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# DREAMING WITH AI

Sheldon Junker

## Introduction

Humans have had a long, complex, and often fraught relationship with technology. From the days of Gutenberg's printing press to the widespread adoption of the Internet, every significant technological advancement has changed the way we think about the world, how we relate to one another, and even what it means to be human.<sup>1</sup> We take for granted that many of the features of our everyday lives were once new technological breakthroughs, and our failure to see this only shows the extent to which we are defined by our relationships with them. For example, few of us would see the books on our shelves as advanced technology, but from a historical perspective, and given the relatively short period of human culture, they are nothing less. Printed media allowed the efficient dissemination of information, reliable sources of truth, and a method of inexpensive and therefore accessible education. This revolutionized the world, and many argue that this technology is what allowed for the predominance of linear thought and large, organized, and uniform populaces.<sup>2</sup>

Understandably then, these new technologies have always been accompanied by both enthusiasm for their potential to elevate and suspicion about their ability to disrupt and degrade the human experience. Many people were worried that the introduction of the printing press

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<sup>1</sup> Antonio Cartelli, Luisa Miglio, and Marco Palma, "New Technologies and New Paradigms in Historical Research," *Informing Science: The International Journal of an Emerging Transdiscipline* 4 (2001): 61–62, <https://doi.org/10.28945/1559>.

<sup>2</sup> Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (Toronto: University of Toronto Press, 1962).

and the corresponding ability for anyone to publish their own literature would lower the quality of available information and would end in the degradation of human cognitive faculties. This has been a repeated concern with many other technological advancements, including radio, film, and television.<sup>3</sup> Though these are all undeniably beneficial, the questions remain: Who will get to use these technologies? How will they be abused? How will we be affected by them?

In this realm of continual technological progress, the electronic age, marked by the Internet and digital innovations, has brought about further dramatic and unprecedented changes. From the introduction of the Internet to social media, to online dating, we as a species have been inundated in a short time with technological changes that have been a challenge to adapt to. Having barely had a chance to take a breath, we find ourselves standing once again at the threshold of another technological revolution: we face the beginning of the age of Artificial Intelligence (AI). And while not everyone realizes it, the fingerprints of AI are already visible everywhere. They determine the videos we watch, the songs we listen to, the stocks we invest in, and even the vehicles we drive—or, in the case of self-driving cars, the vehicles in which we are chauffeured.<sup>4</sup>

With the rise of AI-enabled creative tools, the lines between human and machine are blurred even further. Any individual with a minimal amount of technological skill can, with the aid of AI image generation systems, produce artistic pieces that would have been considered masterpieces by previous generations. The same is true with the works produced by AI systems using generative text models, which can produce text that is in many cases indistinguishable from that authored by humans. They have transformed the digital landscape, acting as our programming partners, academic allies, and creative collaborators.

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<sup>3</sup> Neil Postman, *Amusing Ourselves to Death: Public Discourse in the Age of Show Business* (New York: Penguin Books, 2006).

<sup>4</sup> Ed Newton-Rex, “59 Impressive Things Artificial Intelligence Can Do Today,” *Business Insider*, March 7, 2017, <https://danielschriani.com/learning-ecosystems/2017/03/27/59-impressive-things-artificial-intelligence-can-do-today-7-other-items-re-artificial-intelligence-machine-learning-deep-learning/>.

With such impressive credentials, one wonders where the limitations of these AI systems are. Many of these domains have always been thought to require human intelligence, intuition, and creativity, but time and time again, AI has demonstrated its ability to rival even the most competent humans in a variety of situations. To further determine the ability of AI systems, we decided to explore an area that has been largely unaddressed in the context of AI research—an area that we believe is less concerned with the replacement or mimicry of human activity, and more to do with deepening our understanding of what it means to be human in such a technology-focused era. We wondered: To what extent could AI help us understand our own psyches? Could it help us live more fully in a world of complex, personal symbology? Could it provide us with new insights about our lives and relationships? In short, we asked the question of whether AI, with all its automated algorithms and vast neural networks, could help us delve into the mysterious and mystical world of our dreams.

Just as humans have always had an intricate relationship with technology, we share an equally profound connection with our dreams. From time immemorial, dreams have captivated the human psyche, their innate, nightly ritual sparking curiosity and introspection, driving us to seek and create meaning and significance. Throughout history, dreams have been perceived as windows into other realms. They have offered us glimpses into our psyches, served as pathways to commune with higher beings, and provided insights into the enigmatic and symbolic world we all inhabit. Whether viewed as prophetic foretellings of future events, wellsprings of artistic inspiration, or compasses guiding pivotal life decisions, dreams have played a central role in shaping personal and collective narratives. For some, dreaming transcends mere nocturnal visions and is itself a spiritual practice. The aspirations to reach lucidity, journey through astral realms, or connect to a higher self to attain enlightenment illustrate the profound depths of our engagement with this phenomenon.<sup>5</sup>

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<sup>5</sup> Kelly Bulkeley, *Dreaming in the World's Religions: A Comparative History* (New York: New York University Press, 2008), 3–4.

In their quest to decipher dreams, cultures have always turned to various texts and interpreters. These individuals, along with their writings, became sources of wisdom, offering explanations and insights into phenomena that are otherwise often seen as nothing more than the random and meaningless byproducts of the sleeping mind or brain. Over the centuries, these collective insights and the oral and written records that they produced have led to the development of numerous traditions surrounding dreams and dream interpretation.<sup>6</sup> From shamanic traditions focused on communion with ancestors and the spirit world, dream interpretation practices have evolved into modern approaches rooted in psychoanalytical theory. Notable among these are the symbolic frameworks proffered by Freudian and Jungian practices of interpretation.<sup>7</sup> The most common way that dreams are interpreted in these frameworks is in the process of individual psychoanalysis in which clients share dreams with trained professionals—or analysts—so that they can be explored and understood in the context of the client's life situation and personal development.

However, in our technologically advanced era, many people are turning instead to apps and software to aid in the interpretation of their dreams. Examples abound with countless online websites and communities dedicated to dream symbols and interpretation. Coming full circle back to artificial intelligence, even more recently, there are many mobile apps such as Elsewhere, Oniri, and Dream App, all of which are providing their users with insightful AI-based dream interpretations.<sup>8</sup> Even though these AI-driven analyses are becoming increasingly common, a formal examination of the integration of AI with dream analysis remains largely unexplored, to our knowledge. To rectify this, we decided to perform a variety of experiments or explorations into the capacity of AI systems to both interpret individual dream reports and

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<sup>6</sup> Bulkeley, *Dreaming in the World's Religions*.

<sup>7</sup> Kelly Bulkeley, *An Introduction to the Psychology of Dreaming* (Westport, CT: Praeger, 1997), 3.

