GAME OVER: FACING THE AI NEGOTIATOR

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AI applications will put an end to negotiation processes as we know them. The typical back-and-forth communication and haggling in a state of information insecurity could soon be a thing of the past. AI applications will increase the information level of the parties and drastically reduce transaction costs. A quick and predictable agreement in the middle of a visible bargaining range could become the new normal. But, sophisticated negotiators will shift this bargaining range to their advantage. They will automate negotiation moves and execute value-claiming strategies with precision, exploiting remaining information asymmetries to their advantage. Negotiations will no longer be open-ended communication processes. They will become machine-driven chess endgames. Large businesses will have the upper hand in these endgames.

Introduction

Think about your most recent negotiation experience. You prepared (hopefully) by assessing your interests and potential agreement options and by thinking about your "Best Alternative to a Negotiated Agreement" (BATNA). You sat down at the negotiation table, unsure whether a "Zone of Possible Agreement" (ZOPA) or "Bargaining Range" exists and what its extension could be. You engaged in back-and-forth communication with the other side, attempting to devise creative solutions and, at the same time, to convince them of the merits of your preferred option. Maybe you came to an agreement; maybe not. It might have been quite stressful, especially if you and your negotiation partner felt strongly about certain issues and emotions flew high.

This kind of negotiation experience could soon be a thing of the past. Increasingly, artificial intelligence (AI) applications are being used to assist or even replace human negotiators. In consequence, it is no longer entirely correct to say that negotiations are a *process* in

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which ***people*** attempt to solve a *problem*. Clearly, some accommodation of the PPP Negotiation Model is warranted to account for the changes in negotiation practice associated with the rise and use of smart algorithms.

In this Essay, I argue that AI applications will put an end to negotiation processes as we know them. The typical back-and-forth communication and haggling in a state of information insecurity will no longer be characteristic of negotiations. AI applications will increase the information level of the parties and drastically reduce transaction costs. A quick and predictable agreement in the middle of a visible bargaining range could become the new normal.

But, sophisticated negotiators will shift this bargaining range to their advantage. They will automate negotiation moves and execute value-claiming strategies with precision, exploiting remaining information asymmetries to their advantage. Negotiations will no longer be open-ended communication processes. They will become machine-driven chess endgames. Large businesses will have the upper hand in these endgames.

Part I outlines traditional negotiation dynamics. Part II examines how AI applications will increase the information level of the negotiating parties and reduce transaction costs, which could lead to quick and fair agreements. But the reality likely will be different. As demonstrated in Part III, sophisticated AI negotiators will keep the upper hand in automated negotiation games with cool logic and precision.

I. Traditional Negotiation Dynamics

In a negotiation, the parties usually do not know exactly whether a ZOPA exists and how large it is. There are at least three reasons for this. Firstly, the parties may know their own BATNA, but they usually do not know their opponent's BATNA. Secondly, the parties may not know the preferences of the other party and do not have the creativity to coordinate their preferences optimally in order to increase the ZOPA, i.e., to maximize the size of the pie. And thirdly, the parties have an incentive to misrepresent their interests and alternatives in order to obtain as much value as possible for themselves.

If you lie about your BATNA, for example, by inventing a good alternative that does not exist, and if your opponent believes your lie, you gain an advantage. You will not agree to a solution that gives you less than your invented BATNA, and your opponent knows this.

Negotiators therefore act on the basis of imperfect information. They make assumptions, they revise those assumptions in light of their opponent's statements and actions, and they try to discern the

signal in the noise. This is costly and it involves risks. It may be that the parties do not reach an agreement even though a ZOPA objectively exists. Haggling in a state of information insecurity is like playing hide-and-seek in dense fog.

II. Increased Transparency in AI-Assisted Negotiations

AI is advancing fast. New tools with the potential to fundamentally change our daily lives are being released in rapid succession. This includes tools for communication processes and, more specifically, negotiations.

