

A BRIEF OVERVIEW OF ART AUCTIONS

In perhaps one of the world's oldest duopolies, approximately 42% of the global art auction market is controlled by two major houses, Christie's (est. 1766) and Sotheby's (est. 1744)¹. The former, headquartered in London, is privately held by French multibillionaire Francois-Henri Pinault and so only reports sales figures twice a year². Sotheby's on the other hand is headquartered in New York City and publicly traded, and is thus required to report revenue and costs in detail³. While both houses deal in art, often sourced from museum or private collections, in recent years Christie's has become the larger player in this domain. In the first six months of 2015, Christie's realized \$4.5 billion in art sales, while Sotheby's only pulled \$3.5 billion⁴. Over the years, both houses have enjoyed their share of record-breaking auctions: Picasso's *Les Femmes d'Alger ("Version O")* sold for \$179 million at Christie's in 2015, while Pollock's *No. 5, 1948* went for \$164 million at Sotheby's in 2006. The whole spectrum of art can be found at Christie's and Sotheby's, ranging from European sculptures and Impressionist oil paintings to Chinese ceramics and modern prints. Auctions are usually themed around a certain artist, medium, time period, or represent a private collection. Often

¹ <http://www.bloomberg.com/news/articles/2015-06-21/auction-wars-christie-s-sotheby-s-and-the-art-of-competition>

² <http://www.bloombergvew.com/articles/2014-12-03/how-sothebys-and-christies-went-wrong>

³ [http://www.wikinest.com/stock/Sotheby's_Holdings_\(BID\)](http://www.wikinest.com/stock/Sotheby's_Holdings_(BID))

⁴ <http://www.nytimes.com/2015/08/17/arts/international/sothebys-and-christies-jostle-for-sales.html>

individual events are part of a series, such as Christie's "First Open" series (launched in 2005) for post-war and contemporary art⁵. In recent decades, one also sees the rise of other innovations. For example, Sotheby's and Christie's offer live online bidding for clients who can neither attend nor send a surrogate⁶. Both houses also offer art-backed loans, allowing collectors to borrow money against their own artwork – a highly illiquid asset.

In addition to fine art, both houses run auctions for other luxury goods such as jewelry, automobiles, and furniture – and so many believe these houses play to different strengths. To sell photographs, go to Sotheby's; to sell books and manuscripts, go to Christie's⁷. Only Sotheby's sells classic automobiles⁸. Specialization is not limited to products, either: one administrator at Bonham's, a well-known but smaller auction house, told me they appeal to prospective sellers because their lower sales volume (specifically, smaller lots) ensures their work will be better noticed. Competition between these houses is fierce, and each tries to capture the best consignments and expand market share by luring prospective sellers with benefits such as higher guaranteed prices and waived house commission fees⁹. Putting one's own money on the

⁵ <http://www.christies.com/auctions/first-open-september-2014/#specialist-picks-section>

⁶ <http://www.sothebys.com/en/news-video/auction-essays/sothebys-digital-features/2015/01/online-bidding-regis.html>

⁷ <http://www.forbes.com/2001/11/14/1114connguide.html>

⁸ <http://www.nytimes.com/2015/08/17/arts/international/sothebys-and-christies-jostle-for-sales.html>

⁹ <http://www.bloomberg.com/news/articles/2015-06-21/auction-wars-christie-s-sotheby-s-and-the-art-of-competition>

line means profit margins are thin for both Sotheby's and Christie's, and both have lost millions as a result¹⁰. Despite this ongoing cut-throat battle, the two houses have cooperated – and even colluded – at times. For example, according to an auctioneer interview in Hong et al. (2015), Sotheby's and Christie's have an agreement to take turns leading New York City's annual Auction Week, a major event which saw \$1.5 billion in art sales in 2014¹¹. The early 2000's saw an infamous scandal where both houses fixed commission prices charged to sellers, and once convicted, were required to pay back \$256 million to customers (and for Sotheby's, shareholders)¹².

The auction process proceeds as follows. First, a client (prospective seller) will begin by requesting an auction estimate from the auction house for their item of interest, either by submitting photographs or scheduling an in-person appointment with a specialist. After assessing whether the item is appropriate for auction, the house will negotiate with the seller (e.g. for the reserve price) and draw up a seller's contract. The item then goes to the house to be officially photographed, catalogued, and stored before the auction event¹³. Of course, many clients visit more than one auction house to compare deals.

