

Misattribution stigma and contagion: How the art auction market reacted to Australia's 'Black Art Scandals'

Abstract: In 1999, two major stories hit the media concerning the authenticity of artworks by two of Australia's leading Indigenous artists. These incidents were quickly tagged as "Black art scandals," with both artists disavowing the production of the questioned works. We theorize the market impacts through the lens of stigma, given that, in the art market, uncovering fakes and forgeries can trigger panic among an artist's buyers. Our proposed mechanism suggests that negative media attention surrounding misattributed works stigmatizes both the artist's name and their artworks. Additionally, we highlight the potential for stigma transfer to other artists within the same style or genre (category-level contagion). Our results show a decline in the clearance rate and weak evidence of a drop in sales value for auctions held after the news stories broke. We propose stigma as a useful lens for future research in cultural economics.

Keywords: stigma and stigma transfer, art auctions, Indigenous art, valuation, provenance, art market

JEL Codes: Z11, Z13, D44

Availability of data: The data and supporting Stata code that support the findings of this study are available from the corresponding author upon request.

1. Introduction

When it comes to valuation in the cultural industries, particularly for products with fundamental uncertainty (Geismar, 2008; Karpik, 2010; Peterson, 1997; Podolny, 1994; Velthuis, 2003), we argue that stigmatization and its contagion to others are critical processes deserving attention. Although there are cases where stigmatization may offer a value advantage (Helms and Patterson, 2014)—such as in avant-garde art or convention-breaking artists—we focus on instances where the negative social evaluations resulting from stigmatization harm the financial value of products, firms, and organizations. Specifically, we examine the damage to perceived value caused by stigmatizing events in the art market, such as price drops associated with ‘burned’ artwork (failure to sell at auction), artists whose work is ‘dumped’ by major collectors, and media attention highlighting rumors regarding an artwork’s provenance, including theft (Ashenfelter & Graddy, 2006; Bandle, 2015; Coslor et al., 2020; Runhovde, 2020; Velthuis, 2003).

Historically, stigma was understood as a physical marker signalling the problematic moral status of the bearer. Today, the term has evolved to reflect the ‘moral disgrace’ of the stigmatized individual, with stigma carrying a ‘discrediting effect’ (Goffman, 1963)—a concept that naturally applies to the valuation of artwork and other cultural products. Building on Goffman’s work, there has been increasing attention to the processes, impacts, and responses to the stigmatization of individuals, groups, firms, products, industries, and categories (Ashforth & Kreiner, 1999; Devers & Mishina, 2019; Durand & Vergne, 2015; Fitzmaurice, 2017; Roulet, 2015). This research is particularly relevant when considering the shifting valuation of cultural products and producers. We focus on challenges to artistic attribution, where intermediaries broadly disseminate stigmatizing assessments to key audiences, as seen in media frenzies surrounding corporate events like the Tylenol scare (Mitchell, 1989).

A key feature of stigmatization research relevant to cultural products and producers is that disgrace and other negative social evaluations can spread beyond the directly affected party through stigma transfer. Also known as ‘taint’ or stigma by association, this contagion occurs when the stigmatization of one individual or organization spreads to others through their association, as seen in the blacklisting of artists during the Hollywood Red Scares (Pontikes et al., 2010). Importantly, stigma transfer can span multiple levels of analysis, with taint spreading from industry to organization (Piazza & Perretti, 2015; Zhang & Wang, 2018), from organization to individual (Phung et al., 2020), or from products to producers (Mitchell, 1989).

Stigma can also transfer to other firms within the same category, as demonstrated by the impact on firms caught up in the Chinese melamine scandal who were not adulterating their baby formula products (Zhang & Wang, 2018). The potential for stigma transfer can intensify stigma's negative social effects, with tendencies for others to distance themselves or sever affiliations out of fear of contamination. For example, a firm declaring bankruptcy may trigger negative reactions including disengagement, reduced participation, or denigration of the organization (Sutton & Callahan, 1987). Similarly, an artwork owner facing rumors about its provenance might prefer a private sale over a public auction. The boundaries of stigma transfer vary by context, but the critical point is that stigma can lead to more severe valuation harm than a simple negative social evaluation or price drop. Given the potential for moral taint, stigma is more than just a bad reputation (Mishina & Devers, 2012).

Stigmatization is frequently visible in media and news stories that assess blame or pass judgment—what Wiesenfeld et al. (2008) call ‘attribution by key arbiters’—often through the attachment of a stigmatizing label (Kvåle & Murdoch, 2022; Helms & Patterson, 2014). A useful insight from labeling theory is that when key intermediaries use stigmatizing labels, the recipients of those labels may still be stigmatized and suffer negative consequences, even if the label is inaccurate (Pontikes et al., 2010; Becker, 1963; Sgourev & Althuizen, 2017). Stigmatization involving negative publicity can thus have significant implications for product sales, firm reputation, and perceptions of former employees (Durand & Vergne, 2015; Wiesenfeld et al., 2008). However, the degree to which a label is stigmatizing can depend on the audience and cultural expectations, which differ across groups and societies. For example, dropping out of university might be viewed as shameful in many contexts, but as a badge of honor in Silicon Valley.

We examine the valuation impacts of stigmatization and stigma transfer in artistic attribution scandals, situations in which intermediaries propagate stigmatizing assessments of artistic misattribution following a potential misattribution event. This framework is appropriate given the stigmatizing force of rumors about fakes and frauds in the art market—a market inherently difficult to value. Considering the importance of accurate attribution in securing the economic value of artwork (Coslor, 2016; Czujack, 1997), media reports on attribution scandals may lead to what we call ‘misattribution stigma,’ which we define as stigma arising from rumors about authenticity and the circulation of fakes attributed to an artist, particularly by key value arbiters such as critics and journalists.

Using an empirical dataset of Australian Aboriginal artworks at auction, we focus on the period around the year 2000, a time of increasing interest in Aboriginal artwork. In the lead-up to the 2000 Sydney Olympics, Aboriginal art was promoted as a uniquely Australian genre. However, this period also saw growing concern over attribution issues, with various forgeries and instances of entirely fabricated Aboriginal artists (Farnsworth, 1997) gaining media attention, especially during the ‘Black Art Scandals’ (V. Johnson, 2000). In addition to media reports from Australian and international sources, we collected auction data from the Australian Art Sales Digest (AASD) for all Indigenous Australian artworks from 1998 to 2000, comprising 3,667 artworks by 680 artists, across 125 auctions. With 2,116 observations of artists within auctions, we examine two key Western Desert artists involved in attribution scandals and assess the impact on realized prices and clearance rates for the work of these artists, the category of Western Desert artwork and the broader Aboriginal art category, using the stylistically distinct Hermannsburg School as a comparison.

Our focus is on misattribution stigma and the related valuation dynamics, contributing to the broader research on factors that drive higher prices and better sales (Ashenfelter & Graddy, 2006; Hernando & Campo, 2017; Pénet & Lee, 2014; Plante et al., 2020; Sgourev & Althuizen, 2014). Existing research has explored value losses from fakes and forgeries (Bocart and Oosterlinck, 2011; Scorcu et al., 2021). We take a different approach, using the lens of stigma to examine mechanisms explaining the loss of value associated with rumors of fakes and forgeries. Our empirical analysis tests the stigma and stigma transfer effects of media reports on attribution scandals for Aboriginal artwork at auction. We find that publicized artistic attribution scandals can indeed damage the sales of affected artists in the near term. We also observe stigma transfer to other artists in the same style, the Western Desert region of Australia, which is home to the distinctive dot painting style typically associated with Aboriginal art. Our work also highlights the boundaries of possible stigma transfer, at least in this context. Our analysis of the Hermannsburg School, known for its figurative watercolor landscapes that sharply contrast with the abstracted acrylics of the Western Desert, revealed no sales impacts during the period of interest. Additionally, we note that journalists (and headline writers) often question artistic attribution in a broad fashion; grouping together attribution scandals arising from forgeries with what we term ‘family attribution,’ a culturally accepted practice in Aboriginal art where family members create works under the focal artist’s name, similar to the traditional studio or master-apprentice system in Western art genres. This nuance allows us to further consider the role of intermediary assessments in shaping audience responses. In

addition to stigmatizing labels that influence audience behavior and market sentiment (Becker, 1963; Helms & Patterson, 2014; Sgourev & Althuisen, 2017), this would suggest that stigma by association (Pontikes et al., 2010) is also a relevant mechanism for stigma transfer in the art market.

