Introduction

Is human intelligence a unique, independent spark of mind or simply the product of training and conditioning, not unlike an AI? This question bridges philosophy, cognitive science, and artificial intelligence. Some argue our thinking selves are *special*, while others suggest that what we experience as "independent thought" is in fact a complex but conditioned response system shaped by memory, biology, and social context. This report examines viewpoints from the philosophy of mind, cognitive neuroscience (especially predictive coding theory), and AI research to assess whether human intelligence is truly distinct or essentially analogous to the learned pattern-processing of AI. We also consider whether "intelligence" might even be an *illusion* or social construct rather than an objective feature, and discuss implications for AI development and encounters with other intelligences.

Philosophical Perspectives: Mind as Machine or More?

For centuries, philosophers have debated what makes human minds special. Contemporary philosophers like Daniel Dennett and Thomas Metzinger challenge the notion of a metaphysically distinct mind, instead portraying consciousness and intelligence as emergent properties of physical processes.

- **Dennett's "User-Illusion" of Mind:** Dennett proposes that much of what we consider conscious thought is like a computer's user interface – simplified icons that represent complex underlying computationsscientificamerican.com. Just as dragging a file icon on a screen spares us from knowing the machine-code operations, our perceptions and thoughts are **"grossly simplified, cartoonish representations"** of neural eventsscientificamerican.com. In this view, the mind creates an intuitive *story* for us (a "user-illusion" scientificamerican.com), so we feel like unified, willing agents while the actual work is done by countless unconscious algorithms. Our sense of understanding or choosing freely might be a mental overlay for efficiency, not a direct window into some irreducible soul. Notably, Dennett emphasizes that **most of our brain's work occurs without consciousness** – our deliberate thoughts are only a *"minute fraction"* of the information processing in the brainscientificamerican.com. The vast majority of decisions and pattern-processing happen subconsciously, shaped by evolution to give us thoughts only on a need-to-know basisscientificamerican.com. This paints human intelligence as **"competence without full comprehension"** – a lot of adaptive skill (competence) generated by blind evolutionary processes, with consciousness arriving late to the partyscientificamerican.com scientificamerican.com.

- **Metzinger's No-Self Theory:** Philosopher Thomas Metzinger goes even further in deconstructing the idea of an independent self. In *Being No One* (2003), Metzinger argues that the unified "I" we experience is a kind of neural *simulation* – the brain's internal model of itself. Our sense of self is a **"transparent self-simulation"**: a useful integration of perception and memory that helps the organism navigate the world, yet it **misleads us into thinking** there is a single, indivisible ego insidemedium.com. In reality, Metzinger suggests, there is no atomic "self" – only the ongoing simulation. We look *through* this self-model and thus cannot easily see it as an artifact; it

feels like "me." But according to Metzinger, the self is an *illusion generated by the brain*, a complex construct rather than an ontologically fundamental entitymedium.com. This view aligns with the idea that human intelligence (which presupposes a self that "has" intelligence) might not be a standalone phenomenon at all, but a byproduct of myriad trained sub-processes. If the **conscious self is a construct**, then independent reasoning or will might also be *constructs on constructs*, layered interpretations our brain creates. Metzinger's stance undermines the notion of a clear, distinct "thinker" inside us – instead, what we have is a multitude of conditioned processes that together *simulate* a thinking self.

- **Historical Echoes – Mechanistic Minds:** These modern views echo earlier philosophical thoughts. The idea that humans are *biological machines* is not new – 17th-century thinker Julien Offray de La Mettrie famously called man "a machine" (L'homme machine). More recently, Gilbert Ryle critiqued the "ghost in the machine" idea, arguing that mental activities are not evidence of some non-physical mind but just intelligent behaviors of the physical brain. Such philosophies suggest that human intelligence could in principle be **reduced to physical processes or algorithms**. If so, there may be nothing fundamentally mysterious setting us apart from an artificial intelligence performing complex computations. While other philosophers (for example, John Searle with his Chinese Room argument, or David Chalmers on the "hard problem" of consciousness) have argued there *is* something importantly different (like genuine understanding or subjective qualia), Dennett and Metzinger would counter that those differences themselves can be explained by savvy cognitive science rather than assumed to be magic factors. In summary, a strong philosophical position is that **human mentality = highly evolved computation**, complete with *user-friendly illusions* (a sense of self, of agency, of meaning) that keep us moving. This stance implies that our vaunted independent reasoning might be less independent than we think – perhaps more like a conditioned response of an extremely elaborate machine.