<sup>8</sup> Sheldon Juncker, Daniel Kennedy, and Gez Quinn, *Elsewhere*, Version 3.7.5, Google Play Store, released November 16, 2023; Oniri Inc., *Oniri - Explore your dreams*, Version 1.26, Google Play Store, released November 9, 2023; DreamApp Ltd., *DreamApp: Journal & Dictionary*, Version 5.37.13, Google Play Store, released November 8, 2023.

to analyze the symbols and relationships found within lengthy series of dreams found in dream journals. These analyses will be explored in detail in the following section. Moving beyond just the capabilities of AI, we will also touch upon the broader implications of AI, with a specific focus on the impact on the world of our dreams. This intersection between AI and dream analysis brings with it a unique set of ethical and philosophical challenges. We aim to address these concerns, pondering the consequences of merging AI with our most personal and intimate thoughts, while also offering what we hope is a positive vision for the future.

By the end, we hope that you will not only grasp what AI can achieve in the domain of dream analysis but that you will also understand the underlying tools and technologies. Moreover, we wish to lay a foundation of theoretical and ethical considerations, equipping those interested in make their own informed explorations and contributions. We hope that in doing so, we have made a positive contribution to the long and complex history of mankind's relationship with their technology and their dreams.

### Explorations

To determine the ability of AI systems to help us interpret and understand our dreams, we have crafted a set of six explorations or experiments, each emphasizing a different aspect of our dreams and the capabilities of artificial intelligence. The first three analyses will start with a simple and generic dream interpretation and then move to dream interpretations within the two interpretive schools mentioned in the previous section. The next three analyses will focus on patterns detected within one of our own dream journals, where we will be looking at the dreamer's personal symbology, character relationships, and changes to relationships across time.

To facilitate these analyses, we decided to use the GPT-3.5 and GPT-4 generative text models underlying OpenAI's ChatGPT systems. These models have been trained on vast amounts of human knowledge, use high-quality and up-to-date information, and have shown the capacity to produce content that is difficult for humans to distinguish

from human-generated text.<sup>9</sup> They are also efficient, highly affordable, and accessible, allowing anyone to explore them, even if they have a minimal technological background. They provide limited free tools, advanced paid-for features, and developer playgrounds and APIs for easy testing and exploration. These were of particular interest to us: as both researchers and software engineers, we wanted to maintain an emphasis on practicality and reproducibility. Our goal was to make each exploration user-friendly and straightforward so that any interested reader could reproduce our experiments and gain insights into their own dreams. To aid in this, we have included references to the specific technologies and configurations used in each exploration.

### Exploration 1: A Dream Interpretation

In this exploration, we start with a dream report of 105 words, which is roughly the average for a written report, and show the process by which we can generate an interpretation using AI systems.<sup>10</sup> We use OpenAI's GPT-4 model, as is the case with all of our individual dream interpretation examples. For this exercise, we chose a contemporary dream from one of our own private dream journals to ensure that the dream text could not have been included in the AI's training set and thus affect the results.

The dream report was written as follows:

I was in a large building with Dad that also happened to be a train car, taking us somewhere. The issue was that the building was flying and so it was no longer possible to get out halfway through the journey. You could only get out at the end where it touched down on the ground. I had been watching a red bar on a screen indicating the progress it was making. All of a sudden, it jumped to the end where it and the sign above the door showed yellow. I rushed to grab all of my things before the train took off again.

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<sup>9</sup> Tom B. Brown et al., "Language Models are Few-Shot Learners," *ArXiv:2005.14165 Computer Science* (June 2020): 46, <https://doi.org/10.48550/arXiv.2005.14165>.

<sup>10</sup> Kelly Bulkeley, "Baseline Survey," Sleep and Dream Database, accessed November 24, 2023, [https://sleepanddreamdatabase.org/search\\_results/%7B%22surveyIds%22:\[%224bd8d2cd-d69d-4b4a-b225-81d6f2a80a69%22\],%22surveyNames%22:\[%22Baseline%20Survey%22\]%7D](https://sleepanddreamdatabase.org/search_results/%7B%22surveyIds%22:[%224bd8d2cd-d69d-4b4a-b225-81d6f2a80a69%22],%22surveyNames%22:[%22Baseline%20Survey%22]%7D).

We used the OpenAI playground environment, which allows developers and other technology enthusiasts to test the capabilities of various OpenAI models in different scenarios. We ran our test with the settings outlined in Config 1.<sup>11</sup> Using these settings, we received the following dream interpretation:

This dream could symbolize a journey or process you are going through in your life, possibly with the guidance or influence of your father. The large building being a train car could represent the structure and direction of this journey, while it flying could indicate that it's a journey you can't easily escape or change the course of. The red bar on the screen could symbolize your awareness of the progress you're making in this journey or process. The sudden jump to the end could indicate a sudden advancement or change in your situation. The rush to grab your things before the train takes off again could suggest a fear of being unprepared or left behind. The colors red and yellow could symbolize caution and urgency.

This interpretation is quite insightful and illustrates how advanced these technologies are in that they can easily and quickly generate meaningful dream interpretations with a minimum of guidance and instruction. We will highlight three features of this interpretation.

### 1. Connects with the Dreamer's Waking-Life Relationships and Situations

One of the standout features of this dream interpretation is its ability to make connections to the dreamer's possible waking-life relationships and situations. For example, when the dream mentions the presence of the dreamer's father, the interpretation suggests that it might revolve around a situation where there is guidance or influence from the father. This shows an understanding of how dreams can often reflect our real-world relationships, especially those with a significant emotional impact. By drawing parallels between the elements of the dream and potential real-life scenarios, the interpretation provides the dreamer with a bridge to connect their subconscious mind to their everyday experiences, there-

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<sup>11</sup> Under the "Supporting AI Configurations" section, see pp. 191–192.

by enabling a more profound introspection and understanding of their emotions and situations.

## 2. Analyzes Various Symbols and Their Potential Meanings

Another remarkable feature of the interpretation is the depth of symbol analysis. From the large building being a train car symbolizing the journey's structure to the red bar on the screen symbolizing the awareness of progress, each element is carefully dissected to unearth its potential meaning. The colors red and yellow being associated with caution and urgency further illustrates the keen attention to detail and understanding of symbolic representation. This analysis not only provides the dreamer with a comprehensive breakdown of each dream element but also presents a cohesive narrative that ties these symbols together, offering a broader perspective on the dream's possible significance.

## 3. Uses Ambiguous Language and Doesn't Provide Definitive Answers

The interpretation helpfully employs ambiguous language, such as "could indicate" and "could symbolize," demonstrating a respectful, non-intrusive approach to dream analysis. Instead of imposing definitive meanings or interpretations, it provides possibilities and allows the dreamer the freedom to resonate with what feels most accurate to their personal experience. This approach recognizes that dreams are deeply personal and subjective, and that their meanings can vary widely among individuals. By providing options rather than certainties, the interpretation empowers the dreamer to connect the dots in a way that feels most authentic to them. It showcases an understanding that, while AI can provide insight and guidance, the ultimate interpretation and meaning of a dream resides with the dreamer.

Overall, this is a high-quality attempt at interpreting the dream and would rival that of any human interpreter if asked to provide a possible interpretation of the dream while being placed under the same limitations regarding word count and lack of additional context about the dream and dreamer.