2. Attribution Scandals as Stigmatizing Events in Art Valuation

Long collected for its ethnological value, Australian Indigenous art began gaining recognition as an internationally recognized contemporary art genre about 40 years ago, given striking parallels to abstract art (Myers, 2002; Smith, 2008). By the late 1980s, the genre had transitioned into the secondary auction market (Aboriginal Arts and Crafts Industry Review Committee, 1989), no longer limited to auctions of ethnographic and cultural material but also featured in modern and contemporary art auctions. Importantly, secondary sales represent an important stage in an artist's career, conferring value beyond mere decorative art (Plante et al., 2020; Velthuis, 2005). By 1989, the total value of Indigenous artwork at auction had reached about half a million Australian dollars (Furphy, 2021), or approximately US\$415,000. From that point, growth was remarkable: by 1995, sales had tripled to US\$1 million, and by 1998, they had reached US\$3.5 million. Though growth stalled in 1999 (US\$3.5 million), sales rose to US\$4 million by 2000, peaking at US\$22 million in 2007. Relevant factors during our period of interest (1998–2000) include a booming economy (Treasury, 1999) and the 2000 Sydney Olympics.

Several key stylistic groupings exist within Australian Aboriginal artwork. As the market developed, figurative landscape works by the watercolorists of the Hermannsburg School (e.g., Albert Namatjira) were increasingly traded, alongside prominent styles from the Central Desert (e.g., Emily Kngwarreye) and Kimberley region (e.g., Rover Thomas). Much of the growth in the auction market for Australian Indigenous art was driven by works created in the Western Desert region (Johnson, 2006), which stretches from the Nullarbor in the south to the Kimberly in the north. Among the most prominent artists from this region were Clifford Possum Tjapaltjarri and Turkey Tolson Tjupurrula. The 'dot painting' style of these artists became synonymous with Australian Indigenous artwork, resonating with Western sensibilities shaped by abstract art (Butler, 2014; Smith, 2008). Given the potential valuation impacts of misattribution, we consider newspaper articles that question artistic attribution to be potentially

stigmatizing trigger events. We theorize this phenomenon as ‘misattribution stigma’, which can damage the perceived value of an artist’s work.

2.1 Artistic attribution and valuation

Artist attribution and provenance are essential factors in determining the value of an artwork (Czujack, 1997; Robertson, 2005; Runhovde, 2020). Artworks are often viewed as extensions of their creator (Newman & Smith, 2019); the artist’s name can function like a brand (Belk, 1995). The difference between a painting attributed to a leader of an artistic movement and one attributed to a lesser-known figure can amount to hundreds of thousands of dollars, or even millions, despite stylistic similarities. Named attribution creates a key point of valuation, overshadowing minor stylistic differences. Even a provisional name, such as ‘The Master of...,’ can carry significant valuation implications (Oosterlinck & Radermecker, 2019). In contrast, works attributed to apprentices in the “school of” a master may not be stigmatized, but are typically valued less than those attributed to the master.

Conversely, questions about attribution can cast a dark cloud over an artist’s works. Uncovering a forgery or incorrect attribution can have dramatic price implications (Bandle, 2015; Geismar, 2008; Runhovde, 2020), reducing an artwork worth hundreds of thousands of dollars to nearly zero as a mere replica. This also causes reputational damage for buyers, an example of stigma transfer. These situations can evoke strong emotions from collectors, shaping market sentiment and influencing buyer behavior. Even without an attribution scandal, the desire to avoid sudden price drops is known to prompt risk-averse behavior among buyers (Boucher, 2016; Velthuis, 2003, 2005). Auction houses may also withdraw artworks before auction if authenticity is questioned (Bocart and Oosterlinck, 2011; Kaplan, 2017), acting both as arbiters of quality and possibly to avoid stigma transfer to themselves. The stigmatizing implications of a misattribution scandal and the resulting changes in market sentiment and buyer behavior highlight the relevance of this theorization to cultural economists.

While research in cultural economics has devoted substantial attention to the overall harms to the art market or the duration of valuation impacts following the discovery of fakes (Bocart & Oosterlinck, 2011; Scorcu et al., 2021), we focus on potential mechanisms. We argue that the stigma lens provides a more nuanced understanding of the mechanisms underlying valuation damage due to artistic misattribution scandals. Although attribution (authenticity) is just one aspect of valuation—along with ‘quality, rarity, condition, provenance, and value’

(ADAA, 2007, cited in Coslor, 2016)—it is a necessary condition for an artwork to achieve a high value. Furthermore, given the contagious nature of stigma, which can span levels and spread beyond initially stigmatized actors, this theorization helps explain how buyers and other actors might seek to distance themselves from stigmatized entities, potentially exacerbating the negative effects of stigmatization.

2.2 News articles on artistic misattribution events as key intermediary assessments

Drawing on stigma research outside the art market, we identify media stories as a key driver in the misattribution stigma process, alerting the public to issues or priming them to stigmatize certain products or producers (Durand & Vergne, 2015; Wiesenfeld et al., 2008). The discovery of a misattribution, such as a forgery, can undermine high financial value expectations and call into question the judgment of buyers who purchased misattributed artworks (Robertson, 2005). Thus, a newspaper story about such an incident can trigger stigmatization. Similar to how price decreases at auction can be a black mark for artists (Velthuis, 2003), this process might suggest additional misattributions and lead to value uncertainty (Czujack, 1997; Geismar, 2008; Peterson, 1997). In this way, questions about the authenticity of one artwork can provoke doubt about the authenticity of other works attributed to the same artist. After all, the success of one forgery might reasonably suggest that the forger could continue their illicit activities. Observably, the importance of attribution in art auctions means that misattribution can damage the value (hammer price) of artworks by the stigmatized artists—or worst, prevent the auction house from finding a willing buyer (clearance rate).

Prior research suggests that the assessment of misattribution stigma for artists and their work is likely to involve a decision-making process by key arbiters of value—in this case, journalists—similar to other contexts (Durand & Vergne, 2015; Wiesenfeld et al., 2008). Intermediaries like journalists and critics drive value judgments in various markets through evaluative schema (Hsu et al., 2012). Indeed, when it comes to valuing artwork, there are key differences between the factors considered relevant between experts and the average buyer (Coslor, 2016). Importantly, while media coverage is often a type of important, but non-expert opinion, Pénet and Lee (2014) point out that it can sometimes be indistinguishable from expert opinion. As Wiesenfeld et al. (2008) note, ‘Because society’s members... are not in a position to generate answers to [questions about culpability] themselves... they must rely on key arbiters who render and disseminate judgments.’

Given the event-based nature of the art auction market, we view newspaper stories about attribution scandals as discrete stigmatizing *events*, akin to media attacks on firms involved in problematic industries (Durand & Vergne, 2015) or the media frenzy following a product quality scare (Mitchell, 1989). As stigmatizing events, news stories about fakes and forgeries impact artists and their work at subsequent auctions. In the event-driven auction market, a well-timed—or ill-timed—headline can mean the difference between a high price or a low price, or even prevent a sale altogether, which itself creates a black mark. Beyond the impact on the perceived value of the stigmatized artist's work, we are also interested in how misattribution stigma and its valuation harms may transfer to other artists within the same or different artistic styles.

2.3 Stigma transfer from one artist to others: Cognitive and valuation-based mechanisms

To explore how stigma transfers from one artist facing an attribution scandal to others, we draw on research related to categories and comparables, presenting two distinct but overlapping mechanisms.

The first mechanism involves cognitive groupings. Stigmatization can spread within an industry category (Durand & Vergne, 2015; Zhang & Wang, 2018), where organizations share common features, leading audiences to lump them together and generalize negative traits across the whole category (Barlow et al., 2018). It is logical that positive or negative evaluations might be applied across an artistic category. For example, one case of misattribution stigma might raise concerns that other artists in the same collective or genre have also been targeted by forgers, affecting buyer behavior. In short, discovering fakes and forgeries may cast doubt not only on the artist in question but also on others within the same group or genre, as concerns about prevalence grow.

The second mechanism examines the use of comparables for valuation (Coslor, 2016; Velthuis, 2005) as a pathway for stigma transfer and valuation impacts in the art market. Although conceptually similar to cognitive groupings, this mechanism focuses on the specific methods used by experts to value artwork. With comparables, recent sales of other works by the artist and similar artists inform an impression of the likely value of a piece, alongside attributes like provenance, career stage, prizes, exhibitions, and other factors (Pénet & Lee, 2014; Robertson, 2005). When comparable artworks experience price challenges, the effects can spread beyond the artist in question to similar artists. One key difference between expert

valuers and less experienced buyers is that experts are much more selective about which comparables they include or exclude or include when valuing a given piece of artwork (Coslor, 2016). These two mechanisms—cognitive groupings and comparables—are complementary when integrating stigma and stigma transfer research with the valuation of artwork.

2.4 Misattribution or normal practice? Artistic studio systems

The moral evaluations of stigma can also depend on culturally specific understandings. To nuance the concept of misattribution stigma, we examine family attribution in Australian Indigenous artwork, recognizing that cultural constructs differ between societies. This practice bears similarities to the traditional studio system in Western art, raising intriguing questions about valuation. While attribution to a named artist is crucial for assessing provenance, historically and contemporarily, some art styles have employed a studio system in which a ‘Master’ signs their name to work produced with the help of others. This system is characteristic of the Old Masters genre in Western art (Oosterlinck & Radermecker, 2019; Radermecker, 2020) and continues today with contemporary artists such as Andy Warhol and Jeff Koons, as well as community-based projects like those orchestrated by Vik Muniz with the help of Rio de Janeiro’s *catadores*.

