Provenance, preference and Pivot: exploring premium Shiraz with international sommeliers and Australian winemakers using a new rapid sensory method

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A rapid sensory method called Pivot© profile has been used to assess the sensory properties of super-premium Shiraz wines from regions across Australia to assess the differences in the use of descriptors by professional tasters.

INTRODUCTION

The idea that a wine from a particular place tastes different to a wine from another place has long captivated wine lovers around the world. Wine drinkers are becoming increasingly well-informed that certain regions produce wines with distinctive flavours that appeal to them, and may be prepared to pay more for these wines. From a research point of view, the topic of regional and sub-regional differences in the sensory properties of Australian Shiraz wines is one that has recently been given greater attention. If it is possible to better explain what causes, for example, a Shiraz from the Barossa Valley to be different from a Heathcote Shiraz, this could improve Australia's position in the international marketplace, as consumers of premium wines cherish these regional characters and the stories that go along with them. This goal has been developed into a project covering one aspect of a larger program of research, undertaken jointly by researchers at the National Wine and Grape Industry Centre at Charles Sturt University, and the Australian Wine Research Institute, funded by Wine Australia.

PIVOT PROFILE: A RAPID METHOD FOR CHARACTERISING A SET OF WINES

A rapid sensory methodology called Pivot© profile has been applied in this project to allow sensory information to be obtained on a large number of regionally-sourced wines. Pivot profile (PP) is a relatively new sensory method that has potential for general application in the Australian wine industry, and was first applied to characterise a set of sparkling wines in France (Thuillier *et al.* 2015). It is a free description method that can use the well-developed lexicon of professional judges (winemakers, sommeliers, wine writers, wine buyers, etc.) as an asset but also removes the bias that can occur in groups of this type. The judges use a 'pivot' wine as a reference for assessing the samples. Judges assess each coded sample, compare it with the pivot wine, and write descriptors based on how the coded sample differs from the reference. An example of the assessment sheet for one wine is given in Figure 1. Judges can use any term to describe the wine; however, the degree modifier 'less' or 'more' is used in conjunction with the descriptor. By using only these degree modifiers, the scope of the descriptors is moderated, so only the main differences between the pivot wine and a specific sample are recorded. For example, if writing free choice notes about a wine, judges when using the term sweet to describe a wine could add on the degree modifiers 'moderately', 'very', 'not so', 'highly', 'a little', 'a bit', 'slightly', etc. By having to use either 'less x than the pivot' or 'more y than the pivot' (e.g. less sweet, more astringent), the judge must fit the term into one of two categories but is still free to use creativity and personal interpretation to describe the sample. This format also makes the results much easier to analyse and interpret, with simple counts regarding the number of judges using particular terms used to differentiate wines.

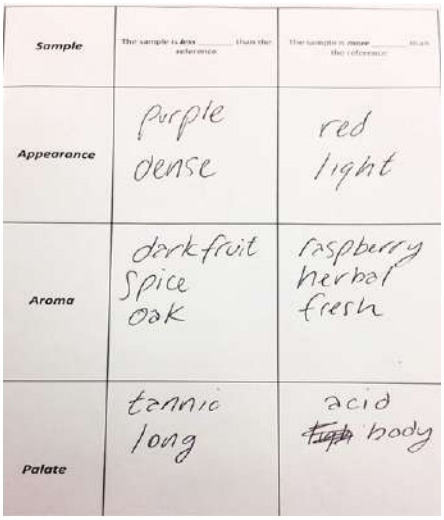

Figure 1. An example of a Pivot profile assessment sheet for a single wine.

The terms are tabulated by noting whether they were perceived as 'more than the pivot' or 'less than the pivot'. Once all the attributes are counted, the results are summarised in an attributes x wines frequency table. The statistical technique of correspondence analysis is then performed to obtain a straightforward 'map' of the wines, showing both attributes and products, and allowing a simple way of picturing the degree of sensory differences among the set of wines.