## Exploration 2: A Freudian Analysis

Since AI was clearly up to the task of generating a general dream interpretation, we wanted to push the limits of its capabilities and ask it to provide interpretations within specific schools of dream interpretation theory. Since the text models underlying ChatGPT have been trained using high-quality data from the Internet, it stands to reason that they should be familiar with many different systems of thought for interpreting dreams. To test this, we started by re-framing our prompt to request an expressly Freudian interpretation, without giving any hints or expectations as to what we meant by this. Freudian dream analysis often focuses on the hidden meaning of symbols, repressed emotions, and fears and anxieties related to waking-life situations, and in all of these primarily seeing the dream functioning as wish fulfillment.<sup>12</sup> We wanted to see which of these themes of Freudian analysis the AI system would pick up on by itself. We used the same AI settings as before but have extended the permitted output from 256 tokens to 400 tokens as the longer response will prove illustrative (See Config 2).<sup>13</sup> This is the result that ChatGPT provided in response to our request for a Freudian dream interpretation:

In a Freudian framework, dreams are seen as a reflection of repressed desires, thoughts, and experiences. The dreamer's journey in the large flying train car could represent their unconscious desire for structure and guidance, possibly from a paternal figure. The train's flight could symbolize the dreamer's feelings of being trapped or unable to control their life's direction, reflecting a sense of helplessness or lack of control.

The red bar on the screen could represent the dreamer's suppressed awareness of their progress or achievements, possibly due to a fear of failure or criticism. The sudden jump to the end could symbolize a repressed desire for quick success or change, reflecting impatience or anxiety about the future.

The rush to grab things before the train takes off again could indicate a fear of abandonment or being left behind, possibly stemming from past experi-

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<sup>12</sup> Sigmund Freud, *The Interpretation of Dreams*, trans. A. A. Brill (New York: The Macmillan Company, 1918).

<sup>13</sup> Under the "Supporting AI Configurations" section, see p. 192.

ences or insecurities. This could also reflect the dreamer's anxiety about being unprepared or not having enough resources to face life's challenges.

The colors red and yellow, in Freudian symbolism, often represent intense emotions. Red can symbolize passion, anger, or danger, while yellow can symbolize caution, cowardice, or deceit. In this dream, these colors could reflect the dreamer's repressed emotions or fears related to their life journey.

This interpretation has many elements in common with the earlier general interpretation, but given the expanded output limit and additional prompting, it expands upon and adds to those features in a discernibly Freudian way. The following highlights several of the uniquely Freudian features of this analysis and how they differ from the general interpretation.

## 1. Focuses More on the Symbolic Significance and Less on Waking-Life Situations

While the general interpretation tends to directly relate the dream's contents to the dreamer's waking-life relationships and situations, the Freudian analysis leans heavily into symbolic significance. For instance, rather than drawing a direct connection to the dreamer's father, the Freudian interpretation suggests that the train car and its journey might symbolize the dreamer's unconscious desire for a kind of authoritarian or paternal structure and guidance. This approach aligns with Freud's belief that dreams are often coded messages from the unconscious, filled with symbols that require deciphering to understand the underlying desires and emotions.

## 2. Emphasizes Feelings of Fear and Anxiety

Freudian interpretation places a more pronounced emphasis on underlying feelings of fear and anxiety. For instance, the dream's elements, such as the train's flight and the rush to grab belongings before it departs, are viewed through the lens of feelings of helplessness, abandonment, and lack of control. These are interpreted as indicators of the dreamer's deeper insecurities and anxieties, which are potentially rooted in past experiences. Such a focus is characteristic of Freud's belief that

many of our unconscious thoughts and feelings manifest as anxieties and fears in our dreams, reflecting unresolved internal conflicts.

### 3. Highlights Possible Repressed and Suppressed Emotions

A distinct feature of Freudian analysis is its attention to repressed and suppressed emotions. The red bar on the screen, for example, is not merely a symbol of progress awareness but is seen as a representation of the suppressed acknowledgment of one's achievements, potentially due to a fear of failure. The colors red and yellow are not just symbolic of caution and urgency; they delve deeper into the realm of intense emotions such as passion, anger, deceit, and cowardice. This underscores Freud's theory that dreams are a playground for our repressed desires, emotions, and experiences, providing a window into our unconscious mind.

### 4. Suggests Wish Fulfillment

One of the cornerstones of Freudian dream interpretation is the concept of wish fulfillment. Dreams, in this view, often represent unsatisfied desires or unfulfilled wishes. In the provided interpretation, the sudden jump to the end of the journey might be seen as a repressed desire for rapid success or an abrupt change, showcasing the dreamer's impatience or anxiety about what the future holds. This nuanced understanding differs from the general interpretation, which could merely view the "jump" as a change in circumstance or situation. It's a clear nod to Freud's theory that dreams serve as a space where our unmet desires play out.

It is pertinent to note, however, that while the interpretation is closely aligned with Freudian theory, there are aspects, like the color yellow, where the AI might be projecting plausible interpretations that are not explicitly mentioned in Freudian literature. Despite this, once again, the AI text-completion model shows its ability to not only provide an insightful and plausible dream interpretation but to incorporate the theories of a specific school of thought.

### Exploration 3: A Jungian Interpretation

Seeing that the AI was able to provide a more than passable Freudian-style analysis, we were further curious to see if it would perform as well when providing an analysis using the less well-known and more depth-based Jungian approach. While Jung was, for a time, the student of Freud, and their theories agree on many points, there are some key differences that are worth highlighting here. In Jungian depth psychology, dreams are not primarily symbolically obscured wish fulfillment, but are instead a clear and direct message from the unconscious to the conscious mind, accurately and honestly exposing the underlying psychic state.<sup>14</sup> In Jungian psychology, dream symbolism and metaphor is often connected to archetypes found in the collective unconscious and are meant to be understood and integrated in the pursuit of the organism's health and individuation. Specifically in that endeavor, dreams are seen as providing both compensatory and prospective functions, helping to maintain psychic equilibrium and providing hints at possible future outcomes. To test whether the AI system was capable of providing this style of interpretation, we once again re-framed the original prompt, this time giving it a Jungian bent (see Config 3).<sup>15</sup> This resulted in the following Jungian-style interpretation:

In a Jungian framework, dreams are seen as a way for the unconscious mind to communicate with the conscious mind, often using symbols and metaphors.

The large building that is also a train car could represent the dreamer's life journey or a specific phase of life. The fact that it's also a building might suggest that this journey or phase is a significant one, involving personal growth or development. The presence of the dreamer's father could symbolize authority, tradition, or the influence of the past on this journey.

The flying building/train car could symbolize a feeling of being out of control or being carried along by circumstances. The inability to get out halfway

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<sup>14</sup> Marlon Xavier, "Dream Interpretation In Jung's Theory A Comparative Analysis," *The Jung Page*, October 27, 2013, <https://jungpage.org/learn/articles/analytical-psychology/107-dream-interpretation-in-jungs-theory-a-comparative-analysis>.

<sup>15</sup> Under the "Supporting AI Configurations" section, see p. 192.

through the journey might suggest a feeling of commitment or inevitability about this journey or phase of life.

The red bar on the screen could represent the dreamer's awareness of the progress they're making in this journey or phase of life. The sudden jump to the end might suggest a sudden realization or change in perspective.

The color yellow is often associated with caution or warning in Western cultures. The sign turning yellow as the dreamer rushes to gather their things could symbolize a warning or sense of urgency about the need to prepare for the next phase of the journey or life.