Similarly, in the Australian Indigenous art market, we find a lesser-known studio system where a named artist permits culturally authorized members, typically family, to paint the artist's ‘Dreamings,’ which are then signed with the focal artist’s name (Johnson, 2000, 2006). Thus, from an Indigenous perspective, artistic authenticity revolves around cultural authority. Artists have the right to depict certain themes (Dreamings), but they can authorize others, often family members, to participate in creating the work. As in the Western studio system, these works may have more or less attention by the focal artist in the finishing process. This cultural practice clashes with typical buyer expectations of provenance in which the signing artist fully created the artwork.

In terms of valuation, we theorize similarities to the studio system of the Old Masters—or contemporary artists—where the focal artist’s name adds value to work produced by others. As this system is relatively unfamiliar to collectors, increasing awareness of ‘skin name’ attributions (where a family member creates the work but signs the focal artist’s name) may reduce the perceived stigma of misattribution. This knowledge would likely be disseminated by key arbiters like journalists and critics. We now turn to our research context: Aboriginal art.

2.5 Attribution scandals in the Aboriginal Art Market

With the growing interest in and rising prices for Aboriginal art, attribution concerns have become more prominent, similar to other high-value art markets. This provides a context to explore misattribution stigma, given the negative impacts of fakes and forgeries on both the focal artist and others. We focus on a period marked by several ‘Black Art’ scandals involving artistic attribution. Leading up to the 2000 Sydney Olympics, the promotion of Aboriginal art played a key role in promoting Australia, with exhibitions in cities like New York and London receiving international media attention from outlets such as *The New York Times* and *The Times* of London. Alongside the acclaim, however, were stories of fakes and frauds, a common concern in art market reporting. These included reports of a fictional artist named Eddy Burrup (Farnsworth, 1997), allegations that Kathleen Petyarre’s former (white, male, Welsh) partner had helped produce her most significant work, and rumors that some of Emily Kngwarreye’s works were not created solely by her hand (Alder et al., 2011; Myers, 2002).

The rising value of Australian Indigenous art and previous attribution scandals frame our area of interest: artists from the Western Desert region, particularly Clifford Possum Tjapaltjarri (1932–2002) and Turkey Tolson Tjupurrula (1942–2001). We begin with Clifford Possum Tjapaltjarri. In February and early March 1999, Clifford Possum Tjapaltjarri, accompanied by members of the New South Wales commercial fraud squad, attended an exhibition of his works and identified many as ‘not mine’ (V. Johnson, 2000). These gallery visits attracted media attention (McCulloch-Uehlin, 1999a), raising concerns during a traditionally slow period in the Australian auction calendar. A criminal investigation culminated in the arrest of Adelaide art dealer John O’Loughlin on 11 October, 1999 (Alder et al., 2011).

Building on the sensationalism of this story, attention shifted to another Western Desert artist, Turkey Tolson Tjupurrula. In April 1999, a story broke (McCulloch-Uehlin, 1999b) questioning whether Turkey Tolson Tjupurrula had painted his own artworks. A well-timed follow-up appeared in *The Sydney Morning Herald* on 20 April (Smee, 1999), the same day that auctions featuring Indigenous Australian artists were set to take place in Sydney and Melbourne (Newstead, 2014).

The first case involved fraud, the second case featured family attribution, but both were discussed as misattribution scandals. As noted, this system, similar to the Old Masters’

apprenticeships or modern artistic studios, allows others to help realize the vision of a focal creator. However, family attribution in Indigenous art conflicts with typical (Western) collector expectations, which influence the auction market. Despite the cultural legitimacy of family attribution, forgery concerns surrounding Clifford Possum’s work triggered broader authenticity concerns for the genre, and were used as background in stories about Turkey Tolson Tjupurrula’s works. Headlines like “The Latest Aboriginal Art ‘Crisis’” (Smee, 1999) fueled misattribution stigma, rather than educating readers about family attribution.

Overall, we theorize a process illustrated in Figure 1.

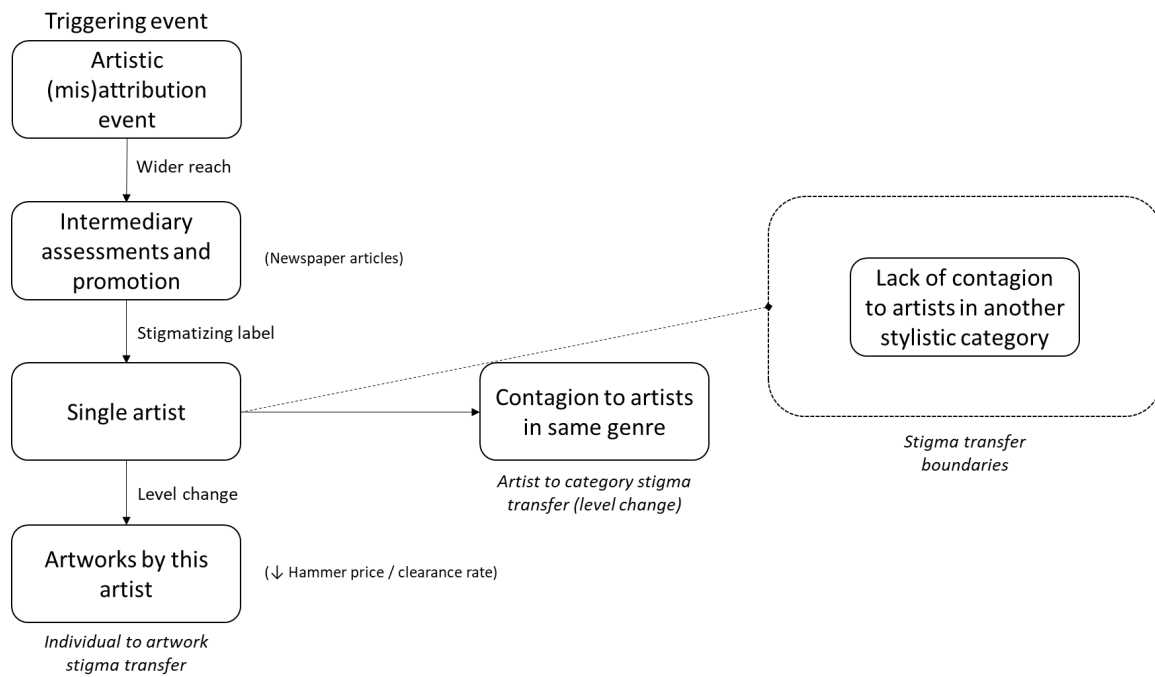


Fig. 1 Theoretical framework for misattribution stigma and stigma transfer in art

3. Data and Methods

3.1 Auction dataset and newspaper data

Our dataset includes transaction-based data from the AASD (Furphy, 2021) for all artworks by Australian Indigenous artists offered at auction from 1998 to 2000. There were 125 auctions on 104 distinct dates during this period. While Aboriginal art is collected globally, these auction locations were geographically concentrated, with 97% of artworks sold in Melbourne and Sydney. Over three years, 3,667 artworks were offered for sale, created by 680 artists. Of these, 2,507 artworks by 525 artists were sold at auction, while the rest were either unsold or withdrawn before auction.

Together with stigmatising news stories about specific artists, we used auction data to create a database of individual artists within each auction. This database included auction date, auction house and location, number of artworks by an artist offered for sale, number of artworks by an artist that sold, pre-sale estimated value, and realized auction value. The database provided 2,116 observations of artists across auctions. As shown in Table 1, most artists had only a small number of artworks offered, often just one artwork in a single auction during the three-year period (52.8%). The right-skewed distribution ranges from 1 to 47, with an average of 3.1 auctions per artist. At the high end, a few artists had works featured in over 21 auctions.

Table 1: Distribution of artists and auctions in the database

Auctions	# Artists	Percentage
1	359	52.794
2	104	15.294
3	71	10.441
4	31	4.559
5	16	2.353
6	22	3.235
7	11	1.618
8	9	1.324
9	12	1.765
10	6	0.882
11	4	0.588
12	6	0.882
13	4	0.588
14	3	0.441
15	2	0.294
16	2	0.294
17	3	0.441
18	3	0.441
20	4	0.588
21+	8	1.176
Total	680	

Figure 2 highlights the skewness in these data, with 52.8% of artists appearing in only one of the 125 auctions during the study period.