AI tools are increasingly embedded into popular software products. For example, Microsoft Word's translation functionality belongs to this category, as does Apple's Siri. Google claims to radically improve online searches with generative AI (Search Generative Experience). We can use ChatGPT[1] as a negotiation coach, prompting it to advise us on issues, tactics, and moves in a negotiation. But we can now also rely on a wealth of specialized AI tools that analyze interests, emotions, and alternatives; generate creative options; de-bias negotiators; and devise and implement sophisticated negotiation strategies with precision.

This will surely have a significant impact on negotiation practices. In the future, it will be much more difficult for a party to strategically hide or misrepresent its true interests and preferences. They will be confronted with algorithms that profile them, deduct interests from behavioral patterns, adjust their assessments to real-time information derived from verbal and non-verbal communication, and literally might, at some point, even be able to read their mind. It will also be much more difficult to lie about BATNAs when all public information can be analyzed and assessed in a split-second, and algorithms can detect if a person is lying or telling the truth based on facial movements.

The consequences for negotiation dynamics and outcomes will be profound. The key variable is the information level of the negotiators. A significant increase in transparency about interests, preferences, and alternatives will make the existence and extension of the ZOPA increasingly clear. The room for manipulation shrinks. Negotiators will come to appreciate the true reservation value of the other side and will

[1] On May 13, 2024, OpenAI launched GPT-4o, a faster version of ChatGPT, its popular AI Chatbot. It will be free for all ChatGPT users, though paying OpenAI customers will have more capacity to use the tool. *See* Hello GPT-4o, OPENAI (May 13, 2024), https://openai.com/index/hello-gpt-4o/.

be better able to negotiate agreements that best match their respective preferences. To stay with the image above, the fog will be less dense, making hide-and-seek more difficult. Agreements should become more likely and predictable.

At the same time, the transaction costs of negotiations will fall sharply. This is important because high transaction costs reduce the net value that can be realized through trades and may even eliminate a ZOPA altogether. Negotiation processes will become more transparent and rule-based, providing an improved framework for superior outcomes. Smart algorithms will also de-emotionalize negotiations. This should have an overall beneficial effect on the efficiency of negotiation processes.[2]

Taken together, increased transparency about the ZOPA and significantly reduced transaction costs could pave the way to speedy and fair agreements. If all parties share a common perception of the ZOPA, they should quickly agree on splitting the pie. This is the obvious way to divide the cooperative surplus. A deal is possible only when everybody participates, and why should somebody receive more than an equal share of the gains from cooperation?

Decades ago, Thomas Schelling argued that coordinating behavior becomes easier if a "focal point" for an agreement exists. This can be because of mathematical symmetry, obvious fairness, geographical prominence, or other factors that create an almost "magnetic effect" of a certain solution. Splitting the pie is such a focal point.

Overall, then, it appears that the algorithmization of negotiations brings significant benefits to negotiators and societies in general: significantly better results—a bigger pie—in less time, at significantly lower costs, and with a fair distribution of the cooperative surplus. Haggling in a state of information uncertainty could be replaced by quick and fair deals. At the margin, outcomes would become entirely predictable. The scope for negotiation seems to be shrinking to zero.

III. Powerplay by the Algorithmic Negotiator

Really?—you might ask. It would be surprising if negotiations ended like this. And they probably won't.

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[2] Of course, emotions are not always negative. Positive emotions can improve negotiation processes. At the same time, at least in dispute resolution negotiations, negative emotions such as fear, anger, and frustration usually dominate the negotiators' minds. And even in dealmaking negotiations, most humans normally feel somewhat tense and anxious most of the time. Few sincerely enjoy negotiating deals.

Complete transparency about interests, preferences, alternatives, and possible agreement options for all negotiators is unrealistic. Sophisticated large companies will exploit remaining information asymmetries to their advantage, executing value-claiming strategies with precision and automating negotiation processes. And even if such information asymmetries eventually disappear, these actors will use their leverage to shift the ZOPA to their advantage.

