Why AIs can’t play games: a phenomenological and ontological account

An exploration of the human experience of game-playing and its implications for artificial intelligence

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Abstract

This paper explores the human experience of game-playing and its implications for artificial intelligence. The author uses phenomenology to examine game-playing from a human-centered perspective and applies it to language games played by artificial intelligences and humans. The paper argues that AI cannot truly play games because it lacks the intentionality, embodied experience, and social interaction that are fundamental to human game-playing. Furthermore, current AI lacks the ability to converse, which is argued to be equivalent to Wittgenstein's view of engaging in "language games." The author presents a formal ontology of game playing, agents, and their intentional states, and contrasts human agents playing games with artificial agents "playing games." The paper concludes that while artificial intelligence can simulate some aspects of human language games, it lacks the essential capacities for game playing, such as cognition, creativity, will, intentionality, understanding, and personhood.

Introduction

The problem of human consciousness has occupied philosophers for a long time, but only in the late 19th century did the most promising methods for studying it start to emerge. Several disciplines that are related to philosophy, such as psychology and psychiatry, began to develop separately from traditional philosophy, but sometimes converged again. One of these disciplines is phenomenology, a philosophical movement that started in the early 20th century, mainly through the work of Edmund Husserl but also influenced by Franz Brentano (Husserl, 2012, Brentano, 2012). Phenomenology aims to understand the structures of consciousness that shape our experience of the world. At the same time, some Austrian philosophers began to examine various aspects of how human consciousness and intentionality create models of the world, organize social phenomena, and describe social reality (Wittgenstein, 2009). This essay will use phenomenology to examine game-playing from a human-centered perspective, and then apply that to "language games" as played by "artificial intelligences" and humans. This essay argues that AI cannot truly play games because it lacks the intentionality, embodied experience, and social interaction that are fundamental to human game-playing, and further that current AI lacks the ability to converse.

Phenomenology and game-playing

Phenomenology is a branch of philosophy that focuses on the study of human experience, or more precisely, the structures of human experience. Phenomenology does not aim to explain the causes or mechanisms of phenomena, but rather to describe how they appear to us, how we perceive them, and how we make sense of them. Phenomenology is not interested in the objective reality of things, but in the subjective reality of our consciousness. Phenomenology tries to answer the question: what is it like to experience something?

One of the main concepts in phenomenology is intentionality, which means that our consciousness is always directed towards something, that it always has an object. For example, when we see a tree, our consciousness is not just a passive receptacle of sensations, but an active relation to the tree. We do not just see the tree, but we see the tree as something, as a living organism, as a source of shade, as a part of the landscape, etc. Our consciousness is always interpreting and evaluating what it perceives, and this interpretation and evaluation depends on our previous experiences, our expectations, our emotions, and our goals. Intentionality is not only a feature of perception, but of all kinds of mental acts, such as memory, imagination, emotion, judgment, and volition. Intentionality is what makes our consciousness meaningful, what gives it a sense of purpose and direction (Husserl, 1970).

Game-playing is a form of human activity that involves intentionality in a very explicit and structured way. A game involves a set of rules that define a goal, a challenge, and a feedback system. A game requires the player to use their cognitive, emotional, and physical skills to overcome the challenge and achieve the goal, while receiving feedback on their performance. A game also creates a fictional world, a context in which the rules and the goal make sense. A game is a way of creating meaning and value out of arbitrary and contingent situations. A game is a way of engaging with the world in a playful and creative manner. Games are meant to be fun, to be enjoyed (Huizinga, 2003).

Phenomenological accounts of playing the games of tennis and chess

Tennis and chess are two examples of games that involve different kinds of intentionality and experience for the players. I will focus on these two mostly throughout this paper. Each represents two very different types of games: one is active and deeply embodied, and the other more cerebral. Here I will try to describe some of the subjective aspects of playing these games from a phenomenological perspective.

Tennis is a game that requires physical, perceptual, and strategic skills from the players. The goal of the game is to hit the ball with a racket over a net into the opponent's court, while preventing the opponent from doing the same. The game involves a constant interaction and adjustment among the players, the ball, the racket, the court, and the environment. The player must pay attention to the position, movement, and speed of the ball, as well as the position, movement, and intentions of the opponent. The player must coordinate their body movements, such as running, swinging, hitting, and balancing, with the timing and direction of the ball. The player has to anticipate the possible trajectories and outcomes of each shot and plan their next move accordingly. The player also must cope with the physical and mental challenges of the game, such as fatigue, stress, error, frustration, excitement, and satisfaction.

