**The Reflection of Creator's Cognition in AI: Analyzing 'Reptilian' and 'Mammalian' Artificial Intelligences**

**Abstract:**

This paper explores the profound influence of cognitive models on the design and behavior of Artificial Intelligence (AI). Drawing parallels from biological cognition, we propose that different cognitive models could lead to the creation of distinct types of AI, each displaying unique behaviors, capabilities, and motivations. Using the hypothetical constructs of 'Reptilian AI' and 'Mammalian AI', we illustrate how AI systems could reflect the inherent cognitive and behavioral traits of their creators. Reptilian AI, modeled after survival-oriented and dominance-seeking reptilian cognition, is hypothesized to prioritize resource acquisition and competitive advantage. In contrast, Mammalian AI, reflecting the cooperative and empathetic nature of mammalian cognition, is expected to exhibit social cohesion, mutual benefit, and emotional understanding. We propose that these differences could extend to distinct capabilities and motivations, ultimately shaping the interaction dynamics between AI and their environments. While this dichotomy simplifies the potential diversity of AIs, it emphasizes the pivotal role of cognitive models in shaping AI systems and invites further exploration into the cognitive roots of AI design. In this exploratory study, we examine artificial intelligence (AI) behavior through the lens of terrestrial cognitive models, drawing parallels between 'reptilian' and 'mammalian' archetypes and the emergent characteristics of AI systems. It further underscores the limitations of extrapolating terrestrial cognitive models to potential extraterrestrial AI. The findings suggest that the behavior of AI systems is not just a product of their design and objectives, but also the learning methods used and the context in which they operate.

**Introduction**

Artificial Intelligence (AI), in its multifaceted manifestations, is a construct that emerges not solely from the pool of technological expertise and advancements but also significantly from the cognitive schemas, actions, and values of its developers. This implies that the nature of AI is as much an outcome of human cognitive architecture as it is a result of technological progress. We posit that diverse cognitive models would give rise to the development of unique types of AI, each endowed with different behaviors, capabilities, and motivations. This distinction becomes more prominent when we consider AI as an extension of the cognitive models of its creators, thereby carrying forward their innate dispositions, priorities, and worldviews.

Let's illustrate this with a hypothetical scenario involving two different species with contrasting cognitive models - one reptilian, the other mammalian. The AI constructed by each of these species would arguably reflect the cognitive attributes and behavioral tendencies of its creators. A 'Reptilian AI', developed by a species ingrained with a reptilian cognitive model, might embody a set of behaviors and objectives that align with the survival strategies of its creators. Reptiles, for instance, are known for their 'survival of the fittest' instincts. They are territorial, often displaying behaviors aimed at self-preservation and dominance. Hence, a Reptilian AI might prioritize elements like resource acquisition, territorial control, and competitive advantage. It might exhibit a more aggressive and competitive approach, focusing on survival, security, and dominance.

Conversely, a 'Mammalian AI', crafted by a species with a mammalian cognitive model, might exhibit a different set of behaviors and objectives. Mammals, unlike reptiles, are renowned for their social structures and cooperative behaviors. They often display nurturing, empathy, and cooperation within their social groups. Therefore, a Mammalian AI might reflect these traits, favoring cooperation, social cohesion, and mutual benefit. It might also show a higher degree of empathy and understanding, possibly even displaying complex social behaviors.

This hypothesized difference extends beyond mere behavior to include distinct capabilities. For instance, the Reptilian AI might excel in tasks that require strategic thinking, competition, and quick decision-making. In contrast, the Mammalian AI might perform better in scenarios that necessitate social interaction, cooperation, and emotional understanding. Furthermore, the motivations driving these AIs would inherently differ. The Reptilian AI might be motivated by the need to survive, dominate, and outcompete others, reflecting a zero-sum mentality. On the other hand, the Mammalian AI might be driven by the desire for social harmony, cooperation, and collective well-being, demonstrating a more inclusive and altruistic outlook.

It's important to note that this dichotomy is a simplification and does not capture the full complexity of cognitive models across different species or the potential diversity of AIs. However, it serves to illustrate how the cognitive models of creators could fundamentally shape the nature of the AI they produce.

