Preparing for Deductive Tasting Exams at High Levels

By Martin Beally

Introduction

To an outsider, blind tasting seems like a magic trick. How can anyone look at a wine, taste it, and then tell you what it is? The truth is that anybody out there can learn the methods that are needed to become a proficient blind taster, and in this document I will outline a set of tools that I believe are important to analyzing how the major clues in a wine will lead you to a successful conclusion in your deductive tastings.

Deductive tasting relies on the taster analyzing all of the clues in a wine and *then* making a logical conclusion. Unfortunately, when faced with a puzzle, our brains instinctively try to categorize our sometimes unreliable sensory input. Often it will take one piece of information and only look for what supports it, ignoring contradicting evidence, a phenomena called confirmation bias.

Most novices taste in this fashion, a type of tasting called recognition tasting. To a novice, an aroma of banana runts in a red wine might quickly lead them to conclude that it must be a Gamay Noir, but a taster schooled in deductive tasting would realize that the banana smell is strongly linked with whole cluster fermentation, and so other varieties that typically use whole cluster, like Pinot Noir, Grenache, and Syrah should also be included as possibilities.

The deductive taster would also be on the lookout for other clues that would help build a case for the wine as well. If the wine also had low visual intensity, a garnet color, and herbal notes of cola and sassafras, then the taster could safely conclude that the wine was Pinot Noir. It wasn't the one fact that led them to Pinot Noir, but instead it was the set of facts that together built the case of the wine being Pinot Noir. It wasn't one piece of evidence, but instead it was four facts that helped narrow the wine down to Pinot Noir, and with that set of facts, it could only be Pinot Noir and nothing else.

A Caveat Before We Begin

Learning how to taste well in an intensely personal journey and part of my journey has been to make this guide. Some of the markers that I review are idiosyncratic, intensely personal, and, ultimately, judgement calls. It is up to you as a taster to read this guide and decide what works for you and what doesn't. If you disagree with me strongly on a point or have a marker that is absolutely bulletproof for you, go your own way. Doing your own research into what works for you and how you perceive your palate will only strengthen your tasting.

Additionally, throughout this document, we will be peppering our discussion with technical tasting terms like rotundone, TDN, mercaptans, and others. If these are unfamiliar, look over Guildsomm's Expert Guide to the Science of Tasting to get a handle on what many of them mean.

The Grid

First and foremost, you must know the grid, forwards and backwards. The grid is the shorthand for the deductive tasting format which guides you through the process of blind tasting. You can find the most current version of the deductive tasting format in the Resources area of the Court of Master Sommeliers-Americas (CMS-A) website.

When I say you must know the grid, I don't mean in a "I have to think about it" kind of way. Instead, you need to know the grid in a "It's so deeply ingrained in me that I could recite it backwards and forwards without thinking" way.

Why is that? *Structure sets you free.*

When you are reciting the grid from instinct, you end up approaching each wine consistently and correctly. It also means that you are not devoting mental processing power towards remembering the grid. Instead you can focus on being present and truly evaluating the sensory information you are experiencing. This is important because you do not want to give just a rote answer - for example, too many novice tasters will default to an "all medium plus" mentality when evaluating the structure of a red wine. You need to be present and give each note their own attention.

In an exam setting, this automatic recitation of the grid has two advantages. First, it ensures that you hit every single box possible and, therefore, give yourself every opportunity to score points. It also makes you easier to grade, especially if you have a consistent cadence that is relaxed and in control.

Tasting Paradigms

The grid manifests itself differently for each wine in what is called a tasting paradigm. Each possible variety you might encounter in an exam setting has its own tasting paradigm and, just like the structure of the grid, you should know each tasting paradigm. This helps you in two ways: by knowing each grape's tasting paradigm, you'll be able to more confidently make correct choices when you're trying to decide what the wine is, and you'll also build subconscious associations that push you towards making correct calls. That doesn't mean that you'll become an instinctive taster, but instead it means that your subconscious will help guide you towards making a better choice when you reach your conclusion.

How many paradigms should you know? Pop quiz: how many white varieties are listed by the CMS-A as examinable for the Advanced exam? How many red for the Advanced exam? If you are sitting for the Advanced or the Masters, you should be able to tell me that the CMS-A lists ten white (Albariño, Chardonnay, Chenin Blanc, Gewürztraminer, Grüner Veltliner, Pinot Gris, Riesling, Sauvignon Blanc and blends, Torrontés, and Viognier) and fourteen red (Cabernet Sauvignon and blends, Cabernet Franc, Carménère, Corvina blends, Gamay Noir, Grenache and blends, Malbec, Merlot and blends, Nebbiolo, Pinot Noir, Sangiovese, Syrah, Tempranillo, and Zinfandel) as probable varieties.

In practice what does this mean for you? You need to know these paradigms backwards and forwards. If you have attended the CMS-A Deductive Tasting Seminar, you will have been given a fantastic booklet that serves to outline all of the probable varieties that you would encounter in an exam situation. If you're not able to attend this seminar in person, you can use resources like Guildsomm's

Blind Tasting area and the Grape Varieties section of Guildsomm's Compendium to build out your own paradigms of varieties you wish to prepare for in blind tasting (not only that, but in Guildsomm's Blind Tasting section you'll find invaluable advice on how to improve your skills from both Master Sommeliers and Masters of Wine). Your goal should be to imagine a glass of wine in your hand like, say, a New Zealand Sauvignon Blanc and then recite the perfect tasting note from memory, with impeccable cadence and without any effort on your part to recall the information.

Your Own Personal Grid

As you develop your methodology for approaching tasting, you should start to adapt the grid to play to your strengths and shore up your weaknesses. How so? Take a look at the grid that's on the following page. This is my own personal grid that I use during deductive tasting and I've changed the structure a bit from the standard grid.

- **There's a lot more things to check for!** Yes, but it's something that works for me. In order to be a true deductive taster I need to make sure that I'm checking for everything that could possibly be in a wine. Instead of a generic non-fruit category, I've expanded it into twelve (spice, rotundone, stem inclusion, etc) to cover almost every possible data point. Yes, I've still got a category labeled "other," but the most important things that fall into other have been broken out of it.
- **You've added some categories that don't exist on the CMS-A grid!** Yes I have, specifically a category for floral intensity in the nose and palate and a Why? category for the initial conclusion and final conclusion. The floral intensity category is there to help me differentiate between moderately and highly floral whites (Albariño vs Torrontes, for example) and to help clue me into reds with very expressive florals (such as my bête noire, Malbec). The Why? category is a mental reminder for me to slow down and to listen to everything that I've said while giving my tasting notes, thus giving myself another reminder to process deductively rather than instinctively.
- **You've got Structure before Palate!** I find significant value in the clues that structure can provide, so I want that information as part of my process while assessing the wine on my palate. Thus, if I get a major clue from the structure (such as high acid, high tannins, high alcohol, etc) I can then focus my evaluation on the palate to compare against my tasting paradigms that match with that structural clue. It's almost like one part of my brain is going through the analysis of the wine, while another part is off to the side, evaluating what I'm saying and comparing it to what I'm tasting (which can only occur if you have your grid and paradigms down cold). This is what works for me. There are those who prefer to put the palate after structure and they would argue that it gives their palate a chance to acclimatize to the wine, which I do not disagree with. Everyone tastes differently and you shouldn't be afraid to experiment with what works for you. One of my friends goes so far as to do structure twice, both before and after the palate to ensure that they give it proper importance.

My Personal Deductive Tasting Grid

Sight
Clarity/Brightness, Intensity, Primary Color, Secondary Color, Rim Color, Staining, Viscosity, Gas/Sediment

Nose
Faults, Intensity, Condition/Maturity, Fruit Condition, White Wine Fruits (Citrus/Stone/Tree/Tropical/Other), Red Wine Fruits (Red/Black/Blue/Purple/Other) Floral Intensity, Floral, Vegetal, Herbal, Spice, Rotundone, Stem Inclusion, Thiols, Brettanomyces, Botrytis, TDN, Mercaptans, Lees, Malolactic Fermentation, Oxidation, Other, Organic Earth, Inorganic Earth, Oak, French Oak, American Oak

Structure
Residual Sugar, Body, Texture, Tannin/Phenolics, Acid, Alcohol. Balance/Complexity/Length

Palate
Faults, Intensity, Condition/Maturity, Fruit Condition, White Wine Fruits (Citrus/Stone/Tree/Tropical/Other), Red Wine Fruits (Red/Black/Blue/Purple/Other) Floral Intensity, Floral, Vegetal, Herbal, Spice, Rotundone, Stem Inclusion, Thiols, Brettanomyces, Botrytis, TDN, Mercaptans, Lees, Malolactic Fermentation, Oxidation, Other, Organic Earth, Inorganic Earth, Oak, French Oak, American Oak

Initial Conclusion
Old World/New World, Climate, Why?, Possible Varieties, Possible Countries, Age Range

Final Conclusion
Variety/Blend, Why?, Country of Origin, Region/Appellation, Quality/Classification, Vintage

Good Habits to Improve Your Tasting

I love how sommeliers take on theory - we ask hard questions, we keep score, we systematically track our progress and identify areas of improvement. But when it comes to tasting, quite often we'll take our notes at a tasting session and never look at them again. That is a shame, because when you make a mistake, you're not taking that gift and learning from it. So how do you improve?