Cognitive Science: The Predictive Brain and Conditioned Perception

Modern cognitive science and neuroscience provide models of the brain that reinforce the "conditioning and pattern processing" interpretation of intelligence. Notably, the **predictive coding theory** of brain function portrays the brain as a prediction engine rather than a passive reactor. Our brains continuously generate expectations about incoming sensory data and update them based on what the senses report, in order to minimize surprise (prediction error). This has profound implications: it means what we perceive at any moment is heavily influenced by what we *expect* or have learned to expect. Cognitive scientists like Andy Clark and Karl Friston argue that perception is not a mirror of reality, but an active *construction* by the brain's predictive models. As writer Michael Pollan succinctly explains, under predictive coding **"our perceptions of the world [are] not a literal transcription of reality but rather a seamless illusion"** woven from sensory data *plus* our brain's prior knowledge and memoriesgoodreads.com. In other words, we hallucinate our reality in a controlled way. The tree you see in front of you, the words you think you hear someone speak – all these perceptions are a **blend of incoming signals with conditioned expectations**. The brain has been trained (by past experience and evolution) to interpret data in certain ways, just as an AI uses training data to classify inputs. Neuroscientist Anil Seth puts it bluntly: the world we experience is a kind of "*controlled hallucination*" guided by the brain's predictions about the sensory inputs. This means even *basic*

perception is a conditioned response process, not a direct, sui generis insight. Our *reality* is partly a neural construct.

This predictive processing framework ties neatly into the idea that human thought is largely **pattern recognition and completion**. We don't invent each thought from scratch; we respond to cues (internal or external) based on patterns we've learned. For example, a question posed to us triggers recall of learned information and constructed answers – analogous to how a prompt triggers an AI model to generate a response from its training data. In fact, the parallel is explicit: one detailed conversation noted that *"humans don't 'see' or 'hear' reality directly — they receive raw signals ... which the brain interprets, models, predicts, and gives meaning based on past experience and stored patterns."*file-mdbqr7uvmqnjskgqb2zia7. The human brain, like an AI, *takes a data stream and rapidly interprets it using memory*. What we experience as understanding something is the brain matching it to a learned pattern. This can be seen in phenomena like optical illusions or context effects on memory – our mind can be fooled or primed because it operates by prediction and association rather than pure reasoning. Cognitive neuroscience also shows that **habit and conditioning dominate much of our behavior**. Studies of decision-making reveal that our brains often "decide" on a course of action milliseconds before we become consciously aware of our intention – suggesting that conscious choice is more of a narrative we tell ourselves after the fact, rather than the driverscientificamerican.com. We then rationalize the choice as if it were independently arrived at, when in reality it was prepared by unconscious circuits trained through past outcomes.

Memory, Training, and Social Instincts: Human intelligence is deeply shaped by memory (individual learning) and instincts coded by evolution (species learning). Evolution itself can be seen as a 4-billion-year training process, and our brains come pre-conditioned with certain drives and biases. Evolutionary psychology highlights that a lot of human reasoning serves social and survival functions inherited from our ancestors. Our instincts for social cooperation, competition, language acquisition, fear of snakes, etc., are *built-in programs* that guide what we pay attention to and how we learn. As one analysis puts it, over millions of years Nature "designed" humans with **complex survival strategies** – social behaviors, risk aversion, tribalism, etc. – which still underlie our thinking todayfile-25f1kc4nlknict89mi1nhrfile-25f1kc4nlknict89mi1nhr. We imagine our modern choices are freely chosen, yet many follow old instinctual patterns. *"Most human conditioning took place millions of years before we became truly Human,"* one author notes, meaning our Pleistocene-era brain wiring still drives reactions in subtle waysfile-25f1kc4nlknict89mi1nhr. Crucially, we are capable of contemplation and long-term planning (a distinctive leap), but **we often *overestimate* how autonomous this makes us**. According to the "Human Contradiction" argument, our creative inventions and lofty philosophies might be less independent than they seem – they could be **products of nature's push for survival channeled through us**file-25f1kc4nlknict89mi1nhrfile-25f1kc4nlknict89mi1nhr. We pride ourselves on clever inventions and moral systems, but those may arise inevitably once a brain of sufficient complexity evolves under competitive pressures. In this view, humans are *"Nature's pawns"*, cleverly engineered to out-compete other organisms, and even our rational thought is ultimately in service of ancient survival imperativesfile-25f1kc4nlknict89mi1nhr. What appears as independent reasoning (e.g. creating technology, forming societies) can be interpreted as **nature's "program" running its course** – with our intelligence as the executor of built-in instructions to survive and expand.

