Presentation and validity In season 3, episode 3, Will is at Hannibal's childhood home and decides to talk to him to learn more. It should be noted that at this moment Hannibal is not physically present with him, Will is therefore going to imagine Hannibal in his head, but the scene is there to represent their connection to how much they understand each other. Hannibal and Will were thus speaking to each other at the same time, both in their imagination, knowing what the other was going to answer. This makes even more sense when we know that later Will will join part of Hannibal's memory palace, a place they use to talk to each other at any moment, even when they are not physically present. Moreover, Hannibal and Will are both described as being above the rest of humanity in emotional understanding, and even said to have the same level of "insight." So it seems that narratively it makes sense that Hannibal also imagined the conversation, to show their connection, but it also makes sense in terms of Hannibal's narrative in the verse compared to Will, he is superior in intelligence, but in emotional understanding (interpersonal) he seems relative

In a show full of mirrored relationships, none is more compelling than the central struggle between Hannibal and Will Graham. As with a reflective surface, the similarities are just as compelling as the differences.

At the start of the show, Graham has removed himself from active duty as a profiler and retreated to the world of teaching.

"I always assumed that it was because it was too much for him," actor Hugh Dancy says. "And he felt that the next most productive activity for him would be to train other people."

There is also a sense that while the act of profiling comes at a steep cost, Graham is also aware of his own attraction to that violent side of himself. And he's frightened of it.

"He's been holding it at arm's length, but once the door is opened for him again by Jack Crawford, he starts to go down that slope quite quickly."

Graham finds an unsuspecting—and certainly unorthodox—friend in Hannibal Lecter during this slippery slope. When Hugh Dancy discusses the relationship, he mentions how Graham has never been closer to another person than he is to Hannibal.

"In a sense, the two of them have been wandering the Earth, totally isolated, because they have such a specific and elevated mentality," he suggests. "Not identical, but it is as if not only are you the greatest chess player on the planet, you're actually the only person on the planet that can play chess. And then suddenly you walk into a room one day and there's a guy playing chess. I think that's how they feel about each other."

It's a complicated relationship, one muddied by the realization that one of them is a cannibalizing serial killer, but it's not a deal-breaker.

"It's a very rich and profound friendship, and love even," Dancy explains. "Once Will realizes who Hannibal is, it complicates that, but it doesn't just wipe the slate clean. It doesn't change the fact of their connection."

Further to the recognition of a kindred spirit is a similar linguistic facility and the ability to use it for full expressive intent.

"Hannibal can talk with the same level of profound insight as Will has about the acts of violent people, and that's reflected in the language. In the scenes that Will and Hannibal have when they're in Hannibal's office, when they're not directly therapizing Will and they're talking about the various different crimes, the language remains the same. It's very heightened, almost poetic, and full of imagery. That's not the case when Will talks to Jack about the crimes. Jack just wants answers. 'Just tell me who did it. What weapon did he use?'"

"A lot of it was rooted in his anxiety and his tension and figuring out where and when to drop or increase that."

The approach with Mads Mikkelsen took a more theoretical bent.

"With Mads, it's incredibly conceptual," Slade reports. "[Hannibal] is the Devil, he is omniscient, he is the smartest person in the room. And if you start from that position, the character falls beautifully together...Mads is going to become the defining face of this character."

Likely it didn't take one thousand Post-It Notes for David Slade to arrive at that conclusion.

now let's look at the script to see the feat

Well-coiffed, besuited, dry. Sitting in his THERAPY CHAIR.
He's staring at the hunting cottage and the castle in the
distance beyond it.

HANNIBAL

It's not healing to see your
childhood home, but it helps you
measure whether you are broken, how
and why, assuming you want to know.

WILL GRAHAM
I want to know.
(then)
Is this where construction began?
Hannibal glances back at his childhood home.

HANNIBAL

On my memory palace? Its door at
the center of my mind. And here
you are, feeling for the latch.

Will regards Hannibal with something approaching a smile.

WILL GRAHAM

The spaces in your mind devoted to
your earliest years... are they
different than the other rooms?