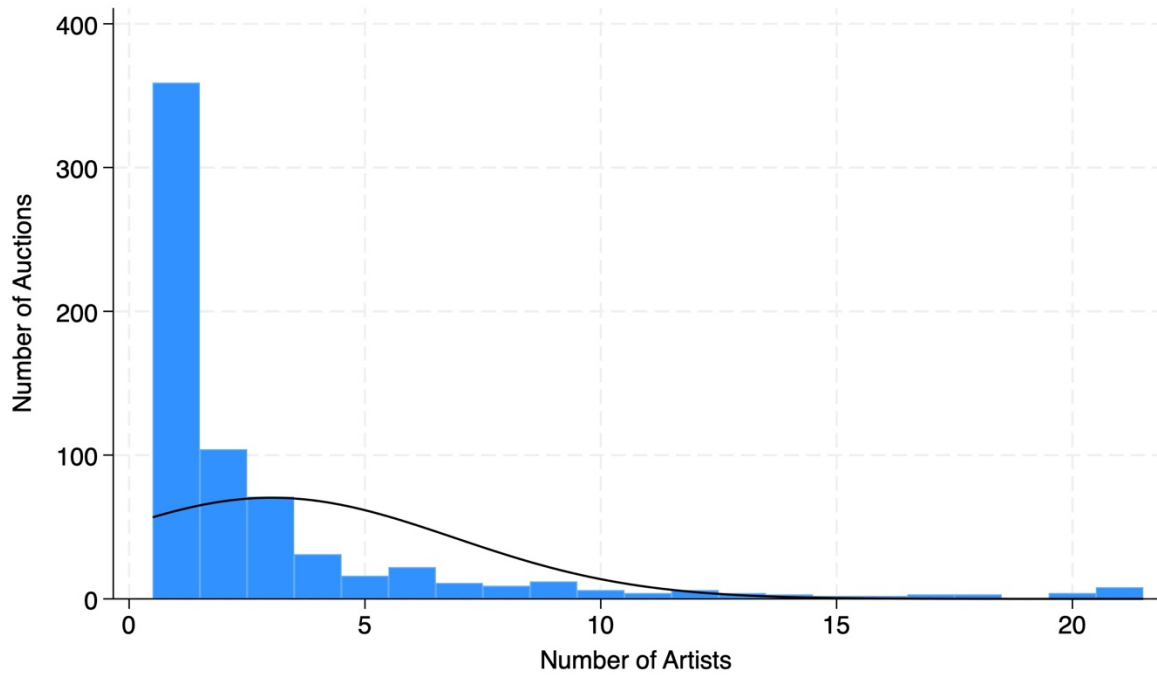


Fig. 2 Distribution of artists and auctions in the database

3.2 Skin names

In Australian Indigenous society, the kinship system, identified by one’s ‘skin name,’ plays a central role (Central Land Council, 2020). The skin name system determines social relationships, land rights, ceremonial roles, and Dreamings (McConvell et al., 2018). Skin names are inherited through one’s parents, identifying individuals and their close relations (McConvell et al., 2018; Radcliffe-Brown, 1930a, 1930b). Individuals with the same skin name are related, and their families originate from specific geographic regions in Australia. Skin names also confer ownership of particular Dreamings and the cultural authority to depict these Dreamings (Van den Bosch & Rentschler, 2009).

Skin names allow us to identify Indigenous artists with rights to produce images of the same or related Dreamings. These works, similar in subject and composition, function like a school of art and help determine the geographic origin of the artist. We used the table published by the Central Land Council (2020) to identify artists from the Pintupi, Pintupi/Luritja, Warlpiri, and Waramungu language groups, who originate from the Western Desert and are closely related in the kinship system to Turkey Tolson Tjupurrula and Clifford Possum Tjapaltjarri, thereby creating related Dreamings (Artark, 2021).

3.3 Newspaper data

We operationalized our focus on media attention to fakes and forgeries using a NewsBank search of domestic Australian papers for the names of our two focal artists. This method provided systematic results from papers such as *The Australian*, *The Age*, and *The Sydney Morning Herald*. While the operationalization of dependent and control variables is detailed below, this method also served as the foundation for a qualitative corpus of news data.

Given that Australian Indigenous art buyers are located around the world, we broadened our search to include international coverage of Aboriginal art. The global interest in Aboriginal art increased with the promotion of the 2000 Sydney Olympics, travel to Australia, and the recognition of Aboriginal art as a distinctive domestic art form. To examine this international interest, we reviewed coverage in newspapers outside Australia during our study period, focusing on major publications such as *The Times* of London and *The New York Times*. Through a search of Gale Academic OneFile for the five years leading up to the Sydney Olympics (1995–2000), using keywords like "Indigenous art," "Aboriginal art," and the names of key Aboriginal artists, we found over 100 international articles to add to our qualitative corpus. Articles about Canadian Indigenous artists were excluded unless they mentioned exhibitions of Australian Aboriginal artwork in Canadian museums. This approach allowed us to confirm that attribution scandals involving Aboriginal art were reasonably well-publicized internationally, not just in domestic outlets like *The Age* in Melbourne or *The Sydney Morning Herald*. Thus, attribution scandals in the lead-up to the Sydney Olympics reached a global audience, including collectors worldwide.

3.4 Dependent and independent variables

3.4.1 Dependent variables

We investigated both the sales clearance rate and the realized 'hammer price' of artworks for each artist.

Clearance process: We modeled the probability of an artist's artworks being sold at auction based on the number offered for sale (Clearance rate = number of artworks sold / number offered).

Hammer price: We converted the realized sales values into deflated U.S. dollars due to the global nature of art auctions. We used the USD/AUD exchange rate on the auction date and adjusted these values for inflation using the U.S. Consumer Price Index (1983 = 100) to account

for rising price levels from 1998 to 2000. This 'real U.S. dollar value' was used as the dependent variable when modeling realized hammer prices.

3.4.2 Control variables

In our statistical modeling, we included several variables known to influence either the clearance process or realized sales value in the Australian Indigenous auction market (Farrell et al., 2018; Farrell & Fry, 2017; Fry, 2020). Table 2 presents descriptive statistics for these variables.

Pre-sale estimate: We used pre-sale information on the value of artworks offered by each artist (in real U.S. dollars), taking the midpoint of the low and high value estimates for both offered and sold artworks.

Lagged market indicator: We controlled for the state of the overall Indigenous auction market in the previous quarter using a Herfindahl-Hirschman Index (HHI; Herfindahl, 1950; Hirschman, 1964). This index measures market concentration based on the value share of auction houses selling Indigenous art in the previous quarter. We then took the reciprocal of the index (Davidson et al., 2008), representing the equivalent number of auction houses with equal value shares that would be expected given the observed level of market concentration.

Stock market index: Since artwork purchases can be viewed as investments (McAndrew, 2010), we controlled for investment alternatives by including the logarithm of the relevant local stock market index, the Australian All Ordinaries Index.

Table 2 provides descriptive statistics for these variables, which, like typical art auction data, exhibit skewness and heavy tails.

Table 2: Descriptive statistics

Variable	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
Number of works offered by an artist	1.73	1.83	1	43	8.064	135.84
Number of works sold by an artist	1.18	1.44	0	14	3.344	19.761
Number of artists with works offered	72.49	65.70	1	211	0.851	2.452
Pre-sale estimated value for all works offered	3,906	12,873	17	187,322	8.468	94.20
All Ordinaries Index	2,946.77	219.99	2,510.20	3,326.30	-0.448	1.905
Equivalent number of auction houses	2.17	0.96	1.17	3.64	0.476	1.568
Realized sales value: Average for works sold	1,547	3,327	8	47,664	5.753	52.84
Pre-sale estimated value: Average for works sold	1,584	3,052	20	38,498	4.960	38.55

All values are in 1983 US Dollars

Auction house: We also included dummy variables (fixed effects) for the auction house hosting the auction, as auction houses vary in specialization, the types of artworks they sell, their locations, and the typical price levels of their offerings. Table 3 shows the distribution of observations by auction house.

Table 3: Observations by auction house

Auction house	Observations	Percentage
Sotheby's Australia	527	24.91
Deutscher~Menzies	401	18.95
Lawsons	288	13.61
Leonard Joel	281	13.28
Goodman's Auctioneers	135	6.38
Other auction houses	126	5.95
Phillips Auctions International	111	5.25
Philips Auctions Australia	107	5.06
Christies	97	4.58
Theodore Bruce	43	2.03
Total	2,116	

3.4.3 Stigmatizing news variables

For our period of focus (1998–2000), we used 1998 as the base year and noted three intervals of news coverage related to forgery and attribution issues in 1999. Although several attribution scandals involving Aboriginal artwork had occurred earlier in the 1990s, no published scandals named our two focal artists until 1999. Therefore, while collectors of Aboriginal art might have been sensitive to attribution concerns in the genre, neither Clifford Possum Tjapaltjarri nor Turkey Tolson Tjupurrula was at the center of attention until our periods of interest. Figure 3 shows the number of news stories and auctions during 1999.