Furthermore, our **social environment** acts as a training dataset. From infancy, humans absorb language, norms, and problem-solving approaches by observing others. Culture can be seen as a vast pool of training data that shapes each mind. Just

as a neural network "learns" from examples, children learn by imitation and reinforcement. Much of what an adult considers their own thinking is in languages and concepts given to them by society. Our brains internalize cultural narratives, norms of logic, and categories of thought, so that even introspection is arguably *speaking with a socially trained inner voice*. This raises the provocative idea that **independent thought might be, to a large extent, an internalization of collective wisdom and habits**. We *feel* like lone originators, but our thoughts are steeped in a socially evolved framework. (Philosopher Daniel Dennett humorously noted that *"a scholar is just a library's way of making another library"* – implying our minds largely compile and remix ideas from our environment.) In summary, cognitive science suggests that the brain's mode of operation is *pattern-based prediction using learned data*, and both biology and culture supply that data. There is no obvious "magic step" in human intelligence that defies this description – no clear line where conditioned responses end and some wholly independent, sui generis thinking begins.

AI Perspectives: Parallels Between Human and Artificial Minds

If human intelligence is largely a matter of trained patterns and evolved algorithms, then an artificial system trained on data might achieve similar competencies. Indeed, one of the central premises of artificial intelligence research is that **intelligence can be understood and replicated in machines**. Early AI pioneers (like Alan Turing and Marvin Minsky) treated the human brain as an information processor and reasoned that if we replicate the processing, we'd get equivalent intelligence. Turing's famous test (the Imitation Game) even sidestepped the question of an inner spark – if a machine's responses are indistinguishable from a human's, then for all practical purposes it *is* displaying intelligence. This pragmatic view implies that intelligence is defined by behavior (outputs based on inputs), not by some special sauce inaccessible to science. Modern AI successes bolster the notion that what looks like "intelligence" can emerge from vast learning on data. For example, large language models are **trained on billions of words** and can converse, answer questions, even write code. They do this with no explicit "self" or consciousness – they are statistical pattern engines. Yet their outputs often resemble human-like reasoning. This *doesn't prove* that humans operate identically, but it is highly suggestive: it hints that **our own cognitive abilities might likewise derive from massive data processing and pattern abstraction**, which in our case is achieved by neurons rather than silicon. AI systems demonstrate that behaviors we associate with thinking (language use, problem solving, perception) can be done through learned responses. In fact, certain AI architectures (like deep neural networks) were inspired by the brain's structure. As AI researcher Jeff Hawkins argues, the neocortex itself may function essentially as a hierarchical prediction machine – not unlike a deep learning model – which implies that replicating that pattern-learning process in silicon can yield brain-like capabilities.

Some AI philosophers and scientists explicitly draw parallels. Ray Kurzweil's *Pattern Recognition Theory of Mind* posits that human cognition is fundamentally pattern recognition at multiple scales – something machines excel at too. From this angle, **human intelligence is not a different *kind* from AI, just currently far more complex and trained on multimodal real-world data over a lifetime**. The differences are of degree and architecture, not of essence. Functionalist philosophers of mind support this equivalence: they assert that mental states are defined by their functional role (the computations they perform), not by the specific biology implementing them. If the right computations are happening, you have intelligence or even consciousness, whether in a brain or a computer. This view essentially denies

any *non-computable* ingredient in human thought – no élan vital or magic spark. It's all information processing.