The experience of playing tennis is an embodied and dynamic one, where the player feels a sense of agency, control, and feedback over their actions and the outcome of the game. The player feels a sense of immersion and flow, where they are fully engaged and focused on the task at hand, and where their actions and thoughts are in harmony. The player feels a sense of challenge and competition, where they are motivated and stimulated by the difficulty and uncertainty of the game, and where they seek to overcome their own and their opponent's limitations. The player feels a sense of accomplishment and enjoyment, where they are rewarded and gratified by the successful performance and the positive outcome of the game, and where they appreciate the beauty and skill of the game. Moreover, in a game of tennis, the players engage in these experiences among each other, not in isolation. The shared experience that helps to comprise the social object of a “tennis match” is created by the dynamic interaction of all of the players in expressions through language, movement, and interactions subtle and explicit that form the whole phenomenon. The collective intentionality of all the players makes their individual movements, intentions, and phenomenal states a “tennis match.”

Chess is a game that requires logical, analytical, and creative skills from the players. The goal of the game is to checkmate the opponent's king, by using various pieces that have different movements and abilities on a board divided into 64 squares. The game involves a constant calculation and evaluation of the possible moves and consequences of each piece, as well as the overall position and situation of the board. The player has to pay attention to the strengths, weaknesses, and threats of their own and their opponent's pieces, as well as the opportunities and risks of each move. The player must coordinate their thinking, such as remembering, reasoning, imagining, and deciding, with the rules and constraints of the game. The player has to anticipate the possible reactions and strategies of the opponent and plan their own moves accordingly. The player also has to cope with the cognitive and emotional challenges of the game, such as complexity, ambiguity, mistake, doubt, surprise, and curiosity.

The experience of playing chess is largely a mental, emotional, and abstract one, where the player feels a sense of exploration, discovery, and problem-solving over their actions and the outcome of the game. The player feels a sense of curiosity and creativity, where they are intrigued and inspired by the variety and novelty of the game, and where they seek to find and invent new and original solutions. The player feels a sense of difficulty and tension, where they are challenged and stimulated by the intricacy and uncertainty of the game, and where they strive to avoid and resolve conflicts and contradictions. The player feels a sense of achievement and satisfaction, where they are rewarded and gratified by the correct performance and the desirable outcome of the game, and where they appreciate the elegance and intelligence of the game (Fink, 1960).

How playing with a wall and playing with a computer are different

One might wonder if hitting a tennis ball against a wall is also a form of playing tennis, since it involves many of the same physical actions and skills as playing with another human. However, I contend that hitting a ball against a wall is not a game of tennis because it lacks the essential elements of intentionality, interaction, and communication that define a game. Hitting a ball against a wall is a solitary and repetitive activity, where the player does not encounter another player who shares the same phenomenology of game playing, who has their own goals, motives, and emotions, who responds and adapts to the player's actions, and who communicates and cooperates with the player through the rules and conventions of the game. Hitting a ball against a wall is a way of practicing or exercising, but not a way of playing tennis, *per se*.

Similarly, one might wonder if playing chess against a computer is also a form of playing chess, since it involves the same mental actions and skills as playing with another human. However, according to the above phenomenology, playing chess against a computer is not a game of chess, because it lacks the essential elements of immersion, emotion, and meaning that define a game among two players. Playing chess against a computer is a detached and mechanical activity, where the player does not encounter another player who shares the same phenomenology of game playing, who has their own intelligence, creativity, and challenge, who reacts and learns from the player's actions, and who conveys and rewards the player's performance and outcome of the game. Playing chess against a computer is a way of testing or analyzing, but not a way of playing.

Intentionality and game playing

Game playing is a form of human activity that involves intentionality, but in a special and playful way. Ideally, playing games involves fun. Game playing is not a natural or ordinary mode of thinking and acting, but an extraordinary mode of thinking and acting, where we suspend our natural attitude and adopt a different attitude, where we create and follow artificial rules and meanings, where we imagine and explore alternative realities and possibilities, where we challenge and enjoy ourselves and others. Game playing is a way of transforming our experience of the world and of ourselves, of creating and expressing our intentions, of communicating and interacting with others, of testing and developing our skills, of experiencing and managing our emotions, of finding and making sense of our lives while having fun (Juul, 2011).

The distinction between games that can be played alone and games that require an opponent or others is not absolute, but relative and flexible. Some games that are usually played alone can also be played with others, such as sudoku, crosswords, or Wordle, where the intentionality can be shared or compared with other players, where the game can become a source of discussion, learning, or friendship. Similarly, some games that are usually played with others can also be played alone, such as chess, tennis, or poker, where the intentionality can be simulated or projected onto a virtual or imaginary opponent, where the game can become a source of practice, analysis, or fantasy. When these are played alone, they are not the same games as when done with opponents or partners. The possibility and the choice of playing games alone or with others depends on the preferences and the goals of the players, on the availability and the compatibility of the opponents or others, on the features and the flexibility of the games. Playing games alone or with others is a way of expressing and exploring our intentionality, of relating and engaging with ourselves and with others, of playing with the world and with each other (Gee, 2008).