Overall, this dream might be interpreted as a message from the dreamer's unconscious about a significant journey or phase of life they're currently undergoing. It might suggest feelings of being carried along by circumstances, a sudden realization or change in perspective, and a sense of urgency about preparing for what's next.

This interpretation is again similar to the previous two but diverges from the Freudian approach in several ways by centering around the broad life path and individuation process of the dreamer. Through the Jungian lens, the dream is seen as a representation of the dreamer's psyche, evoking a more holistic and integrative perspective. It focuses on the symbols as being parts of the dreamer's psyche and as being connected to processes of growth along a life path. Again, we will highlight a few of the Jungian features of this interpretation.

## 1. A Focus on Symbols and Metaphors Related to the Dreamer's Life

The Jungian interpretation underscores the dream's symbols and metaphors as they relate directly to the dreamer's life journey and personal growth. For instance, the large building that doubles as a train car is not merely an object of transportation or even a specific symbol but is rather a metaphor for the dreamer's ongoing life journey or a particular significant phase in life. This emphasis on symbolic resonance with life stages and personal development is in line with Jung's belief that dreams serve as a window into the individual's internal processes and unconscious perspective. Instead of just pointing to repressed desires or direct connections to waking-life situations, the Jungian approach interprets these symbols as deep-seated elements of the dreamer's psyche that reveal new information about their life path.

## 2. Shows a More Holistic Process of Growth and Individuation

Another salient feature of the Jungian analysis is its representation of the dream as a comprehensive story of growth and individuation. The dream is not viewed as a disjointed collection of symbols but as an interconnected narrative highlighting the dreamer's process of becoming a whole individual. The presence of the dreamer's father, for example, not only signifies authority or past influences but indicates the dreamer's relationship with tradition, authority, and the influence of the past as they navigate their life journey. The flying train car and the inability to exit it, rather than just pointing to feelings of being out of control, suggest a more profound sense of commitment or inevitability tied to this life phase. Jung's concept of individuation, the journey to becoming a unique individual by integrating different parts of the unconscious into consciousness, is encapsulated in this holistic interpretation.

## 3. Focuses Less on Repressed Emotions or Fears and Anxieties

Unlike the Freudian perspective, which delved deeply into repressed desires and underlying anxieties, the Jungian interpretation steers away from a predominant focus on these aspects. Instead, it acknowledges emotions and sensations, while centering more on the developmental journey and the messages the unconscious is trying to convey for the individuation of the dreamer. For instance, the color yellow and the rush to gather belongings are not primarily seen as repressed fears or anxieties but are interpreted as symbolic warnings or a sense of urgency related to the dreamer's personal development and life journey. This distinction showcases the tendency of the Jungian approach to view dreams as more direct messages from the unconscious, aiming to guide and inform the conscious self, rather than as coded expressions of repressed feelings or desires.

While still clearly interpreting the same dream and using many of the same themes, this interpretation provides a distinctly Jungian bent and includes features that would not have been brought to light in the other approaches.

Based on these examples, the overall capability of AI in dream interpretation is more than evident. The interpretations it produces arguably rival those of many amateur interpreters and even some professional analysts—again with the need to emphasize that this is only the case under the limitations of context and brevity under which the AI system was placed. With the ability to mold its analysis based on different psychological frameworks, the potential of AI in this domain is vast. Further, these examples are startlingly simple and there are many avenues of future exploration and improvement in the process of AI-based dream interpretation.

That said, since AI has demonstrated exceptional competence in analyzing individual dreams through several interpretive frameworks, we wanted to continue our explorations of AI's capabilities to understand dreams and broaden our focus from isolated dreams to comprehensive dream journals. The goal was to see whether AI would prove useful in quickly and efficiently processing a large number of dreams and being able to pick out interesting patterns that could be used to help individuals learn more about their dreaming—and even waking—lives.

#### Exploration 4: The “Cat” Symbol Analysis

Because of the importance of symbolic associations in the majority of schools of thought in dream interpretation, understanding the interpretation of symbols within these dream journals was central to our exploration.<sup>16</sup> We aimed to uncover how AI might illuminate the intricate dynamics between the dreamer and their symbols, ultimately assisting individuals in decoding their distinct symbolic lexicon.

We decided to test this by analyzing the symbol “Cat” in a series of dreams from one of our own dream journals. The symbol was chosen primarily for three reasons: its frequent occurrence in dreams, its rich interpretative background, and admittedly, the author's personal affinity for cats. This presented an opportunity to discern whether the AI could identify the dreamer's distinctive relationship with the symbol or merely default to its preexisting general knowledge of dream symbols.

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<sup>16</sup> Bulkeley, *An Introduction*, 18, 32, 45–53.

The choice of dream journal was made so that we would be able to verify the results without taking the painstaking time to read through thousands of dream reports and provide our own in-depth analysis. Already having a basis for understanding our own symbolic dream world, using one of our own dream journals made the most sense in terms of being able to fact-check the results of the AI system.

The journal in question contains 1,990 dreams spanning from late 2016 to early 2023, though it also includes several childhood dreams from the late 1990s and early 2000s. The average word count is 250. The dreamer is male, and at the time of this writing, in his late twenties.

The first analysis was performed using the following system. First, all of the dreams with references to “Cats” were collected, looking for words such as “cat,” “cats,” “kitten,” “tabby,” etc. Larger cats, such as lions and tigers were excluded as they are understood to have their own unique representation in symbolic space. Some 67 dreams were found, but due to the limitations of the AI systems, we randomly selected 50 of these. At the time of this writing, these limitations are no longer in place and a significantly larger number could be used for future analyses.

All of the dreams were ordered from oldest to newest and were each given separately to the AI system, which was asked to interpret the symbolic meaning of the “Cat” in the dream. This was meant to provide us with a brief interpretation containing no more than a few sentences and capturing the gist of the meaning of the symbol within the dream. The settings used for these symbol interpretations are outlined in Config 4.<sup>17</sup>

Once all of these individual symbol interpretations were collected, they were again ordered by the dream dates from earliest to latest and were fed back into the AI system, this time requesting the AI to take all of the individual interpretations and synthesize them into a holistic picture of the dreamer’s relationship with that symbol. The settings for that request are outlined in Config 5.<sup>18</sup> The resulting synthesis from this experiment was as follows:

Based on the series of short summaries, it seems that the dreamer has a complex and multifaceted relationship with the symbol of the cat. The cat

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<sup>17</sup> Under the “Supporting AI Configurations” section, see pp.192–193.

<sup>18</sup> Under the “Supporting AI Configurations” section, see p. 193.

often represents a desire for comfort, affection, and companionship. The dreamer may have a strong attachment to their pet or may long for a sense of security and relaxation. However, the cat also symbolizes independence, self-sufficiency, and a need for personal space. The dreamer may value their freedom and autonomy, and may have a curious and playful nature.

In some dreams, the cat represents the dreamer's nurturing and caring side, as they take care of kittens or show concern for the cat's well-being. This suggests that the dreamer has a natural instinct to protect and provide for others. On the other hand, the cat can also symbolize the dreamer's own need for nurturing and care, as they seek comfort from the cat or desire affection.