The SKY DARKENS around them, like the instant onset of night,
and this darkness becomes the shadowy interior of...
INT. HANNIBAL LECTER'S OFFICE - DAY
Incongruously, rain falls in the office on Will (and Will
only) still sitting opposite Hannibal who remains dry.

WILL GRAHAM

Are they different than this room?

HANNIBAL

This room holds sound and motion,
great snakes wrestling and heaving
in the dark. Other rooms are
static scenes, fragmentary...

CLOSE ON HANNIBAL
He appears briefly to be composed of PAINTED SHARDS OF GLASS.
HANNIBAL Ep. #303 "Secondo" FINAL DRAFT 10/30/14 5.

HANNIBAL (CONT'D)
...like painted shards of glass.

WIDE

WILL GRAHAM

Everything keyed to memories that
lead to other memories.
HANNIBAL
In geometric progression.
WILL GRAHAM

The rooms you can't bring yourself
to go. Nothing escapes from them
that causes you any comfort.

HANNIBAL

Screams fill some of those places.
But the corridors do not echo
screaming... because I hear music.
A GUNSHOT rings out, snapping us back to --

THE CASTLE LECTER GROUNDS
Will snaps out of his daydream. Another SHOT, then ANOTHER.
Will is up, heading toward the sound...

Screen_Recording_20250808-213712_Chrome2.mp4
Screen_Recording_20250808-213712_Chrome3.mp4

Now, trying to understand the feat, let's see what Hannibal and Will had to understand in order to create this conversation: Hannibal and Will both knew exactly which place they were going to visualize, even down to the meter, since we see Hannibal looking around the environment when he is questioned. Hannibal also knew when Will would want to speak to him, but Will could do the same, and this was down to the minute, even the exact second. They predicted each other's every word, the responses, the intonation, the choice of words, the emphasis, the rhythm, the structure, the purpose of the conversation, the speaking time | when they were going to speak down to the second... They also knew about the change of location, meaning they knew the exact location, again, down to the meter of Hannibal's memory palace. Obviously, there are also the facial expressions, the movements of their bodies, the emotions they feel in the moment, their shared memories, their understanding of each other, and the fact that they had to adapt their modeling of one another knowing that the other's mental state affects their modeling of their interlocutor... all of this, of course, with perfect accuracy in order to replicate an authentic conversation.

It's also important to understand that they are imagining what the other would say, so they had logically anticipated the entire conversation, because if we take Will's perspective, Hannibal is speaking to him but in truth it's Will's imagination knowing what Hannibal would say and the same for Hannibal. So, taking this into account, we can deduce that both characters can anticipate their conversation entirely in advance, they know what the other is going to say, they know what the other is going to ask and answer. Now we are going to see how this buffs the feat, but just before that, let's try to explain how the system in which they operate resembles or is a chaotic system.

Sensitivity to initial conditions: If, for example, Hannibal is 0.1% more irritated or more tired than Will thinks, the entire prediction of tone, words, and imagery changes.

Interdependence of variables: Changing a single word changes the emotional reaction, which changes the facial expression, which changes the choice of the following words. There is therefore an exponential factor.

Impossibility of perfect calculation: The amount of information required is astronomical and would demand a mental model of the other at neuronal resolution.

The system contains too many things they predict with 100% accuracy, with in addition a huge exponential factor knowing that this is a conversation, and that the example of initial conditions also applies to Hannibal, who could think that Will is 0.1% sadder, which would change much about Will and even about Hannibal. But no both know perfectly, without the slightest apparent error, what the other feels despite the astronomical number of parameters that must be taken into account.