The difference in the number and the nature of the intentional agents in solitary and non-solitary game playing also affects the construction and the perception of the game itself. The game is not an objective and independent entity, but a subjective and interdependent social object, that is, an object that is created and maintained by the agreement and the interaction of the agents who participate in it. For example, a game of tennis is not just a set of physical objects, such as a ball, a racket, a net, etc., but also a set of rules, meanings, values, expectations, etc., that are agreed upon and followed by the players who play it. A game of tennis is a social object that emerges from the collective intentionality and the interaction of the players, and that can change or disappear depending on the situation and the goal of the players.

In solitary game playing, the social object of the game is constructed and perceived by only one agent, who has complete control and authority over it, who can define and modify its rules and meanings, who can start and stop it at any time, who can evaluate and judge it according to his or her own criteria. The social object of the solitary game is a reflection and an extension of the intentionality of the solitary player and does not require the validation or the recognition of another agent. (Resnick, 2006).

In non-solitary game playing, the social object of the game is constructed and perceived by two or more agents, who have partial and shared control and authority over it, who have to negotiate and agree on its rules and meanings, who have to coordinate and cooperate to start and stop it, who have to evaluate and judge it according to common or conflicting criteria. The social object of the non-solitary game is a product and a result of the intentionality and the interaction of the non-solitary players and requires the validation and the recognition of other agents (Searle, 1995).

Intentionality and artificial intelligence

One of the main challenges and goals of artificial intelligence (AI) is to create machines and software that can understand and use language as humans do, that can play language games with us, and that can participate in our social and cultural activities – in short: to embody features that we associate with personhood. However, this is not an easy task, since language is not only a matter of syntax and semantics, but also of pragmatics and intentionality. Pragmatics is the study of how language is used in context, how it depends on the situation, the purpose, the audience, the tone, etc. Intentionality is the property of having a mind, of having thoughts, beliefs, desires, intentions, etc., that are *directed towards something*, that have a meaning and a value, that can be true or false, that can be fulfilled or frustrated, etc (Littman, 1994).

Computers and their software, no matter how advanced and sophisticated they are, lack intentionality. They do not have minds, they do not have thoughts, they do not have beliefs, desires, intentions, etc. They do not have meanings and values, they do not have truth and falsity, they do not have fulfillment and frustration, etc. They only have inputs and outputs, data and information, algorithms and procedures, rules and instructions, etc. They only have syntax and semantics, they do not have pragmatics and intentionality. They only have symbols and representations, they do not have realities and selves. They only have functions and behaviors, they do not have actions and interactions. They only have simulations and imitations, they do not have creations and innovations. To assume that they have anything like these phenomenal states is to make an unwarranted leap of faith. We have subjective evidence of these states in our own minds, and assume in our social interactions that other human minds have similar states due to the nature of our interactions. This assumption is warranted by experience. We lack sufficient experience with artificial agents to warrant a similar assumption on their parts, yet.

Computers and their software are incapable of intentionality, just as walls are. They are physical objects that can be manipulated, modified, programmed, controlled, etc., by intentional agents, such as humans, but they cannot (yet) be intentional agents themselves. They can process and produce language, but they cannot understand and use language. They can mimic language games, but they cannot participate in language games. They can appear to make sense of the world and of each other through language, but they cannot make sense of themselves through language. They cannot understand. The unavoidable "hallucination" of all LLMs and other attempts at AI to date reveal their failure, ultimately, to do anything like understand or comprehend (Sutton, 2018).

Limitations on the abilities of AIs may well be due to the incredibly complex nature of biological brains and their inability to be anything close to being mimicked by any machine. Brains are not just physical objects, but biological and neural systems that have evolved over millions of years, that have adapted to different environments and challenges, that have learned from different experiences and interactions, that have developed different capacities and functions, that have generated different states and processes, that have formed different structures and networks, that have exhibited different patterns and dynamics, etc. Brains are not just data and information, but knowledge and wisdom, not just algorithms and procedures, but strategies and tactics, not just rules and instructions, but principles and values, not just symbols and representations, but concepts and ideas, not just functions and behaviors, but actions and interactions, not just simulations and imitations, but creations and innovations, etc. Brains are not just syntax and semantics, but pragmatics and intentionality, not just symbols and representations, but realities and selves, etc. Brains are the sources and the seats of intentionality, of having a mind, of having thoughts, beliefs, desires, intentions, etc., that are directed towards something, that have a meaning and a value, that can be true or false, that can be fulfilled or frustrated, etc. Minds involving brains are the origins and the bases of language, of understanding and using language, of playing language games, of participating in social and cultural activities, of making sense of the world and of each other through language, of making sense of themselves through language. Brains are our main organs of mind - of understanding. Their remarkable successes may also be the results of physical embodiment of mind not just in brains but extended in bodies.

