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REVIEW

Wine fraud

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Abstract: Wine fraud may take several forms, of which two are discussed here: consumption fraud aimed at the wine market in general, and collector fraud aimed at the very top of the wine market. Examples of wine fraud past and present are given, and a suggestion about the extent of contemporary consumer fraud in Europe is provided. Technological possibilities for future detection and prevention of both forms of wine fraud are discussed.

Keywords: adulteration, counterfeit, detection

"As it is, even the rich never drink it in an unsophisticated state; the morals of the age being such, that it is the name only of a vintage that is sold, the wines being adulterated the very moment they enter the vat."

Pliny the Elder (23–79 AD)[1]

Introduction

In 1985, at an auction at Christie's in London, a single bottle of wine fetched the record price of £105,000 from a private collector. The wine bore no label, but the inscription "Lafitte 1787 Th.J." was etched on the bottle. To connoisseurs, this inscription indicated that the bottle had belonged to the American president Thomas Jefferson, who had a reputation as an avid and knowing wine collector and drinker. Jefferson had spent some years in Paris and he was especially interested in French wine; during his first presidency (1801–1805), he spent US$7,500 on wine alone – an amount that equals US$120,000 in today's prices.[2]

In the years following the Christie's auction, another wine collector, Bill Koch, bought four other bottles bearing Jefferson's initials, spending a total of about half a million US dollars. In addition to wine, Koch collected antiquities and art. In 2005, he was approached by a museum wishing to exhibit parts of his collection, including the wines. In preparation for this exhibition, Koch sought to document the provenance of the bottles, but soon realized that something was wrong. The first of the "Jefferson bottles" had already been examined by a curator at the Thomas Jefferson Foundation, and the results were disappointing: Jefferson kept meticulous records of his wine purchases and a close scrutiny of these records revealed that Jefferson had only ordered some of the brands of wine now offered up for sale as being his. Furthermore, Jefferson usually ordered his wine marked "T.I.", while sometimes using the initials "TJ" or "Th.J" – in fact, he never used "Th.J". There were several indications that the bottles were frauds.[3]

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Consumption fraud and collector fraud

Wine fraud is, by most accounts, an extensive problem. Most research on the subject, however, is focused on possibilities for fraud detection and conducted within the chemical sciences, whereas more general research on the nature and extent of wine fraud is limited. This paper aims at providing the reader with an overview of the most common forms of wine fraud and the possibilities for prevention.

As is the case with other consumer goods, wine production and distribution offer possibilities for tax-evasion and evasion of other duties through fraudulent documentation, smuggling, etc. Such forms of fraud, directed at the state and its fiscal agencies, are not the subject here. Instead, the article will focus on the kinds of fraud that are directly aimed at the buyer's level: attempts at misleading the wine drinker (and/or wine collector) into believing that he or she has bought a different/better product than is actually the case.

Adulteration – in earlier times also known as "sophistication" – is the common word for many kinds of food and beverage fraud. Wine adulteration can be committed through dilution with water, addition of alcohol or other substances, and blending with, or replacement by, wine of a lesser quality. Apart from such adulteration, wine fraud can be committed through misinformation about the wine, such as mislabeling.

Wine fraud can be categorized in several ways. Charters[4] labels different kinds of behavior as being legal, unhelpful, misleading, or outright illegal, but he also differentiates between kinds of fraud perpetrated against consumers and those primarily harming other producers. He does not, however, differentiate between different kinds of consumers.

From a historical point of view, the victims of wine fraud were almost invariably the end consumers: people who bought the wine in order to drink it. In this paper, fraud aimed at the general consumer level and involving larger quantities of wine will be called "consumption fraud".

Within the last 25–30 years, the market for old and rare wines has expanded tremendously; buyers most often being wine collectors who do not always intend to drink the wine. Wine has become an investment, and the expanding market and the rising prices have made tampering with single bottles a lucrative enterprise. Here, this kind of fraud will be called "collector fraud". Both kinds of wine fraud have their distinctive characteristics, just as there are different possibilities for their prevention in the future.