¹⁰ <http://www.nytimes.com/2015/01/08/arts/design/sothebys-and-christies-return-to-guaranteeing-art-prices.html>

¹¹ http://www.artspace.com/magazine/news_events/the_heat_index/how_to_understand_new_york_record_auction_week-52310

¹² <http://www.wsj.com/articles/SB969829620926708015>

¹³ <http://www.sothebys.com/en/news-video/videos/2014/10/how-to-sell-at-auction.html>

Three quantities are determined by the seller and the house before any auction: a low and a high presale estimate for the art piece, and a reserve price. The low and high estimates represent the range of possible values the piece might go for, and are usually decided upon by a committee of in-house art experts. As shown empirically by Ashenfelter (1989), these estimates do generally seem to accurately predict the item's sale price¹⁴. Some significant cross-house differences may exist: Bauwens and Ginsburgh (2000) show that in certain art categories, Sotheby's tends to undervalue expensive pieces and overvalue inexpensive ones, while Christie's does the opposite¹⁵. In negotiations, the seller and the house also determine a secret reserve price known only to those two parties. The reserve price is a closely guarded secret in the art auction world, but according to estimates by Ashenfelter, Graddy and Stevens (2004), the reserve price may be set around 70-80% of the low estimate. It is not known why the reserve is concealed, but Vincent (1995) suggests that under certain circumstances, announcing the reserve may discourage potential bidders from participating and could lower overall bids¹⁶.

Before an auction, the house will typically put out a presale catalog for the art pieces, which is usually available both online and in print. In addition to the presale

¹⁴ Ashenfelter, Orley. "How auctions work for wine and art." *The Journal of Economic Perspectives* 3.3 (1989): 23-36.

¹⁵ http://www.jstor.org/stable/pdf/40724283.pdf?_=1459015351227

¹⁶ Vincent, Daniel R. "Bidding off the wall: Why reserve prices may be kept secret." *Journal of Economic Theory* 65.2 (1995): 575-584.

estimates, the description of each piece can include information such as the artist, the materials and a condition report, various signs of authenticity such as a signature, and where the work was previously displayed (provenance). Houses also host pre-auction viewings where both potential bidders and the public can examine the art pieces in person. Bidders must register before an auction, and for particularly opulent auctions, must show proof of their assets.

Auctions are almost always conducted in an ascending first price format. The auctioneer starts low (somewhere below the secret reserve price¹⁷) and calls increasing prices¹⁸ until the bidding stops, at which the item is declared to be “knocked down” or “hammered down.” The final price is the “hammer price,” on top of which the house adds a commission or “buyer’s premium,” usually 10% to 17.5% of the hammer price, before the winning bidder receives the item¹⁹. At Sotheby’s and Christie’s, the seller receives payment approximately 35 days after the auction, minus a “seller’s premium” fee which is often around 10% of the hammer price^{20 21}. If an item does not meet its reserve price, it goes unsold and is said to have been “bought in.” The auction house, however, rarely purchases the item: instead, it may be resold later or taken off the

¹⁷ Ashenfelter, Orley. "How auctions work for wine and art." *The Journal of Economic Perspectives* 3.3 (1989): 23-36.

¹⁸ Typically, the auctioneer will call out prices that are approximately 10% higher than the current bid.
<http://www.sothebys.com/en/Glossary.html>

¹⁹ <http://www.ppge.ufrgs.br/giacomo/arquivos/econ-cultura/ashenfelter-graddy-2003.pdf>

²⁰ <http://www.christies.com/features/guides/selling-guide/selling-at-christies/after-the-sale/>

²¹ <http://www.ppge.ufrgs.br/giacomo/arquivos/econ-cultura/ashenfelter-graddy-2003.pdf>

market. Historically, auction houses have concealed whether items go unsold.

However, since the 1980's auction houses in NYC have been legally required to report this, and according to Ashenfelter & Graddy (2003) houses in other locations are following this trend²².

HOW ANCHORING AFFECTS ART AUCTIONS

The auction market is particularly prone to unobserved psychological and behavioral biases, because on both sides of the market, participants must rely on subjective judgement, past experience, and personal preferences to evaluate artwork. The ever-changing heterogeneity of art pieces, buyers, and sellers makes it intractable for both auction houses and economists to perfectly estimate demand for art. The auction format, designed to set prices by discovering private valuations, is a natural way to tackle this issue. Yet auctions are perhaps shaped the most by behavioral phenomena: the thrill of winning, for example, can spark bidding wars that drive up sale prices far beyond an artwork's estimated value²³.

Anchoring is one of the most-studied biases in the behavioral sciences: it is at once trivial to demonstrate and difficult to explain away. This effect occurs when first

²² <http://www.ppge.ufrgs.br/giacomo/arquivos/econ-cultura/ashenfelter-graddy-2003.pdf>

²³ <http://video.cnbc.com/gallery/?video=3000504214>

(quantitative) impressions distort future outcomes – even when the initial information is irrelevant^{24 25} or obviously mistaken²⁶. As a relevant example of anchoring, a record high sale price for an Edgar Degas ballerina sculpture in March may induce buyers in April to pay more for other Degas ballerinas, even if the purely artistic value (“hedonic value” or “fundamental value”) of Degas ballerinas is unchanging or comparable year-to-year. It is essential to understand that anchoring differs from rational learning, in which past prices do correspond to changes in hedonic quality and thus are legitimately informative for predicting future prices²⁷. Beggs & Graddy (2009) argue that demand for art changes over time, but underlying hedonic quality remains constant, thus allowing anchoring to be identified.