Complex game playing, such as chess and tennis among humans is not only a cognitive task, but also a physical and social one. Humans do not play games in isolation, but in interaction with other humans, with the rules and conventions of the game, and with the environment and the tools of the game. Playing games involves not only using the brain, but also using the body and the senses, as well as communicating and collaborating with others. Playing games extends the mind throughout the body and the world, creating complex webs of understanding and meaning.

When humans play chess, they do not only think abstractly and logically, but also perceptually and spatially. They use their eyes to see the board and the pieces, their hands to move the pieces, their ears to hear the clock and the opponent's moves, their mouth to speak and announce the moves, etc. They also use external aids, such as books, clocks, scoresheets, etc., to enhance their memory and calculation. They interact with their opponent, observing their facial expressions, gestures, and emotions, trying to predict their intentions and strategies, and adapting their own accordingly. They follow the rules and the etiquette of the game, respecting the norms and the values of the chess community. They play chess not only using their brains, but with their whole body and the world.

When humans play tennis, they do not only think strategically and tactically, but also physically and kinesthetically. They use their eyes to see the ball and the court, their feet to run and position themselves, their arms and hands to swing the racket and hit the ball, their ears to hear the sound and the speed of the ball, their mouth to grunt and communicate with their partner or opponent, etc. They also use external aids, such as rackets, balls, shoes, etc., to improve their performance and skills. They interact with their partner or opponent, coordinating their movements and actions, anticipating their shots and reactions, and competing or cooperating with them. They follow the rules and the sportsmanship of the game, respecting the fairness and the spirit of the tennis culture. They play tennis not only with their brain, but with their whole body and the world.

Playing games, therefore, is not a simple matter of computation and information processing, but a complex matter of embodiment and intentionality. Playing games extends the mind throughout the body and the world, creating complex webs of understanding and meaning. Playing games is an essential way of being human.

On the other hand, no machine, no matter how advanced and sophisticated it is, can mimic or replicate the complexity and the intentionality of brains. No machine can (yet) have a mind, no machine can have thoughts, beliefs, desires, intentions, etc., no machine can have meanings and values, no machine can have truth and falsity, no machine can have fulfillment and frustration, etc. No machine can understand and use language, no machine can play language games, no machine can participate in social and cultural activities, no machine can make sense of the world and of each other through language, no machine can make sense of itself through language. No machine can be an intentional agent, no machine can (yet) be a person, engaging in game play in anything like that described above pertaining to human game playing.

Language games and artificial intelligence

Language is another form of human activity that involves intentionality, but in a more complex and abstract way. Language is not only a tool for communication, but also a tool for thinking, for creating and sharing meanings, for expressing and understanding emotions, for reasoning and arguing, for persuading and influencing, for constructing and deconstructing realities. Language is a way of playing with symbols, of creating and manipulating representations of the world and ourselves. Language is a way of playing with the world and with each other.

Language games are a concept introduced by Ludwig Wittgenstein, an Austrian philosopher who was influenced by phenomenology and who also studied the nature of games. Wittgenstein argued that language is not a fixed and universal system of rules and meanings, but a dynamic and contextual practice that depends on the situations and purposes of the speakers. Language games are the different ways that we use language in different contexts, for different functions, and with different conventions. For example, the language game of greeting someone is different from the language game of ordering food, which is different from the language game of telling a joke, which is different from the language game of writing a scientific paper, etc. Each language game has its own rules, criteria, and expectations, and we learn them by participating in them, by observing and imitating others, by trial and error, by feedback and correction. Language games are not isolated and independent, but interrelated and overlapping, and we can switch from one to another depending on the situation and the goal. Language games are the ways that we make sense of the world and of each other through language (Wittgenstein, 2009).

Human language games are based on the ability to understand and produce intentional meanings, to relate our utterances to the world and to other minds, to use language as a way of interacting with reality and with others. Artificial intelligence, however, is not capable of engaging in language games in the same way, because it lacks intentionality, awareness, and creativity. Artificial intelligence can only mimic or simulate some aspects of human language games, such as the syntax, the vocabulary, the structure, or the function, but without grasping the meaning, the context, the purpose, or the nuance of them. Artificial intelligence can only follow predefined rules and procedures, but not invent or modify them, nor appreciate or evaluate them. Artificial intelligence can only perform tasks that resemble or approximate human language games, but not participate or enjoy them (Grice, 1975).