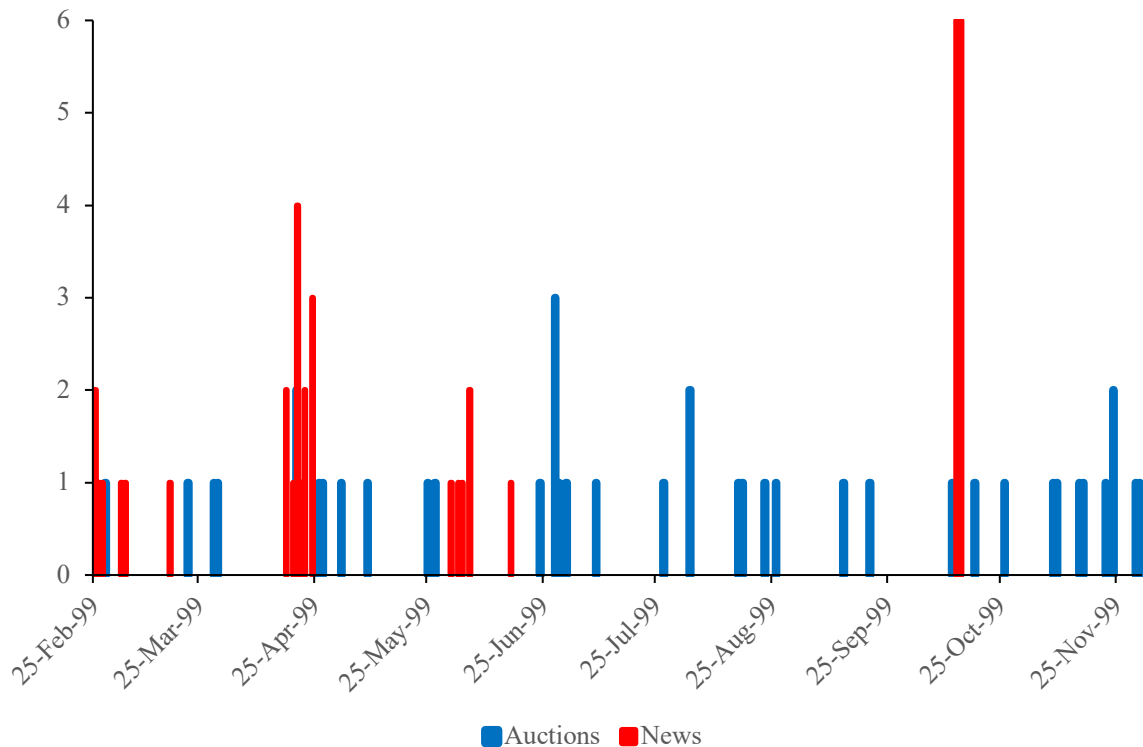


Fig. 3 News stories and auctions in 1999.

February to March: In early 1999, seven news articles covered the discovery of fake works by Clifford Possum Tjapaltjarri and the launch of a criminal investigation. However, since this occurred during a traditionally quiet period in the Australian auction calendar (February–March), we lacked sufficient data to assess auction impacts.

April 17 to May 1: Our first key period saw 13 articles published about the improper attribution of works to Turkey Tolson Tjupurrula, with some articles also referencing the earlier Clifford Possum Tjapaltjarri discoveries. These reports began with Susan McCulloch-Uehlin’s story that many of Turkey Tolson Tjupurrula’s works were painted by female relatives under his direction (McCulloch-Uehlin, 1999b). Although this reflected family attribution—a culturally accepted practice—the article raised doubts about whether paintings created by Tjupurrula’s family members were circulating without his approval, thus creating attribution concerns despite the culturally allowed practice of family attribution.

October 13–14: Our second key period occurred on October 13–14, when 12 articles reported the arrest of art dealer John O’Loughlin in connection with the earlier Clifford Possum Tjapaltjarri forgeries. Although these articles marked the resolution of the criminal case, they likely heightened attribution concerns among collectors.

To investigate the impacts of these events on Australian Indigenous artists and the auction market, we created a ‘step variable’ to identify auctions occurring during the relevant news windows. The variable takes the value of one for auctions held within the news window and zero otherwise. Unfortunately, the determination of window length was constrained by the frequency of auctions and the number of news items related to misattribution and forgery¹. Figure 4 shows the auction clearance rates and realized sales values (in 1983 U.S. dollars).

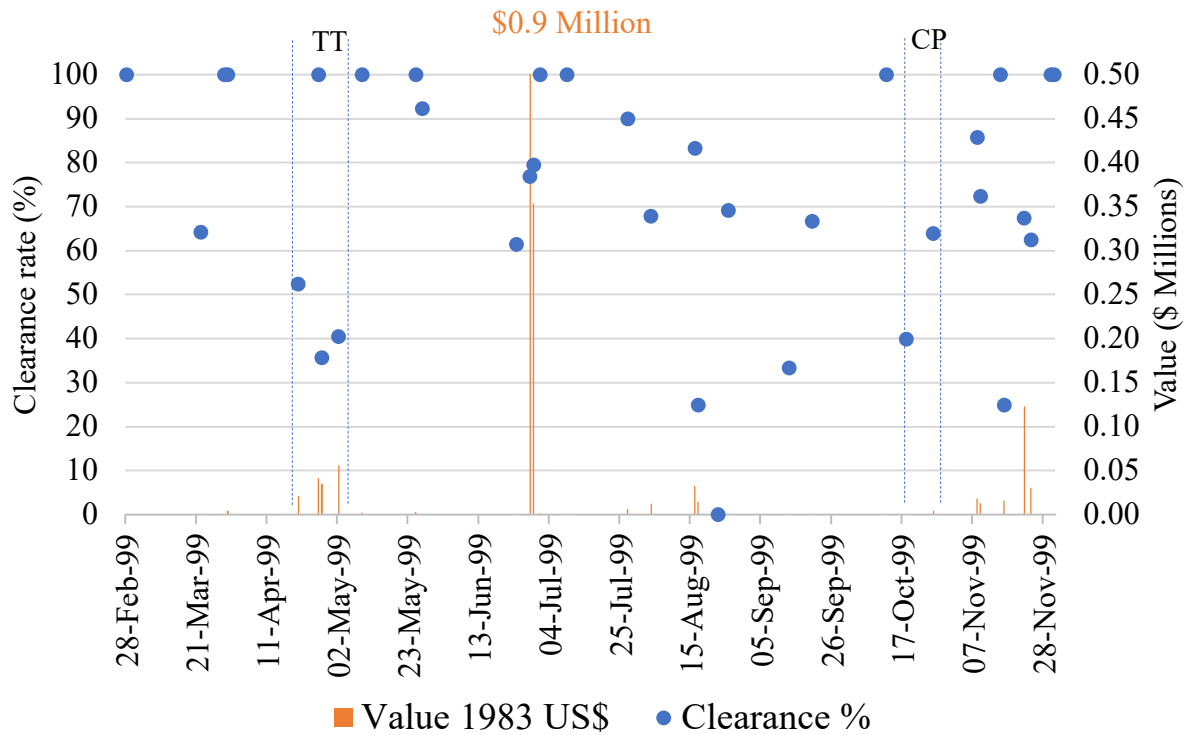


Fig. 4 Auctions in 1999.

Our first news variable concerns Turkey Tolson Tjupurrula (TTT) and takes the value of one for auctions held during the news period (five auctions on four dates 20 April, 20 April, 26 April, 27 April, and 2 May). During these auctions, works by 123 artists were offered for sale, and works by 65 artists sold. Out of the artworks in this window, nine works by Turkey Tolson Tjupurrula (TTT) were listed, of which two sold. The second news variable takes the value of one for the two auctions held on the two dates (18 October and 26 October) following news of John O’Loughlin’s arrest in the Clifford Possum Tjapaltjarri case, and zero otherwise.

¹ Future work incorporating richer auction data might include the use of impulse functions (Peseran and Shin, 1998).

Therein, works by 35 artists were offered for sale, and works by 19 artists sold. No works by Clifford Possum Tjapaltjarri were offered for sale during this window ².

3.4.5 Hypotheses

We consider news articles about fakes and forgeries as stigmatizing events for the artist and the value of their work:

HYPOTHESIS 1 (H1): *When an attribution scandal occurs, an artist's sales will be negatively impacted.*

The likely outcome of an attribution scandal is a negative impact on the sales of other works by the artist, either through a reduction in sales prices or lower clearance rates at auction. Essentially, news of widespread forgeries associated with an artist may decrease the expected value of their works, leading collectors to be less inclined to buy these works, or willing to pay less, compared to artists without attribution issues.

We also considered the possibility of misattribution stigma transferring to other artists in the same style or category.

HYPOTHESIS 2A (H2A): *When an attribution scandal affects one artist, stigma can transfer to other artists in the same style.*

HYPOTHESIS 2B (H2B): *Stigma transfer (contagion) is higher for artists in the same style as the focal artist compared to those in other styles.*

These hypotheses suggest that stigma may spread to other artists, with a stronger effect on artists who share similar styles, regions, or markets. Possible mechanisms include cognitive grouping of artists within a style (Pachucki, 2012) or concerns about dealer reputation, where incidents involving a particular dealer may raise authenticity questions about other artists they represent, along with comparables valuation methods (Coslor, 2016).

4. Model specification and estimation

We initially considered two models to analyze both the clearance process and the average realized (hammer) value of artworks sold.

² In both cases, given that we are using processed data from the Australian Sales Index, it is unclear whether any works were withdrawn prior to auction and thus fail to appear in these data; withdrawing works from auction is a common practice, but these listings may or may not be included by auction data aggregators such as the AASD.