The cat's behavior in the dreams can vary, from being tame and content to being skittish or aggressive. This reflects the dreamer's own emotions and experiences. The dreamer may feel overwhelmed or outnumbered by small but persistent problems or obstacles, which they try to address with newfound abilities or tools. There may be a sense of fear or anxiety that the dreamer is trying to conquer or fend off.

Overall, the cat symbol in the dreamer's dreams represents a complex blend of emotions, desires, and experiences. It reflects the dreamer's longing for comfort and affection, their need for independence and self-sufficiency, and their nurturing and protective instincts. The cat symbolizes the dreamer's relationships with others, as well as their own inner world and sense of self.

The AI's interpretation of the cat symbol, as seen in the dreams, is both intricate and expansive, encompassing a broad spectrum of characteristics and associations related to the symbol. One particularly notable observation made by the AI is the dreamer's ownership of a pet cat. While skeptics might dismiss this as a mere projection or fortunate guess, it showcases the depth of understanding embedded within the AI's analysis. It is evident that while some features of the cat symbol interpretation are ingrained in the AI's fundamental understanding, a significant portion is tailor-made, derived specifically from the dreamer's unique relationship with and perception of cats. For instance, when one requests ChatGPT to provide general information on the symbolic meaning of cats in dreams, the model would highlight elements of femininity, mystery, magic, intuition, emotion, independence, sensuality, and omens. Of these characteristics, attributes like independence, instinct, and emotion resonate with the dreamer's specific interpretation. However, the AI astutely identified other traits directly linked to the dreamer's experiences as

reflected in the dreams, including playfulness, curiosity, nurture, and relationship to self/other.

These attributes were discerned and presented by the AI in an impressively short period of time (under 2 minutes of total processing time), underscoring its efficiency. The analysis is not only rich in detail but is also presented in a coherent and reader-friendly format. By synthesizing a myriad of data points, the AI creates a comprehensive narrative that offers both clarity and depth. Most importantly, this AI-driven interpretation was found to be both enlightening and accurate, providing useful insights into the dreamer's self-understanding.

### Exploration 5: Relationship Analysis

Having seen the successful outcomes of this symbol analysis, we were eager to test the AI's capability in decoding the dreamer's interactions and affiliations with the characters populating their dreams. A key point to consider here is the continuity hypothesis, which suggests that dreams are a natural reflection of the most recurring and significant elements of our waking lives.<sup>19</sup> Accordingly, many of the characters in our dreams will represent real-life individuals, typically, people we are closest to and therefore the ones with whom we are most likely to want insight and understanding. Thus, comprehending these dream-character relationships might offer a gateway to better understanding the dreamer's real-world relationships and interactions, helping them make appropriate changes and take positive action. It is also often the case in dreams that the distinction between self and other is blurred, and if the AI analysis can help an individual identify these aspects, that understanding, in turn, could serve as a valuable tool for self-reflection and personal growth as they more clearly see which elements of their relationships are projections and which are coming from the environment.

For this analysis, we used the same dream journal and foundational framework that was applied during the symbol analysis, but our fo-

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<sup>19</sup> Maja Gutman Mušič et al., "Theoretical Foundations," In Maja Gutman Mušič et al., *2020 Dreams: Toward a New Understanding of the Dreaming-Waking Continuum* (Stanford, CA: Stanford University Press, 2023), <https://2020dreams.supdigital.org/2d/theoretical-foundations>.

cus shifted to the dreamer's interactions with one of their friends and colleagues—an individual they had been acquainted with for approximately three years and with whom they had developed a close relationship. This dream-character, who we will refer to as “James,” appeared in a total of 50 dreams in the journal. This provided us with a complete dataset without necessitating any truncation or selection. The methodological approach remained consistent with the symbol analysis, though minor modifications were made to the two prompts to cater to the change in subject matter, as shown in Configs 6–7.<sup>20</sup> This resulted in OpenAI's systems producing the following character synthesis:

The dreamer's relationship with their friend James appears to be complex and multifaceted, with different emotions and dynamics at play depending on the dream and situation. In some dreams, the dreamer may feel disconnected or left out of James's life, while in others they may feel a strong bond of friendship and trust. The dreamer may also perceive James as someone who is fun and adventurous but may have concerns about his behavior or safety at times.

One recurring theme in the dreams is a sense of responsibility toward James's well-being, with the dreamer often expressing concern for his safety or worrying about his behavior. This may suggest that the dreamer sees themselves as a protector or caretaker in their relationship with James, and may feel a sense of obligation to look out for him.

Another theme that emerges in the dreams is a desire for deeper connection and understanding with James. The dreamer may feel uncertain about whether James shares their interests or values, or may feel frustrated in their attempts to keep up with his intellectual pursuits. However, there are also moments of camaraderie and comfort between the two, suggesting that they do share a strong bond of friendship.

Throughout the dreams, there are also indications of a power dynamic at play in the dreamer's relationship with James. The dreamer may see themselves as a natural leader when they are with James, but may also feel a desire to explore and assert their independence. This tension between leadership and independence may reflect the dreamer's desire for a more equal and balanced relationship with James.

Overall, the dreamer's relationship with James appears to be a mix of positive and negative emotions, with moments of connection and support as well as moments of frustration and disconnection. The dreamer may need to re-

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<sup>20</sup> Under the “Supporting AI Configurations” section, see pp. 193–194.

flect on their own desires and needs in the relationship, and communicate openly with James about their feelings in order to strengthen their bond and achieve a more fulfilling relationship.

In this analysis, what stands out is the AI system's ability to understand character relationships without any foundational knowledge about the dreamer or their friend, James. While analyzing the "cat" symbol, the AI could at least draw from its training based on numerous dream symbol dictionaries. In contrast, when interpreting the dynamic with James, it could only rely on the features of the text included in the dream reports. The resulting interpretation is nothing short of remarkable. It not only captures the salient features of the dreamer's relationship with the dream-character, James, but also mirrors the dreamer's real-world interactions with the actual person. Several features of this analysis are worth noting.

#### 1. The AI's Determination that James is a "Friend"

The AI is easily able to determine that James is primarily a "friend" in the dreamer's life, which, though apparent from reading the texts, is still worth noting given the limited context provided in the dream reports. While there are hints about their professional interaction as colleagues—inferred from notions of leadership dynamics—the system still correctly identifies their bond primarily as friendship. This ability of the AI to discern and emphasize the primary nature of relationships in dream analysis allows the dreamer to approach the interpretation from a more personal and emotional perspective, facilitating deeper introspection.

#### 2. The Diverse Range of Emotions Connected to James is Brought to the Forefront

Another standout feature of this analysis is the AI's aptitude in highlighting a wide range of emotions associated with James. From feelings of disconnection or being left out, to strong sentiments of trust, friendship, and camaraderie, the AI paints a comprehensive emotional portrait of the dreamer's relationship with him. By doing so, it acknowl-

edges the multifaceted and dynamic nature of human relationships and helps the dreamer grasp the depth, complexities, and intricacies of their specific relationship with James.