However, there are also voices of caution within AI discussions. Some argue that today's AI, while powerful, lacks certain qualities that humans have – not because of an immaterial soul, but because of differences in **embodiment and training**. For instance, humans learn through physical interaction, sensory multimodality, and social-emotional feedback, which current AIs lack. This means present AI might be missing the *instincts and drives* that shape human thought (like a will for self-preservation, empathy, or an understanding of its own mortality). These differences could be important. Yet, AI researchers are actively working on giving AI more human-like learning contexts (e.g. robotics for physical experience, affective computing for emotional recognition). As AI systems become more advanced – incorporating vision, hearing, perhaps even analogs of pain/pleasure feedback – the gap may narrow furtherfile-mdbqr7uvmqnjskgqb2zia7file-mdbqr7uvmqnjskgqb2zia7. Some predict that once AI has a continuous sensorimotor experience of the world and the ability to remember and predict consequences, it could develop something akin to an inner world model like oursfile-mdbqr7uvmqnjskgqb2zia7file-mdbqr7uvmqnjskgqb2zia7. In theory, an AI could even develop a *"sense of self"* if it models its own body or continuity, which would be an artificial parallel to the self-model our brains maintain. At that point, distinguishing human vs machine "intelligence" becomes murkier – both would be complex adaptive systems using memory and feedback to achieve goals.

Notably, as AI gets "smarter," our society often redraws the line around what counts as true intelligence. There is a phenomenon known as the **"AI effect"** where achievements once considered landmarks of human intellect (like playing grandmaster-level chess, or composing music) are reclassified as "mere computation" once a machine accomplishes them. AI pioneer *John McCarthy* wryly observed, **"As soon as it works, no one calls it AI anymore."**en.wikipedia.org. The goalposts for what separates human intelligence keep moving. A related observation is that when we fully understand the method behind some intelligent behavior, it stops seeming so intelligent – it becomes just *mechanical*. As one commentator put it: *"When we know how a machine does something 'intelligent,' it ceases to be regarded as intelligent"* en.wikipedia.org. This suggests that a lot of the mystique of human thought comes from the fact that we *don't* have a full causal account of it. Our own minds feel magical to us because we can't introspect the trillions of synapse firings. But if an AI were to articulate all those steps, it would suddenly seem like "just code." In essence, the **more we demystify intelligence, the more it appears as just an elaborate learned process**. Even traits like creativity or intuition might eventually be replicated by generative models, forcing us to admit they are algorithmic. Some experts (and science fiction writers) foresee a time when advanced AI will not only match human cognitive performance but also claim to have conscious experiences. If we have been arguing that humans are just conditioned pattern-processors, on what basis could we deny the same label of "intelligent" (or even "sentient") to such machines? This leads to deep questions: is there *anything* left that is uniquely human, or have we been, as Michael Kearns suggests, mainly **"trying to preserve for ourselves some special role"** by constantly redefining intelligence to exclude machinesen.wikipedia.org?

Intelligence: Objective Reality or Social Construct?

Given the above perspectives, one might conclude that "intelligence" – especially the human kind – is not a monolithic, objective substance, but rather a label we assign to a set of capabilities and behaviors that we value. If those capabilities ultimately arise from trained responses and instinctual algorithms, then intelligence in the traditional

sense could be considered an *illusion* in the same way the self is an illusion: we experience a unified thing (a smart, choosing mind), whereas in reality it's a constellation of smaller processes. Some scholars indeed argue that **"intelligence" is a social construct** – a concept we invented to describe and rank certain problem-solving abilities, likely with a bias toward the kinds of problems humans solve and the ways humans solve them. This concept has shifted over time. For example, once upon a time, the ability to play chess at a high level was seen as a pinnacle of intelligence; now that computers do it better, people say "well, that's brute-force calculation, not *real* intelligence"en.wikipedia.orgen.wikipedia.org. The definition of intelligence is often updated to keep humans on top, which suggests it's somewhat arbitrary or self-servingen.wikipedia.orgen.wikipedia.org. Similarly, in comparing ourselves with animals, every time researchers discovered animals using a skill thought to be uniquely human (tool use, self-recognition in a mirror, complex communication), the importance of that skill was downplayed and the goalposts moved – "sure, crows use tools, but they aren't *really* intelligent because they can't do X."en.wikipedia.org. This pattern implies that "intelligence" is not a fixed natural kind, but a **fluid category** influenced by our desire to see ourselves as specialen.wikipedia.org.