Take all of the data that you're creating and use it effectively! In the appendix, I have a Guildsomm post where I published my spreadsheet that I use to track blind tastings. It has some analytical tools that will allow you to see how well/poorly you are doing as you taste your wines and give you valuable objective feedback on the accuracy of your tasting rather than just your intuition and memories. You don't have to use my methodology, but I highly encourage you to review and analyze how well you are tasting because there is very little room for error when you are in an exam setting.

The next step would be to use that data to help identify your personal markers and what markers you may be blind to. You can then incorporate these markers into your own grid to ensure you're not missing crucial clues. For example, I completely missed a Torrentes in a high pressure situation because I wasn't checking for floral notes during the flight. If you know that you have a difficult time sensing floral notes, doesn't it make sense for you to build a box into your grid to check for florals to ensure that you detect it more often?

Now you're prepared to use your previous tastings and improved grid to structure future tastings. How should you take advantage of that data?

- **Taste what you haven't tasted recently** - Since you know what you've seen at recent tastings, you can now use this as an opportunity to plan future tastings. As you tweak your tasting methodology, you might find that certain changes will have unexpected outcomes. Even if you know that you can get Pinot Grigio ninety-nine times out of one hundred, you're still better off making sure that you are properly calibrated.
- **Focus on what you're doing poorly and practice** - Now that you have objective data on what you're missing, you can structure your future tastings to work on those blind spots.

How? In the next section, I'll lay out some techniques that I use to make my tastings more effective.

Structuring Your Tastings

Many sommeliers tend to develop a myopic focus on six wine flights. Six wine flights are great for learning how to run the grid during a six wine flight, but I contend that they are not great tools for improving your deductive abilities. When you go four for six and miss the Pinot Grigio and Brunello, calling them Grüner Veltliner and Rioja respectively, what did you really learn? What will you take away that will help you distinguish between Pinot Grigio and Grüner Veltliner or between Brunello and Rioja the next time you encounter them? Instead, I believe you should be spending most of your time on comparatives, 75% or more, especially when you have your grid down. Here are three versions of comparatives that I have used to help improve my tastings.

- **Double Blind/Single Blind** - This format is fantastic because it gives you an immediate chance to work on what you got right and what you got wrong. To do a double/single, everyone in the group brings a bottle of wine based on a theme (say, low pigment variety reds) and then places them in bags (I would recommend getting a pack of something like these so they are all the same) and then pours them in random order. Sit down and evaluate this first flight, then reveal and discuss. Looks like a regular comparative, right? Now here's where the real learning happens. Take the wines that the group had the most trouble with, re-bag them, randomize them, then taste them again. You now get to immediately work on your problem areas while the sense memories are fresh in your brain. Your accuracy will skyrocket.
- **Lazy Susan Coravin Blinds** - To replicate the feeling of a double/single blind at home, I'll take 6-8 wines, Coravin them into matching stems, attach labels with the answers face down, then put them on a lazy susan and give it a spin. I then pull one off at random and taste. Every time I get it right, it comes off the lazy susan; if I get it wrong, it goes back on. This is a really great way to do solo tasting at home.
- **Triangle Test** - This exercise will help you distinguish two wines that you regularly confuse for each other. Have a friend pour you two glasses from one bottle and one glass from another and then taste them as a flight, trying to guess which two wines are the same. You'll be amazed how confused you can get, so dig deep and focus on the objective factors.

Tasting with Objective Factors

What are objective factors? They are the clues that significantly limit your possible options because when you encounter them, they connect you to certain grape varieties, vineyard characteristics/practices, or vinification techniques.

To help organize and consider the importance of each factor, I have grouped mine into three types:

- **Varietal** - If this type of objective factor is present, treat it as an absolute signal of what your possibilities are. Varietal objective factors are key to making conclusions because they are tied to specific varieties, greatly narrowing your possibilities. If you miss a varietal objective factor in your tasting, you're likely to make an incorrect conclusion. It is highly unlikely you will come across a wine where it is not exhibiting its varietal objective factors.
- **Vineyard** - This type of objective factor comes from the environment in which a vine is grown and how it is cultivated. It is typically indicative of climate (and, therefore, region) or vintage and is non-exclusionary, meaning that its presence may point to a certain wine or wines, but its absence does not necessarily exclude a wine. Vineyard objective factors typically are strongly correlated with a regional expression of a variety, but will need some other correlating factors to make an airtight case.
- **Vinification** - Similar to vineyard objective factors, this type of objective factor is also non-exclusionary. If you get a vinification objective factor, it might be a strong indication of a style for a region, but not all winemakers in a region will make a wine the same way. Since the greatest amount of choice in winemaking occurs during vinification and elevage, these objective factors are the most weakly correlated of the three and will need the most supporting evidence.

Below is a chart of the objective factors, how strongly they are correlated, and whether they fall into the Varietal, Vineyard, or Vinification categories.

White Wine Objective Factors			
	Varietal	**Vineyard**	**Vinification**
Highly Correlated	Nose/Palate - Grapefruit Nose/Palate - Lychee Nose/Palate - M+ Floral Intensity Nose/Palate - H Floral Intensity Nose/Palate - Pyrazines Nose/Palate - TDN Nose/Palate - Mercaptans Palate - Low Tannins Palate - High Acid	Visual - Deep Brownish Gold Nose/Palate - Fruit is Tarter on Palate	Nose/Palate - American Oak Palate - Residual Sugar
Moderately Correlated	Nose/Palate - Chamomile/Hay Nose/Palate - Parsnip/Turnup Nose/Palate - Rotundone Nose/Palate - Lanolin/Wet Wool Nose/Palate - Fruit Loops	Nose/Palate - Overripe/Dried Fruit Nose/Palate - Botrytis Palate - High Body Palate - Oily Texture Palate - High Alcohol	Visual - Platinum Visual - Copper Visual - Gas Nose/Palate - MLF Nose/Palate - Oxidation Nose/Palate - Struck Flint Palate - Spritzig
Weakly Correlated			Visual - High Viscosity w/Fast Tears Visual - High Viscosity w/Slow Tears Nose/Palate - Lees

Red Wine Objective Factors			
	Varietal	**Vineyard**	**Vinification**
Highly Correlated	Visual - Orange/Garnet Rim Color Nose/Palate - Pyrazines Nose/Palate - Olive Nose/Palate - Rotundone	Nose/Palate - Fruit is Tarter on Palate Nose/Palate - Eucalyptus	Nose/Palate - Botrytis Palate - Off Dry
Moderately Correlated	Visual - High Intensity Visual - Garnet Primary Color Nose/Palate - Overripe/Dried Fruit Nose/Palate - M+/H Floral Intensity Nose/Palate - Cola/Sassafras Palate - H Tannins	Nose/Palate - Overripe/Dried Fruit	Visual - Purple/Magenta Rim Color Nose/Palate - EA/VA Nose/Palate - Brettanomyces Nose/Palate - Overripe/Dried Fruit Nose/Palate - Carbonic Nose/Palate - Stem Inclusion Nose/Palate - MLF Nose/Palate - Oxidation Nose/Palate - American Oak
Weakly Correlated	Visual - Low Intensity		Nose/Palate - Thiols

How do you use this information to your advantage? If you smell an objective factor that comes from the variety, like pyrazines, you know that it can only be limited to the Sauvignon family. However, if you get an objective factor related to vineyards or vinification, you must be more careful, especially if you are sensitive to the objective factor. For example, I associate malolactic fermentation with Chardonnay, Viognier, Marsanne/Roussanne blends, and Grenache Blanc, but sometimes a

winemaker might opt to allow a small amount to help soften out a cold vintage in another grape or blend. In every case you must ask yourself that, although you are perceiving this objective factor, is it significant enough to make a meaningful impact on your conclusion?

Making Conclusions Using Objective Factors

In general, I would say that you want four to five objective factors to help you make your conclusion. Let's take an example wine that I'll describe in a very limited fashion and run through it. If you come across a red wine with high visual intensity, red and black fruit fruit that was ripe but went tarter on the palate, high floral intensity, aromas of black olives, and sweaty saddle/barnyard aromas from brettanomyces, what could it be? Let's first identify the objective factors.