This method shows promise for use in industry tastings as it is easy to perform

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in one session, and judges need no training. The sensory characterisation provided by the method has been previously shown to be reliable and could be employed in multiple applications when sensory evaluation is required.

The goal in this project was to use the method to assess sensory properties of super-premium Shiraz wines from regions across Australia, using judges with varying backgrounds, to assess differences in use of descriptors. In addition, the method was compared with the much more time-consuming but well-established method of quantitative sensory descriptive analysis to test its reliability and validity for generating robust sensory characterisations.

WINEMAKERS' AND SOMMELIERS' PERCEPTIONS OF SHIRAZ WINES

In conjunction with the 'World's Top 100 Restaurants' event held in April 2017, Wine Australia coordinated a visit of 50 eminent sommeliers from some of the participating restaurants for an extensive tour of Australian wine regions. This event provided an opportunity to investigate the descriptive language used by international wine professionals for Shiraz wines. In addition, it was an excellent chance to measure the preferences of this influential group, and their impressions of Australian Shiraz. For the visiting sommeliers it was an opportunity to taste a broad cross-section of regional, ultra-premium Australian Shiraz and be exposed to Australian wine research activities.

Wines for the exercise were selected based on 'icon' status (having a long-standing reputation) and included wines deemed to exhibit regional characters. Fourteen current vintage wines were carefully selected from 11 regions: Hunter Valley, Barossa Valley, Eden Valley, McLaren Vale, Adelaide Hills, Yarra Valley, Canberra, Beechworth, Heathcote, Clare Valley, Geelong and the Grampians, ranging in retail price from $45 to $250. One wine from New Zealand (Trinity Hill Homage Syrah 2013, A$120) and two wines from the Rhone Valley in France (Auguste Clape Cornas 2013, A$200 and Domaine Alain Graillot Crozes Hermitage rouge 2015, A$70) were also included in the tasting as international benchmarks. The 'pivot' reference Shiraz wine was selected based on it having varietal characters, but lacking distinctively regional characters. It was produced in high volumes, and had been awarded a gold medal at a recent Australian capital city wine show. The tasting was conducted at a hotel function room in Melbourne, with the sommeliers asked to assess the pivot wine and then each coded sample wine, writing comments as to how it was different from the pivot wine, using the previously described format of 'more than' or 'less than'. The sommeliers were also asked to rate how much they liked each wine, using a line scale at the bottom of the page, anchored by the terms 'dislike extremely' and 'like extremely'. Following the session, the wines were revealed and discussed.

The PP results can be summarised in a 'map' illustrating the main similarities and differences among the wines (Figure 2a). In this figure the wines from the warmer regions (Barossa, McLaren Vale and Heathcote) are plotted in the upper right, while wines from the cooler regions (including Yarra Valley, Adelaide Hills and Canberra) are farthest to the left. The warmer region wines were most associated by the sommeliers with the attributes 'deep colour', 'body', 'fruit', 'dark fruit', 'alcohol', 'intense' and 'oak'. The wines on the left half of the figure were associated with the attributes 'acid', 'floral', 'fresh', 'red fruit aroma' and 'herbal' and were described more often with the terms 'drinkable', 'elegant', 'bright', 'balanced' and 'fresh'.

The two Rhone Valley wines had similar sensory properties and were associated with 'deep colour', 'high tannin', and a character the sommeliers referred to as 'medicinal', 'dirty' or 'barnyard'. It was interesting that once the Rhone Valley wines were revealed there was some surprise and disbelief from many of the sommeliers. As the wines were from highly regarded producers, comments as to the integrity of the bottles poured or other excuses were given by some of the participants as to the general poor quality of these wines. However, this in itself is an interesting observation regarding Old World vs New World producers, where trade influencers can be biased towards prestigious Old World producers due to the history, pedigree and scarcity of the wines, regardless of the presence of arguably undesirable flavours.

