

Why AI?

TLDR: *Crypto stands on the precipice of revolution. For years, we've seen its potential as a commitment device, but the true value has been drowned in speculation. Now, AI — a titan poised to unlock trillions in value — offers a lifeline. The future is fast, global games. Games that traditional tools are too slow, too centralized to handle. But not for Crypto. In Crypto, we have a tool that can coordinate these games, a key to unlock AI's full potential.*

1. Crypto's value proposition lies in its function as a credible commitment device for positive sum games with inefficient equilibria.
2. To date, tangible use cases for this technology remain limited, with most of its value driven by speculation, reaching a saturation point.
3. The imminent rise of AI, expected to create tens of trillions in value, necessitates efficient coordination technology - a role perfectly suited for crypto.
4. The division of labor between AI and crypto is crucial: AI enhances capabilities and reveals more positive sum games, while crypto provides the commitment device to coordinate these games.
5. Fast games, characterized by high frequency and certainty, are the optimal starting point for coordinating AI with crypto.

Crypto's Value Proposition

We know crypto's only [value proposition](#) is [acting](#) as a [permissionless credible commitment device \(PCCD\)](#). The commitment device itself doesn't hold any value, the value derives from the fact that you can use this commitment device to implement enforcement and common knowledge of enforcement for positive sum games that currently have inefficient equilibria.

Since 2016 the start of Ethereum, it's been 7 years. And we have largely not found sensible use cases for this technology of commitment besides global payments (which started in 2008 by the Bitcoin "app-chain").

Most existing games that we use commitment devices have their value largely driven by speculation, i.e., much of the market cap we have (1.2 trillion USD as of writing) comes mostly from the ponzi casino property of crypto, not from the value of improved equilibria by mediation of commitment devices. This is already close to *saturation* because traditional gambling industry has a market cap of ~750 billion USD. We won't have much of a "liquidity heaven" in future.

This means if we don't devise applications that actually bring in value to crypto (i.e., positive sum games with inefficient equilibria), there is no growth space. There will not exist enough real value flowing through the system to drive up the liquidity that is needed for you to exit. More importantly, your work would have been empty, because crypto would have failed its only value proposition, being a useful commitment device.

AI's Value Generation

Now, it is certainty that AI will create tens of trillions of value in the next few years.

Technology, which generates value, typically fails to realise its potential if it doesn't have good coordinating capabilities. An example would be chips, they generate a ton of value because the supply chain is so intricate that it realises maximum potential. Furthermore, coordination ensures that technological advancement is sustainable and doesn't exacerbate societal issues such as fairness and inequality. For example, without coordination capabilities, it's hard to fight against rich get richer dynamics, where not only the pie is smaller (the potential value is not fully realised) and also the pie is way more concentrated in the hands of a few. Looking back at human history, we see most economic value is generated via improvements on the technology of coordination and alignment (which includes elicitation, communication, commitments, etc.), not via direct improvements on the capabilities and technologies themselves (modulo recursive second-order effects).

This rule will persist through the age of AI as well. So for AIs to generate value, they will need some kind of coordination technology. And crypto, as a permissionless credible commitment device, is best suited for high-frequency coordination games between algorithmic agents. Without crypto, a large part of AI's value cannot be efficiently unlocked because the coordination technology would be centralized, opaque, slow, and hurts innovation. So, this means, AI solves the application problem for crypto: as long as crypto as a commitment device for AI coordination can capture a fraction of the value that the positive sum games AI play generates, then we will already be in a good spot.

This value capture comes from the crypto applications being focal points for AI coordination, e.g., when two agents want to exchange some information, they can use some crypto application to sign binding agreements for controlled access to their data only when some predicate on the context of the usage is satisfied. The value that crypto can capture here is the value that market mediators can capture.

This division of labor is crucial because AI provides a direct enhancement to capabilities, thereby bringing to light more positive sum games that have inefficient equilibria. For instance, even basic applications leveraging ChatGPT, a powerful AI model, already contribute tangible value. It's evident that the AI community is generally more proficient at identifying valuable applications compared to the crypto community. This dichotomy is quite understandable when we consider the focus of each field. AI is inherently application-oriented, concentrating on the capabilities of gameplay, while crypto's focus lies in perfecting the integrity of its commitment device—a perspective reinforced by the proliferation of crypto infrastructure and middleware companies. Thus, crypto, deeply invested in refining the quality of the commitment device, faces a challenge in identifying positive sum games to engage with, as such games are scarce without a boost in individual capability. The advent of AI is catalyzing this much-needed increase in individual capability.