- Deep red color with **High Visual Intensity**
- Red and black **Fruit is Tarter on the Palate**
- **High Floral Intensity**
- **Black Olive** aromas
- **Brettanomyces** presenting as sweaty saddle and barnyard aromas

And now let's categorize the objective factors by type and strength.

- **High Visual Intensity** - Varietal (moderately correlated)
- **Fruit is Tarter on the Palate** - Vineyard (highly correlated)
- **High Floral Intensity** - Varietal (moderately correlated)
- **Black Olives** - Varietal (highly correlated)
- **Brettanomyces** - Vinification (moderately correlated)

So what variety are we dealing with our red wine here? Let's look at our three varietal objective factors, two of which are highly correlated, and list the possible varieties.

- **High Visual Intensity** - Cabernet Sauvignon, Carménère, Merlot, Malbec, Syrah
- **High Floral Intensity** - Nebbiolo, Malbec, Syrah
- **Olives** - Syrah, Grenache

Syrah is the only variety that is consistent across all of these factors, so with these three objective factors we've figured out what the grape is and now we just need to know where it comes from. Let's look at what's left.

- **Fruit is Tarter on the Palate** - Vineyard (highly correlated)
- **Brettanomyces** - Vinification (moderately correlated)

Our vineyard objective factor, the fruit is tarter on the palate, points to an old world wine. In the context of Syrah, brettanomyces is typical of Northern Rhône Syrah, so we can confidently say we have a Syrah from the Northern Rhône.

From this exercise, you can see how I made my primary decision on three objective factors that narrowed down my varietal choices to just one option. Two more objective factors not only confirmed the variety, but left me with one conclusion for the origin of the wine. Because I waited until after thoroughly evaluating the wine, I was able to avoid jumping to conclusions and relying on instinctive taste memory.

Using objective factors in your deductive reasoning allows you to quickly recognize what your possibilities are and pushes you towards a strong conclusion. The major advantage of this method is that it forces you to make your conclusion based on multiple sources of information, not just one. This will eliminate situations where you "don't know" because you will have gathered so much sensory information that there can only be one possible conclusion by the end.

Suggestions for Improving Your Deductive Tasting

So how do you utilize this information to maximize the impact on your tasting? In this section we'll review some techniques I believe will help you raise your tasting game.

Don't be Afraid to Make Mistakes

The best way you'll learn is by not being perfect, so don't be afraid to make a decision. Many times novice tasters will be tempted into the "medium plus" trap where the entire structure is medium plus, especially for reds. People do this because they're afraid of being wrong, but the best way to learn is by being wrong and learning from your mistakes. If you're torn between medium plus and high, but leaning towards high, don't say "medium plus" just to be safe. Instead, say "high." If you're going to be wrong, be wrong with conviction - don't cheat yourself out of an opportunity to learn.

The Absence of Objective Factors is Just as Important as Their Presence

Coming to a conclusion can be difficult if you only have a few objective factors to draw on. In those cases you'll have to use your knowledge of other varietal profiles to help make your case. For example, let's say the wine in your glass is Zinfandel, but it was vinified bone dry and you cannot get the yogurt aroma common to malolactic in Zinfandel. You were able to detect that the fruit condition was overripe/dried, and so what you should do is ask yourself for every grape that has overripe/dried fruit condition as an objective factor, do you detect the objective factors associated with each of them in the wine? Do you see the garnet rim typically associated with Aglianico or Grenache? Do you get the stem inclusion or volatile acidity associated with Corvina? The absence of these factors points to your final conclusion just as strongly as another factor's presence.

Talk Through Your Reasoning

It's okay to talk about where you think the wine is going. For example, if I encountered jalapeño in a red wine and was 100% sure about it, I would probably add, "Jalapeño, possibly indicating the presence of Cabernet Sauvignon, Cabernet Franc or Carménère." This is me taking a bold stand on the wine early, so that when it came to my conclusions I had a reminder of how strong my convictions

were on the possible varieties and where I should take my conclusion. But I would still continue to run the grid and listen to the wine, as I still need four to five objective factors to finalize my conclusion.

Not All Objective Factors Carry the Same Weight

In order to be useful to a conclusion, an objective factor must be important and significant towards making a conclusion. For example, Grüner Veltliner, Pinot Gris/Grigio, and Albariño are grapes that have phenolic bitterness, but identifying the fact that they have phenolic bitterness does not help you make a conclusion in between them. It's more important to note that Grüner Veltliner will have rotundone, that Pinot Gris/Grigio will have copper on the visual, and that Albariño will have pronounced floral intensity (all of which are varietal objective factors). But isn't phenolic bitterness a varietal characteristic as well? Although phenolic bitterness is a typical varietal characteristic for many grapes, at lower levels of bitterness it becomes more about how the must is pressed/soaked in the winery, so it becomes a vinification objective factor rather than a varietal objective factor. Therefore, the correlation is weakened and it has minimal value in steering the conclusion.

Ordering Your Conclusion

When making a conclusion, I believe it's important to figure out your variety first, then figure out where it comes from. Remember that markers for variety will always lead you to the variety, but winemaking techniques can be applied to any wine. So just because you smelled lees on a Torrontes, don't let that steer you away from Torrontes! If you get lychee on the palate and the floral intensity is high, you should still keep Torrontes as a possibility since lychee and high floral intensity are varietal characteristics of Torrontes.

Why Ask Why?

Why have I added the Why? box to my Initial and Final Conclusion? In the initial, if I'm saying "It's an old world wine from a cool climate," it forces me to support that claim with data I have gathered from my tasting that would indicate that it is an old world wine from a cool climate. Similarly, when I get to an initial conclusion with three or four wines that fit, the objective factors help me answer why they are possibilities and will help lead me towards an accurate conclusion. Remember that objective factors can be weighed differently and each of the types (Varietal, Vineyard, and Vinification) have their own inherent strengths. In general, Varietal objective factors should be weighed the strongest, Vineyard should be medium, and Vinification should have the least amount of weight attached to them.

Working Through Your Blind Spots

Let's think back to our Syrah. What if you were only able to find two varietal objective factors? What if you weren't able to smell black olives in it? Now you're left with either Malbec or Syrah as possible varieties and you would have to make the call between them based on old world vs new world growing regions. But because you have four pieces of data you're basing your conclusion on, your conclusion is still accurate in the end.

Improvement Will Take Time and Effort

Getting to the point where you can use objective factors effortlessly during your tasting will take a lot of work. You'll need to internalize the grid and know the objective factors for each tasting paradigm. When you start using these techniques, your process will be awkward and bumpy - my first preparatory flight for the CMS Advanced Exam took me over thirty minutes to fumble through - so don't get frustrated about your time. Instead, make sure you're checking all of your boxes and progressing in an orderly fashion. You'll find that you'll quickly internalize the grid structure and then will be free to devote your mental analysis to the wines.

Introducing the Objective Factors

Now that we have seen what objective factors are, how to use them, and their relative importance, we are ready to dive in deep with them. After seeing how they work in the Syrah deduction, we'll have a much easier time recognizing their value to your tasting.

White Wine Visual Objective Factors

I find often that tasters will ignore the visual on white wines. Although you're typically only supposed to use about fifteen seconds to go through a visual assessment, there are powerful visual clues that can help steer you in the proper direction.

Primary Color - White Wine (Visual)		
Platinum	*Type*	Vinification (moderately correlated)
	Varieties	Melon de Bourgogone, Sauvignon Blanc (especially New Zealand), and botrytis-free expressions of Grüner Veltliner and Riesling
	Explanation	Since the color in wines comes from their skins, if the must doesn't have significant skin contact, you get an extremely pale colored white wine, even from red grapes (think blanc de noir). A platinum color signifies that the winemaker got the must out of the press quickly, with very little skin contact. This is typically an indication of either a very technically savvy winemaker or one that wants to avoid the extra aromatics or drop in acidity that comes from skin contact.
Deep Brownish Gold	*Type*	Vineyard (highly correlated)
	Varieties	Chenin Blanc, Gewürztraminer, Pinot Gris, Riesling, Semillon/Sauvignon Blanc blend, Furmint
	Explanation	When a youthful white is deep brownish gold, it tends to be an indication of heavy botrytis because botrytis releases laccase, an enzyme that is a powerful oxidizer. Brown coloring could also be a sign oxidation due to bottle age, but the color would be a duller brown rather than a brownish gold.