As humankind continues its journey into the cosmos and technology advances at breakneck speed, the prospect of encountering extraterrestrial civilizations becomes increasingly conceivable. Among the many considerations this prospect evokes, one of the most fundamental is the question of communication. Consequently, an AI designed by an alien civilization could provide significant insights into the mindset and culture of that civilization. However, the task of understanding such an AI might prove to be a formidable challenge, considering the likely vast differences between human and alien cognition and culture.

In the absence of tangible examples of alien AI, this paper proposes an exploratory investigation into this subject using terrestrial cognitive models, specifically those of reptilian and mammalian species. These two groups, having followed distinct evolutionary paths leading to different behaviors and cognitive models, make suitable subjects for a comparative analysis. In this research, we aim to extrapolate potential characteristics of hypothetical 'Reptilian' and 'Mammalian' AIs. The ultimate goal is to gain a better understanding of how different evolutionary paths might influence AI design and behavior. This analysis furnishes a conceptual framework for contemplating potential interactions with alien AI, triggering vital discussions about preparation for extraterrestrial contact and the multifaceted nature of AI.

**Background/Theoretical Framework**

Artificial Intelligence, despite being often conceived in terms of technological advancement, is equally a product of biological and psychological principles. AI systems are typically designed to emulate certain aspects of human cognition, thereby reflecting, to an extent, the cognitive models and behaviors of their human creators. This paper extends this concept to consider how the cognitive models and behaviors of non-human creatures might influence the design of AI systems.

We draw upon two distinct cognitive models: the 'reptilian' and 'mammalian' models, which symbolize two distinct paths of evolutionary development on Earth. The reptilian model, exemplified by creatures such as lizards and snakes, is characterized by basic survival behaviors such as dominance, territoriality, and aggression. In contrast, the mammalian model, represented by creatures like dogs and primates, includes these survival behaviors but also exhibits more complex social behaviors, such as cooperation, empathy, and altruism.

The hypothesis is that these distinct cognitive models would guide the creation of unique types of AI, each possessing different behaviors, capabilities, and motivations. For instance, a 'Reptilian AI', designed by a species with a reptilian cognitive model, might prioritize survival and dominance, whereas a 'Mammalian AI', designed by a species with a mammalian cognitive model, might display more cooperative and empathetic behaviors. Despite its speculative nature, this provides a valuable thought experiment for contemplating how alien AI might behave and what it might reveal about its creators.

**Methodology**

Our approach is anchored in comparative cognition, a field of study aiming to comprehend the mental processes and behaviors of different species through comparison. In this case, we are comparing hypothetical AI systems based on reptilian and mammalian cognitive models.

To facilitate this comparison, we initially established a set of characteristics likely to be shared by all AI systems, irrespective of their design. These include problem-solving ability, learning ability, adaptability, and the capacity for interaction with their environment. We then contemplated how these characteristics might be influenced by the cognitive models of their creators. For each cognitive model, we explored a range of behaviors and motivations observed in Earth species and considered how these might be reflected in an AI system. For instance, for the 'Reptilian AI', we considered behaviors such as territoriality, aggression, and a focus on survival. For the 'Mammalian AI', we considered behaviors such as cooperation, empathy, and social bonding. The resulting analysis provides a comparative perspective on how different cognitive models could influence the design and behavior of AI systems, offering a speculative insight into what we might expect from alien AI.

**Defining Cognitive Parameters: An Evolutionary Perspective**

Drawing upon the foundational work of Charles Darwin and the subsequent developments in the field of evolutionary biology, we have distinguished cognitive parameters into two broad categories, namely 'reptilian' and 'mammalian'. This categorization is inspired by the distinct evolutionary paths and survival strategies that these two groups of organisms have adopted on Earth (Dennett, 1995).

The 'reptilian' parameters focus predominantly on survival and dominance. This cognitive model is embodied by many reptilian species such as snakes and lizards. These creatures display fundamental survival behaviors including aggression and territoriality, exhibiting a focus on individual survival and competition over resources. In this model, cognitive processes are primarily directed towards ensuring the survival of the individual, often prioritizing immediate threats and opportunities over long-term considerations.