### 3. It Serves as an Amplification of Elements Previously Unexamined

When the dreamer reviewed this analysis, they found it so insightful that they highlighted several connections that it made to their waking-life relationship with James, finding that it had revealed several aspects of that relationship of which they had previously been unaware. The AI system facilitated this by amplifying specific aspects of the dreamer's relationship with James that had gone unexamined in their waking-life introspection. By highlighting emotions related to exclusion and the recurring sense of responsibility and concern for James's well-being, the AI provided a magnified view of potential underlying emotions and patterns. By shedding light on these elements, the AI aided the dreamer in distinguishing between features of their waking-life relationship with James and the internal symbolic representation of him in their psyche. The dreamer felt that these insights facilitated both a deeper and healthier relationship with their friend.

The significance of AI's capability in generating this kind of analysis should not be understated. Not only can this AI system quickly interpret characters within an individual's dreams, it can also offer tangible and actionable insights that the individual can integrate into their day-to-day life. Such deep insights traditionally emerge only after prolonged periods of introspection, meditation, or through the therapeutic process. Yet, here, the AI accomplishes this in short order despite the dream narratives being largely descriptive, focusing more on dream events than introspective musings or interpretations.

### Exploration 6: Relationships Across Time

In our final exploration of the depth and breadth of insights AI might provide from a singular dream journal, we sought to discern whether it could adeptly map the evolution of a relationship over time. Given AI's ability to perform an in-depth analysis of a dreamer's over-

all relationship with a character, we wondered if AI could also help identify the elements (if any) that had changed as the relationship developed. Our assumption was that the features related to uncertainty and disconnection would primarily be found early on and that the feelings of closeness and security would increase as time passed. To investigate this transformation, we leveraged the same dataset of 50 dreams where James featured prominently. To facilitate a chronological analysis, we devised a simple system in which we segmented these dreams into two distinct subsets: the initial 25 dreams constituted the first set, representing the early stages of their relationship, while the subsequent 25 dreams formed the second set, capturing the most recent interactions. Our objective was to direct the AI to compare and contrast the two sets, discerning the nuanced changes in the relationship dynamics over time. To begin, individual analyses were crafted for both sets using the character-specific settings delineated earlier. After this, both analyses were presented to the AI system, guided by the prompt outlined in Config 8.<sup>21</sup> This resulted in the following output:

The two dream relationship analyses for the dreamer's friend James share some similarities but also have some notable differences. Both analyses describe a complex and multifaceted relationship between the dreamer and James, with the dreamer valuing James's support and guidance. However, there are some differences in how the dreamer's relationship with James has evolved over time.

In the first analysis, the dreamer feels a sense of disconnection and uncertainty in their relationship with James. While they value his reliability and helpfulness, they also feel left out of his life, particularly in regards to his professional activities. The dreamer also feels unsure about whether or not James shares their interests and passions, and may feel hesitant to share those interests with him. Additionally, the dreamer may need to reassess their involvement in certain projects to improve their relationship with James.

In contrast, the second analysis suggests that the dreamer has a closer and more intimate relationship with James. They value his advice and support, and see him as a guiding figure in their life. However, there may be some tension between the dreamer and James, which makes the dreamer feel vulnerable and uncomfortable. The dreamer also feels a level of discomfort or unease

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<sup>21</sup> Under the "Supporting AI Configurations" section, see p. 194.

around James's loved ones, indicating a feeling of unfamiliarity or discomfort in their relationship with them.

Overall, the two dream relationship analyses suggest that the dreamer's relationship with James has become more complex and intimate over time. While the dreamer still values James's support and guidance, they may also feel a sense of disconnection or discomfort in certain aspects of their relationship.

Once again, we are presented with a compelling demonstration of the power of generative AI text models. This analysis elucidates the evolution of a relationship over time, relying solely on the narratives provided in dream reports. The progression is noteworthy: the relationship, initially characterized by hesitancy and uncertainty, gradually transforms into one that is steadfast and intimate. Following our previous findings and theorizing, this closely aligns with the real-world dynamics of the relationship and raises interesting questions about the kinds of patterns that can be found in dreams, what dreams can tell us about our waking lives, and what kinds of unique characteristics could be found by performing these analyses on larger datasets including many different dream journals.

Our research underscores the profound capabilities of AI in the realm of dream interpretation. AI's proficiency extends beyond just interpreting individual dreams; it is adept at conducting intricate analyses across comprehensive dream journals. This allows for a deep dive into symbols, the relationships they forge within dreams, and the evolving patterns that manifest over time. Remarkably, AI's insights seem to be on a par with those of human readers, and in some instances, it offers fresh perspectives that shed new light on the dreamer's waking-life experiences and emotions.

In our continued explorations, we crafted additional tests to delve into a dreamer's connection with religion and spirituality, aiming to chart its growth and shifts over time. These analyses employed the foundational framework outlined earlier. While the results were enlightening, a detailed discussion of these findings falls outside the purview of this particular article. However, there is still much to be explored and, along with others, we hope to continue using these new and powerful tools to uncover more of the uncharted territory of technology and our dreams. In moving toward that goal, we thought that it would

be helpful to conclude by outlining some of our own ethical considerations and philosophies when it comes to working with technologies and dreams, and finally to provide a positive, hopeful vision of a future relationship between artificial intelligence, humanity, and the collective world of our dreams.

### Ethical Considerations

Given the increasing insightfulness and accessibility of powerful AI systems, there is a growing and understandable concern among many people regarding the potential negative impact of artificial intelligence, especially when it comes to its capability to replace humans.<sup>22</sup> As we have seen, this is not limited to purely technical and scientific fields, but extends even to areas as nuanced as analyzing the subconscious content found in our dreams and connecting them to our waking lives. In the preceding sections of our discussion, we delved into this recently discovered capacity of AI systems. In each of those instances, what stood out is the efficiency of the AI systems. They operate swiftly and can generate results that are insightful and of a quality that closely mirrors human expertise. Even though it is still in its infancy as far as technologies go, AI has demonstrated time and time again that it can undertake much of what we once believed required the unique touch of a human hand. So, what are the larger implications of these observations and findings? To better understand the potential ripple effects, we will focus on three significant areas: the potential ramifications in our daily lives and routines, the concern about human replacement by AI, and the role of AI as an ethical analyst and interpreter of dreams.

#### 1. Impact on Day-to-Day Life

In the past, securing reliable and insightful dream interpretations has been a challenging endeavor. While there is some knowledge about

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<sup>22</sup> Marieke M. M. Peeters et al., "Hybrid Collective Intelligence in a Human-AI Society," *AI & SOCIETY* 36, no. 1 (1 March 2021): 217–220, <https://doi.org/10.1007/s00146-020-01005-y>.

dream interpretation and analysis in the general public, it is limited and many are unaware of the insights that can be gained from dreams and how to access them. Since professional dream interpretation has traditionally been performed as part of the psychotherapeutic process, there are many practical and emotional barriers to access, with the most common being concerns about financial cost.<sup>23</sup> Even for those who do possess such knowledge and means, there can be additional barriers, often stemming from the same societal stigmas that prevent so many from seeking psychotherapy.<sup>24</sup> However, this is all changing with the rise of advanced AI systems and an array of accessible dream-related digital platforms—including software, websites, and apps. Today, virtually anyone who is interested can receive immediate and insightful analyses of their dreams with either no or little cost and without facing any of the previously existing barriers or possible discrimination for doing so.