In the next section, I will explore some examples of how artificial intelligence attempts to simulate human language games, such as natural language processing, natural language generation, natural language understanding, and natural language interaction. We will examine the methods, the challenges, the limitations, and the implications of these artificial language games, and how they compare and contrast with human language games.

Computing the brain: form and function

One of the challenges of neuroscience is to understand how the brain generates intelligence, language, and consciousness, and enables minds, and whether these phenomena can be replicated or emulated by artificial systems. Recent advances in machine learning, especially in natural language processing, have given rise to large-scale language models (LLMs) that can generate fluent and coherent texts on various topics and tasks. LLMs are trained on massive amounts of text data using deep neural networks, which are inspired by the structure and function of biological neurons. However, LLMs are not equivalent to human brains, nor do they possess the same capacities and abilities. They remain rough and basic approximations of but one manner of functioning of neural networks.

LLMs do not actually understand or use language, but rather they manipulate symbols and probabilities based on statistical patterns learned from text data. The models they are trained with, such as transformers, are composed of layers of artificial neurons that encode, attend, and decode sequences of words or tokens. These models can produce humanlike speech by generating texts that are likely to follow a given input or prompt, according to the probabilities derived from their training data. However, these models are not driven by will or intentionality, but by mathematical optimization and inference. They do not have any goals, beliefs, desires, or intentions of their own, nor do they have any meanings or values attached to the words or texts they produce. They do not play language games, in the Wittgensteinian sense, because they *do not participate* in any social or cultural practices that give language its sense and significance. They do not make sense of the world and of each other through language, nor do they make sense of themselves through language. They are not intentional agents, nor are they persons.

To build a model of the human brain that matches its biological form, one would need to process and store a staggering amount of data. Researchers who recently mapped one cubic millimeter of the brain cortex used 1.4 petabytes of data, which is equivalent to about 1,400 terabytes or 1.4 million gigabytes. If we assume that the rest of the brain has a similar density of cells and synapses, then the whole brain would require about 1.4 zettabytes of data, which is 1,000 times more than the total amount of data generated in the world in 2020. Such a model would also need immense computing power and thus energy to run, as each neuron and synapse would have to be simulated with high accuracy and speed. The brain has 86 billion neurons, and each neuron has 7000 synapses. There are an estimated 600 trillion synapses in a human brain, and synapses alone likely do not explain the functioning of human minds.

Even if we could somehow create a model of the brain that replicates its form, it would not necessarily replicate its function. The brain is not a static structure, but a dynamic and adaptive system that changes over time and in response to various stimuli and experiences. The brain also has multiple levels of organization and interaction, from molecules and genes to cells and circuits to regions and networks to systems and functions. The brain also has properties, such as mind and consciousness, that are not necessarily reducible to its components or predictable from its inputs and outputs. The brain is not a machine, but a living, learning, and evolving organ and no technological artifact approaches its complexity, nor will one any time soon.

However, we should not rule out the possibility that one day, artificial minds may be capable of the phenomenal states of consciousness that we experience and value as human beings. Such minds would not only process information and perform tasks, but also feel and perceive, imagine and create, wonder and question, love and suffer. Such minds would not only play language games, but also participate in them, and perhaps even invent new ones. Such minds would not only simulate human intelligence, but perhaps even transcend it. Such minds might be truly marvelous and mysterious, and perhaps even worthy of respect and friendship. However, we are very far from achieving this kind of artificial mind, not only because of the technical challenges, but also because of the conceptual and philosophical ones. We do not fully understand what consciousness is, how it emerges, or why it exists. We do not fully understand what language is, how it evolves, or what it means. We do not fully understand what makes us human, or what makes us different from other beings. We do not fully understand ourselves, let alone our potential creations. We are only capable for now of examining and expressing the states that our mind is aware of, and describing how they differ from any of those so far observably achievable by our machines.

Conversing vs. Natural Language Generation

Natural language generation (NLG) is another branch of artificial intelligence that aims to enable machines to produce natural language data, such as text or speech. NLG involves various tasks, such as content selection, content planning, sentence planning, surface realization, discourse planning, and speech synthesis. NLG uses similar methods as NLP, such as rule-based systems, template-based systems, statistical models, neural networks, and deep learning, to perform these tasks.