In essence: The advent of AI has led to an increase in the number of positive sum games with insufficient equilibria being played worldwide. Consequently, the AI community finds itself better positioned to identify these opportunities, paving the way for crypto's most significant application: facilitating AI coordination. Crypto does so by offering these algorithmic agents a decentralized commitment device. Previously, our main hurdle was the crypto community's focus on refining the commitment device itself, which does not inherently generate value. Value creation only happens when this device mediates games, but identifying such games was a challenge without the enhancement in individual capabilities that AI brings. For instance, AI could potentially amplify issues such as the principal-agent problem, network effects, information asymmetry, and public good externalities.

Fast and Slow Games

Furthermore, the majority of coordination games currently being played are slow/local games (e.g., a group of oil drillers deciding on their respective share). However, with the rise of AI algorithmic agents, an increasing number of games will be played at a high-frequency setting on a global scale, i.e., they will be fast/global games (e.g., two bots bidding in the same auction for NFTs). We can anticipate an ultra-refined service/labor market where ad-hoc agreements can be made from time to time with various parties who are better suited for the task at hand, eliminating the need for long-term commitments with familiar parties. Our traditional coordination tools, however, are not well-equipped for these fast/global games. Institutions and regulations, for instance, operate within the confines of national credibility and enforcement. These mechanisms are often cumbersome, trading off efficiency for robustness. Moreover, these institutions, which are typically monopolistic rent extractors, have a poor track record in effectively coordinating markets. In contrast, cryptographic or crypto-economic commitment devices allow these games to be coordinated both efficiently and safely. Additionally, those commitment devices are free to use (you can sign any binding agreements for the games that you care), which means you don't have to spend huge amount of resources to social engineer the regulators who lack depth of knowledge in your game's area.

But this shift towards [fast](#) and global games also represents a positive change, and it is where we should start. Fast games (e.g., searchers bots [backrunning each other](#)), being more technical, are easier to scrutinize due to their relatively certain structure (uncertainty tends to increase with time). We have a reasonable understanding of how to coordinate fast games because they can be structured, allowing us to apply our knowledge from mechanism design and game theory. In contrast, slow games carry so much uncertainty that it often proves counterproductive or even harmful to attempt to structure them. This is why the coordination of slow games frequently devolves into power struggles and politics. Therefore, crypto presents a tractable path forward for AI coordination and alignment.

We should begin AI coordination with crypto because the game is far more manageable and certain - and we know how to solve it. After accumulating sufficient data or experience on how AIs behave or coordinate in these fast games, we can progress to extend the game's duration. The argument here is that slow games bear more resemblance to agent-based alignment due to the uncertain game structure. It's always possible for someone to discover an uncoordinated game with a payoff correlated to your existing coordinated game, causing the existing incentive Rube Goldberg machine to collapse. Fast games, however, are more akin to game-based alignment because their shorter duration makes them more certain.

In essence, when coordinating a slow game, you aim to engineer player incentives in the right direction robustly, regardless of the dynamics and new games being played. This is often impractical, explaining why slow game commitments (e.g., laws, policies) often retain a human element. These commitments need to confront unknown unknowns or fundamental uncertainties, which can only be effectively handled by human intelligence. Alternatively, the commitment can choose to sacrifice efficiency for robustness, meaning it deliberately reduces game structure uncertainty. But for fast games, the structure is usually contained, so algorithmic agents (commitments) don't have to deal with much uncertainty. As such, there's significantly less demand for the robustness of the commitments. Furthermore, these commitments don't need to be complex because they are expected to expire shortly after the fast game concludes.

Essentially, as the duration of the game increases (and uncertainties increase over time), either the complexity of the commitment increases because it needs to account for more possible scenarios, or the robustness of the commitment decreases (because simple commitments will become "stale quotes" very quickly and gets "sniped" by sophisticated intelligences), leading to unaligned or uncoordinated games.

An additional advantage of AI is that its community boasts an industrialized and mature research process populated by many talented individuals. The crypto community, on the other hand, lacks a streamlined research process. It would be beneficial to attract more structured individuals into the crypto domain to make our discussions more productive.

In conclusion, we (crypto) need not worry, as the AI alignment community has already sold the problem for us (the need to coordinate games where participants include AIs). We just need to sell the solution. And we have the solution, it's clear:

using crypto commitments to help AIs coordinate.

What Crypto should do?

We should think about how to better tailor our permissionless credible commitment device technology for coordination games with AI agents.