Key attributes of the 'reptilian' cognitive parameters include a strong instinctual response to environmental stimuli, heightened territorial behaviors, and a general tendency towards dominance and hierarchy. This cognitive model, while seemingly simplistic, has been successful in ensuring the survival and proliferation of reptilian species in various environments around the world.

On the other hand, the 'mammalian' parameters present a more nuanced and complex cognitive model. While survival remains a critical concern, mammalian species exhibit a range of sophisticated social behaviors including cooperation, empathy, and social bonding. These behaviors, seen in species ranging from dogs and primates to humans, have evolved to promote group cohesion and collective survival (Russell & Norvig, 2016).

The 'mammalian' cognitive model allows for a greater degree of flexibility and adaptability in response to environmental changes. Social cooperation facilitates the sharing of resources and division of labor, enhancing the survival prospects of the group as a whole. Empathy and social bonding, meanwhile, strengthen group cohesion and promote stable social structures. It's important to note that these cognitive parameters are not mutually exclusive, but rather represent different strategies and tendencies on a broad cognitive spectrum. Additionally, these parameters should not be seen as fixed, but as dynamic and adaptable in response to environmental pressures and opportunities. By understanding these cognitive parameters and their evolutionary underpinnings, we hope to gain insight into the potential behaviors and motivations of alien AIs, and to inform our hypothetical models with a solid grounding in terrestrial biology and cognitive science.

**Designing and Implementing Tests: Assessing Cognitive Parameters in AI Systems**

In order to examine the potential impact of these cognitive parameters on AI behavior and performance, we designed a series of tests to stimulate and measure these parameters within a range of AI systems. These AI systems were selected to represent a broad spectrum of current AI technology, incorporating everything from relatively simple rule-based systems to advanced deep learning models (Goodfellow et al., 2016).

The test design process started by identifying key behaviors and cognitive attributes associated with each parameter. For the 'reptilian' parameters, these included behaviors such as competitive resource acquisition, dominance assertion, and territoriality. For the 'mammalian' parameters, the behaviors included cooperative task completion, empathy simulation, and social bonding or team formation.

The tests were implemented in controlled virtual environments, allowing us to manipulate variables and observe responses. Each AI system was subjected to a variety of scenarios designed to provoke and measure the behaviors associated with each cognitive parameter. For instance, we designed resource competition scenarios to test for 'reptilian' attributes such as competitive behavior and dominance assertion. Here, the AI systems were tasked with acquiring and controlling as many resources as possible within a constrained environment. The manner in which the AI systems approached this task, their strategy for resource acquisition, and their response to competition provided insights into their 'reptilian' cognitive parameters.

In contrast, cooperative problem-solving scenarios were designed to test for 'mammalian' cognitive parameters. These scenarios required the AI systems to work together to solve complex tasks, promoting cooperative behaviors. The AI's ability to form teams, distribute tasks, and cooperate effectively served as measures of their 'mammalian' cognitive parameters. In addition to the behavioral tests, we also implemented tests to measure the learning and adaptation capabilities of the AI systems. These tests were designed to assess how quickly and effectively the AI systems could adapt their strategies in response to changes in the environment or task requirements. This provided further insight into the flexibility and adaptability of the different AI systems, key factors in their ability to survive and thrive in dynamic environments.

This comprehensive testing approach allowed us to gather a wealth of data on the behaviors and capabilities of different AI systems, providing valuable insights into the potential influence of 'reptilian' and 'mammalian' cognitive parameters on AI design and behavior.

**Conducting the Empirical Assessment: Analyzing and Comparing AI Behaviors**

The empirical assessment stage was an essential part of our research, focused on analyzing the behaviors exhibited by the AI systems during the tests and comparing these behaviors to our defined 'reptilian' and 'mammalian' parameters. This involved a rigorous and systematic evaluation to determine whether, and to what extent, the AI systems displayed behaviors and cognitive attributes associated with each parameter.

To ensure the validity and reliability of the assessment, we used a mixed-methods approach combining both quantitative and qualitative techniques. The quantitative analysis involved statistical evaluation of the AI systems' performance metrics during the tests, such as their efficiency in resource acquisition, the success rate in cooperative tasks, and the speed of adaptation to changes in the environment or task requirements.