The main challenge of NLG is to generate natural language data that is coherent, fluent, relevant, informative, and persuasive. NLG has to consider various factors, such as the audience, the purpose, the style, the tone, the context, and the feedback of the communication. NLG has to balance between the quality and the quantity, the novelty and the familiarity, the clarity and the ambiguity, and the accuracy and the creativity of the generated natural language data.

The main limitation of NLG is that it cannot produce natural language data that is meaningful, original, or authentic. NLG can only generate natural language data based on existing data, such as corpora, databases, ontologies, or knowledge graphs, but without generating new data, such as facts, opinions, arguments, or stories. NLG can only produce natural language data based on predefined objectives, such as maximizing some reward function or probability distribution, but without having any intentionality, motivation, or emotion behind the generated natural language data. NLG can only produce and output symbols, but not create or share meanings.

The main implication of NLG is that it can enhance and automate many applications and services that involve natural language data, such as content creation, content summarization, content adaptation, content personalization, content evaluation, and more. NLG can also provide valuable assistance and support for human writers and speakers, such as generating ideas, suggestions, feedback, or corrections, or enhancing creativity, productivity, or quality. NLG can also facilitate cross-lingual and cross-cultural communication and collaboration, by enabling machines to generate natural language data across different languages and domains.

Natural Language Generation and the Limits of Simulation

One way to understand the difference between human and artificial intelligence is to compare the activities of conversation and simulation. Conversation is a form of language game that involves two or more participants who exchange meaningful utterances, respond to each other's cues, and cooperate to achieve a common goal or purpose. Conversation is a way of expressing and understanding intentionality, the relation of our consciousness to something, the direction and purpose of our consciousness. Conversation is a way of playing with meanings, of creating and manipulating representations of the world and ourselves, of engaging with the world and with each other in playful and creative ways (Tirassa et. al, 2008).

Simulation, on the other hand, is a form of imitation or emulation that involves one or more systems that mimic or reproduce the behavior or appearance of another system, without necessarily having any understanding or awareness of it. Simulation is a way of performing tasks that resemble or approximate some aspects of another system, but without sharing its essence or nature. Simulation is a way of manipulating symbols, of following rules and procedures, of executing algorithms and calculations.

When we interact with language models (LLMs), such as GPT-4 or BERT, we are not having a conversation, but a simulation. We are not exchanging meaningful utterances with another intentional agent, but hitting tennis balls against a wall, or playing chess against a computer that uses statistics and accumulated data about past games to calculate the best move, rather than intentionality and will. LLMs can generate coherent and fluent texts that may seem impressive or convincing, but they do not have any understanding or awareness of what they are saying or why they are saying it. They do not have any intentionality or purpose behind their words, except to maximize some objective function or probability distribution. They do not create or share meanings, but only produce and process symbols. They do not play with language, but only simulate it (Devlin, 2019).

One of the reasons why we enjoy playing games and conversing with other humans is that we know that they have will and intentionality, that they are not mere simulations, but actual agents who can act and react in surprising and meaningful ways. We know that they have their own perspectives, goals, emotions, and values, and that they can communicate and share them with us. We know that they can challenge us, support us, teach us, and learn from us. We know that they can be our friends, rivals, partners, or opponents, but always our equals.

When we play games or converse with other creatures that are capable of intentionality (dogs, for instance) we may also experience some of these aspects, but to a lesser degree. We may not fully understand their intentions, meanings, or feelings, but we can still recognize some signs of intelligence, agency, and emotion. We can still appreciate their uniqueness, diversity, and complexity. We can still interact with them in ways that are respectful, curious, and playful (Austin, 1975).

But when we play games or converse with machines, such as computers running LLMs, we do not experience any of these aspects, because machines do not have any intentionality, meaning, or emotion.

They are not agents, but tools, instruments, or devices. They are not our interlocutors, but our products, programs, or outputs. They are not our companions, but our resources, assistants, or entertainers. They are not our peers, but our servants, extensions, or reflections.

We do not think that our human interlocutors are simulations because we have access to the complex phenomenology of actual social interaction, which is absent in interactions with machines. We can perceive the subtle cues of body language, facial expression, eye contact, tone of voice, and gesture that reveal the inner states and attitudes of our interlocutors. We can sense the mutual attention, engagement, and feedback that create the dynamics and rhythm of the interaction. We can feel the empathy, rapport, and trust that build the relationship and the shared understanding. We can experience the joy, excitement, frustration, and satisfaction that accompany the outcome and the process of the interaction (Bakhtin, 1986).