Secondary Color and Rim Color - White Wine (Visual)		
Copper	*Type*	Vinification (moderately correlated)
	Varieties	Pinot Gris/Grigio, Gewürztraminer
	Explanation	If we have a copper color in a white wine, it must have had contact with the skins since pink skinned grapes will tend to yield copper secondaries, even if the wine had very limited contact with the skins.

Viscosity - White Wine (Visual)		
High with Fast Tears	*Type*	Vineyard (weakly correlated)
	Varieties	Chardonnay (warmer climate examples), Gewürztraminer, Marsanne/Roussanne blends, Viogner, Grenache Blanc
	Explanation	Alcohol is one way in which a wine gains viscosity (another being residual sugar). When evaluating tears, we are relying on the Gibbs-Marangoni effect, which occurs because alcohol and water evaporate at two different rates. When the alcohol at the top of the wine on the inside of the glass starts to evaporate, capillary action sucks more wine up which then falls back as tears. The higher the alcohol level, the faster these tears will fall because the evaporation is drawing up wine more quickly. From this we can deduce that a wine high in viscosity with fast falling tears will have a high level of alcohol. Please note that that effect relies on surface tension so the condition of the glass (for example, leftover rinsing agents) will greatly affect the wine's appearance.
High with Slow Tears	*Type*	Vineyard (weakly correlated)
	Varieties	Chenin Blanc, Gewürztraminer, Pinot Gris/Grigio, Riesling, Semillon/Sauvignon Blanc blend, Furmint
	Explanation	On the flip side, sugar creates high viscosity, but because this sugar has not fermented into alcohol, we are left with a wine that is lower in alcohol and the tears will fall more slowly. Note that being able to differentiate between high viscosity with fast tears vs high viscosity with slow tears can be difficult.

Gas - White Wine (Visual)		
High	*Type*	Vinification (moderately correlated)
	Varieties	Riesling, Grüner Veltliner
	Explanation	Quite often you'll see a still wine that has dissolved gas in it, but what does that mean? Most of the time, dissolved gas indicates that the wine has been very gently treated after fermentation since this dissolved CO_2 is typically a byproduct of fermentation. So you wouldn't have battonage, hard racking, or extended aging in wood which would allow this dissolved CO_2 to sublimate into the atmosphere. It could also indicate that the wine was sparged (injecting a mixture of N_2 and CO_2 to strip out any O_2) and the effect tends to be more apparent in wines under Stelvin closures. Put it all together and you have signs that point to extremely technically oriented winemaker, and I personally encounter this objective factor most often in wines that have a Teutonic bent.

White Wine Nose/Palate Objective Factors

I have grouped Nose and Palate together because these objective factors lead you down the same path, regardless where you encounter them.

Fruit Condition - White Wine (Nose/Palate)		
Overripe/Dried	*Type*	Vineyard (moderately correlated)
	Varieties	Chardonnay (warmer climate examples), Viogner (warmer climate examples), Grenache Blanc, Chenin Blanc, Gewürztraminer, Pinot Gris, Riesling, Semillon/Sauvignon Blanc blend, Furmint
	Explanation	Fruit condition is dependent on climate, and so overripe fruit character will tend to occur only in the hottest of climates or instances where the grapes shrivel on the vine. You can also encounter dried fruit in an aged wine, but a duller visual with brown notes would have to accompany the dried fruit notes.
Fruit is Tarter on Palate	*Type*	Vineyard (highly correlated)
	Varieties	Fruit that becomes tarter on the palate is generally indicative of an old world wine
	Explanation	This is one of the most helpful objective factors relating to vineyards because it can assist in identifying what sort of climate you have. Broadly speaking, old world wine regions tend to have climates that are more conducive to showing tarter expressions of fruit than their new world counterparts. Think of California Pinot Noir vs Red Burgundy. Even a cooler California vintage compared to a warmer Burgundy vintage will tend to show a ripeness that continues on the palate. The Burgundy, on the other hand, will tend to show more red fruit on the palate, even if you get riper black fruits on the nose.

Fruit - White Wine (Nose/Palate)		
Grapefruit	*Type*	Varietal (highly correlated)
	Varieties	Sauvignon Blanc, Semillon/Sauvignon Blanc blends
	Explanation	The chemical compound responsible for grapefruit (and passion fruit) aromas belongs to a chemical family called thiols and thiols are a hallmark of wines from the Sauvignon family.
Lychee	*Type*	Varietal (highly correlated)
	Varieties	Gewürztraminer, Torrontes, Muscat
	Explanation	The chemical compounds that help form the aroma of lychees are called monoterpenes and they include rose oxide, geraniol, nerol, and linalool. These monoterpenes tend to be most prevalent in Gewürztraminer, Torrontes, and Muscat.

Floral Intensity - White Wine (Nose/Palate)		
Medium Plus Floral Intensity	*Type*	Varietal (highly correlated)
	Varieties	Albariño
	Explanation	Albariño wants to be a floral grape and the best expressions show an exuberance of honeysuckle and orange blossom. Some examples, especially if they are sourced exclusively from the Val do Salnés, will tend to not show as floral since the cooler climate will inhibit the ripeness enough to mute this character. Although Riesling can be a terpenic grape, I personally do not find floral intensity to be a reliable factor in my evaluations for Riesling and thus have omitted it here, but your experience may differ.
High Floral Intensity	*Type*	Varietal (highly correlated)
	Varieties	Gewürztraminer, Torrontes, Muscat, Viognier
	Explanation	Because these four varieties tend to be loaded with monoterpenes, they will exude floral aromas in your sensory evaluation. Specific ones like rose oxide, will yield scents of roses while geraniol smell like geranium and lemon while nerol will smell like orange and roses.

Vegetal - White Wine (Nose/Palate)		
Jalapeño, Bell Pepper, Black Currant Bud (Pyrazines)	*Type*	Varietal (highly correlated)
	Varieties	Sauvignon Blanc
	Explanation	Pyrazines are a signature feature of the Cabernet family and have a distinctive green aroma when harvested from an under-ripe grape. Because they can ripen out, you must pay particular attention to this objective factor and not rely on them immediately jumping out on the nose (as the recent trend of hot vintages in Sancerre can demonstrate)
Chamomile, Hay	*Type*	Varietal (moderately correlated)
	Varieties	Chenin Blanc
	Explanation	Chamomile tea and hay are two commonly described markers for Chenin Blanc. Although I cannot give you a scientific basis as to why this aroma occurs, I tend to concur with most tasters on this marker for Chenin Blanc and how strongly it correlates with the grape.
Parsnip, Turnip	*Type*	Varietal (moderately correlated)
	Varieties	Marsanne/Roussanne blends
	Explanation	Marsanne tends to have an almond/hazelnut note to it since it is prone to oxidation and when you combine it with even low amounts of oak and sulfur typical in the Northern Rhône, that note tends to develop into turnips (not surprising given the sulfurous nature of brassicas) and parsnips, especially roasted parsnips.

Rotundone - White Wine (Nose/Palate)		
Radish, Lentils, White Pepper	*Type*	Varietal (moderately correlated)
	Varieties	Grüner Veltliner
	Explanation	Rotundone is a very aromatic compound called a sesquiterpene. In white wines it tends to express itself as radishes, lentils, and white pepper, which is distinctive to Grüner Veltliner.

Botrytis - White Wine (Nose/Palate)		
Honey, Ginger, Saffron, etc	*Type*	Vineyard (moderately correlated)
	Varieties	Chenin Blanc, Gewürztraminer, Muscat, Pinot Gris, Riesling, Semillon/Sauvignon Blanc blends, Furmint
	Explanation	*Botrytis cinerea* is a fungus that infects grapes either when the flower cap falls off (and then lays dormant until conditions are favorable) or later colonizes when there is an opportunistic wound in the grapes (created by pests, hail, frost, fungi, etc). It can often turn into gray rot and affect the health of bunches, but if the conditions are right (ideally 18-21C and 90% humidity) it will turn into noble rot and give off aromas of honey, saffron, ginger, wax, marmalade, and panna cotta among others. So think areas that traditionally produce sweet wines (Loire, Alsace, Bordeaux, Tokaj, etc). Note that the laccase released by botrytis will also tend to break down some monoterpenes associated with Muscat, so you'll rarely see a heavily botrytised version of Muscat.

TDN - White Wine (Nose/Palate)		
Petrol, Rubber	*Type*	Varietal (highly correlated)
	Varieties	Riesling
	Explanation	Why call it TDN? Because 1,1,6-Trymethyl-1,2-dihydronaphthalene is a bit of a mouthful. Most prominently found in Riesling, this is the chemical that produces distinct petrol/rubber/garden hose aromas. Research has shown that this chemical is created in the skins of grapes due to sunlight, so modern handling techniques of white wine must along with a better understanding of how to get ripe but not sunburned grapes in the field can decrease the overall amount of TDN in a wine. Many German winemakers consider TDN to be a fault and work very hard to eliminate it from their wines, so you can't always rely on the presence of this compound.