Consumption fraud – historical and contemporary examples

As can be seen from the quotation at the beginning of this paper, problems with consumption fraud go back a very long time. According to Eisinger,[5] the practice of correcting wine with sapa – grape juice reduced to one-third of its original volume through boiling in a lead vessel – was popular among winemakers in the Roman empire (though not necessarily among their customers). The addition of such lead-infested syrup to the wine not only sweetened it, it also made the wine keep longer. The adding of lead to wine was widespread well into the 17th century, causing severe lead poisoning among wine drinkers all over Europe; in France, the syndrome was known as colica Pictonum, or the colic of Poitou, and in England as the Devonshire colic. Based on experimental evidence, Eisinger estimates that the lead content of wine could easily reach 20 mg/L, a highly poisonous level, given that a daily intake of 0.5 mg is considered to cause chronic lead poisoning. The etiology of the colic of Poitou was discovered by Eberhard Gockel, the City physician of Ulm in Germany, in 1696, but Eisinger cites evidence that sweetening wine with lead was practiced in France as late as 1884.

Lead was not the only additive used in adulteration however. In England, on November 8, 1327, King Edward III, in a letter to the mayor and the sheriffs of London, complained that the city's "vintners and taverners mix weak and corrupt wine with other wine and sell the mixture at the same price as good and pure wine, not allowing their customers to see whether the wine is drawn in measures from casks or otherwise …".[6]

As a preventive measure, English tavern-keepers were ordered to keep their barrels visible to the customers in order to keep them from tampering with the wine while drawing it.[7] In 1419, William Horold, from Hampton, England, was sentenced to the pillory for "fals Romeney"; that is, the counterfeiting of Greek wine.[8]

Wright,[9] in an extensive essay on port wine and the art of detecting adulteration in wine, recounts how on one autumn day in London, 1794, approximately 300 pipes (one pipe contained approximately 480 liters) of port wine was sold to be used by the army, the navy, and a number of hospitals. The price per pipe was £35, but the purchase price in Portugal with the addition of freight, insurance, and customs duty amounted to at least £45 per pipe. Thus, the conclusion was straightforward: the pipes did not contain (pure) port wine. Wright goes on to describe how most wines, including Burgundy and Champagne, had an estimated life of 2–3 years in the bottle. Port was not expected to be drinkable much more than 12 years after the harvest, whereas Madeira had a life expectancy of up to 60 years. Adding brandy to the wine would prolong its life and was thus one of the most common forms of adulteration, but Wright lists a number of other possible adulteration methods, including the adding of

white wine or other wine, and keeping bottles in hot cellars in order to start a bottle fermentation that would increase the alcohol content in the wine.

Simpson[10] describes how, in the latter part of the 19th century, inferior wine imported to Britain from Europe was subsequently shipped to Cadiz in Spain, only to be shipped back again labeled as high-quality sherry. Some "sherries" did not contain wine at all; instead, they were produced using industrial alcohol mixed with other ingredients.

Early examples of wine fraud can be found in German history, too. In 1482, a wine grower from Biebrich was sentenced to drinking one and a half liters of his own, adulterated wine, resulting in his death.[11] In other parts of Europe, however, German wine was considered to be of the best quality and thus the substance to be protected. The Danish King Christian II (1481–1559) thus ordered his German wine to be kept secluded from the rest of his wine cellar in order to prevent mixing.

Stanziani[12] offers a detailed account of the extent of wine adulteration in 19th century France. Methods here included adding plaster to wine in order to make it keep during long trips, and Stanziani argues that milder forms of adulteration were generally accepted by the public, partly due to an increasing demand for wine consumption. At the time, according to Fielden,[13] it was common practice to blend Bordeaux wines with wine from other parts of France. In some cases, this was openly acknowledged, such as adding minor quantities of Hermitage to top wines such as Lafite; in other cases, it was done secretly. Similar problems were found in Bourgogne.

Consumption fraud in recent times

In Germany in recent time, the problem of wine fraud has received a lot of interest. The German *Wein-Staatsanwalt* is a public prosecutor who exclusively prosecutes violations of the wine laws.[14] In a dissertation on wine crime, Nauth[15] concluded that wine fraud amounts to organized crime, even though the existence of a hierarchical, mafia-like organization behind the fraud could not be proven:

> "All wine crime is organized, that is, it is committed by several perpetrators acting in knowing and willful collaboration. This does not imply that any detailed plan of action exists. A quiet agreement is usually enough" (p 175, author's translation).