First, for the clearance model, we employed a generalized linear model, selecting a logit link function for the binomial family (McCullagh & Nelder, 1989) to model the probability of artworks being sold out of those offered for sale. This specification relates the probability of sale to a set of independent variables, following Farrell et al. (2018). Consistent with previous research (Candela et al., 2012; Marinelli & Palomba, 2011), the probability of sale is non-linear in relation to pre-sale estimates of the artworks' value. The previous state of the auction market for Australian Indigenous art also influences the clearance probability. We measured the market's condition in the previous quarter using the 'equivalent number of auction houses' ($1/HHI$). As artworks can be a form of investment, we included the logarithm of the stock market index (the Australian All Ordinaries Index), to account for alternative investment opportunities. An increase in this index may reduce the probability of sale, as investors using art as a hedge might shift to other investments, though some research shows that the value of art and stock markets often rise in concert (Goetzmann et al., 2011). The number of Indigenous artists with artworks offered for sale within an auction may bring additional interested buyers into the auction (Herrero, 2010b), with the potential to thus increase prices. To control for this, we included the number of artists with artworks offered in the auction. To capture specific auction effects, such as the viewing period and conduct of sale, that may vary by auction house, we also included a set of fixed effects for auction houses (Geismar, 2008; Heath & Luff, 2007; Herrero, 2010a).

Second, for realized sales value, we used a regression model, conditional on at least one sale, to ensure a non-zero value. Our specification is based on prior research on hammer prices for Australian Indigenous artworks (Farrell & Fry, 2017; Fry, 2020). The pre-sale estimate plays a significant role in determining the realized sales value (Beckert and Rossel, 2013). We also included the state of the market from the previous quarter and the return on alternative investments, as these factors may influence the final sale price. Fixed effects for auction houses were included to capture the role these institutions and their reputation and specialization in determining value (Teti et al., 2014).

In both models, we incorporated test variables. To explore the potential differential effects of news about TTT on other artists, we introduced an interaction effect with artist type. We identified artists from the same Western Desert region style as Turkey Tolson Tjupurrula and Clifford Possum Tjapaltjarri, using 'skin names' (Central Land Council, 2020). For contrast, we also examined artists from the Hermannsburg School, known for their Central Desert landscape watercolors (Castleman, 2020), which are stylistically very different from the

abstract dot paintings of the Western Desert. A third group, labeled ‘other Indigenous,’ included artists from outside these two styles. Table 4 provides the number of observations by artist type for the TTT news window, Clifford Possum Tjapaltjarri’s arrest, and outside of those periods. Unfortunately, for the Clifford Possum Tjapaltjarri arrest variable, we lacked sufficient observations to identify interaction effects with artist type³.

Table 4: Observations by artistic category

	TTT News		CPT Arrest		Non-Window		Total	
	Offered	Sold	Offered	Sold	Offered	Sold	Offered	Sold
Western Desert	42	15	15	12	572	381	629	408
Hermannsburg	25	21	6	1	488	405	519	427
Other Indigenous	56	29	14	6	898	646	968	681
Total	123	65	35	19	1,958	1,432	2,116	1,516

4.1 Hypothesis Tests

4.1.1 Sales impacts for focal artists (H1)

We began by examining whether the news events impacted the sales of artworks by the two focal artists (H1). Notably, both artists had relatively few works offered for sale over the full three-year period—51 by Turkey Tolson Tjupurrula and 50 by Clifford Possum Tjapaltjarri—limiting our ability to conduct robust statistical analysis for both the clearance process and realized sales value. Moreover, during the arrest window for Clifford Possum Tjapaltjarri’s art dealer, no works by the artist were offered for sale, precluding any analysis. This absence may or may not be significant — collectors are known to withdraw artworks from auction when there is concern about negative outcomes (unsold works or prices below estimate).

Although we lacked sufficient works for TTT to estimate a detailed model for the impact of news stories on sales of his work, we conducted a simple analysis using a binomial distribution. The clearance rate for his artworks before the news window was 62.37%. Focusing on the auctions held on 20 April 1999, six of his artworks were offered, and none sold. Using a binomial distribution, the probability of zero sales from six offered, is 0.0028. Second, across the entire news window (April 17–May 1), nine artworks created by Turkey Tolson Tjupurrula were offered, and two sold. Again, using the binomial distribution, the probability of only two

³ The model specification results presented in this paper were determined using likelihood-ratio or F-tests for restricted versions of the full model containing both news variables and associated interaction terms. These test results are available, on request, from the corresponding author.

sales 0.0150. Third, a sharp contrast is seen in the three auctions taking place after 20 April 1999 (26 April, 27 April, and 2 May). In those later sales, two of three artworks by Turkey Tolson Tjupurrula sold, yielding a probability of 0.4391. This provides suggestive evidence about the clearance impacts of the attribution stories being concentrated in the two auctions held on 20 April 1999, i.e., concurrent with the follow-up article in *The Sydney Morning Herald*.

4.1.2 Stigma transfer to other artists: Auction clearance

Next, we analyzed the clearance process for all artists in our database (H2A, H2B), enabling the use of the full model (Table 5) for the sales clearance rate.

Table 5: Binomial Regression Estimation Results for Sales Clearance

Variable	Coefficient	s.e.	
Pre-Sale Estimated Sales Value	−0.0811	0.0691	
Pre-Sale Estimated Sales Value squared	0.0054	0.0047	
Equivalent # of auction houses last quarter	−0.2134	0.0767	***
ln(All Ordinaries Index)	−3.7684	0.9770	***
# Artists offered for sale	0.0113	0.0043	***
# Artists offered for sale squared	−0.0001	0.0000	***
Auction House			
<i>Base: Other Auction Houses</i>			
Christies	0.2130	0.5136	
Deutscher-Menzies	0.9691	0.5536	*
Goodman's Auctioneers	−0.0135	0.5110	
Lawsons	0.7277	0.5013	
Leonard Joel	0.3620	0.4962	
Philips Auctions Australia	−1.6179	0.5392	***
Phillips Auctions International	−0.0433	0.5373	
Sotheby's Australia	0.8841	0.5337	*
Theodore Bruce	1.3017	0.6113	***
Artist Type			
<i>Base: Other Indigenous</i>			
Western Desert	−0.0646	0.1321	
Hermannsburg	0.7980	0.1479	***
Turkey Tolson Tjupurrula News			
In Window	−0.0222	0.3521	
In Window and Western Desert	−1.1730	0.4641	***

In Window and Hermannsburg	−0.1802	0.5155	
Constant	30.3946	7.7949	***
Number of observations	1,998		
log-pseudolikelihood	−1616.245		
Deviance	2755.01		
Degrees of freedom	21		

Robust standard errors presented.

The results for the sales clearance model show the importance of controlling for auction house, with Phillips Australia having a negative effect and Theodore Bruce a positive one. The model also reveals the negative impact on similar artists from the Western Desert region and the lack of impact on the Hermannsburg School. From these results, we calculated the odds ratios and clearance probabilities by artist type for the news window (Table 6).

Table 6: Odds ratios and clearance probabilities for Turkey Tolson Tjupurrula News

	Odds Ratio	Clearance Probability
Western Desert	0.2837	0.2210
Hermannsburg	1.8141	0.6446
Other Indigenous	0.9780	0.4944

The genre (category) comparison shows a low clearance probability (22%) for Western Desert region artists, in contrast to other Indigenous artists (49%). Hermannsburg watercolors had a strong probability of sale (64%). This suggests support for our hypotheses about stigma contagion among artists in the same style (H2A) and suggests stronger stigma transfer within the Western Desert style (H2B). Additionally, the positive clearance rates for Hermannsburg School artists indicate that misattribution stigma did not spread to this genre (H3).

4.1.3 Stigma transfer to other artists: Realized sales value

Finally, we analyzed the realized sales value for artists whose works sold. Similar to the clearance process, we observed the impact of control variables, with Phillips auction house having a strong negative effect, particularly for international sales.

Table 7: Multiple Regression Estimation Results for Realized Sales Value

Variable	Coefficient	s.e.	
Pre-Sale Estimated Sales Value	1.0387	0.0458	***
Equivalent # of auction houses last quarter	98.7624	51.9518	*
ln(All Ordinaries Index)	-1185.8850	496.6208	***
Auction House			
<i>Base: Other Auction Houses</i>			
Christies	-11.7891	235.2113	
Deutscher~Menzies	-51.1817	99.2300	
Goodman's Auctioneers	-1.4754	73.0250	
Lawsons	-13.9555	60.7415	
Leonard Joel	-4.0451	54.1505	
Philips Auctions Australia	-247.5888	146.8927	*
Phillips Auctions International	-477.0934	96.8149	***
Sotheby's Australia	218.3919	124.7236	*
Theodore Bruce	-54.9351	62.2868	
Clifford Possum Tjapaltjarri Dealer Arrest			
In Window	-168.8800	66.8338	***
Constant	9213.5270	3991.6100	***
Number of observations	1,415		
Adjusted R-squared	0.8737		
F- Statistic (13, 1401)	185.84		

Robust standard errors presented.