In a chaotic system, time acts as an exponential factor. We can see this through the weather: we can predict the weather in 3 days, but not in 1 month, because it would require INCREDIBLE precision in the initial conditions. The more time passes, the more actions there are, each action can lead to several different results, which in turn can do the same. We therefore see the exponential factor here, which is formalized in chaotic systems with the formula:
-----> $|\delta Z(t)| \approx e^{\wedge}(\lambda t)|\delta Z_0|$

Let's explain the formula in the case of chaotic systems. There is something called the Lyapunov time, it is the time after which we can no longer predict the state of the system with precision. It is defined by the formula: $\tau = 1 / \lambda$ Now, to

understand this in more detail, we need to introduce the Lyapunov exponent (λ). It measures how quickly two nearby trajectories separate over time. If you have two points very, very close to each other in phase space (initial states of the system), with a small initial distance $|\delta Z_0|$, the system evolves, and after a certain time t these two trajectories are now separated by a distance $|\delta Z(t)|$. We formalize this with the formula: $|\delta Z(t)| \approx e^{\wedge}(\lambda t)|\delta Z_0|$
https://en.wikipedia.org/wiki/Chaos_theory

It must be understood that in a conversation, each action triggers other actions, which in turn trigger others, and so on, creating a multiplicative effect. Hannibal and Will must not only analyze the immediate reaction to a word or a gesture, but also all the alternatives that could have happened if one of them had acted differently. Each potential alternative creates a new possible trajectory, and each trajectory leads to further branches. This forms a tree of possibilities that grows exponentially, after a single exchange, there are already several paths, and after just a few exchanges, their number becomes astronomical.

For example, if each sentence or gesture offers 10 realistic alternatives, after 5 exchanges there are already 10^5 potential scenarios. Hannibal and Will must analyze every realistic possibility and identify which is the most probable, in order to achieve the perfect conversation. This may seem unrealistic, because it is. Recreating a conversation with perfect accuracy is totally impossible for humanity, yet they do it.

This also does not even take into account microscopic variables such as a 0.1% change in tone, or a tiny variation in facial expression, which in turn alters the emotional reaction and therefore the choice of the following words. In a system so sensitive to initial conditions, these minute variations propagate at each step, amplified by the exponential effect, until they make any perfect prediction theoretically impossible. Yet, in the scene, Hannibal and Will seem to predict with absolute precision the emotional, verbal, and even spatial content of the conversation, which would be equivalent to solving, in real time, a chaotic system of a complexity unattainable for a human being. **Now, even though it's obvious, let's explain how this is above even the entirety of humanity and by how much**

Emotional understanding

On an emotional level, they do not merely read instantaneous emotions, they model the other's complete internal state, anticipating not only their current feelings but also how those feelings will evolve throughout the conversation. They integrate microscopic signals (minute variations in mood, memory, mental imagery) that are normally imperceptible, and project them with perfect accuracy into the future, which implies an emotional simulation at a near neuronal resolution.

What does "near-neuronal" mean? A near neuronal resolution means that one would have to model the crucial internal state of a person, including neuronal states (activity in localized groups of neurons, firing patterns), synaptic weights and their dynamics, hormonal/neuro-modulatory levels (adrenaline, cortisol, dopamine) which modulate decision-making, working memory (what is currently in mind), and unconscious associations that tip the choice toward one word rather than another.

They are therefore at a level of emotional understanding far beyond what we can currently achieve, they know with 100% accuracy anything that touches the other's emotions and can perfectly anticipate future emotions as well.

emotional perception

Hannibal and Will also possess an emotional perception that surpasses any human frame of reference, because in order to recreate an authentic conversation without direct sensory signals, they must already have memorized with absolute precision every micro-expression, every vocal inflection, every muscular and physiological variation the other might express in any situation. Obviously, they cannot memorize absolutely everything, as that would likely be an immense number, but they must have a memory vast enough to then infer, via emotional understanding, the other's face in X situation

This perceptual memory is not a simple general impression, but an exhaustive mental database where each emotional state is encoded as a complete sensory pattern, including physiological correlations invisible to the naked eye, such as microscopic pupil dilation, minute facial tensions, or imperceptible variations in breathing rhythm

To build such a database, they must have accumulated over time a volume of perceptual data that no human could ever collect or store, and above all, they are able to reactivate it with perfect fidelity. Thus, even without perceiving in real time, they can mentally simulate the other's exact emotional state

This level of precision implies that their raw emotional perception is already at an unrealistic level, no bias, no noise, no loss of information, just a complete and exploitable capture of the other's emotional state, which then allows them to feed their unrealistic emotional understanding with data of a purity unattainable for us

Why can a human not reach this precision? FSIQ | sensory

First, the necessary information is inaccessible: to know the neuronal/synaptic state of another would require invasive measurements (very high-resolution scans, electrophysiology, etc.). Human senses (vision, hearing, smell) do not transmit the fine information required to reconstruct synaptic weights or the exact firing pattern. Even chemical signals enhanced smell) only provide partial clues, not the complete map.