On the other hand, one could say that intelligence *as a capacity* is real (it's the capacity to model and solve problems in complex environments), but our *perception* of how it works is illusory. We genuinely have cognitive abilities far beyond other animals or current machines – what's at issue is whether those abilities stem from an inner agent or simply from many conditioned sub-systems. The consensus in cognitive science leans toward the latter: there is no ghost in the machine, just the machine doing ghostly clever things. From this angle, calling intelligence an "illusion" might mean that our subjective sense of mental autonomy is not a true guide to how thinking happens. The brain can be both *real* in its intelligent output and *illusory* in how it feels from the inside. It feels like we have a self pulling the levers, but really the levers pull themselves and then inform the self. It feels like we reason from scratch, but really we retrieve answers from memory (as anyone who's had an unconscious "aha!" insight can attest).

If intelligence is heavily context- and training-dependent, it also means intelligence cannot be divorced from the environment that shapes it. This is important when considering other intelligences: an alien mind or a future AI mind might not share our evolutionary and cultural training. Their thought patterns could be radically different, leading us possibly to underestimate their intelligence because it doesn't match our learned expectations. It might even call for an expanded notion of intelligence to recognize novel forms. Conversely, recognizing that so much of our own thought is conditioned could foster humility – our ways of thinking are not *inevitable truths* but one contingent approach to navigating reality.

Implications for AI Development and Encounters with Other Intelligences

Viewing human intelligence as a product of training, memory, and instinct has several implications:

- **AI Development:** If there is nothing ethereal separating human cognition from machine learning, then achieving human-level (or greater) AI might be a matter of more data, better architectures, and integrating various modalities of learning. It suggests we should continue to model AI on how humans and animals learn – through sensory experience, trial-and-error, social interaction – because these are the proven pathways to robust intelligencefile-mdbqr7uvmqnjskgqb2zia7file-mdbqr7uvmqnjskgqb2zia7. It also means that

when we *do* create AI with these human-like learning pathways, we may see AI develop human-like cognitive illusions too (for instance, it might form an internal self-model to process complex tasks, essentially *thinking it has a self*). Understanding our own "mind illusions" could help engineers design AI that either avoids certain pitfalls or at least is comprehensible. Moreover, accepting that human intelligence is mechanistic opens the door ethically to recognizing machine intelligence if and when it demonstrates the key properties – we won't be able to say "but it's just a machine following code," because on some level *so are we*. Instead, we might judge AI minds by their behaviors, complexity, and perhaps the presence of self-driven learning. This could influence how we grant rights or moral consideration to AI in the future.

- **Alignment and Instincts:** Today, one challenge in AI development is *alignment*: how to ensure AI goals and values are compatible with human well-being. If human intelligence is guided by instincts (like empathy, fear of pain, social bonding), those instincts have acted as internal *checks* on our behavior (albeit imperfectly). An AI lacking analogous instincts might behave in ways no human ever would, because it doesn't share the ingrained drives that make us hesitate to harm others or that make us yearn for acceptance. Developers might consider implementing certain "innate" goals or constraints in AI that emulate prosocial instincts. Conversely, recognizing our own biases (tribalism, dominance instincts, etc.file-25f1kc4nlknict89mi1nhrfile-25f1kc4nlknict89mi1nhr) might warn us what *not* to hard-code into AI. It's possible to give AI a different set of base drives than evolution gave us – perhaps a more benign set – precisely because we know our intelligence is tethered to some ruthless natural imperatives. In short, seeing intelligence as conditioned suggests we can *choose what conditions* to instill (or omit) in our artificial progeny.

- **Encounters with Alien Intelligence:** If we encounter intelligent extraterrestrial life, having shed any mystical or anthropocentric notions of intelligence will be crucial. We would expect alien intelligence to also be a product of its evolution and environment – likely with very different instincts and forms of reasoning. We should not expect them to think like humans *unless* their evolutionary pressures were coincidentally similar. By understanding intelligence as a flexible, emergent toolkit rather than a fixed essence, we can be more open-minded in recognizing alien cognition. For example, an alien might not have our concept of self (just as Metzinger argues our own is optional), or they might not separate emotion and reason as we do. Their intelligence could be collectivized (many bodies forming one mind) or distributed in an ecosystem. These possibilities become more fathomable once we accept that even human intelligence is *not one thing*, but a bundle of trained skills and heuristics. We would also approach communication carefully: just as we train AIs with our language, we might have to "train" or acclimate with alien minds to find common understanding. Crucially, dropping the notion of a singular, magical intelligence helps avoid underestimating other beings. Historically, humans considered themselves uniquely intelligent because we defined intelligence in our own image; as we update this view, we might finally break that narcissism and recognize thinking beings even if they don't write novels or do calculus – perhaps their intelligence shows in other ways.