Nauth described four different kinds of fraud:

1. The "chain of bills": A buys a shipment of cheap wine, either from Germany or somewhere else, typically paying in cash. The wine is then resold to B (who knows of the actual quality of the wine), disguised as wine of a better classification and thus fetching a higher price. B raises the classification once more and then sells the wine to C (who is in on the fraud, too), and finally C puts the wine on the retail market. The many links in the chain, and the stepwise "quality enhancement" makes it possible for each of the participants to claim innocence as to the real quality of the wine, while at the same time making it very difficult for the authorities to investigate the swindle.
2. The criminal import: Foreign grape must is used to produce wine in Germany (an illegal act according to the German wine law, §14), and is treated in a way that makes it look and taste like German wine, feigning "the fine, ripe acidity that is one of the most distinctive features of German wine" (p 172, author's translation).
3. The production and sale of "artificial wine" based solely on additives and water.
4. "Weinverbesserung"; that is, wine enhancement, most often accomplished by adding sugar, other sweeteners, and/or other aromas to the wine, or through blending with sweeter, foreign wines.

In a paper on Hungarian wines, Mikulás[16] lists similar types of fraud. Mislabeling bottles regarding their origin, classification, and vintage seems to be the most common type of fraud, and according to Mikulás, it is often committed after the wine has left Hungary.

Arguably, the most well known wine fraud in recent times is the so-called glycol-scandal from Austria. In 1985, it was revealed that about 70 wine producers had added diethyleneglycol to their late-harvested, sweet wines. Traces of diethylene glycol were subsequently found in a number of German wines, too, hinting that these had been illegally blended with Austrian wine. According to Fielden,[13] the common perception of the "antifreeze scandal", as it is often called, is wrong on two counts: first, diethylene glycol is not commonly used as an antifreeze (ethylene glycol is), and second, the addition of diethylene glycol did not in itself sweeten the wines. Instead, it masked the addition of sugar to the wine, thus making it very difficult to trace in analysis. The adulteration did not pose any health hazard, but the scandal had grave consequences for the Austrian wine industry. Whereas consumers were the immediate victims of the fraud, the implications were in fact much more grave for the many Austrian wine producers who did not partake in the adulteration, since the general reputation of Austrian wine suffered tremendously. In the aftermath of the scandal, the Austrian wine export was nearly wiped out, and the Austrian wine legislation was substantially tightened. Paradoxically, some Austrian wine growers believe that the scandal did a lot of good for the Austrian wine industry in a longer perspective, since the quality is much better today.[17]

The worldwide publication of the Austrian scandal overshadowed somewhat another, and actually much more serious, adulteration incident from Italy. Here, some growers added wood alcohol to their wines, causing several deaths among consumers. In the wake of this affair, two cases were heard by the European Court of Justice: one was brought against the producers by the descendants of four persons who suffered death after drinking the wine; the other was brought against the Commission of the European Communities by a number of importers of Italian wine. In the latter case, the plaintiffs argued that the Commission – by reacting too slowly and by not revealing the names of the producers involved in the adulteration – bore responsibility for the deteriorating reputation of all Italian wine (instead of just the wines involved in the scandal) after the incident; and thus also for the reduced sales suffered by the plaintiffs. The Commission, however, was exonerated on the grounds that "the Commission is under no obligation to publish the identity of traders who may be involved in scandals. The information system established to detect fraud and irregularities in the wine sector and to avert dangers which might arise from the use of consumable products leaves it to the national authorities to take steps to inform the consumer".[18]

In the year 2000, almost 20,000 bottles of the so-called cult wine Sassicaia from Tuscany were exposed as frauds, and more recently it was revealed that large quantities of Barolo, Amarone, and Chianti, sold to Italian restaurants in Germany, did not contain what was claimed on the bottle.[19] In the autumn of 2009, local authorities discovered that, over the last years, more than a million bottles of adulterated Amarone has been distributed by an Italian wine producer.[20]