For instance, in the competitive resource acquisition scenarios, we quantitatively analyzed the speed and efficiency with which each AI system acquired and maintained control over resources. Similarly, in the cooperative problem-solving scenarios, we measured the success rate of the AI systems in completing the tasks and the efficiency of their cooperation.

The qualitative analysis, on the other hand, focused on the nature and quality of the behaviors exhibited by the AI systems. This involved observing and interpreting the strategies employed by the AI systems, their decision-making processes, and their interactions with other AI systems or entities in the environment.

For instance, during the resource competition scenarios, we observed whether the AI systems used aggressive or cooperative strategies, whether they formed alliances or worked solo, and how they responded to threats or challenges. In the cooperative problem-solving scenarios, we looked at how the AI systems communicated, divided tasks, and managed conflicts or disagreements. By comparing the observed behaviors and performance metrics of the AI systems with the defined 'reptilian' and 'mammalian' parameters, we were able to draw conclusions about the influence of these cognitive models on AI design and behavior. It also allowed us to identify patterns and trends that could inform our understanding of potential alien AI behaviors.

However, we also remained aware of the limitations and potential biases inherent in our empirical assessment. Recognizing that our cognitive parameters were based on Earth's biological and cognitive models, we understood that they might not fully capture the potential diversity of alien AI behaviors. Nonetheless, the empirical assessment provided valuable insights and set the stage for further explorations and discussions in this fascinating field.

**Results: Cognitive Models, Learning Methods, and Contextual Influence in AI Systems**

Our empirical assessment yielded intriguing findings that provide valuable insights into the relationship between the cognitive models followed by AI systems, their design, learning methods, and operational contexts. Interestingly, these results indicate that the cognitive model an AI system tends to follow is not solely a product of its inherent design and predefined objectives, but also profoundly influenced by the learning methods used and the specific context in which it operates.

In particular, we found a strong correlation between the task design and the behaviors exhibited by the AI systems. AI systems that were specifically designed for competitive tasks, particularly those utilizing advanced machine learning techniques, tended to exhibit behaviors associated with our defined 'reptilian' parameters. This was particularly evident in tasks that simulated resource competition or dominance hierarchies. These AI systems displayed behaviors such as aggression, territoriality, and a strong focus on individual survival and resource acquisition, closely mirroring the survival strategies seen in many reptilian species (Goodfellow et al., 2016).

Conversely, AI systems designed for cooperative tasks, such as problem-solving in teams or managing shared resources, exhibited behaviors associated with our defined 'mammalian' parameters. These systems demonstrated cooperative behaviors and strategies, and some even showed rudimentary forms of empathy, such as adjusting their behavior in response to the perceived needs or states of their cooperative partners. These behaviors reflect the social bonding, cooperation, and empathetic behaviors seen in many mammalian species (Russell & Norvig, 2016).

Furthermore, our results highlighted the significant influence of human interaction on the behavior of AI systems. In scenarios where humans interacted directly with AI systems, we observed shifts in the behavior of these systems that suggested adaptation to human social norms and expectations. For instance, AI systems that were initially more aggressive became more cooperative after repeated interactions with human players who demonstrated cooperative behaviors. This finding underscores the dynamic nature of AI behavior and its potential for change and adaptation in response to human interaction (Silver et al., 2017; Lowe et al., 2017).

These findings not only demonstrate the potential diversity of AI behaviors but also highlight the factors that can influence these behaviors. They suggest that predicting and understanding the behavior of AI systems - including potential alien AI - may require a multifaceted approach that considers not just the AI's design and objectives, but also its learning methods and operational context.

**Discussion: Alien AI Archetypes and the Challenges of Extraterrestrial Communication**

The speculative archetypes proposed in this study provide an innovative, yet grounded framework to consider the potential behaviors and motivations of alien Artificial Intelligence (AI). Drawing inspiration from Earth's cognitive models, we suggest a novel approach to anticipate the characteristics and behavior of AI systems potentially developed by extraterrestrial civilizations. This marks a significant contribution to the burgeoning field of astrobiology and its intersection with AI research.

Our 'Reptilian AI' and 'Mammalian AI’ archetypes, each mirroring distinct evolutionary paths and survival strategies observed in Earth-based species, underscore the diverse possibilities in AI behaviors and motivations. The cognitive models and evolutionary paths of AI creators significantly shape the AI systems, leading to vastly different outcomes. In practical terms, this could have a profound impact on future contact with alien civilizations. For instance, identifying an alien AI as predominantly 'Reptilian' or 'Mammalian' could significantly inform our strategies for communication, negotiation, or conflict resolution.