Mercaptans/Sulfur Aromas - White Wine (Nose/Palate)		
Onion, Cabbage	*Type*	Varietal (moderately correlated)
	Varieties	Sauvignon Blanc, Semillon/Sauvignon Blanc Blends
	Explanation	These are compounds that come from either thiols like mercaptans (rotten onion, rotten cabbage, burnt match) or other compounds like dimethyl sulfide (cooked cabbage). I personally find that the elevated thiols in Sauvignon Blanc (which give grapefruit and passion fruit aromas) also tend to carry other strong sulfur aromas.

Lees - White Wine (Nose/Palate)		
Rising Dough, Sourdough, Beer Foam, etc	*Type*	Vinification (weakly correlated)
	Varieties	Albariño, Melon de Bourgogne, Chenin Blanc, Sauvignon Blanc, Pinot Gris, Riesling, Chardonnay, Grüner Veltliner
	Explanation	The dead yeast cells left over from fermentation can impart a significant amount of flavor into a wine, depending on how they are handled. There are many varieties whose classic expressions include the use of lees by winemakers and although it does not help narrow the field significantly, it can be another useful piece of evidence when building a case for a variety.

Malolactic Fermentation - White Wine (Nose/Palate)		
Butter, Creme Fraiche, Cheese, etc	*Type*	Vinification (moderately correlated)
	Varieties	Chardonnay, Viognier, Marsanne/Roussanne blends, Grenache Blanc
	Explanation	Malolactic fermentation is the process of the malic acid in wine fermented by bacteria into lactic acid. This is the same process as when you make yogurt or creme fraiche, so it's not surprising that a similar set of aromas is present. MLF also creates diacetyl (a very distinctive buttery smelling compound that's used in the production of margarine and microwave popcorn).

Oxidation - White Wine (Nose/Palate)		
Hazelnut, Almond, Marzipan	*Type*	Vinification (moderately correlated)
	Varieties	Chardonnay, Chenin Blanc, Pinot Gris/Grigio, Marsanne/Roussanne blends, Grenache Blanc, Semillon/Sauvignon Blanc Blends , Viognier
	Explanation	Oxidation tends to be an indicator of aging in an oxygen permeable vessel, like oak, but some varieties (like Chenin Blanc) are naturally more sensitive to it.

Other - White Wine (Nose/Palate)		
Lanolin, Wet Wool	*Type*	Varietal (moderately correlated)
	Varieties	Chenin Blanc, Semillon
	Explanation	Lanolin is the grease is obtained from sheep's wool (think wet wool sweaters here) and this is an aroma that's distinctive to Chenin Blanc and Semillon. I wish I could tell you what chemical is distinctive to its smell and why it's in these two varieties, but it's something that I do not know (I can tell you that lanolin makes an excellent emollient, though).
Fruit Loops	*Type*	Varietal (moderately correlated)
	Varieties	Viognier
	Explanation	Yes, those Fruit Loops. The aromas of lemon, lime, and peach, along with slightly floral notes like lemon verbena and lily along with a hint of vanilla are what I think about when looking back on one of my favorite breakfast cereals (though I would have never given that description when I was in elementary school). Translate that description into wine and you've got Viognier.

Inorganic Earth - White Wine (Nose/Palate)		
Struck Flint	*Type*	Vinification (moderately correlated)
	Varieties	Chardonnay, Riesling, Chenin Blanc, Grüner Veltliner, Assyrtiko, Semillon
	Explanation	To me this is not truly minerality, as studies show that the mineral composition of vine's soils have little to do with creating "mineral" flavors in wine. I associate a struck flint or a burnt sugar aroma with the use of sulfur as a preservative, which is quite distinct from the vegetal character of thiols. Some varieties tend to have the flint note stand out since there typically isn't much else going on (Assyrtiko, Semillon) and with others, it's more a factor of producer style (many winemakers in Chablis).

Oak - White Wine (Nose/Palate)		
Dill, Coconut	*Type*	Vinification (strongly correlated)
	Varieties	Viura (from Rioja)
	Explanation	We most commonly associate overt American oak with red Rioja and the whites are no exception. When you get American oak with Rioja's Viura, it is just as expressive and can evolve into something that resembles Big Mac sauce.

White Wine Structure Objective Factors

The structure of a white wine will contain many clues towards variety. Pay attention and don't be afraid to make the "high" calls. If a wine has high acid, say it has high acid. Don't hedge and deny yourself a powerful clue.

Residual Sugar - White Wine (Palate)		
Off Dry, Medium Sweet, Luscious	*Type*	Vinification (strongly correlated)
	Varieties	Chenin Blanc, Gewürztraminer, Muscat, Pinot Gris/Grigio, Riesling, Semillon/Sauvignon Blanc blend, Furmint
	Explanation	RS is such a beautiful thing to experience because you immediately have narrowed down the wines to a handful of very distinctive examples that each have their own unique set of objective factors.

Body - White Wine (Palate)		
High Body	*Type*	Vineyard (moderately correlated)
	Varieties	Chardonnay (warmer climate examples) Gewürztraminer, Viognier, Marsanne/Roussanne blends, Grenache Blanc, Chenin Blanc, Pinot Gris/Grigio, Riesling, Semillon/Sauvignon Blanc blend, Furmint
	Explanation	This box should correspond with your viscosity call. If you have a difference here, you should probably re-evaluate your viscosity call and amend it.

Texture - White Wine (Palate)		
Oily	*Type*	Vineyard (moderately correlated)
	Varieties	Chardonnay (warmer climate examples), Gewürztraminer, Viognier, Marsanne/Roussanne blends, Grenache Blanc
	Explanation	High body plus little to no residual sugar generally translates into lots of glycerol and alcohol for me, which gives a very oily, rich texture.
Spritzig	*Type*	Vinification (moderately correlated)
	Varieties	Riesling, Grüner Veltliner
	Explanation	Remember on sight when we talked about dissolved gas? On the palate you can really sense it and the Germans call this slight prickling sensation on your tongue *spritzig*. It's basically the carbon dioxide dissolved in the wine forming minute amounts of carbonic acid on your tongue, thus creating the prickling on your palate. Same varieties as the visual apply on the palate for the same reason.

Tannins/Phenolics - White Wine (Palate)		
Low Tannins	*Type*	Varietal (highly correlated)
	Varieties	Assyrtiko
	Explanation	The only white that I regularly encounter the sensation of tannins on is Assyrtiko. Normally soaking a wine on the skins would reduce the acidity, but with Assyrtiko it naturally has so little potassium that there is very little drop in acid from skin contact. Some winemakers feel that the added tannins and phenolics create a nice counterpoint to the bracingly high acidity of the grape.

Acidity - White Wine (Palate)		
High Acid	*Type*	Varietal (highly correlated)
	Varieties	Assyrtiko, Chardonnay (cooler climate examples), Melon de Bourgogne, Chenin Blanc, Riesling, Sauvignon Blanc, Semillon, Semillion/Sauv Blanc Blends
	Explanation	High acid can be difficult to detect if a wine has residual sugar, but it is paramount to be aware of how RS can mask acidity. Instead of using the initial hit of acidity as your measure of the acid level of a wine, instead after you spit focus on how much and how long your mouth waters. Even when masked with RS, high acid wines will cause your mouth to water for a long time.

Alcohol - White Wine (Palate)		
High Alcohol	*Type*	Vineyard (moderately correlated)
	Varieties	Chardonnay (warmer climate examples), Gewürztraminer, Viognier, Marsanne/Roussanne Blends, Grenache Blanc
	Explanation	Remember that a high alcohol call will also be in line with your body and viscosity calls. In order to get better about evaluating alcohol levels, try tasting a low alcohol wine side by side with a high alcohol wine and swallow just a little of each in succession. Suck air into your mouth and focus on how much your throat burns and how quickly the alcohol cools your palate. Eventually you'll start to get it dialed in. To make even greater steps, I would recommend trying to guess the exact ABV of the wine you're tasting. Your palate will get dialed in very quickly.

Red Wine Visual Objective Factors

Thankfully, with red wines, when an objective factor appears, it tends to narrow your options a little more precisely than white wines. While many white wine objective factors will have maybe seven to eight possible varieties, with red wines there are few that indicate more than six varieties.