There is also the size of the state space, which is enormous. To give an idea: the brain has about ~10^{11} neurons and ~10^{13}–10^{14} synapses. If you wanted to very roughly represent the state of the synapses with 16 bits each, you get about ~1.6×10^{15} bits ≈ 200 TB of raw information just for the synaptic weights. This is not only a numerical constraint, you also have to capture these bits from the other person, which is impossible through normal perception.

Now let's move on to the reasoning necessary for this (we will also look again at FSIQ).

Hannibal and Will operate in a massively combinatorial probabilistic space, where every word, intonation, or silence opens a range of possible trajectories. At each step, they estimate not only the most probable trajectory at the moment, but also how this trajectory will be perceived and reinterpreted by the other, which modifies future probabilities. In practice, this is equivalent to exploring an exponential tree of possibilities, if at each turn of conversation there are N plausible responses, after T turns there are N^T possible trajectories. For N = 20 and T = 15, this reaches 20^15 ≈ 3.27×10^19 paths, a space so insane that no human can exhaustively traverse it. Hannibal and Will seem to reduce this space to a single trajectory perfectly predicted, which amounts to solving in real time an optimization problem over an exponential

space with zero error. This is a reasoning feat superior to what the best modern AIs can do, because here the state space is not defined by fixed rules like in chess, but by human psychology, which is far more chaotic.

Reflective loop

We must also take into account that the system has a reflective loop. What is that? Well, I had already mentioned it a bit, it's when A models B, but B models A in return. If both are very good, it becomes a phenomenon of nested simulation: A simulates what B will say, but B simulates what A thinks B will say, which forces A to simulate what B thinks A thinks B will say… and so on.

Mathematically, it's like having a function f that takes as input the model of the other, but whose input is itself the output of the other function. Finding the perfect trajectory comes down to finding a fixed point of this recursive system , that is, a stable configuration where each person's predictions align perfectly.

The problem is that the deeper the level of reflection (he thinks that I think that he thinks…), the more complexity explodes. In theory, an infinite depth is impossible to compute, but Hannibal and Will seem to navigate without loss through several layers of recursion, as if they had direct access to the perfect fixed point.

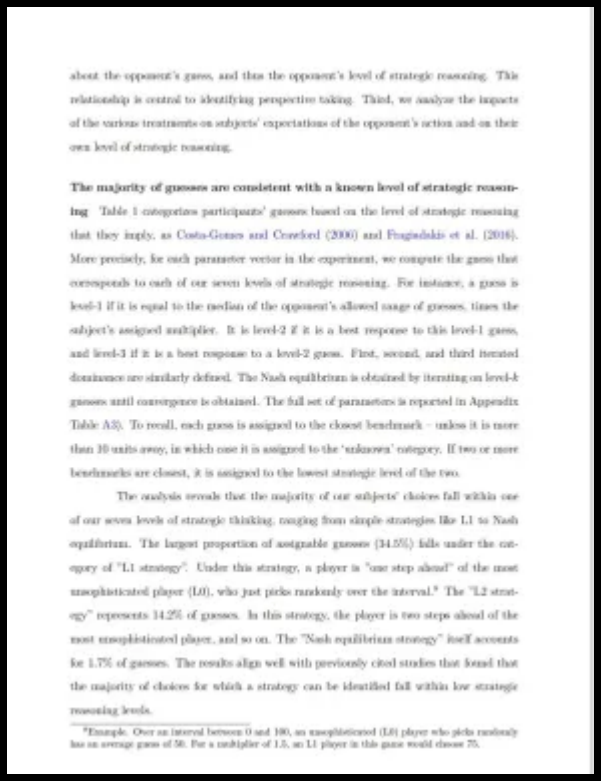
To understand how impressive this is, we will briefly look at studies on this type of reasoning, often called "strategic reasoning." In the linked studies, they say that level 2 or higher strategic reasoning is already a high level, and that's only "I think that you think that I want to leave" or more. Another study shows that 34% of people stop at just being one step ahead, so "I think that you think..." We can clearly see that humans struggle with this type of reasoning, while Will and Hannibal can manipulate an unquantifiable number of layers, which must be very large. But let's try to at least give a small estimate.