France has had its share of incidents. One of the more well known is that of the owners of Chateau Pontet-Canet who, in 1973, were discovered blending Rioja wine with their own, and passing the mixture as quality Bordeaux. Around the same time, the House of Cruse, merchants in Bordeaux, were discovered to have sold wines from the Midi as wines from Bordeaux.[13,21] Similar cases have occurred in Burgundy, including the renowned wine merchant Georges Duboeuf. In a case from 2004, the owners of the Chanson company were imposed a fine of €40,000 and a suspended sentence of prison for 1 year for the crime of having mixed wine from other appellations with their AOC Bourgogne. The adulteration was discovered by Bollinger employees when this company took over Chanson.[22]

In 2009, French authorities discovered that substantially more Pinot Noir wine was exported from the Aude region of Languedoc-Roussilion than was actually produced in the area.[23]

Prevention of consumption fraud

The above list of recent frauds is far from exhaustive. It does demonstrate, however, that the most common frauds are variations of what Nauth[15] labels as type 1; that is, the sale of wine of lesser standard than that indicated on the label. A major reason that this kind of fraud is possible is the fact that it is very difficult to identify wines in blind tastings, even for "professional" wine tasters.[24,25] A study of wine judges' performance at a US tasting demonstrated that only half of the judges were consistent in their judgments when presented with the same wine three times during a blind tasting.[26] If this finding reflects wine judges' capabilities more generally, it is not surprising that most ordinary wine consumers lack the skills to detect more subtle discrepancies between what is in the glass and what is indicated on the bottle. Furthermore, some research suggests that non-expert wine drinkers actually tend to prefer less expensive wines to more expensive ones.[27] Apart from the fact that a mislabeled wine may thus have a taste well suited to most consumers' tastes, an expensive wine may get a better appreciation from its price alone; in blind tastings, experimental subjects rate the same wine differently when it is presented with a different price tag: the higher the alleged price, the higher the rating.[28] Somewhat similar results are reported by Almenberg and Dreber,[29] but in this study, a correlation between price and rating was only demonstrated in female subjects – men were unaffected.

Finally, it should be noted that enjoyment of wine is also influenced by the circumstances surrounding consumption: the look of the bottle, the temperature of the wine, the accompanying food, the ambiance of the occasion, the level of intoxication, etc. Given all these confounding factors, it is unlikely that consumption fraud will be detected though complaints from consumers.

An interesting problem arises when thinking about wine fraud at the consumer level: as long as counterfeit wine goes undetected, the victims (excluding the honest wine producers who may loose market shares to false wines), may not really be victimized at all. With the exception of wines adulterated with substances hazardous to the drinker's health, consumers are not necessarily hurt by wine fraud. As long as they believe the wine in their glass to be of satisfactory quality, they may also perceive it to be so. Thus, we are faced with something of a paradox: when authorities detect and expose counterfeit wine, they may cause harm to those same wine

consumers they are trying to protect, actually creating a sense of victimization.

The extent of consumption fraud

It seems fair to assume that consumption fraud has a substantial "dark figure"; that is, undetected and/or unreported fraud. One way to estimate this is to compare the efforts undertaken by the control apparatus with the amount of counterfeit wines discovered; what is the ratio of inspections to counterfeits detected? Here, Germany will be taken as an example: the Landesuntersuchungsamt (LUA), an inspectorate overseeing food, medicine, and animal welfare, publishes a yearly report on its findings. In 2002, a total of 6443 wines were tested, a number that declined to 4420 in the year 2008. There is no clear trend in the percentage of sampled wines found to be defective: in the period 2002–2008 it varies from a high of 27.1% (in 2007) to a low of 17.6% (in 2008). This percentage, however, is misleading, since it includes a lot of different infringements (tax evasion, defective declarations of legal additives, etc) that have nothing to do with the kinds of wine fraud discussed here. The LUA reports, however, contain data that make it possible to estimate the number of adulterated wines being detected.[30] In the period 2002–2008, 4% of the tested wines were found to contain illegal additives, including water, (illegal) sugar, aromas, and glycol (see Table 1).

As shown in Table 1, wines of non-German origin are approximately twice as likely to be found defective as are German wines. Furthermore, the percentage of defective wines seems pretty stable over time (excluding non-German wines 2004–2006).