At this time, such developments in dream-related technology mainly benefit those who have a keen interest in these subjects and who keep up-to-date with the latest technological advancements, but given the pace at which AI is progressing and becoming integrated into our daily lives, this scenario may shift rapidly. Studies have also shown a general trend toward spirituality with stable beliefs in psychological and paranormal phenomena.<sup>25</sup> These findings corroborate our perception of an increased cultural interest in all things psychological and spiritual, as evidenced by a proliferation of pop psychology books, new-age philosophies, and even a new wave of openness to and research on psychedelics.<sup>26</sup> These trends are naturally being extended to dreams, which is something that we have seen both as researchers and through the

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<sup>23</sup> David C. Mohr et al., “Barriers to Psychotherapy among Depressed and Nondepressed Primary Care Patients,” *Annals of Behavioral Medicine* 32, no. 3 (December 1, 2006): 254–258, [https://doi.org/10.1207/s15324796abm3203\\_12](https://doi.org/10.1207/s15324796abm3203_12).

<sup>24</sup> Patrick Corrigan, “How Stigma Interferes with Mental Health Care,” *American Psychologist* (US: American Psychological Association, 2004), 315–318, <https://doi.org/10.1037/0003-066X.59.7.614>.

<sup>25</sup> Jeffrey M. Jones, “In U.S., 47% Identify as Religious, 33% as Spiritual,” Gallup, September 22, 2023, <https://news.gallup.com/poll/511133/identify-religious-spiritual.aspx>; David W. Moore, “Three in Four Americans Believe in Paranormal,” Gallup, June 16, 2005, <https://news.gallup.com/poll/16915/three-four-americans-believe-paranormal.aspx>.

<sup>26</sup> Michael J. Winkelman, and Ben Sessa, eds., *Advances in Psychedelic Medicine: State-of-the-Art Therapeutic Applications* (Santa Barbara: Praeger, 2019), <https://www.researchgate.net/pub->

proliferation of media and technology focused on dreams and the many ways that our relationship with them can bring meaning to our lives. Given this trajectory and the profound influence that AI already exerts on various facets of our daily lives, it becomes imperative for us to grasp the potential, boundaries, and ethical aspects of AI, especially as they pertain to its interplay with the world of our dreams.

## 2. Human Replacement by AI

The concern regarding whether—and potentially when—artificial intelligence will overshadow most human professions remains a prevailing topic of debate and discussion for many.<sup>27</sup> It is undeniable that AI is already making significant inroads in various sectors, and as time progresses, it is likely to dominate even more. Fields such as writing, coding, and artistic creation emerge as evident and, to some, unsettling instances of this transformation. Our observations, especially with the current generation of generative AI text models, have confirmed that these systems possess remarkable capability. Their efficiency in providing insightful interpretations and analyses of dreams and dream journals is noteworthy. In many ways, their output mimics the insights that human interpreters can provide, generally surpassing the expertise the average person would have access to. So, does this trajectory suggest that AI will soon eclipse human dream interpreters and analysts? Our answer is both yes and no.

On one hand, there is no doubt that certain individuals will prefer and embrace AI-generated content, without feeling the need to consult human professionals for further analysis. When people are provided with inexpensive, easy-to-use, and accessible technologies, we believe that they will tend to prefer them even if it means that more in-depth and previously existing options will be passed over. Take the example of Wikipedia: When Wikipedia was introduced, there was concern about whether or not a free, open, and accessible repository of encyclopedic

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<sup>27</sup> Peeters et al., “Hybrid Collective Intelligence,” 217.

knowledge could ever rival the accuracy of other more expensive and closed sources of knowledge. Even to this day, many universities do not allow their students to reference Wikipedia as they do not consider it a reliable source. Despite this, it has been the case for more than a decade that the accuracy and breadth of knowledge on Wikipedia rivals, and in some areas even surpasses, that of traditional encyclopedias and textbooks.<sup>28</sup> This serves to show that it is often the widely accessible and affordable technologies that receive the most focus and improvements as time goes on. We believe that the same can be true of AI systems, which even today rival the accuracy and knowledge of many human experts. If this is the case even in their infancy, what will the AI-human relationship look like in just a few years? It is almost impossible to imagine a world in which more and more people do not begin to rely on these AI systems, and we see no reason to believe that this will not extend to the analysis of dreams among other aspects of our psychology.

On the other hand, we do not believe that the situation is as dire as some make it out to be. We would argue that most of the individuals who will come to rely on these AI systems would not have been seeking out specialized, and possibly costlier, human expertise in the first place. Going back to the example of Wikipedia, there are many people who rely on it almost solely as their source of information, very few of whom would have been interested in seeking out more in-depth and costlier journal articles and encyclopedias in its absence. Further, we assess that the general population's grasp of dream interpretation and the recognition of dreams' significance remains relatively elementary. Thus, the primary role of the current AI systems, in our opinion, will not be to replace human expertise but rather to highlight and amplify the significance of the symbolic world of our dreams. Finally, we assert that many individuals drawn to dream-related topics are often seeking

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<sup>28</sup> Nicola J Reavley et al., "Quality of Information Sources About Mental Disorders: A Comparison of Wikipedia With Centrally Controlled Web and Printed Sources," *Psychological Medicine* 42, no. 8 (2012): 1753–62, <https://doi.org/10.1017/S003329171100287X>; Jim Giles, "Internet Encyclopaedias Go Head to Head," *Nature* 438, no. 7070 (December 1, 2005): 900–901, <https://doi.org/10.1038/438900a>; Jona Kräenbring et al., "Accuracy and Completeness of Drug Information in Wikipedia: A Comparison with Standard Textbooks of Pharmacology," *PloS One* 9, no. 9 (September 2014): e106930, <https://doi.org/10.1371/journal.pone.0106930>.

a human touch and connection as much as personal insights. Human connection and relationships have always been an essential feature of the psychotherapeutic context in which dreams are most often analyzed, and this is something that AI in its current form is inherently unable to replace. It is essential to note that despite their prowess, in our experience, AI systems still fall short of mirroring the profound depth of human understanding and intuition, as well as bringing to light the context of the dreamer's life in a way that can only happen in the human relationships that are intrinsic to the process of traditional dream analysis.

In our hopeful vision, the advent and popularization of AI in dream analysis could serve as a catalyst by elevating the collective appreciation and understanding of dreams. Consequently, this heightened awareness may increase the demand for the depth of insight and relational connections that can only be offered by human interpreters and analysts, even if a section of the audience will always prefer exclusively AI-driven insights.