C1: My current state, what Will thinks/feels at the moment. C2: His model of Hannibal's state, what Will believes Hannibal feels. C3: Hannibal's model of Will's state, what Will assumes Hannibal thinks about Will (reciprocal reflection). C4: Speech objective, what Will wants to achieve with his reply (inform, test, seduce, trap). C5: Anticipation of word strategy, which word Hannibal will choose according to his model of Will's objective. C6: Predict pauses, emphases, silences (direct influence on interpretation). C7: Expected micro-facial expression, precise contraction of a facial muscle if a particular phrase is said. C8: Which

specific memory the phrase will trigger in the other (image, precise recollection). C9: Emotional reaction to this memory, how the memory modifies the emotion (guilt, nostalgia, anger). C10: How the other will adapt their phrase upon seeing the emotional reaction. C11: If the other intentionally modifies their message to provoke a reaction in Will. C12: Perception the other has of manipulation, Will anticipates if Hannibal believes he is being manipulated and how he will react. C13: Choice of a precise word because the other attaches a particular connotation to it. C14: Consideration of N plausible words and why each would be chosen, simulating reactions for each. C15: Which place/position/object in the memory palace will be evoked and how the other will mentally position themselves there. C16: How the conversation in the next 10–30 seconds will redirect the other's memory and emotion. C17: Instant recalculation based on observed micro-reactions (pause, blink, micro-breath). C18: Will simulates how Hannibal simulates his own simulation (refining the fixed point). C19: Prediction of the stable position where their models will converge (the ideal dialogue). C20: Final choice of action | speech that maximizes the desired effect given all the levels above. Each layer is not just a repetition of "he thinks that": it concerns a different domain (emotion, memory, word, prosody, spatiality, strategy, metacognition).

To predict exactly a word, a pause, and a micro expression, you must first resolve all these dependencies, the word depends on the activated memory (C8), the connotation (C13), the strategy (C11), and how the other will interpret the connotation (C12), which itself depends on the other's belief about your belief (C3, C18).

Two key points to understand why 15–20 is an underestimate:
For each order of belief layer, there are multiple dimensions (lexical, facial, hormonal, spatial). Even a single order layer can contain multiple decision sublayers. Moreover, conversation is not a single act anticipating the trajectory over multiple turns adds one layer per turn for each predictive dimension. This is not only an FSIQ-level reasoning, which is completely unrealistic, but also a metacognition from a whole other world.
https://www.pnas.org/doi/10.1073/pnas.0807721106
https://web.stanford.edu/~fafchamp/Strategic_Reasoning.pdf



about the opponent's guess, and thus the opponent's level of strategic reasoning. This relationship is central to identifying perspective taking. Third, we analyze the impacts of the various treatments on subjects' expectations of the opponent's action and on their own level of strategic reasoning.

The majority of guesses are consistent with a known level of strategic reasoning Table 1 categorizes participants' guesses based on the level of strategic reasoning that they imply, as Costa-Gomes and Crawford (2006) and Fragiadakis et al. (2016). More precisely, for each parameter vector in the experiment, we compute the guess that corresponds to each of our seven levels of strategic reasoning. For instance, a guess is level-1 if it is equal to the median of the opponent's allowed range of guesses, times the subject's assigned multiplier. It is level-2 if it is a best response to this level-1 guess, and level-3 if it is a best response to a level-2 guess. First, second, and third iterated dominance are similarly defined. The Nash equilibrium is obtained by iterating on level-k guesses until convergence is obtained. The full set of parameters is reported in Appendix Table A3). To recall, each guess is assigned to the closest benchmark – unless it is more than 10 units away, in which case it is assigned to the 'unknown' category. If two or more benchmarks are closest, it is assigned to the lowest strategic level of the two.