Given the fact that Germany's share of the world wine market is modest (4% in 2007),[31] the percentage of adulterated wines sold in other European countries should at least equal the percentage found by the LUA in non-German wines. Furthermore, Germany has some of the strictest wine legislation and the most comprehensive control systems in Europe, a fact that is hardly unknown in the wine business. Therefore, it seems plausible to assume that perpetrators of wine fraud will tend to choose other European countries – with less strict wine control systems – as their primary markets. In such countries, a possible estimate would be that up to 10% of the wines offered to consumers are of lesser quality than touted on the label.

Detection of consumption fraud

In some countries/regions there exists a tradition for internal control within the wine industry (as demonstrated in the case from Burgundy, mentioned earlier), but controlling and preventing wine fraud is first and foremost a job for national food administrations and other control bodies.

In this realm, creativity seems to be rising. For instance, the Italian Carabinieri Corps has recently given 25 of their officers an education as sommeliers in order for them to be better equipped to combat Italian wine fraud.[32]

The most promising road, however, seems to be advancements in wine detection technology. As long as authorities have only sight, smell, and taste to go by, it is difficult to detect adulteration. According to Penza and Cassano,[33] "wine is one of the most complex alcoholic beverages with more than a 1000 of volatile components identified in its headspace" (p 159). This makes fraud detection through smell and taste alone almost impossible, while at the same time making scientific analysis rather difficult. Nonetheless, a number of different analytical approaches show promise.

Since 1990, stable isotope ratio analysis through nuclear magnetic resonance and isotope ratio mass spectrometry has been used in the wine control program of the European Union. These methods can – to a certain degree of certainty – detect chaptalization, detect adding of water, and determine geographical origin and vintage of the wine. A successful analysis, however, depends on a rather detailed knowledge about the soil and climate on the wine's alleged place of origin.[34]

Table 1 German and non-German wines tested by the German Landesuntersuchungsamt (LUA) 2002–2008: total number of wines tested, and number of wines found defective (percentage of defective wines in parentheses)

	Year							Total
	2002	2003	2004	2005	2006	2007	2008	
# German wines sampled	5028	4338	3954	4003	4019	3728	3029	28129
# German wines	172	90	123	88	64	63	88	678
found defective	(3.4)	(2.1)	(3.1)	(2.2)	(1.6)	(1.7)	(2.9)	(2.4)
# Non-German wines sampled	1385	1414	1512	1530	1656	1311	1391	10199
# Non-German wines	104	85	28	13	56	92	92	470
found defective	(7.5)	(6.0)	(1.9)	(0.8)	(3.4)	(7.0)	(6.6)	(4.6)

Note: Only wines found to contain illegal additives (including water and sugar) and/or found to contain other grape varieties than indicated on the label are included.
Source: LUA Jahresbericht, different years, own calculations.

Determining a wine's age through carbon 14 analysis is most feasible for older wines. In certain wine varieties, younger vintages can be determined through analyses of the wine's content of pinotin A, since this level rises with age.[10]

Determining the grape variety/varieties used in a specific wine is a difficult matter. DNA analysis works well in establishing the origin and heritage of specific grapes as long as the DNA comes from fresh grapes or must. Once fermented, however, wine contains only limited quantities of DNA, and contamination from other sources of DNA (eg, yeast, fungi, and bacteria) is a problem.[35] Instead, analysts are experimenting with spectral analysis of volatile compounds in wine headspace, and analysis of phenols in wine. These methods make it possible to determine the grapes used in single-variety US reds and whites, and they show promise regarding the identification of multivariety wines as well.[36] Similar results have been reported regarding gas chromatography of single-variety Italian wines.[37] This method makes it possible to determine the age of a wine, an important factor in detecting adulteration through blending young and old wine.