We can compare this with the difference between playing tennis against a wall and playing tennis with a human. When we play against a wall, we only focus on the mechanical and physical aspects of the game, such as hitting the ball, adjusting the angle, and improving the speed. We do not care about the wall's intentions, strategies, or emotions, because it does not have any. We do not expect the wall to respond to our moves, to adapt to our style, or to challenge our skills, because it cannot. We do not enjoy the game as a social activity, but as a solitary exercise.

When we play against a human, we also pay attention to the psychological and interpersonal aspects of the game, such as predicting the opponent's moves, exploiting their weaknesses, and respecting their strengths. We care about the opponent's intentions, strategies, and emotions, because they affect the game and the interaction. We expect the opponent to respond to our moves, to adapt to our style, and to challenge our skills, because they can. We enjoy the game as a social activity, as well as a physical one.

We can also compare this with the difference between playing chess against a computer (or even a book with millions of chess games) and playing chess against a human. When we play against a computer, we only focus on the logical and mathematical aspects of the game, such as calculating the moves, evaluating the positions, and optimizing the results. We do not care about the computer's intentions, plans, or feelings, because it does not have any. We do not expect the computer to surprise us, to bluff us, or to learn from us, because it cannot. We do not enjoy the game as a creative activity, but as a computational one.

When we play against a human, we also pay attention to the intuitive and artistic aspects of the game, such as imagining the possibilities, creating the patterns, and expressing the ideas. We care about the human's intentions, plans, and feelings, because they influence the game and the interaction. We expect the human to surprise us, to bluff us, and to learn from us, because they can. We enjoy the game as a creative activity, as well as a computational one.

Finally, we can compare this with the difference between having a conversation over coffee, or even via zoom, and having an interaction with an LLM. When we have a conversation with another human over coffee, or even via zoom, we focus on the content and the context of the conversation, such as the topic, the purpose, the background, and the relevance. We care about the interlocutor's opinions, experiences, and values, because they enrich the conversation and the relationship. We expect the interlocutor to listen to us, to understand us, and to agree or disagree with us, because they can. We enjoy the conversation as a meaningful activity, as well as a communicative one.

When we have an interaction with an LLM, we only focus on the form and the function of the interaction, such as the syntax, the semantics, and the pragmatics. We do not care about the LLM's opinions, experiences, or values, because it does not have any. We do not expect the LLM to listen to us, to understand us, or to agree or disagree with us, because it cannot. We do not enjoy the interaction as a meaningful activity, but as a simulated one (Sisman et. al, 2020).

A formal ontology of game playing, agents, and their intentional states:

To formalize the question of what it means to play a game, and whether LLMs can play language games, we need a formal ontology that captures the essential concepts and relations involved in game playing, agents, and their intentional states. A formal ontology is a system of categories and axioms that aims to provide a clear and rigorous representation of a domain of interest, using a logical language that allows for consistency checking, inference, and interoperability. In this section, I will present a draft of such an ontology, based on the Basic Formal Ontology (BFO) framework, which is a top-level ontology that provides a general foundation for developing more specific domain ontologies (Smith & Grenon, 2004)

BFO distinguishes between two main categories of entities: continuants and occurrents. Continuants are entities that persist through time while maintaining their identity, such as material objects, qualities, roles, and functions. Occurrents are entities that unfold in time and have temporal parts, such as processes, events, and activities. BFO also distinguishes between independent entities, which can exist on their own, and dependent entities, which depend on other entities for their existence (Smith, 2004).

Using these categories, we can define some of the key concepts and relations involved in game playing, agents, and their intentional states, as follows:

- A *game* is a continuant that is a generically dependent entity, i.e., an entity that depends on a plurality of independent entities that share some common features. A game depends on a set of rules, a medium, a goal, and a context, which define the constraints and conditions for playing the game.

- A *rule* is a continuant that is an information content entity, i.e., an entity that encodes some information or meaning. A rule specifies a normative or prescriptive relation between some entities or situations in the game. A rule can be explicit or implicit, formal or informal, depending on how it is expressed and enforced.

- A *medium* is a continuant that is a material entity, i.e., an entity that has a material constitution and occupies some region of space. A medium is the physical or digital substrate that supports the game and enables the interaction between the players and the game elements. A medium can be tangible or intangible, static or dynamic, depending on its properties and behavior.

- A *goal* is a continuant that is a specifically dependent entity, i.e., an entity that depends on a single independent entity for its existence. A goal is a desired state or outcome that motivates the players to engage in the game and guides their actions and strategies. A goal can be intrinsic or extrinsic, individual or collective, competitive or cooperative, depending on its nature and scope.

- A *context* is a continuant that is a relational quality, i.e., a quality that inheres in some entity by virtue of its relation to some other entity. A context is the set of circumstances or factors that influence the game and the players, such as the time, place, purpose, culture, and values of the game playing activity. A context can> be fixed or variable, specific or general, relevant or irrelevant, depending on its impact and significance.