Access to algorithmic tools will not be evenly distributed among members of societies. Everybody will be able to use the free version of ChatGPT. But, only a few will have access to highly specialized AI negotiation tools. The main users of such algorithms will be large businesses. They can afford to make upfront investments in the development or purchase of specialized algorithms because they can deploy these algorithms at scale, reaping the significant (cost) advantages associated with such deployment. Furthermore, large businesses have access to a huge pool of relevant data internally to train custom machine learning (ML) algorithms. They are also able to recruit and retain the specialists required to develop and deploy such algorithms.

This means that, realistically, large businesses will have an informational advantage in negotiations vis-à-vis their opponents. And they will be able to capitalize on that informational advantage. Scholars working in contract and game theory have shown that asymmetric information allows the better informed player to capture almost all of the cooperative surplus.[3]

The better-informed and technologically-better-equipped negotiator has a wealth of tools at their disposal to maximize their share of the cooperative surplus. If you have a clearer view than your opponent of the ZOPA and its extension, you know how hard you can push. The goal is to give your opponent just a little bit more than their BATNA, capturing close to the whole cooperative surplus.

Large businesses will devise sophisticated negotiation strategies and dynamically update these strategies in real time as new

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[3] *See generally, e.g.*, Drew Fudenberg & David K. Levine, *Reputation and Equilibrium Selection in Games with a Patient Player*, 57 ECONOMETRICA 759 (1989); Klaus Schmidt, *Commitment Through Incomplete Information in a Single Repeated Bargaining Game*, 60 J. ECON. THEORY 114 (1993); Klaus Schmidt, *Reputation and Equilibrium Characterization in Repeated Games with Conflicting Interests*, 61 ECONOMETRICA 325 (1993). For an overview of the literature, see generally GEORGE J. MAILATH & LARRY SAMUELSON, REPEATED GAMES AND REPUTATIONS: LONG-RUN RELATIONSHIPS (2006).

information becomes available. They will execute manipulative value-claiming moves with the utmost precision and consistency. The more complex the strategies and moves get, the greater the advantage for the algorithmic negotiator will be. Machines do not make mistakes, but humans do.

A good example could be sophisticated anchoring and concession moves in price negotiations supported by ML algorithms trained on data from similar transactions. "Personalized communication" can be used to increase the persuasiveness of one's demands, and it has been shown that opponents make fewer adjustments to their counteroffers when bargaining with algorithms, persuaded of algorithms' alleged decision-making precision and comprehensive market intelligence. At the same time, an "Emotion-Canceling Voice Conversion Engine" will protect the algorithmic negotiator against angry reactions from its opponents.

But an even more powerful negotiation innovation will be the complete automation of the negotiation process. This also has the potential to bring negotiation processes as we know them to an end. However, this end will be very different from the quick and fair settlements under complete information transparency as discussed in Part II above. Back-and-forth communication and haggling will be replaced by machine-controlled tick-the-box exercises.

Fully automating negotiation processes involves a compromise. The main advantage is potentially significant savings in transaction costs. The downside is that opportunities for tailored attempts to create and claim value are limited—which is an opportunity cost. Consequently, the potential for fully automating the negotiation process is greatest if a large company must conduct similar negotiations many times so that the savings in transaction costs add up. At the same time, these negotiations should not be very complex and should lend themselves to a standardized approach.

Consider the case of Walmart. In 2022, Walmart International started to use a chatbot developed by California-based firm Pactum to automate (re-)negotiations of 89 of Walmart's more than 100,000 contracts with suppliers.

The algorithm was programmed to target payment schedules, seeking to negotiate early payment discounts or extended payment terms without discounts. In exchange, suppliers were offered the option of changing Walmart's right to terminate contracts immediately without cause to providing a 30-, 60-, or 90-day written termination notice. Walmart also selectively offered suppliers opportunities for growth in assortment and sales volume in exchange for price discounts.