### 3. Ethics in Dream Analysis

Dreams, with their unique nature, necessitate particular ethical attention. Serving as unfiltered portals into our unconscious minds, they often reveal facets of our psyches that had previously remained elusive. When laid bare before an insightful analyst, these deep-seated, concealed portions of our minds can be easily interpreted and understood, often giving away far more about ourselves than we might wish. This gives rise to some pertinent concerns, primarily about what AI systems might be able to discern about an individual and the potential misuse of such information. Not only is there a concern that this information could be abused by being shared with third parties, the very act of sharing this information with the dreamer could lead to discomfort and confusion. Because dreams can bring to the surface deeply personal, and at times negative, content, there is a potential risk of revealing information to the actual dreamer. These revelations might relate to repressed memories or even past traumas that, when revealed, significantly affect the well-being of the dreamer. A further

and related aspect of these concerns is the nature of dream interpretation itself. Analyzing dreams often involves projecting certain meanings or interpretations onto the dreamer. Whether these projections are from a human or an AI, they can sometimes serve to confuse and mislead the dreamer. This leads to the risk of dreamers placing undue trust in the interpretations offered, treating them as absolute truths about their personal lives when in reality they can be wrong or reflective more of the inner world of the interpreter than that of the dreamer.

In light of these considerations, we believe it is imperative to take several precautions into account. Firstly, we advocate the utmost discretion when handling any data related to a person's dreams. Such data is deeply personal, private, and revealing. Any use or analysis of this data should prioritize the dreamer's well-being and always take place with their informed consent. Dreamers should always be aware of the way their dreams are being used and analyzed and whether or not any third parties, even if they are AI systems, might be using or sharing such content. Sharing this data with such third parties, unless requisite for transient processing needs and with the dreamer's consent, is a breach of this trust. Secondly, we believe that dreamers interacting with AI-based dream analyses should be forewarned about the potential depths of information that might be revealed. Thus, dreamers interacting with AI-driven systems that mimic human intuition and insight should approach the experience with the same kind of caution that they would a more traditional psychoanalytical approach. Finally, to mitigate potential misinterpretations, projections, and undue trust in the AI-generated output, we recommend prefacing AI-generated dream interpretations and analyses with disclaimers and clarifying statements. Phrases such as "If this were my dream..." or "This dream might suggest..." emphasize the interpretative nature of the content and dissuade dreamers from considering it as definitive truth or advice. It goes without saying that it should always be clear which content is generated by humans and which by AI.

Our articulation here not only encapsulates a philosophical stance but also delineates a professional approach. Whether engaged in dream research or the development of software applications providing insights

into dreams, we ardently hope that we will witness a similar ethos adopted across the board by others in this domain.

### Conclusion

Congratulations on completing what has, even in writing, felt like a wild ride through the uncharted worlds of technology and dreams! We hope that you walk away from this with a deeper understanding of both the capabilities of AI systems and the symbolic and meaningful world of our dreams. Today, as we have seen, AI systems can provide us with new insights not only into our own dreams but into dreaming as a whole, and in ways that could have a profound impact on our self-understanding and relationships. We are truly in the midst of a technological—and maybe even spiritual—revolution and we are as excited as you are to see what the future holds.

One possible future we envision is a world where every person who is so inclined will be able to have a personal AI assistant that can analyze their dreams and the patterns within them, tracking changes across time, and formulating all of these into helpful and digestible insights. These insights would help people to better understand the depth and complexity of their dreaming world, but would also show the profound and practical connections to their waking lives, making sense of their life journeys and relationships. These insights would not be definitive answers but would be formulated as thoughts, questions, and impressions. They would be starting points for further thought and discussion and would ideally become the basis of an ongoing dialogue with this AI system, but more importantly, with other people whether friends and partners, or therapists and analysts. If such a system is implemented well, it could serve to further the human endeavor and provide people with more meaning, insight, and ways to grow and connect with the people in their lives.

At the same time, we also share many of your ethical concerns around the ingression of AI into our daily lives and the serious implications that this has for so many of us. While the human-AI relationship is most often productive and beneficial, we admit that it can also be harmful and that there will always be the potential for such systems to be abused. This has been the case with the development of every new

technology, but we do not believe that these concerns should prevent us from moving forward. At the end of the day, it is the responsibility of every one of us to make sure that, as individuals and communities, we relate to technology in a way that is healthy and beneficial. By developing these technologies and exploring them openly along with the associated ethical concerns, we believe that we can move forward to a hopeful—and hopefully shared—vision of the future: a world in which humans and AI can co-exist in a mutually beneficial way, and a world in which human life is elevated through a deeper understanding of ourselves, our relationships, and our dreams.

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## Appendix: Supporting AI Configurations

### *Config 1 – Basic dream interpretation*

Prompt: Interpret the following dream.

{dream text}

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Mode=Chat

Model=GPT-4

Max Tokens=256

Temperature=0

Top N=1

Stop sequences=N/A

Frequency Penalty=0

Presence Penalty=0

A quick breakdown of these settings is as follows:

1. Mode: The Chat mode allows one to use the fine-tuned and more conversational ChatGPT models. These are the preferred models for question-and-answer style conversations and can also be faster and more cost-effective.
2. Model: We used the GPT-4 model, which was the most recent at the time of this writing. The GPT-3.5 model is, however, much faster, more cost-effective, and entirely adequate.
3. Temperature: We set the temperature to 0 in all tests so that they would be reproducible as this setting eliminates randomness from the resulting output.

4. Top N/Penalties: These were all left at their default values as these are generally only relevant when working with the non-chat modes when generative AI is more likely to suffer from issues around repetition.

*Config 2 – Freudian dream interpretation*

Prompt: Interpret the following dream using a Freudian framework of dream analysis.

{dream text}

---

Max Tokens=400

*Config 3 – Jungian dream interpretation*

Prompt:

Interpret the following dream using a Jungian framework of dream analysis.

*Config 4 – Symbol interpretation (individual dream)*

Prompt: Interpret the symbol “Cat” in the following dream.

Dream:

{dream text}

---

Model=gpt-3.5

Max Tokens=100

Temperature=0.5

Top N=1

Stop sequences=N/A

Frequency Penalty=0

Presence Penalty=0

*Config 5 – Symbol interpretation (across journal)*

Prompt:

Synthesize the following symbol interpretations for “Cat” into a cohesive picture of the dreamer’s relationship with the symbol.

01/01/2000 - The cat in the dream symbolizes the dreamer’s innate sense of freedom and creative expression.

03/07/2016 - The cat in this dream could represent the dreamer’s relationship with his or herself and their fears relating to independence.

---

Model=gpt-3.5

Max Tokens=600

Temperature=0.7

Top N=1

Stop sequences=N/A

Frequency Penalty=0

Presence Penalty=0

*Config 6 – Relationship analysis (individual dream)*

Prompt:

What can you tell me about the above character “James” from my below dream?

{dream text}

*Config 7 – Relationship analysis (across journal)*

Prompt:

Synthesize the following character interpretations for “James” into a cohesive picture of the dreamer’s relationship with the character.

05/15/2022 - I was walking to the park when I saw James...

03/07/2021 - James and I met at the cafe, but they wouldn’t serve me a coffee saying that they were closing early...

*Config 8 – Relationship changes over time*

Prompt:

Compare the two analyses below and write a summary noting the differences and similarities. Focus a bit more on the differences and help the reader understand what has changed.

System:

The assistant compares two analyses generated from a user's dreams and helps them to understand how their dreams have changed over time. The analyses might be about various topics such as religious experiences, relationships to people in the dreamer's life, or the dreamer's emotions toward a person or place.

Type: Relationship

Analysis 1:

{analysis text}

Analysis 2:

{analysis text}