No live coverage of Ke Jie vs AlphaGo games. *China Digital Times*, 22 May. Available at: https://chinadigitaltimes.net/2017/05/minitrue-no-live-coverage-ke-jie-vs-alphago-games/ (accessed 1 February 2019).
Woodward K (2013) A feeling for the cyborg. In: Mitchell R and Thurtle P (eds) *Data Made Flesh: Embodying Information*. New York: Routledge, pp. 181-197.
Zimmerman E (2004) Narrative, interactivity, play, and games: Four naughty concepts in need of discipline. In: Wardrip-Fruin N (ed) *First Person: New Media as Story, Performance, and Game*. Cambridge: MIT Press, pp. 154–164.

Author biography

Paolo Bory is Postdoctoral fellow and Lecturer in Communication and Media Studies at the Institute of Media and Journalism, USI Università della Svizzera italiana, Switzerland. His research focuses on the social history of digital media and networking technologies, on the role of play in digital media history, and on the imaginaries and narratives of AI.