Thin-film sensors – the so-called electronic nose – offer the possibility of in situ analysis of wines and have been shown able to detect adulteration of wine with ethanol, methanol and other substances[38] and other wine.[33] The electronic nose is also able to discriminate between different Spanish wines[39] and determine geographical origin of Chilean wines,[40] but it is sensible to the methods used in aroma extraction.[41]

Varieties of red wine can also be accomplished through analysis of the wine's content of anthocyanins,[42] but the method is difficult since production methods may influence the level of anthocyanins.[43]

Recently, infrared spectroscopy (near infrared and medium infrared) has shown some promise in the classification of Riesling wines from different countries,[44] and to discriminate between organic and nonorganic wines.[45]

Collector fraud – problems of pedigree

Collector fraud has only recently been acknowledged as a major problem. Some in the wine trade, though, think that this kind of fraud is not new at all; the only difference is that incidents are now publicized.

With regard to publicity, the "Jefferson wines" made a huge impact. Faced with the fact that his Jefferson bottles were probably frauds, Bill Koch started a major investigation. It was soon revealed that all the bottles bearing the famed inscription stemmed from the same source: the German wine specialist Hardy Rodenstock, well known for hosting very exclusive tastings featuring very old and rare wines, some more than 100 years of age. He was renowned for his ability to find otherwise unobtainable wines and he himself often described how, in 1985, he received a phone call about some wines found behind a false wall in a Parisian cellar. He has never disclosed the specific number of bottles he obtained there, and his account of the incident has changed over time.[3]

In 1989, Sotheby's refused a wine collection from a German collector. The head of the auction house's wine department had doubts about a number of bottles in the cellar, among them one from the batch claimed to have belonged to Jefferson; according to Wallace,[3] all the suspicious bottles originated from Rodenstock. A few years later, the owner of the collection had the age of the "Jefferson bottle" forensically analyzed in a lab in Munich. Results were interesting: the sediment in the bottle stemmed from some time within the period 1680–1864, confirming the authenticity of the bottle. Analyzing radioactive isotopes in the wine itself, however, the lab found that it was produced well after 1945, most probably in 1962. There was no doubt that the wine was a fake, but it could not be established when, or by whom, the forgery had been committed.[3]

Koch sued Rodenstock in court and the publicity of the case has drawn attention to the vast possibilities for collector fraud, of which two main forms may be identified: tampering with labels – for instance exchanging the label of a great wine of lesser vintage with that of a better one – or tampering with the wine itself, filling an original bottle from a great wine with wine of an inferior quality. With older wines, such scams are made easier by the fact that in the first half of the 20th century, many rare wines were sold in whole barrels to resellers who bottled them themselves. It is thus quite normal to find wine of the same vintage and quality in different kinds of bottles.

Detecting fraudulent bottles is made further difficult by the fact that some vineyards have offered a recorking service for older wines, making it difficult to determine the age of the wine from the cork (apart from the fact that the cork is most often invisible until the bottle is opened).

Most rare wines are sold one or a few bottles at a time, making it impossible to judge its quality by taste, since, once opened, the wine has lost its value. Moreover, two bottles of the same wine aged for 40 years or more may have developed differently, even though bottled at the same time and kept under the same conditions. Thus, even experts

who have tasted a specific wine before may not be able to recognize it again.

When selling rare vintages, auction houses depend very much on taste notes from wine experts, who may only have tasted these wines once or twice in their career. In the wake of the Jefferson case it was discovered that some wine experts (consulted by auction houses in matters concerning the authenticity of some very rare wines) had actually only tasted these wines once before, namely at tastings organized by Hardy Rodenstock.[2] If some of the rare wines offered at these tastings were not genuine, the credibility of the experts' opinions are put into doubt, a doubt reflecting on the wines offered for sale.

Collector fraud is aided by the fact that most people who put their fine wines up for sale prefer to remain anonymous, thus making it hard to evaluate the authenticity of the wines through their history. At the same time, auction houses and other resellers must reassure prospective buyers that the wines are genuine. This delicate balance is readily apparent in the text of wine auction catalogs, where expressions such as "property of a gentleman" and "reputable sources" are used along with other reassuring wording.

The lack of possibilities for verification not only provides perpetrators with very good opportunities of counterfeiting; it also makes it very difficult to determine the extent of this kind of fraud, even though there is little doubt that it is extensive. In 2007, the head of the wine section at Sotheby's, Serena Sutcliffe, believed that the number of fake bottles offered up for sale was higher than ever.[45] In recent conference contributions, Ashenfelter and Storchmann,[47] and Schamel[48] argue that the rising trade in empty premium wine bottles in online auctions might, to a large degree, be attributable to the fact that they can be used for counterfeiting.