The arrest of Clifford Possum Tjapaltjarri's dealer, John O'Loughlin, precipitated a decrease in the realized sales value of Western Desert artists' works by \$168.88 (10.27%). This fits our model of misattribution scandal news transferring stigma to other artists. We further decomposed this decline by artist type in the news window, finding that sold works by Western Desert artists saw a drop of \$106.70, Hermannsburg artists by \$8.90, and other Indigenous artists by \$53.30. These values reflect only the sold artworks by artist, but we adjusted for the probability of sale using the clearance rate for all artists during the window (54.28%). This adjustment yielded an expected fall in value as the clearance probability x value fall given sales. So, in contrast to the realised sales, total expected value fell by \$91.70 (5.58%).

4.2 Sensitivity to model specification

In this section, we investigate the potential sensitivity of our results to the model specifications chosen, including the binomial regression for the clearance process and a regression model for realized sales value. We first examine the clearance model, then the

realized sales value model, and finally the assumption in our approach that the two can be considered separately.

4.2.1 Clearance process

Our chosen specification, a binomial regression, models the probability of obtaining j sales from k works offered for sale. To assess the sensitivity of this choice, we also considered using a Poisson regression model for j sales with an exposure variable, incorporating the number of works offered. Our estimation results are presented in Table 8.

Table 8: Poisson Regression Estimation Results for Sales Clearance

Variable	Coefficient	s.e.	
Pre-Sale Estimated Sales Value	−0.0245	0.0199	
Pre-Sale Estimated Sales Value squared	0.0016	0.0013	
Equivalent # of auction houses last quarter	−0.0592	0.0200	***
ln(All Ordinaries Index)	−1.0372	0.2603	***
# Artists offered for sale	0.0033	0.0010	***
# Artists offered for sale squared	−0.00002	0.0000	***
Auction House			
<i>Base: Other Auction House</i>			
Christies	0.0215	0.1862	
Deutscher~Menzie's	0.2954	0.1817	
Goodman's Auctioneers	−0.0421	0.1814	
Lawsons	0.2019	0.1729	
Leonard Joel	0.1121	0.1733	
Philips Auctions Australia	−0.8307	0.2286	***
Phillips Auctions International	−0.0734	0.1967	
Sotheby's Australia	0.2755	0.1784	
Theodore Bruce	0.2843	0.1753	
Artist Type			
<i>Base: Other Indigenous</i>			
Western Desert	−0.0274	0.0397	
Hermannsburg	0.2281	0.0419	***
Turkey Tolson News			
In Window	−0.0057	0.1461	
In Window and Western Desert	−0.6954	0.2635	***
In Window and Hermannsburg	−0.0307	0.1725	
Constant	7.7358	2.0795	***
Number of observations	1,998		

log-pseudolikelihood	−2183.84
Wald chi-squared test	198.80
Degrees of freedom	20

Robust standard errors presented.

The results are consistent with those from the binomial regression model shown in Table 5. This consistency suggests that our findings regarding the clearance process are robust to model specification.

4.2.2 Realized sales value

Auction sales values typically exhibit skewness and heavy tails (high kurtosis), as is the case with our data (see Table 2). Such characteristics can significantly affect the results of a least squares estimation in linear regression models (Farrell & Fry, 2017). To assess the sensitivity of our results in Table 7, we used a simultaneous quantile regression for the lower quartile (Q25), median (Q50), and upper quartile (Q75), with results presented in Table 9.

Table 9: Quantile Regression Estimation Results for Realized Sales Value

	Coefficient	s.e.	
Lower Quantile (Q25)			
Pre-Sale Estimated Sales Value	0.7994	0.0137	***
Equivalent # of auction houses last quarter	−0.2152	2.6668	
ln(All Ordinaries Index)	−4.8267	48.0038	
Auction House			
<i>Base: Other Auction House</i>			
Christies	−18.2593	40.9496	
Deutscher~Menzie's	−68.1901	19.5790	***
Goodman's Auctioneers	−4.1951	10.6651	
Lawsons	−0.1399	9.7588	
Leonard Joel	−0.3911	7.9133	
Philips Auctions Australia	−47.7849	52.6688	
Phillips Auctions International	−81.5826	42.4025	*
Sotheby's Australia	15.5119	12.5432	
Theodore Bruce	−26.3923	13.3370	**
Clifford Possum Arrest			
In Window	−23.2717	27.1498	
Constant	23.7817	385.8064	
Median (Q50)			
Pre-Sale Estimated Sales Value	0.9144	0.0226	***
Equivalent # of auction houses last quarter	0.4642	2.7074	

ln(All Ordinaries Index)	-52.8307	37.6594	
Auction House			
<i>Base: Other Auction House</i>			
Christies	-28.7223	74.5271	
Deutscher~Menzies	-63.2593	16.7269	***
Goodman's Auctioneers	-7.6559	8.4936	
Lawsons	1.3619	7.6344	
Leonard Joel	4.0761	8.1344	
Philips Auctions Australia	-18.7939	19.5757	
Phillips Auctions International	-167.8479	53.7052	***
Sotheby's Australia	60.8129	27.4847	**
Theodore Bruce	-20.0431	9.3119	**
Clifford Possum Arrest			
In Window	-22.8679	13.7567	*
Constant	411.0994	297.3225	
Upper Quartile (Q75)			
Pre-Sale Estimated Sales Value	1.1878	0.0572	***
Equivalent # of auction houses last quarter	5.4906	5.4614	
ln(All Ordinaries Index)	-236.0173	55.4200	***
Auction House			
<i>Base: Other Auction House</i>			
Christies	72.9629	169.5908	
Deutscher~Menzies	-25.7895	49.3638	
Goodman's Auctioneers	4.0358	46.9193	
Lawsons	12.8204	45.5343	
Leonard Joel	7.9626	45.1700	
Philips Auctions Australia	-26.5549	44.9878	
Phillips Auctions International	-176.4812	85.2943	**
Sotheby's Australia	83.1362	100.8238	
Theodore Bruce	-13.0918	46.2781	
Clifford Possum Arrest			
In Window	-28.3526	34.8293	
Constant	1851.9650	442.2479	***

Q25 Pseudo R-squared 0.6338

Q50 Pseudo R-squared 0.7016

Q75 Pseudo R-squared 0.7530

Bootstrap standard errors presented.

These results show different impacts of the control variables across the quantiles. For instance, the stock market is significant only for the upper quartile, indicating that shares as an alternative investment matter most at the high end of the market. In terms of the impact of Clifford

Possum's arrest, although there is an estimated fall in average realised sales value for Q25, Q50, and Q75, it is only weakly significant at the median (Q50). This contrasts with the earlier regression model estimation that the arrest was associated with a statistically significant fall in value. Thus, our finding that a fall in value is associated with the arrest is sensitive to model specification. This suggests that our finding on the impact of the arrest is only weak evidence of a fall in value.

4.2.3 Independence of the two models

Our previous models treated the clearance and value models separately, assuming that the value model is conditionally independent of the clearance process. We tested this assumption using a Heckman model (Heckman, 1976, 1979). This approach uses less information about the clearance process than our binomial and Poisson models, as it only considers whether any works sold rather than the number of sales from k works offered. Our results are presented in table 10 below.

Table 10: Heckman Model Two-Step Estimates

Variable	Selection Component		
	Coefficient	s.e.	
Pre-Sale Estimated Sales Value	0.3586	0.0935	***
Pre-Sale Estimated Sales Value squared	-0.0129	0.0126	
Equivalent # of auction houses last quarter	-0.0997	0.0437	**
ln(All Ordinaries Index)	-1.8190	0.5567	***
# Artists offered for sale	0.0110	0.0029	***
# Artists offered for sale squared	-0.0001	0.0000	***
Auction House			
<i>Base: Other Auction House</i>			
Christies	0.3410	0.2831	
Deutscher~Menzies	0.7238	0.3016	**
Goodman's Auctioneers	0.0507	0.2784	
Lawsons	0.4998	0.2569	*
Leonard Joel	0.3094	0.2616	
Philips Auctions Australia	-0.8161	0.2814	***
Phillips Auctions International	0.1963	0.2899	
Sotheby's Australia	0.6048	0.2987	**
Theodore Bruce	1.0718	0.3684	***
Artist Type			
<i>Base: Other Indigenous</i>			
Western Desert	-0.1038	0.0752	

Hermannsburg	0.7413	0.1037	***
Turkey Tolson News			
In Window	-0.2956	0.2040	
In Window and Western Desert	-0.3607	0.2743	
In Window and Hermannsburg	0.1935	0.3695	
Constant	14.3977	4.4591	***
Regression Component			
Pre-Sale Estimated Sales Value	1.0367	0.0117	***
Equivalent # of auction houses last quarter	104.6754	41.4026	**
ln(All Ordinaries Index)	-1075.9680	548.0369	**
Auction House			
<i>Base: Other Auction House</i>			
Christies	-9.7312	331.1195	
Deutscher~Menzies	-78.3507	302.2599	
Goodman's Auctioneers	-13.4531	323.7006	
Lawsons	-37.9926	302.5509	
Leonard Joel	-33.8525	304.8253	
Philips Auctions Australia	-158.7062	397.8105	
Phillips Auctions International	-467.7680	327.5245	
Sotheby's Australia	180.7252	301.0422	
Theodore Bruce	-109.2345	359.6751	
Clifford Possum Arrest			
In Window	-150.3629	294.7901	
Inverse Mills Ratio	-128.0949	210.1240	
Constant	8404.7220	4391.0590	*

The signs of the estimates and their significance align with our earlier results, though significance for the test variables is reduced. However, the critical factor in determining the appropriateness of the Heckman model is the presence of bias. The potential selectivity bias and associated lack of independence between the clearance (Sold (Y/N)) and value components is captured by the inverse Mills ratio. This ratio was statistically insignificant, indicating that our assumption in the modelling above that the two processes are independent is supported, and that our previous results are robust to model specification.