Overall, the results of the pivot profile assessment by the sommeliers provided a valuable insight into their perceptions of Australian Shiraz compared with international benchmarks. The group found the tasting an interesting experience and found the process of assessing the wines by comparison with a reference a straightforward task.

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This tasting was replicated a few weeks later with a group of 11 Australian winemakers to examine how the background and experience of the expert judges might change the way that wines are characterised, and to examine the preferences and language used by both groups. This tasting was completed at the AWRI, and all aspects of the sommelier tasting were repeated, with identical wines.

When comparing the sommeliers' results (Figure 2a) to the winemakers' (Figure 2b), there are many similarities. Wines from the Barossa, McLaren Vale and Heathcote were again plotted to the upper right, and the associated attributes were similar to those used by the international sommeliers, with the winemakers using the terms 'opaque', 'body', 'dark fruit', 'tannin', 'oak' and 'intensity' to describe these wines. Some notable differences between the two groups included the positioning of the Beechworth wine, which was much closer in sensory properties to the McLaren Vale wine 1 according to the winemaker group, and the use of the terms 'brown' and 'developed', which were not used by the sommeliers. The cooler climate wines to the left of Figure 3b were described by the terms 'floral', 'red fruit', 'lifted', 'vibrant', 'acid' and 'green'. The French wines were characterised by the terms 'purple colour', 'opaque', 'tannin', 'VA', 'reductive' and 'Brett'. Overall the Australian winemakers used somewhat more technical terms and fewer terms related to quality compared with the sommeliers. However, it is striking how similar the two maps

are, and how similar terms were generally employed. The two data sets were also compared using a multivariate statistical technique which provides a measure of how similar two data sets are to each other. The similarity is measured by a coefficient between 0 and 1, with 0 showing no resemblance and 1 being perfectly correlated. The similarity coefficient between these two data sets was 0.79, which shows a high level of similarity.

DO INTERNATIONAL SOMMELIERS AND AUSTRALIAN WINEMAKERS HAVE SIMILAR PREFERENCES FOR SHIRAZ?

Another point of comparison between the two groups of assessors was the liking scores for the wines. Figure 3 shows the relationship between the two groups' liking scores. The sommeliers' most liked wine was the Eden Valley wine, followed by the Geelong and Grampians wines. The least liked wines were Rhone 2 and Rhone 1, followed by the Clare Valley and the New Zealand wines. The winemakers also gave low liking scores for the French wines, this time with Rhone 1 the least liked wine, followed by Rhone 2. McLaren Vale 1 and the Clare Valley wines were the next least liked. Interestingly, the Eden Valley wine was the fifth least liked sample for the winemakers, while it was the most liked for the sommeliers. The winemakers' most liked wine was from Canberra, which was also well liked by the sommeliers, followed by McLaren Vale 2 and Yarra 2. Overall, there was only a fairly weak correlation between the two groups' preference scores.

In assessing the individual sommeliers' liking responses in more detail, it was found that most sommeliers had similar preferences, with good correlation of each judge with the group mean. However, there was a small group of judges who more strongly appreciated the relatively lighter, 'red fruit', 'herbal', 'floral' wines from Canberra, Adelaide Hills and Yarra Valley.

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HOW DOES PIVOT PROFILE COMPARE WITH CONVENTIONAL SENSORY ANALYSIS?

A detailed sensory profile on the same wines was completed by the AWRI's trained panel using descriptive analysis (DA). The DA method is the gold standard for sensory profiling as it produces reliable, detailed and repeatable quantitative sensory data that can be analysed using robust statistical tests. However, the costs involved in recruiting, training and maintaining such a panel are prohibitively expensive for all but the largest wine producers. Therefore, the development of alternative rapid methods offers the potential to generate good sensory data without the costs and labour required for DA. A comparison between the sensory profile generated by the AWRI's trained panel and that generated by the winemakers using the PP

Figure 2a and 2b. Pivot profile sensory maps of ultra-premium Shiraz wines for a) a group of 50 international sommeliers, and b) 11 Australian winemakers.