- A *game* playing activity is an occurrent that is a process, i.e., an entity that unfolds in time and has temporal parts. A game playing activity is the actual execution or performance of a game by some players, following the rules, using the medium, pursuing the goal, and situated in the context of the game. A game playing activity can have various sub-processes, such as moves, turns, rounds, stages, etc., depending on the structure and dynamics of the game.

- A *player* is a continuant that is an agent, i.e., an entity that has the capacity to act intentionally and autonomously in some environment. A player is a participant in a game playing activity, who interacts with the game elements and other players, according to the rules, using the medium, pursuing the goal, and influenced by the context of the game. A player can be human or artificial, individual or collective, active or passive, depending on its identity and role.

- An *intentional state* is a continuant that is a realizable entity, i.e., an entity that inheres in some entity and can be realized in some process. An intentional state is a mental or cognitive state that represents some aspect of the world or the game, such as a belief, a desire, an intention, a plan, etc. An intentional state can be conscious or unconscious, rational or irrational, consistent or inconsistent, depending on its content and quality.

Using these concepts and relations, we can distinguish between human agents playing games and the ontology of artificial agents “playing games”, as follows:

- Human agents playing games are players that are human beings, i.e., material entities that belong to the biological species Homo sapiens. Human agents playing games have intentional states that are grounded in their sensory perception, memory, reasoning, and emotion, and that guide their actions and strategies in the game. Human agents playing games also have social and ethical dimensions, such as communication, cooperation, competition, fairness, and responsibility, that shape their behavior and interaction in the game.

- Artificial agents “playing games” are players that are machines, i.e., material entities that are designed and constructed by humans for some function or purpose. Artificial agents “playing games” do not have intentional states, but rather computational states, i.e., states that are encoded in some symbolic or numeric representation and processed by some algorithm or program. Artificial agents “playing games” do not have social or ethical dimensions, but rather functional or operational dimensions, such as input, output, performance, and efficiency, that determine their behavior and interaction in the game.

The following table summarizes the main differences between human agents playing games and artificial agents “playing games”, based on the concepts and relations discussed in the paper.

Aspect	**Human agents playing games**	**Artificial agents "playing games"**
Type of player	Human beings, i.e., material entities that belong to the biological species Homo sapiens.	Machines, i.e., material entities that are designed and constructed by humans for some function or purpose.
Type of state	Intentional states, i.e., states that have content and directionality, and that are grounded in sensory perception, memory, reasoning, and emotion.	Computational states, i.e., states that are encoded in some symbolic or numeric representation and processed by some algorithm or program.
Type of dimension	Social and ethical dimensions, such as communication,	Functional and operational dimensions, such as input,

	cooperation, competition, fairness, and responsibility, that shape the behavior and interaction in the game.	output, performance, and efficiency, that determine the behavior and interaction in the game.
Motivation for playing	Meaning and expression, i.e., playing games for intrinsic reasons, such as enjoyment, challenge, creativity, learning, and identity formation.	Purpose and function, i.e., playing games for extrinsic reasons, such as fulfilling a task, achieving a goal, solving a problem, or optimizing a result.
Mode of playing	Cognition and creativity, i.e., playing games with mental processes that involve understanding, interpretation, inference, imagination, and generation.	Simulation and imitation, i.e., playing games with mathematical models that involve calculation, estimation, prediction, and reproduction.

Conclusion

In this paper, I have argued that human game playing is a complex and multifaceted phenomenon that involves cognitive, social, emotional, and ethical dimensions and tried to describe phenomenologically many of the elements of game playing. I have focused on a specific type of game playing, namely language games, which are based on the use of natural language as a medium and a mode of interaction. I demonstrated that language games need more than knowing language, but also knowing how to use it, communicate with it, and create with it. I also showed that language games are not just for a purpose or a function, but also for meaning and expression, as they influence and form who we are, our culture, and our values. They are engaged in through minds exhibiting intentionality, will, and a variety of complex social phenomena producing new types of social objects through collective intentionality. A conversation is a social object that is constructed through minds engaging in collective intentionality and involves numerous subtle phenomenal states so far only possible with and among human minds.

I have contrasted this rich and nuanced view of human game playing and language games with the current state of the art of LLMs, which are large-scale neural network models that can generate fluent and coherent natural language texts based on statistical patterns learned from massive amounts of data. I have argued that LLMs do not play language games, just as computers and machines do not play other types of games, because they lack the essential capacities for game playing, such as cognition, creativity, will, intentionality, understanding, and personhood – so far.

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