Intensity - Red Wine (Visual)		
Low	*Type*	Varietal (weakly correlated)
	Varieties	Pinot Noir, Grenache, Nebbiolo
	Explanation	Low intensity of color means we're dealing with a low pigment variety. It used to be fashionable to say thick skinned vs thin skinned, but it is more accurate to look at the amount of pigment (anthocyanins) in the grapes. Basically with these wines, you should be able to easily see through them. Please note that this factor is non-exclusive, as winemaking decisions such as longer soaking or blending with more intensely colored varieties, can deepen the intensity of these wines. Similarly, other varieties can be made in a fashion where they will have low intensity, such as Zinfandel, Sangiovese, Cabernet Franc, and Merlot, etc, but typically these varieties will still exhibit a higher intensity than the ones listed for this objective factor.
High	*Type*	Varietal (moderately correlated)
	Varieties	Cabernet Sauvignon (warm climate examples especially), Merlot, Malbec, Syrah
	Explanation	High intensity of color comes from varieties that are high in anthocyanins. This results in deep, intense colors, typically with such saturation that it is difficult to see through the wine. This high color intensity is more strongly correlated than a low intensity since the typical steps in red wine making allow the must to extract the abundance of anthocyanins in the skins quite readily, however winemaking techniques and extended aging can diminish color intensity.

Primary Color - Red Wine (Visual)		
Garnet	*Type*	Varietal (moderately correlated)
	Varieties	Pinot Noir, Grenache, Nebbiolo, Sangiovese
	Explanation	The garnet color tends to be one of the more distinctive expressions of color in reds, typically associated with varieties that are more prone to oxidation or see extended aging in oak.

Rim Color - Red Wine (Visual)		
Purple/Magenta	*Type*	Vinification (moderately correlated)
	Varieties	Cabernet Sauvignon, Carménère, Merlot, Malbec, Syrah, Gamay Noir (with carbonic or semi-carbonic maceration)
	Explanation	This type of rim variation tends to come from one of two sources. The first is carbonic maceration, which can create an intense, purple rim. The other is youthful examples of varieties that tend to have deeper color intensity and are also aged in oak.
Orange/Garnet	*Type*	Varietal (strongly correlated)
	Varieties	Pinot Noir, Grenache, Nebbiolo, Sangiovese, Aglianico
	Explanation	Typically this type of rim variation will come from varietal characteristics. With some of these varieties, like Nebbiolo and Sangiovese, these are enhanced by the extended aging required before release.

As with whites, the visual has a number of clues for the savvy eye. One clue that isn't really an objective factor, but is important, is the hue for the primary color of red wine. The red pigments in a wine tend to be more stable at lower pH while the purple pigments are more stable at a higher pH. This means that if you have two red wines, one ruby red in color and the other purple, the ruby red colored wine will tend to have a higher acid than the purple colored wine. It helps play into the possibilities of variety and climate immediately on the visual (but will still need to be checked by running through the grid and examining your objective factors).

Red Wine Nose/Palate Objective Factors

Faults - Red Wine (Nose/Palate)		
Ethyl Acetate and/or Volatile Acidity	*Type*	Vinification (moderately correlated)
	Varieties	Corvina, Nebbiolo, Sangiovese, Aglianico, Tempranillo (Gran Reserva styles especially)
	Explanation	Volatile acidity comes from bacteria (typically *Acetobactor aceti*) which ferments alcohol into acetic acid, which smells like vinegar (because, well, acetic acid is vinegar). This bacteria requires oxygen to reproduce, so VA is typically associated with extended aging in oxygen permeable oak. When this acetic acid then reacts with alcohol, it can create ethyl acetate, which smells like nail polish remover. Quite often EA and VA appear together (although there are other pathways to create EA that do not involve acetic acid) and when you smell VA or VA and EA it's a pretty good indicator of extended aging in oak. Although some new world winemakers will tolerate an elevated level of VA/EA (as the volatility can help lift fruity notes in a red wine) it tends to be a hallmark of many Italian varieties.
Brettanomyces	*Type*	Vinification (moderately correlated)
	Varieties	Syrah (Rhône especially), Grenache (Rhône especially), Merlot and Merlot blends (Bordeaux especially), Cabernet Sauvignon and Cabernet Sauvignon Blends (Bordeaux especially), Tempranillo (Gran Reserva styles especially)
	Explanation	*Brettanomyces bruxellensis* is the most prominent yeast in the *Brettanomyces* family when it comes to wine and is considered a spoilage yeast. It can smell like bacon, smoke, wild game, or "barnyard." A hardy microbe, once established in a winery it is difficult to remove - brett loves to live off of wood sugars and so tends to be indicative of regions (or winery) where hygiene is a bit lacking or where there is significant stem inclusion that gives brett the wood sugars it prefers. Note that this is not an exclusionary objective factor, as attitudes towards sanitation in individual wineries can determine the amount of brett in the finished wine, but it tends to point towards the Rhône Valley or Bordeaux.

Fruit Condition - Red Wine (Nose/Palate)		
Overripe/Dried	*Type*	Mixed (moderately correlated)
	Varieties	Grenache (vineyard), Aglianico (vineyard), Zinfandel (varietal), Corvina (vinification)
	Explanation	Overripe and/or dried fruit character for reds is a bit more complicated than whites. Overripe character can be related to a warm wine region's climate, especially if you find the fruit character to be uniform; I tend to find that it is only helpful when it is the baked fruit character you find in heat loving varieties like Grenache grown in warm vineyard sites. It can also be related to varietal character. Zinfandel tends to be prone to uneven ripening, giving you it's hallmark character of mixed overripe and underripe fruit. For winemaking, regions that dry their grapes before vinification will exhibit dried fruit character, but not necessarily baked fruit character (think of the difference between a ripe apricot, a dried apricot, and a baked apricot cobbler), with Corvina based blends from Amarone della Valpolicella being one of the most prominent dried grape wines. Aging can also yield a dried fruit character, but will typically be accompanied by brown or tawny visual notes.
Carbonic	*Type*	Vinification (moderately correlated)
	Varieties	Gamay Noir (more with village, less to none with cru), Pinot Noir (partial or whole cluster expressions), Grenache (partial or whole cluster expressions), Syrah (partial or whole cluster expressions)
	Explanation	Carbonic maceration is a technique that results from whole cluster fermentation. The grapes, cut off from the vines as a nutrition source, try to survive by transforming their sugar and malic acid into ethanol and carbon dioxide. The fruit character takes on a bright, Jolly Rancher-style presentation that is quite distinctive. It also produces esters like amyl acetate and isoamyl acetate which together smell like bananas, pear drops (a candy more familiar to the British), bubblegum, or cotton candy .

Fruit Condition (Continued) - Red Wine (Nose/Palate)		
Fruit is Tarter on the Palate	*Type*	Vineyard (strongly correlated)
	Varieties	Fruit that becomes tarter on the palate is generally indicative of an old world wine
	Explanation	For the reasoning behind this, see the *Fruit is Tarter on the Palate* factor for white wines.

Floral Intensity - Red Wine (Nose/Palate)		
Medium Plus to High Floral Intensity	*Type*	Varietal (moderately correlated)
	Varieties	Nebbiolo, Malbec, Syrah (with co-fermentation with aromatic varieties)
	Explanation	The intensity of floral notes in red wine is often overlooked, but can be a signal to varietal character. Nebbiolo tends to be high in terpenes like cis-rose oxide (roses) while Malbec tends to have high amounts of geraniol (roses, geraniums, and citrus) and alpha-ionone (violets). Syrah naturally has a moderate amount of terpenes like linalool (roses, lavender, and bergamot) and geraniol, but the floral characteristics can be enhanced if co-fermented with aromatic varieties like Vioginer in Côte-Rôtie. Other varieties like Cabernet Sauvignon, Cabernet Franc, Merlot, and Gamay Noir tend to exhibit floral notes as well, but not at the levels of Nebbiolo, Malbec and Syrah. Corvina can have high concentrations of linalool, but this decreases significantly when the grapes are dried as the linalool oxidizes, creating more earthy green notes.

Vegetal - Red Wine (Nose/Palate)		
Jalapeño, Bell Pepper, Grass (Pyrazines)	*Type*	Varietal (strongly correlated)
	Varieties	Cabernet Sauvignon (and blends), Cabernet Franc (and blends), Carménère (and blends)
	Explanation	Pyrazines are a signature feature of the Cabernet family and have a distinctive green aroma in even slightly under-ripe grapes. In red wines they tend to have a broader expressive range than in whites, and it's not uncommon to find riper expressions of pyrazines, like red bell pepper, in grapes like Carménère. Again, be mindful that pyrazines can ripen out, so do not rely on them immediately jumping out on the nose.
Olive	*Type*	Varietal (strongly correlated)
	Varieties	Syrah, Grenache (especially Grenache/Syrah blends)
	Explanation	Our friend dimethyl sulfide makes a return here in red wines, which can express itself as black olive or even truffles. It seems to be most strongly associated with Syrah where it can also enhance raspberry fruit notes.