The analysis reveals that the majority of our subjects' choices fall within one of our seven levels of strategic thinking, ranging from simple strategies like L1 to Nash equilibrium. The largest proportion of assignable guesses (34.5%) falls under the category of "L1 strategy". Under this strategy, a player is "one step ahead" of the most unsophisticated player (L0), who just picks randomly over the interval.[8] The "L2 strategy" represents 14.2% of guesses. In this strategy, the player is two steps ahead of the most unsophisticated player, and so on. The "Nash equilibrium strategy" itself accounts for 1.7% of guesses. The results align well with previously cited studies that found that the majority of choices for which a strategy can be identified fall within low strategic reasoning levels.

[8]Example. Over an interval between 0 and 100, an unsophisticated (L0) player who picks randomly has an average guess of 50. For a multiplier of 1.5, an L1 player in this game would choose 75.



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We can compare this with the Traveling Salesman Problem, which is already one of the most well known problems in mathematics. The problem involves a traveler who crosses a country and must find the shortest route linking a set of cities without passing through the same place twice, and this problem quickly

becomes impossible to solve exactly as the number of cities increases, to the point that even supercomputers must use approximations.

Now imagine a dynamic version where the cities change position in real time, where distances vary every instant, where some cities appear and disappear while you calculate, and where you also have to guess their exact position from noisy data. For a normal human, this is totally unachievable, because our working memory, calculation speed, and probabilistic precision are far too limited to track a moving graph with such a degree of complexity.

Yet, in their conversations, Hannibal and Will solve in real time a mental problem equivalent to this dynamic version, except that each city represents a possible emotional state of the other, each distance is a probability of transition to another state, and the graph changes every microsecond because the other thinks and acts simultaneously. Not only do they find the optimal trajectory, but they do it with no visible approximation, without a computer, and integrating an astronomical number of microscopic variables, which clearly places them above all known human capacity.

https://en.wikipedia.org/wiki/Travelling_salesman_problem

Learning ability

Also, Hannibal and Will possess a learning ability that radically surpasses that of humans, because in each of the domains necessary for their feat, they must operate at a level beyond that of the best specialists. In cognitive psychology, they exceed the most advanced researchers by reading and modeling the complete internal state of a person with perfect accuracy, where even modern science only provides a rough approximation. In linguistics, they surpass discourse analysis experts by instantly detecting every nuance of language, micro expressions, and vocal rhythm without error, then integrating these into a 100% reliable behavioral prediction. In behavioral chemistry, they go far beyond neuroscientists by inferring precise hormonal or neuromodulatory states (dopamine, cortisol, adrenaline) from subtle signals and anticipating their future influence on the other's choices. In applied mathematics and probability, they

outmatch the greatest statisticians by reducing an astronomical possibility space to the single correct trajectory, in real time, without ever making a mistake. In sociology and game theory, they surpass the brightest strategists by perfectly simulating complex social interactions several moves ahead while accounting for chaotic variables.

To maintain this level, their brain plasticity, their speed of integrating new information, and their ability to instantly combine this knowledge into a unified mental model are far beyond known human biological limits

In summary Hannibal and Will operate within a complex chaotic system where each interaction generates an exponential factor of variables and uncertainties. Their capacity for emotional understanding far exceeds what humans can achieve, integrating microscopic signals, nearly inaccessible neural states, and emotional predictions with perfect precision. They manipulate deep reflexive loops well beyond 20 layers, allowing them to model not only their own thoughts but also those of the other at multiple nested levels. The volume of information to process is astronomical, requiring sophisticated probabilistic reasoning to sort and anticipate