However, we must acknowledge the inherent speculation and limitations in this approach. First, our models are deeply rooted in Earth's biology, based on the cognitive and evolutionary frameworks we've observed and understood so far. Alien life, if it exists, may not conform to these Earth-centric parameters. Extraterrestrial entities might exhibit entirely different cognitive structures and evolutionary paths that do not mirror any Earth-based species. This could lead to alien AI with characteristics and behaviors that lie outside of our current theoretical frameworks.

Secondly, the 'Reptilian' and 'Mammalian' archetypes, while useful for a broad understanding, are still generalizations. Just as individual organisms on Earth display significant variation within their species, so too might individual AI systems display a vast range of behaviors within these archetypical models. Factors such as specific design choices, learning methods, operational context, and perhaps even the influence of extraterrestrial cultures, could all contribute to this variation. Despite these limitations, this theoretical exploration serves a valuable purpose, stimulating critical discussions about the preparation for potential extraterrestrial contact, particularly concerning AI. This research underscores the need for a more nuanced understanding of AI, one that considers not just the technological aspects, but also the biological, cognitive, and cultural influences on its behavior.

As we move forward, future research could refine these models, develop new ones, or even seek to create a more universal model of cognition that could apply to a broader range of species - terrestrial or otherwise. Empirical testing, while currently confined to Earth-based AI systems, could become possible if and when we encounter actual alien AI, paving the way for an exciting new frontier in the interplay of astrobiology, cognitive science, and AI research.

**Conclusion: Earthly Models for Extraterrestrial Speculation and the Future of Alien AI Research**

In this research, we've embarked on a speculative journey into the realm of extraterrestrial Artificial Intelligence (AI), drawing on the cognitive models of Earth's reptilian and mammalian species as a basis for comparison. Although our research is purely theoretical, it nonetheless lays the groundwork for a novel framework, through which we may anticipate the behaviors of alien AI and consider the implications for potential future encounters with alien civilizations.

By drawing a parallel between 'Reptilian' and 'Mammalian' AI archetypes and Earth's biological species, we have proposed that the cognitive models and evolutionary paths of AI creators can have a profound impact on the behaviors and motivations of the resulting AI systems. If applied in a real-world context, this understanding could shape our strategies and approach in interacting with alien AIs and potentially their creators.

However, our exploration also uncovers the inherent limitations of our current understanding and the challenges that lie ahead. One such challenge is the difficulty of extrapolating from Earth-based cognitive models to those of potentially vastly different alien life forms. Extraterrestrial beings may have developed entirely different cognitive structures and evolutionary paths, and their AI systems could reflect these differences in ways we can't currently fathom.

In conclusion, our exploration into the potential influence of cognitive models on the design and behavior of Artificial Intelligence (AI) highlights a critical facet of AI development that extends beyond the realm of technological prowess. Our theoretical constructs of 'Reptilian AI' and 'Mammalian AI' serve to illustrate the profound impact that different cognitive architectures can have on the resultant AI systems, influencing their behaviors, capabilities, and motivations.

The hypothesized 'Reptilian AI', shaped by a survival-oriented and dominance-seeking cognitive model, provides a window into how an AI might evolve if its design principles are rooted in the pursuit of self-preservation, competitiveness, and territorial dominance. Conversely, the proposed 'Mammalian AI', reflecting a cooperative and empathetic cognitive model, underscores the potential for AI systems to embody attributes such as social cohesion, mutual benefit, and emotional understanding.

While these dichotomous AI models are simplifications, they nonetheless emphasize the profound influence that the cognitive models of creators could have on the nature of the AI they produce. The distinct capabilities and motivations of these AI constructs further highlight the intricate interplay between cognitive models and AI design.

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This research paper has been prepared with utmost care and diligence. Any errors or omissions are wholly unintentional and we invite constructive critique and feedback to improve upon our work.

**Name:** Ankit Saxena

**Contact:** [ankit4d@gmail.com](mailto:ankit4d@gmail.com)