Crucially, the different agreement options were used to build "structured scripts" to guide suppliers through the negotiation process.

The chatbot reached an agreement with 64% of the participating suppliers. Walmart reports limited cost savings (on average of 1.5% on the spend negotiated) and an extension of payment terms to an average of 35 days.

From the suppliers' perspective, these "negotiations" must have felt like an exercise in selecting different menu options by ticking different boxes. The Pactum chatbot leaves some room for value creation. The size of the discount is a purely zero-sum issue. But, trading certain discounts for different types of termination rights is a form of value-creating logrolling. Negotiation scholars will be reminded of the "Multiple Equivalent Simultaneous Offers" (MESO) tool. Suppliers can "buy" different forms of protection against immediate contract termination in exchange for different prices, i.e., discounts. However, this trading is scripted in the sense that only a strictly limited set of agreement options is available.

It is noteworthy that the automation exercise takes place without information transparency. Not only are Walmart's negotiating partners obviously not clear about the company's interests and alternatives, Walmart itself is also, to a certain extent, in the dark. The company uses different agreement options to find out more about the preferences of its negotiating partners.

At the same time, Walmart's position as a dominant market player allows it to present its partners with a carefully designed "pick-and-choose or leave it" scenario. The menu on offer consists of a strictly limited set of dishes. Other early AI applications for automating negotiations work similarly. In some cases, they even forego any attempt at creating value and limit themselves to claiming value.[4]

This is noteworthy because it helps us understand how negotiation dynamics would evolve if information transparency was increased for all negotiators. Splitting the cooperative surplus, as discussed in Part III above, is then only part of the story, and the less interesting

[4] In November 2023, the British company Luminance demonstrated how Autopilot, its large language model, completely automated the negotiation of a non-disclosure agreement between two opposing parties without human intervention. In essence, Autopilot was negotiating with itself on both sides of the transaction. The company stated that Autopilot was "utilizing knowledge from their respective business's previous agreements and preferred positions." *See Luminance Showcases World's First Completely AI-Powered Contract Negotiation,* LUMINANCE (Nov. 7, 2023), https://perma.cc/3U3R-7V54.

one. The most interesting question is which party will actually manage to move the ZOPA to their advantage. Who is in a better position to create new and better alternatives to agreement for themselves? Who is in a better position to worsen the other side's nonagreement alternatives? And who, in consequence, has the greater bargaining power?

Many factors will be relevant here. General sophistication and bargaining skills are among them, as are resources and access to negotiating tools, including AI tools. The structure of the market in which the negotiators operate is also important. The more insulated from competitive pressures a negotiator is, the better they will perform.

It should be obvious that large businesses which have market or even monopoly power will be best positioned to devise and execute sophisticated strategies which move the ZOPA to their advantage. They will automate the search for and refinement of nonagreement alternatives. This includes dealing with third parties. In the negotiations, they will make scripted take-it-or-leave-it offers, which their opponents will accept.

For them, these negotiations will feel more like a chess endgame in which they are up against the world's best chess engine. The engine moves first, and they can choose how they will be mated in the next move. This is a frustrating prospect.

Conclusion

Negotiation practice is increasingly influenced by AI applications. This has the potential to bring an end to negotiation processes as we know them. Haggling in a state of information uncertainty will be a thing of the past. AI applications will streamline negotiations, significantly reducing transaction costs. Negotiators will have a clearer view of the ZOPA and its extension. This suggests that they should be able to come to a fair agreement quickly: just split the pie.

But information asymmetries will persist. Large companies will be better informed about relevant factors than their opponents, and they will have more sophisticated AI tools at their disposal. These negotiators will devise and execute sophisticated negotiation strategies with precision, capturing the lion's share of the cooperative surplus. And they will automate the negotiation process, creating favorable nonagreement alternatives for themselves and presenting their opponents with a limited set of options from which they can choose. In essence, their opponents will be able to choose how they are checkmated. Game over.

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