5. Discussion and Conclusion

We theorized the concept of misattribution stigma to better understand the harms to an artist's perceived value due to misattribution, emphasizing the importance of authenticity as a necessary condition for art to achieve high financial value. Similar to other industries, we found that stigma is spread to relevant audiences by key arbiters of value, such as journalists (Hsu et al., 2012; Pénét & Lee, 2014; Wiesenfeld et al., 2008). Misattribution stigma can harm the

value of an artist's work, as shown in the reductions in hammer price and clearance rate, and this stigma can also transfer to other artists in the same category. We see not only the influence of stigmatizing labels, but also stigma by association, as in the case of family attribution. However, as we discuss, stylistic boundaries can moderate the spread of stigma transfer. This deepens our understanding of the mechanisms underlying harms to perceived value and suggests questions for future research.

5.1 How misattribution stigma impacts the value of other works by focal artists

First, our analysis of attribution scandals involving two key Aboriginal artists suggests that misattribution stigma is a clear negative driver of perceived value, evidenced by a fall in expected auction hammer price and clearance rate for the affected artists. Our findings on the negative impact of news stories about fakes add to the existing literature on valuation effects (Bocart & Oosterlinck, 2011). We found misattribution stigma in both realized sales and clearance rates. While some artworks may have been withdrawn prior to auction to avoid unsold works, manual checks of selected paper catalogs from the time did not reveal any immediate concerns. Moreover, while both of our cases began with stories in national paper *The Australian*, one question for future research is whether more frequent media coverage increases the harm to value, as articles in widely read publications are likely to have a greater impact.

Our concept of misattribution stigma, arising from the influence of key arbiters like journalists (Hsu et al., 2012; Wiesenfeld et al., 2008), also explains the impact of misattribution scandals on Turkey Tolson Tjupurrula. The effect on both clearance rate and hammer price suggests that even non-expert media coverage can have significant valuation effects, as it is often indistinguishable from expert opinion. Our findings extend the work of Pénet and Lee (2014), complementing their finding that news coverage boosts valuation due to positive events like prizes, with the point that news coverage also lowers valuations in response to negative events like attribution scandals. Given our historical dataset, one avenue for future research is to explore whether misattribution stigma holds if rumors circulate via social media platforms like Facebook, or whether more prominent arbiters like journalists are necessary for the effect.

Future research could also delve into the specific mechanisms through which misattribution stigma harms the perceived value of an artist's work. Is the effect driven by a fear of financial loss due to potential misattribution, or is there additional nuance, such as

concerns about reputational damage (Robertson, 2005; Runhovde, 2020) and stigma transfer to buyers? Buyers may be motivated to avoid being tainted by association with problematic works (Pontikes et al., 2010). Additionally, our focus on newspaper articles may have overlooked key evaluations by critics (Hsu et al., 2012) that circulated among art market insiders. Our finding of differential impacts across auction houses, as noted by Bocart and Oosterlinck (2011), also merit further exploration.

5.2 Misattribution stigma contagion and its boundaries

Our findings show that misattribution stigma can transfer to similar artists in the Aboriginal art market. The decline in realized sales prices and expected value (including unsold pieces) supports the notion that news about fakes and forgeries not only affects the focal artist but also impacts artists in the same category. This categorical finding about the limits of stigma transfer in the art market highlights the importance of stylistic groupings.

Future research could explore the mechanisms of stigma transfer in more detail. Is stigma transferred through cognitive grouping within a stigmatized category (Durand & Vergne, 2015), or does it spread through association (Pontikes et al., 2010), potentially because intermediaries mention prior scandals in new cases? The latter point could be tested using lexical methods as we observed this pattern in our qualitative review of articles. .

Another stigma transfer mechanism relates to valuation methods, since sales results for similar artists often serve as comparables in future sales (Scorcu et al., 2021; Velthuis, 2003). There is growing interest in art as an investment (Bocart & Oosterlinck, 2011; McAndrew, 2010; McAndrew & Thompson, 2007), and our findings align with the notion that art buyers use art as a hedge against market volatility (Goetzmann et al., 2011; McAndrew, 2010; McAndrew and Thompson, 2007; Mei & Moses, 2002). The inverse relationship between the Australian All Ordinaries index and both realized sales value (Table 7) and clearance rate (Table 5) confirms this view. Moreover, some news articles referenced art investment in connection with the Clifford Possum arrest news.

Finally, our data highlights the limits of stigma transfer. Artists from the Hermannsburg School were not affected by misattribution stigma originating from our inciting Western Desert artists, as evidenced by stable clearance rates and average prices. Questions remain about how stigma boundaries are drawn, as our study found a clear stylistic limit, but both socially constructed and perceptual boundaries influence perceptions of value (Sgourev & Althuizen,

2017). Future research could investigate the specific boundaries and mechanisms that prevent stigma transfer, using methods like buyer interviews or card-sorting tasks (Pachucki, 2012).

5.3 Stigma redefinition: Skin names as normal practice in Aboriginal art

Our data also allow us to begin theorizing the differential impacts of misattribution stigma in relation to cultural differences in attribution, particularly the accepted Aboriginal art practice of allowing authorized family members to "paint the Dreamings" and sign the focal artist's name (Johnson, 2006). Similar to the Western studio system, as seen with both Old Masters and contemporary artists, this practice should only minimally affect the financial value when authorized family members create the artworks, and show only a value decrease rather than stigmatization or stigma transfer.

The attribution scandals involving our two focal artists differed significantly. The scandal around works attributed to Clifford Possum Tjapaltjarri was a "true scandal," with his art dealer later arrested for forgery. In contrast, the controversy surrounding works attributed to Turkey Tolson Tjupurrula that, which were found to be painted by family members, was more of a temporary scandal. This episode helped educate the public about the allowed family attribution system in Aboriginal art. The media attention enabled the stigma to be openly addressed, and cultural and historical narratives were invoked to mitigate the stigma (Grolleau et al., 2020; Smith et al., 2021). While both artists experienced short-term valuation impacts, this case offers insights into the dynamics of misattribution stigma and its boundaries, at least in terms of perceived value. More broadly, the process of detaching stigma from family attribution resembles how other cultural products have reshaped categories to cast off stigma and achieve higher valuation, seen in the examples of wine and MMA (Fitzmaurice, 2017; Helms and Patterson, 2014). As our data are limited, this point should be examined further in future research.

5.4 Conclusion and practical implications

We argue that stigma and its transfer deserve further consideration by cultural economists in art and other contexts. Stigmatization may help explain the valuation impacts of other "black marks" in the art market, including lower-than-expected auction prices for other works by the same artist (Velthuis, 2003), artists who are "dumped" by key collectors (Coslor et al., 2020), and rumors of stolen artwork (Runhovde, 2020).

In our theorization of misattribution stigma, we believe that cultural markets and other markets characterized by fundamental value uncertainty (Geismar, 2008; Karpik, 2010; Peterson, 1997; Podolny, 1994; Velthuis, 2003) are particularly vulnerable to value damage from misattribution stigma and its contagious effects across actors and levels. The "taint" of misattribution may persist or be renewed even after events have been resolved.

Furthermore, the art market is one where "consumers conceal their errors to protect their reputation" (Robertson, 2005), another example of aversive behavior in response to the threat of stigma transfer from artistic misattribution. Stigma transfer considerations also apply to other cultural markets. For instance, questions about the true authorship of a song or autobiographical manuscript can have negative effects on both reputation and valuation. In fact, Victorian-era record companies strategically used pseudonyms to avoid stigma transfer and valuation harm from being associated with popular jazz music (Phillips & Kim, 2009). The issue of family attribution in Aboriginal art offers an interesting comparison to the more studied Western studio system, where the practice should not be tainted with misattribution stigma but was treated as such by some journalists.

Finally, while we focused on a case where stigma had negative impacts, it is important to acknowledge that stigma can have positive implications in other contexts. For example, avant-garde artworks may benefit from associations with stigmatized topics, despite censure from certain audiences. Another area of interest for cultural economists could be how stigma influences the inclusion or exclusion of artists within specific genres.

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