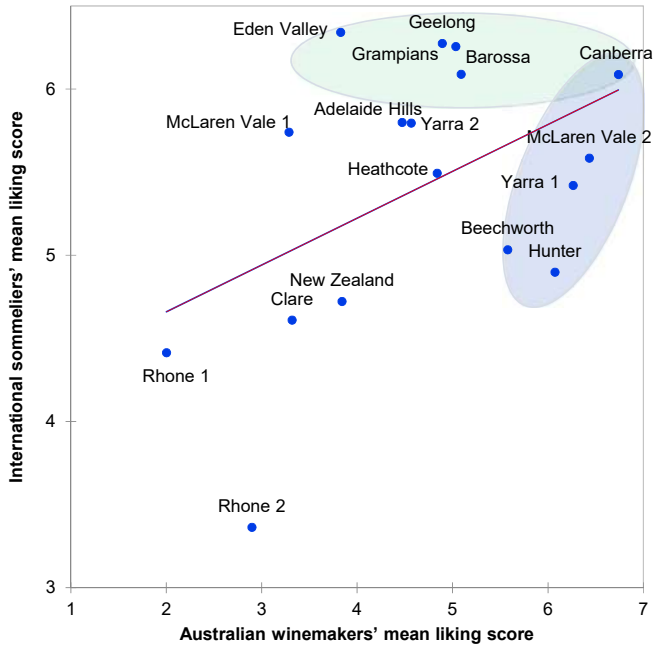

Figure 3. Relationship between the liking scores for the winemaker group (n=11) and the sommeliers (n=50). The regression line is shown (r=0.467, P=0.059). The wines that were most liked by the winemakers (blue ellipse) and the sommeliers (green ellipse) are highlighted.

Wes Pearson, from the Australian Wine Research Institute; John Blackman, from the National Wine and Grape Industry Centre; and Mark Davidson, head of Education Americas for Wine Australia, conducted a blind tasting at Vinexpo Hong Kong in late May where the comparative evaluation method Pivot©Profile was used to enable sommeliers and other members of the wine trade to define the sensory properties of Shiraz wines from various regions across Australia. A similar tasting was undertaken in conjunction with the 'World's Top 100 Restaurants' event held in April 2017 involving around 50 sommeliers.

method was completed using multiple factor analysis. The similarity coefficient between the two data sets was 0.69, slightly less than that between the sommelier and winemaker PP tastings, but nevertheless quite high, showing that the different panels gave broadly similar results. These results indicate that while the Pivot profile is easy and quick to perform, it may not be as comprehensive as conventional descriptive analysis. It is, however, appropriate to use in certain situations when a less detailed sensory profile is acceptable.

CONCLUSION

Overall, the experience with the PP method has been a positive one, with the data it yields being both reliable and repeatable. That, combined with the ease of administering the tests and the lack of training needed for judges, leads to the assessment that Pivot profile is an excellent option when choosing a rapid method to perform sensory analysis. The main drawback with the method from an industry application point of view is the data entry and subsequent statistical analysis, which are quite time-consuming and require relatively sophisticated data analysis skills. The method has recently been applied to a much larger number of single site wines from the Barossa Valley, Canberra, Heathcote, Hunter Valley, McLaren Vale and Yarra using winemaker panels to relate the sensory properties of the wines from these regions to other data.

The recognition that the international sommelier group appreciated premium Australian Shiraz wines of a range of styles, and that the international benchmark wines were not so well liked, provides useful insight into sensory descriptors used and preferences of this influential group. It was notable how diverse the flavour descriptions were for the wines produced from different sites across the country, and that wines from both warmer and cooler climates were equally preferred by the sommeliers. The results highlight the value in studying Shiraz sensory profiles and how they relate to regions and sites and, ultimately, the site-specific influences on these characteristics.

ACKNOWLEDGEMENTS

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