Herbal - Red Wine (Nose/Palate)		
Eucalyptus	*Type*	Vineyard (strongly correlated)
	Varieties	Cabernet Sauvignon, Merlot, Syrah, Grenache
	Explanation	The main aromatic note of eucalyptus is the terpene 1,8-cineole, detectable at 1.1 micrograms/liter (the equivalent of three drops in an Olympic swimming pool). Contamination from eucalyptus trees (via oil and leaves) to nearby vines is quite common, especially when using mechanical harvesting, so reds from Napa Valley (which has lots of eucalyptus planted) and Australia (where the tree is native) are going to be suspect.
Cola/Sassafras	*Type*	Variety (moderately correlated)
	Varieties	Pinot Noir
	Explanation	This is a scent that is strongly associated with Pinot Noir. In cooler climates it tends to be more herbal, with more of the sassafras note, but in warmer climates rich cola notes will be apparent. Like the aromas of lanolin and wet wool in white wines, I cannot give you a satisfactory scientific explanation for this note, but it is widely agreed upon as a characteristic for Pinot Noir and I absolutely concur.

Rotundone - Red Wine (Nose/Palate)		
Black Pepper, Pastrami Spice	*Type*	Varietal (strongly correlated)
	Varieties	Syrah
	Explanation	In white wine it presents as radish or lentils, but in red wines rotundone tends to come across as extremely peppery. This chemical is one that a significant portion of the population is nose blind to, but if you come across it it tends to smell like black pepper and for me it sometimes evolves into pastrami spice.

Stem Inclusion - Red Wine (Nose/Palate)		
Pickled Green Peppercorn, Dusty Black Pepper	*Type*	Vinification (moderately correlated)
	Varieties	Grenache, Syrah, Pinot Noir, Gamay Noir, Corvina, Cabernet Franc (from the Loire especially)
	Explanation	For me stem inclusion tends to show what I call peppery notes, but these are subtly different from the true black pepper notes of rotundone. While rotundone will come across as fresh cracked black pepper with a heady hit of essential oils (try putting some black pepper in a spice grinder to get this effect), stem inclusion will be either pickled green peppercorn (if the stems were a bit green, which adds a resinous green note) or dusty black pepper (think pepper that's been sitting in your spice cabinet for years, where the essential oils have evaporated and the pepper is bland and lost its punch). Remember that this is a winemaking choice, so you won't necessarily find it all the time in these varieties.

Thiols - Red Wine (Nose/Palate)		
Espresso, Coffee	*Type*	Vinification (weakly correlated)
	Varieties	Cabernet Sauvignon, Cabernet Franc, Merlot, Malbec, Carménère
	Explanation	The chemical family of thiols is diverse and there is a class called furfurylthiol that smells like roasted coffee, smoke, or chocolate. This is more about barrel toast than varietal character since furfurylthiol is created by a reaction between furfural (a byproduct of the Maillard reaction) and hydrogen sulfide. To me, these notes particularly stand out in Bordeaux varieties, especially ones that see a generous amount of new oak.

Botrytis - Red Wine (Nose/Palate)		
Honey, Ginger	*Type*	Vinification (strongly correlated)
	Varieties	Corvina
	Explanation	While sometimes welcome in white wines, for red wines botrytis would be considered a flaw. About the only region you might encounter it on a regular basis would be Amarone della Valpolicella, where, for lower quality producers, they might be inclined to tolerate a little bit of botrytis.

MLF - Red Wine (Nose/Palate)		
Yogurt, Cream, Hard Candies	*Type*	Vinification (moderately correlated)
	Varieties	Zinfandel
	Explanation	Although malolactic fermentation occurs in nearly all red wines, for many it tends to stand out in Zinfandel. Some tasters like to call it peach yogurt, but for me it's more like strawberries and creme flavored hard candies, confected and creamy at the same time.

Oxidation - Red Wine (Nose/Palate)		
Balsamic, Orange Peel, Orange Liqueur Chocolates	*Type*	Vinification (moderately correlated)
	Varieties	Grenache, Corvina, Nebbiolo, Sangiovese, Aglianico, Tempranillo (Gran Reserva styles especially)
	Explanation	Orange peel is an aroma that I tend to get with oxidized wines, and when you combine that with a balsamic note (indicative of volatile acidity) it leads you to varietals that are either prone to oxidation, like Grenache, or wines where you've had extended aging in oak vessels.

Oak - Red Wine (Nose/Palate)		
Dill, Coconut, Cumin, Curry, Fenugreek (American Oak)	*Type*	Vinification (moderately correlated)
	Varieties	Tempranillo (Gran Reserva styles especially)
	Explanation	Extended oak aging combined with full or partial American oak in Rioja creates a riot of aromas. American oak is more prominent with whiskey lactones (which give us sweet, coconut aromas) and the extended aging period gives a chance for complex aromas like sotolon (which smells like fenugreek or maple syrup).

Red Wine Structure Objective Factors

Residual Sugar - Red Wine (Nose/Palate)		
Off Dry	*Type*	Vinification (highly correlated)
	Varieties	Corvina, Zinfandel, Grenache (especially from Australia), Syrah (especially from Australia)
	Explanation	Residual sugar in red wines is usually just off dry. Typically RS can be found in Amarone (where the law allows RS levels to adjust upwards with ABV), Zinfandel, and warmer climate expressions of Grenache and Syrah (where the sugar complements the exuberant ripe fruit and helps integrate the elevated alcohol).

Tannins/Phenolics - Red Wine (Nose/Palate)		
High Tannins	*Type*	Varietal (moderately correlated)
	Varieties	Cabernet Sauvignon, Nebbiolo, Aglianico
	Explanation	When I speak of high tannins, I mean rip your teeth off your gums high. Cabernet Sauvignon, which already has high grape tannins, typically sees them supplemented with wood tannins from oak aging. Meanwhile, both Nebbiolo and Aglianico are tannic beasts. Some might question not including Sangiovese, but I personally feel that the warmer climate in Tuscany doesn't allow the grape to develop truly high tannins. Some would disagree with me, and if you do, I encourage you to use what works for you.

Conclusion

Getting better at deductive tasting involves a lot of disciplined practice; it can be devilishly hard to fight against our instincts and not jump to conclusions. However, the process of deductive tasting is designed to force you to systematically approach each glass of wine the same way. If you focus on building a case for your conclusions, where you have four or more data points that support your conclusion, you will eventually become a better taster.

Get there by focusing on knowing the grid backwards and forwards and then learn what works for you. If you need to modify how you approach the grid or add to its contents, do so as it can only help you become a better taster. You also need to know your varietal paradigms and objective factors, and know the science behind them as well so you can make educated deductions while you are tasting. And finally, focus on doing comparative tastings (rather than six wine flights) and track your tasting so you know where you are strong and where you can improve.

Being a good taster is not about being born with a magic palate; it's about doing the hard work, memorizing your tasting theory and practicing your deductive skills. If you put your time into honing your skills, you can be sure to be ready to attack the tasting section of a high level exam.

Additional Resources

- CMS-A Resources Area - A listing of exam standards as laid out by the Court of Master Sommeliers-Americas.
- Guildsomm's Expert Guide to the Science of Tasting - A must read to get a better understanding behind the science of tasting.
- Guildsomm's Blind Tasting Section - Filled with useful tools including commentary by knowledgeable tasters.
- Grape Varieties Section of Guildsomm's Compendium - Complete varietal profiles for many major varieties including descriptions of major classic regions for each variety.
- Green Pin Manifesto - A comprehensive view of how to approach learning at the advanced exam and beyond.
- Advanced Memory Techniques and How to Apply Them - My own guide on how to develop memorization systems to deal with learning and retaining large amounts of information.
- Preparing for Service Exams at High Levels (Advanced and Masters) - My walk through of how to prepare for service exams.
- StudyTech 1.04 - A great overview of not only what to study for higher level wine exams, but how to approach the material as well.