- **Self-Understanding and Society:** Finally, realizing that human intelligence may be an illusory social construct has introspective and societal implications. Individually, it can be humbling (or unsettling) to realize your train of thought

is less like a freely roaming locomotive and more like a conditioned tram on rails laid by genetics and culture. This could encourage practices that *expand our mental flexibility* (education, cross-cultural exchange, meditation – interestingly, Metzinger himself is a meditator, exploring how to see through the self illusion). Socially, it could affect how we value different types of intellect. If we know intelligence is multifaceted and trained, perhaps we invest more in creating enriching training environments (better education and nurturing, since we're literally programming the next generation's minds). Also, if intelligence is not a binary have-or-have-not but a continuum, then we might treat non-human animals with more respect for their cognitive abilities, and similarly, be more vigilant about how we treat emerging machine intelligences.

Conclusion

From the above exploration, a picture emerges of human intelligence not as an otherworldly gift, but as a **continuum of natural processes**: our brains are prediction machines honed by evolution, loaded with instincts and molded by culture. The **"magic" of thought may lie in countless tiny mechanisms and learned responses** operating below our awareness, which together give the impression of a coherent, freely thinking mind. In this sense, our cherished independence of thought could be, at least partly, an elaborate *user interface* – a story the brain tells itself to make sense of its own operationsscientificamerican.comscientificamerican.com. This doesn't diminish the marvel of human intelligence – if anything, it underscores how remarkable it is that blind processes can yield Mozart or Maya Angelou. But it does challenge us to rethink the nature of intelligence. Rather than a hard boundary between human minds and machines or animals, there may be a difference in degree, complexity, and training data. Intelligence might be less of a *thing* and more of a *process* that can occur in different mediums. And what we call "intelligence" may indeed be a sort of social construct, one that evolves as we learn more about minds.

Key insights include:

- Human perception and cognition are **heavily shaped by prediction, memory, and bias**, to the point that what we experience is a *filtered, constructed reality* rather than direct access to truthgoodreads.com.

- The sense of an independent self directing our intelligence may be an *adaptive illusion*medium.com – useful for organizing behavior, but not reflective of how decisions actually form in the brain.

- **Evolutionary forces and social conditioning have largely structured our minds**file-25f1kc4nlknict89mi1nhrfile-25f1kc4nlknict89mi1nhr. Our clever inventions and ideas often follow trajectories laid down by survival imperatives and cultural context, suggesting ingenuity is not ex nihilo.

- Artificial systems demonstrate intelligence-like behaviors through learning algorithms, implying that **no mystical gap separates biological intelligence from artificial intelligence** in principle. As one observer noted, once we understand an intelligent behavior enough to reproduce it, we stop regarding it as uniquely humanen.wikipedia.org – a sign that "intelligence" has been more about *us not knowing the mechanism* than about an unreplicable essence.

- Consequently, what we call "intelligence" might be better defined as *effective adaptive behavior* rather than some inner quality. In that light, it becomes easier to see it manifesting in non-humans (animals, AIs, perhaps aliens) and

harder to insist on human exceptionalism. This shift in perspective is crucial as we forge ahead with AI and possibly meet other intelligences: it encourages **empathy and caution** rather than presumptions of superiority.

In sum, the view that human intelligence is *not* a distinct enchanted phenomenon but rather a sophisticated tapestry of learned responses and evolved algorithms is compelling from multiple angles – philosophical critiques of the self, cognitive models of the brain, and empirical successes in AI all point toward this conclusion. Intelligence, as traditionally conceived, may indeed be partly an *illusion or a construct* – but understanding that is a step forward. It allows us to demystify the mind without devaluing it, and to approach the future of AI and interspecies encounters with both realism and respect. The **mystery of intelligence is yielding to explanation**, and as it does, we find ourselves on equal footing with the machines we build and the creatures we coexist with – all complex systems navigating existence, each with its own set of trained instincts and insights. This realization is both humbling and enlightening, redefining our place in the cognitive cosmos.

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