Not all collector fraud is equally sophisticated however; some scams are easily detected by people with knowledge of rare and old wines: at a New York auction, the 1945 vintage of the Grand Cru Burgundy wine Clos St Denis was put up for sale. This was rather problematic, since, according to the winemaker, the first actual vintage of Clos St Denis was bottled in 1982.[49]

As is the case with consumer fraud, it is unlikely that much fraud will be detected through complaints from people who actually drink the wine. The mere knowledge that he/she is drinking a great wine may overshadow any doubts a wine enthusiast may have about its actual taste. Furthermore, not all consumers of such wines will know what they are supposed to taste like: at a Las Vegas restaurant, a party of guests enjoyed a bottle of Chateau Petrús 1982 and ordered a second. This bottle did not taste like the first one, so they sent it back and got a third that was satisfactory. Afterwards, while examining the three bottles, the restaurant owner discovered that the first and third bottle had been tampered with, while the second was genuine.[50]

Prevention of collector fraud

Collector fraud is usually committed by a third party unaffiliated with the original producer/seller of the wine. Whereas producers of wine made for consumption may partake in fraudulent schemes themselves, producers of great/rare wines will normally try to combat fraud since being associated with fraud may harm their brand. Therefore, it is not unusual for such producers to aid prospective buyers and sellers in establishing the authenticity of older bottles from their own cellars. Unfortunately, even such producers may be fooled. Tampered labels may be possible to detect, whereas fraud with the wine itself may be more difficult to prove (or disprove). The best advice, then, for a wine collector interested in old wines is to team up with one or more experts and to proceed with care, since fantastic bargains in this area are hard to come across.

If it is still something of a gamble to buy older wines, technology has been enlisted in prevention of future fraud. Top producers are experimenting with a number of security measures. Some Bordeaux producers now mark their labels with ink visible only in ultraviolet light, thus making it impossible to copy their labels through scanning. Such a measure, however, does nothing to prevent tampering with the wine itself.

Here, different kinds of proof tags seem more promising. A proof tag can take the form of a foil strip covering the neck of the bottle in such a way that the strip will be destroyed if the bottle is opened. The strip contains a unique, nonreproducible identity marker and provides traceability through information about the origins of the bottle.[51] While there is an ongoing discussion about whether overt or covert proof marks are to be preferred, there seems little doubt that future tampering with fine wines will be much more difficult than is the case with older vintages.

Conclusion: the future of wine fraud

The two kinds of wine fraud described here have different characteristics: consumption fraud involves large quantities of wine; perpetrators are most often to be found among wine producers and/or exporters, and victims are customers who will probably never realize that they have been deceived. As is the case for other areas providing profitable possibilities

for counterfeiters, it is to be expected that the wine trade will, in future years, experience an arms race between fraudsters and producers/authorities. In the consumer market, the increasing interest in wine of quality may present increased incentives for consumption fraud. It is still too early to say whether, or when, the new test methods discussed here will become useable in combating consumption fraud.

Collector fraud, on the other hand, involves small quantities and it is usually committed by perpetrators unaffiliated with producers and original exporters. Since rare wines are most often kept for a long time, and many are resold, possibilities for fraud detection are somewhat greater, and the recent interest in the subject may lead to more exposures. The "Jefferson case" that started it all is now resolved: In May 2010, a US District Court entered a default judgment against Hardy Rodenstock,[52] and lawyers for Bill Koch have submitted to the court a claim for a total of US$1,539,127.59 in damages.[53]

There is little doubt that counterfeited wine will continue to haunt the collector market years from now. At the same time, there is ample evidence that the great "chateaux" are working hard to prevent future fraud. It remains to be seen whether the prevention measures undertaken so far will suffice, but if not, new measures are sure to be invented. In 2050, wine enthusiasts opening a bottle of the vintage 2010 or 2011 will probably have reason to feel a lot more confident that they are getting the genuine article. One can only hope that they will be able to appreciate it.

Disclosure

The author reports no conflicts of interest in this work.

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