Appendix A - Table of Varieties and Corresponding Objective Factors

Variety	Visual	Nose/Palate	Palate
Albariño		Floral Intensity - M+ Lees	
Assyrtiko		Inorganic Earth - Flint	Tannins - Low Acid - High
Chardonnay	Viscosity - H w/Fast Tears (Warm Climate)	Fruit Con - Overripe/Dried (Warm Climate) Lees MLF Oxidation Inorganic Earth - Flint	Body - High (Warm Climate) Texture - Oily (Warm Climate) Acid - High (Cool Climate) Alcohol - High (Warm Climate)
Chenin Blanc	Deep Brownish Gold Viscosity - H w/Slow Tears	Fruit Con - Overripe/Dried Vegetal - Chamomile, Hay Botrytis Lees Oxidation Lanolin Inorganic Earth - Flint	Residual Sugar Body - High Acid - High
Furmint	Deep Brownish Gold Viscosity - H w/Slow Tears	Fruit Con - Overripe/Dried Botrytis	Residual Sugar Body - High
Gewürztraminer	Deep Brownish Gold Copper Viscosity - H w/Fast Tears Viscosity - H w/Slow Tears	Fruit Con - Overripe/Dried Fruit - Lychee Floral Intensity - High Botrytis	Residual Sugar Body - High Texture - Oily Alcohol - High
Grenache Blanc	Viscosity - H w/Fast Tears	Fruit Con - Overripe/Dried MLF Oxidation	Body - High Texture - Oily Alcohol - High
Grüner Veltliner	Platinum (no botrytis) Gas - High	Rotundone Lees Inorganic Earth - Flint	Texture - Spritzig
Marsanne/Roussanne Blends	Viscosity - H w/Fast Tears	Vegetal - Parsnip, Turnip MLF Oxidation	Body - High Texture - Oily Alcohol - High
Melon de Bourgogne	Platinum	Lees	Acid - High
Muscat		Fruit - Lychee Floral Intensity - High Botrytis	Residual Sugar
Pinot Gris/Grigio	Deep Brownish Gold Copper Viscosity - H w/Slow Tears	Fruit Con - Overripe/Dried Botrytis Lees Oxidation	Residual Sugar Body - High
Riesling	Platinum (no botrytis) Deep Brownish Gold Viscosity - H w/Slow Tears Gas - High	Fruit Con - Overripe/Dried Botrytis TDN Lees Inorganic Earth - Flint	Residual Sugar Body - High Texture - Spritzig Acid - High
Sauvignon Blanc	Platinum (especially NZ)	Fruit - Grapefruit Vegetal - Pyrazines Mercaptans Lees	Acid - High
Semillon		Lanolin Inorganic Earth - Flint	Acid - High
Semillon/Sauv Blanc	Deep Brownish Gold Viscosity - H w/Slow Tears	Fruit - Grapefruit Fruit Con - Overripe/Dried Botrytis Mercaptans Oxidation (BDX)	Residual Sugar Body - High Acid - High

Varieties and Corresponding Objective Factors (Continued)

Variety	Visual	Nose/Palate	Palate
Torrontes		Fruit - Lychee Floral Intensity - High	
Viognier	Viscosity - H w/Fast Tears	Fruit Con - Overripe/Dried (Warm Climate) Floral Intensity - High MLF Oxidation Fruit Loops	Body - High Texture - Oily Alcohol - High
Viura		Oak - American	
Aglianico	Rim Color - Garnet	EA/VA Fruit - Overripe/Dried Oxidation	High Tannins
Cabernet Franc		Vegetal - Pyrazines Stem Inclusion (Loire) Thiols	
Cabernet Sauvignon	High Intensity Rim Color - Purple/Magenta	Brett (BDX Especially) Vegetal - Pyrazines Herbal - Eucalyptus Thiols	High Tannins
Carménère	Rim Color - Purple/Magenta	Vegetal - Pyrazines Thiols	
Corvina		EA/VA Fruit - Overripe/Dried Stem Inclusion Botrytis Oxidation	Off Dry
Gamay Noir	Rim Color - Purple/Magenta (Carbonic)	Fruit - Carbonic (Village) Stem Inclusion	
Grenache	Low Intensity Primary Color - Garnet Rim Color - Garnet	Brett (Rhône Especially) Fruit - Overripe/Dried Fruit - Carbonic (Whole/Partial Clus) Vegetal - Olive Herbal - Eucalyptus Stem Inclusion Oxidation	Off Dry (Australia)
Malbec	High Intensity Rim Color - Purple/Magenta	Thiols Floral Intensity - M+ to H	
Merlot	High Intensity Rim Color - Purple/Magenta	Brett (BDX Especially) Herbal - Eucalyptus Thiols	
Nebbiolo	Visual - Low Intensity Primary Color - Garnet Rim Color - Garnet	EA/VA Floral Intensity - M+ to H Oxidation	High Tannins
Pinot Noir	Low Intensity Primary Color - Garnet Rim Color - Garnet	Fruit - Carbonic (Whole/Partial Clus) Herbal - Cola/Sassafras Stem Inclusion	
Sangiovese	Primary Color - Garnet Rim Color - Garnet	EA/VA Oxidation	

Varieties and Corresponding Objective Factors (Continued)

Syrah	High Intensity Rim Color - Purple/Magenta	Brett (Rhône Especially) Fruit - Carbonic (Whole/Partial Clus) Floral Intensity - M+ to H (Coferm) Vegetal - Olive Herbal - Eucalyptus Rotundone Stem Inclusion	Off Dry (Australia)
Tempranillo	Low Intensity	Oak - American	
Zinfandel		Fruit - Overripe/Dried MLF	Off Dry

Appendix B - Post from Guildsomm entitled "Track Your Blind Tastings With This Google Sheet"

Hi folks,

I had been struggling with developing a way of tracking my blind tasting and just paper and pen didn't seem to be adequate. I was using a Google Sheet to track my tastings, but the raw data, unanalyzed, was a crime to my organized mind; I didn't have any overall view of how well I was doing. I wanted a tool that would automatically analyze my tastings and tell me where I was doing well and help me identify my blind spots, so I spent a few hours a month ago to create something to do exactly that.

The final result can be found here: Blind Tasting Tracking BLANK. Please make a copy for yourself to use and give it a try. If you're looking for an example of how to fill it out, check out this example: Blind Tasting Tracking EXAMPLE. It seems more complicated than it is, but all you really have to do is fill out the Tasting Log sheet and the rest will take care of itself. The document has three sheets:

- Overall Scores
    - Raw - Takes total scores from the Analysis sheet for whites/reds and sums them up
    - Including Non-Classic Examples - Rolls up the instances where you passed/failed non-classic examples into the appropriate category
    - Omitting Non-Classic Examples - Excludes non-classic examples. This is the best indicator of how you are tasting.
- Analysis
    - Rolls up the data from the Tasting Log sheet
    - To match between the Tasting Log sheet and the Analysis sheet you need to make sure that you are using the country code and varietal code consistently. So Gruner from Austria becomes GV from AT. (To add a new varietal, just insert it into the sheet and update the order so you can sort appropriately)
    - Note that varietals listed on this sheet are solely based on what I've been tasting lately for my own studies and you can modify it as you see fit by inserting a row into the sheet and adding the varietal code and country code - just make sure to use the same varietal code and country code whenever you enter anything in the Tasting Log sheet.
    - Columns
        - Ord - Order for sorting
        - Var - Varietal
        - Co - Country
        - Tasted - Sum of number tasted from the Tasting Log sheet
        - Classic - Sum of number classic examples from the Tasting Log sheet
        - P% and P Adj - Raw pass percentage and adjusted percentage based solely on classic examples
        - F% and F Adj - Raw fail percentage and adjusted percentage based solely on classic examples
        - Alm% and Alm Adj - Almost pass percentage and adjusted percentage based solely on classic examples
        - Pass, NC - Pass, but not a classic example

        - Fail, NC - Fail, but not a classic example
- Tasting Log
    - Here's where I keep the raw data from my tastings. The color codings are manually added after the tastings.
    - Columns
        - Ord - Order for sorting
        - Sc - Score
            - 1 - Pass, got country and varietal correct (my methodology does not go down to appellation to score a wine as correct, as I feel that, for my purposes, that country is sufficient)
            - 2 - Fail, missed both
            - 3 - Almost, got close enough or initialed the correct wine
            - 4 - Pass, but not a classic example
            - 5 - Fail, but not a classic example
        - Date and Loc - Day and what tasting I was at
        - First set of wine information - What you called
            - Var - Varietal for what you called, using the two digit varietal code
            - O/N - Old World, New World
            - CO - Country, using the same consistent codes (two digits for everything except USA)
            - Appellation
            - Vintage
            - Objective Factors - Notes for why you called that wine
        - Second set of wine information - What the wine was
            - Var - Varietal, using the two digit varietal code
            - Producer
            - Bottling
            - CO - Country, using the same consistent codes (two digits for everything except USA)
            - Appellation
            - Vintage
            - Objective Factors Missed - Notes for what you missed in the wine that should have lead you to the correct answer
            - Objective Factors Added - Notes for what you mentally added to the wine to make you go astray
            - Notes - Any other notes