If the quality changes, then we can still identify anchoring, given we control for those differences²⁸. This allows us to generalize the work of Beggs & Graddy (2009) beyond resales of the same good to sales of similar (substitute) goods. We define anchoring as follows: *when past observed quantities bias future quantities beyond hedonic factors, which either remain constant or whose changes are controlled for*. Even after controlling for such factors, the mechanism by which past quantities impact future ones

²⁴ Tversky, A.; Kahneman, D. (1974). "Judgment under Uncertainty: Heuristics and Biases" (PDF). *Science* 185 (4157): 1124–1131. doi:10.1126/science.185.4157.1124. PMID 17835457.

²⁵ Sugden, Robert, Jiwei Zheng, and Daniel John Zizzo. "Not all anchors are created equal." *Journal of Economic Psychology* 39 (2013): 21-31.

²⁶ Edward Teach, "Avoiding Decision Traps", CFO (1 June 2004). Retrieved 29 May 2007.

²⁷ Graddy, Kathryn, et al. "Anchoring or loss aversion? Empirical evidence from art auctions." (2014).

²⁸ Observation from MB 00 about how even the same work can change over time?

is still a black box: this impact may be attributed to buyers, sellers, auctioneers, or some combination of all three²⁹. For instance, the knowledge of a past price may affect buyers not only directly, but indirectly through the presale estimates set by auction house researchers. Hence, the mere observation of this effect suffices for our definition of anchoring. We outline just a few ways in which anchoring can impact auctions for art.

Bidders may anchor on numbers provided prior to auction: this can include presale estimates and past sale prices for a work of art, as well as estimates and prices for related pieces. The former is expected to anchor bidder perceptions, because the purpose of presale estimates is to provide a baseline idea of how much an art piece is worth. However, past sales prices may reflect not only the hedonic value of an art piece, but also unobserved characteristics such as bidding activity, the wealth of individual customers, and even the weather³⁰. It is worth noting that anchoring is extremely difficult to avoid and can bias even experts in the field, though more expertise does guard against anchoring³¹. Additionally, anchoring effects tend to weaken when the value of goods is well-known.

²⁹ Graddy, Kathryn, et al. "Anchoring or loss aversion? Empirical evidence from art auctions." (2014).

³⁰ De Silva, Dakshina G., Rachel AJ Pownall, and Leonard Wolk. "Does the sun 'shine' on art prices?." *Journal of Economic Behavior & Organization* 82.1 (2012): 167-178.

³¹ Northcraft, Gregory B., and Margaret A. Neale. "Experts, amateurs, and real estate: An anchoring-and-adjustment perspective on property pricing decisions." *Organizational behavior and human decision processes* 39.1 (1987): 84-97.

Sellers, when setting reserve prices, may anchor on past sales prices. Past economic psychology research³² finds that anchoring is more powerful for sellers than for buyers, though anchoring is weaker with more experience selling the goods of concern³³. While sellers can set anchors through reserve prices, auctioneers can anchor bidder perceptions of value through what numbers they call out, particularly at the start of an auction. This can be a powerful tool for the auctioneer, but one veteran warns against setting anchors too high (to drive up future bids) or too low (to attract starting bids)³⁴. Go too high, and your numbers lose credibility; go too low, and bidders will suspect something is wrong with the good.

Through interviews with art experts at Sotheby's, we learned that auction houses are aware of anchoring effects. For example, when internal departments need to determine presale estimates for a work of art, a single specialist will research past sales of comparable pieces (same artist, medium, etc.) to get an idea of how much revenue to expect. Next, the specialist tells others in the department about the current work of art – but without revealing any prices from related past sales (which, if done, would introduce anchoring). Every person volunteers an estimate for the current work, and only then does the specialist reveal what related works went for in the past. From there

³² Sugden, Robert, Jiwei Zheng, and Daniel John Zizzo. "Not all anchors are created equal." *Journal of Economic Psychology* 39 (2013): 21-31.

³³ Alevy, Jonathan E., John A. List, and Wiktor L. Adamowicz. "How can behavioral economics inform nonmarket valuation? An example from the preference reversal literature." *Land Economics* 87.3 (2011): 365-381.

³⁴ <https://mikebrandlyauctioneer.wordpress.com/2015/04/13/value-anchoring-in-the-auction-business/>

presale estimates are formed, presumably as a combination of past sales information (the anchors) and more up-to-date expert knowledge of the art piece in question. < talk about comparison to real estate >

The question of what makes two art pieces similar (i.e. substitute goods) is therefore of enormous interest to auction houses. Before one can appraise a piece of art, one must identify past sale precedents, which requires understanding what makes art pieces similar. Only then is it possible to properly analyze anchoring and other biases that can drastically alter prices and sales. My research examines what it means quantitatively for two art pieces to be substitute goods, and what anchoring effects look like after controlling for substitution factors. To study this, I draw upon existing research, new and old data, and interviews with people in the field conducted specifically for this research.