

# Automated Negotiating Causing Power Differences in Auction-based e-Marketplaces

Nick Case

For our group project, we looked into the field of automated negotiation agents, and how agents designed for selfishness and selflessness performed within a tournament of negotiation, specifically how average social utility changed. However, for my term paper, I wanted to take a step back and look at some of the applications of automated negotiation. Automated negotiation is an interesting topic that has lots of promise of creating faster, more efficient, and overall better negotiation, but like any other new technology, some limitations and challenges need to be discussed first.

When looking at the application of automated negotiation, one essential question and limitation that must be addressed is how the automated negotiation affects or changes the environment or circumstances surrounding the negotiation. Will adopting automated negotiating change the environment and make it better for both parties or just one? For example, when a small company is negotiating with a smaller company, they may both have the same quality and value of goods to negotiate with, but since the bigger company is more reputable and can have more negotiators, there might be a power imbalance in the negotiation.

In Barry Blecherman's *Adopting Automated Negotiation*, he states that four things are sources of negotiation power and these four things must be considered. Power can arise from patience, alternatives, creativity, and/or knowledge [1]. Patience gives power because it allows time to drag on, allowing one side to become loose in their negotiation, like having a large strike fund to use. Alternatives give power because when there are more alternatives, there is less pressure on negotiation to happen, giving the power to walk away or alter the deal. Creativity gives power because it gives the ability to create new dimensions to negotiate with that could potentially create a win-win situation [1]. Finally, knowledge gives power because it allows for an understanding of what each side wants, the time constraints, the environment, and many other factors that play a role in the negotiation process [1].

With this framework of how negotiating power is created and then can be changed due to automated negotiations, I will analyze how these sources of powers change, and evaluate if eBay's agents hold similar power to the traditional in-person English auction system, systems that are similar to each other and share principles of negotiating.

*Automated Negotiation on Agent-Based e-Marketplaces: An Overview* states, "To sell something one has to provide a description of an item together with some preferences including payment method, where to ship, who will pay for shipment, minimum bid and reserve price (real amount the seller is willing to accept for this item) For a bidder, the auction system offers an optional "phantom" bidding service, called proxy bidding, which is equivalent to initialization of a buying agent. ...eBay's Auction Web's English auction with "phantom" bidding service can be considered a multi-agent e-marketplace with negotiation between agents about one issue (price), although of a very simple type" [2]. Marketplaces like eBay are auctions but can be viewed as negotiations over price between multiple agents simultaneously.

First, let's look at the four sources of negotiation power and see how they change. The power coming from patience decreases between eBay's autonomous agents' auctions and in-person auctions. In traditional auctions, there is a certain level of commitment needed by each

bidder to stay in the auction. However, with automated agents, the users behind the agents do not have to pay attention and commit themselves to being there for the entire auction. They have more power because they have a greater ability to wait since there is no need for a large time and attention commitment with automated agents. They both have to obey a fixed end to the bidding process, but for eBay's autonomous agents' auctions, that deadline can be days, or even weeks which is not possible for in-person auctions.

The change in power coming from alternatives is a big difference between eBay's autonomous agents' auctions and in-person auctions. In both eBay auctions and in-person auctions, there is the process of an English auction going on, and there are not many alternatives that can be taken during or before negotiations. Within the auction, in both eBay and in-person auctions, there is not much change in the power coming from alternatives because of the process and decorum already in place for both an in-person and online auction. However, eBay's autonomous agent auctions provide more options for alternatives since there are often many auctions going on for the same item, just different sellers. Many buying agents can be created with the proxy-bidding feature since one user can set a max bid for many online auctions, but that can't be done in an in-person auction. An in-person auction usually only sells one item, and there is no option to go look around at other auctions that have the same item.

The power change from creativity did not change. Creativity to find new dimensions that can allow for more compromise to be made is not a thing in most auctions in general. Auctions generally don't allow for people to add extra dimensions like adding in money over time or materials in addition to payment. This holds for both eBay and in-person auctions, with no additional power being created or subtracted from this source. Creativity is limited due to the nature of an auction, but everyone is limited by this fact [1].

Finally, with the knowledge power source, I believe that overall the power decreases going from in-person to eBay's autonomous agents auctions. In in-person auctions, there is time to get to know the other people around you and the seller, getting to know their preferences, priorities, time pressure, and much more than online auctions. In online auctions, the only thing that is known is the username of all the agents interacting with that auction, there is no exchange and learning about the seller agent or the competing agents simply because the auction is online and not face-to-face, decreasing the negotiating power from knowledge. Specifically concerning knowledge of previous prices and trends, the power from in-person auctions to automated agent online auctions is the same with no change. Both people who attend an in-person auction and those who are using an automated agent online auction can see the price history and the trend for that item, and then use that to evaluate. However, overall, the power from knowledge decreases.

From analyzing these four sources of negotiating power according to Blecherman [1], I believe that in the transition from in-person English auctions to automated agent online auctions, forms of negotiation, the overall negotiation power decreases for each user bidding. While this is not necessarily a good or bad conclusion, it is something to consider and dive deeper into. Ideas like whether this decrease in negotiating power overall will stop the adoption of automated negotiating could be explored further.

## References

- [1] B. Blecherman, “Adopting automated negotiation,” *Technology in Society*, vol. 21, no. 2, pp. 167–174, Apr. 1999. doi:10.1016/s0160-791x(99)00004-4
- [2] S. Klaue, K. Kurbel, I. Loutchko, “Automated Negotiation on Agent-Based E-Marketplaces: An Overview” in *14th Bled Electronic Commerce Conference*, 2001, IEEE.