

The Oeneo Closures Debate 2006

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*Panel members: Peter Ferriera, John Forrest, Peter Godden and Terry Lee (all introduced below). Chaired by Jamie Goode (publisher www.wineanorak.com, author of books *Wine Science* and *Wine Bottle Closures*, and wine correspondent for the UK's *Sunday Express* newspaper). This transcript was prepared by Jamie Goode: it has been lightly edited for readability, but otherwise it presents the discussion as it occurred.*

Goode: This afternoon we are fortunate to have a star-studded panel for the closures debate. **Terry Lee** is currently a consultant but was previously director of the AWRI for 14 years and worked for a number of years with Gallo. Terry has a PhD in food science and was responsible for a lot of the early work on TCA and cork taint. **Peter Godden** is the Group Manager of Industry Development and Support at the AWRI. He is also a winemaker and is lead author on many of the important recent publications on closure performance. **John Forrest** is winemaker at Forrest Estate in New Zealand's Marlborough, and he has a PhD in molecular neuroscience. **Peter Ferriera** is cellar master at Graham Beck Wines in South Africa. In this session we will have a question and answer session with the panel, and then we will take questions from the floor.

I am going to begin with what might be seen as a rather controversial statement, and I'll ask the panel to comment. While natural cork has until now been the dominant closure type, its failings are well established. First it taints a significant proportion of wines that it seals, with all half-decent surveys on taint rates coming up with a figure in excess of 4%. Second, as a natural product its performance is variable: until now, cork taint and inconsistency have been the chief battle ground in the closures debate. But now that several consistent taint-free alternative closures, offering a range of oxygen transmission (OTR) levels are available, we can move on from discussion about cork's failings. There is no longer any justification to continue using natural cork to seal wine bottles. The central issue in the closures debate is now one of oxygen transmission, and working out which alternative closures are most suited to which types of wines. Does the panel agree that there is now no place for a closure that is inconsistent in its performance, or introduces a significant risk of contamination? And is it irresponsible of winemakers to still be using cork, with its attendant risks, in sealing their wines?

Godden: I don't think there's any justification to use a closure that shows variability and risk of contamination from a technical point of view. But if that's what consumers want from a marketing and consumer perspective, then this in itself is a justification. Are winemakers irresponsible if they use cork? I don't think I'd use

- that term. I think winemakers in many parts of the world are fully aware of the issues but continue to use natural cork for other reasons, and we wouldn't criticise them for doing this. But as the efficacy of other closure systems becomes more widely accepted and disseminated, then this situation will change.
- Forrest:* It was the search for a better alternative in 2000 that led the NZ industry to research options, and the choice made was the screwcap. We think it has been successful for us. The surprise has been the ready acceptance by the public globally. I think some winemakers worry falsely about the market.
- Ferriera:* At the end of the day it is the winemaker's decision to use the right closure, but it is for the marketer to decide what's appropriate for where that product will be sold. It is not just a winemaking issue: we have to deliver what the market requires.
- Lee:* The main focus today should be the development of a range of closures that perform more than adequately for the job we want done. As was stated, the consumer has all too often been forgotten in this debate. I'd hate to call winemakers irresponsible for using cork: I call them a lot of things, but irresponsible isn't the word I'd use here. They are guided by a number of issues: the performance of the closure, whether it runs on their line, and the consumer expectations. Our role as technicians is to make the closures perform, and then it's up to the marketing people to select the product for the particular product or marketplace.
- Goode:* Imagine we could devise a closure that seals a wine bottle completely, with no gas transmission whatsoever. Is a complete oxygen barrier the ideal closure for a wine, and would you use such a closure?
- Ferreira:* I certainly believe that a little oxygen transmission is necessary for development of the wine in the bottle. It's a long time since we made wines that are only drinkable after 20 years.
- Godden:* The point we've been making for a few years now is that it is possible to use different levels of oxygen—introduced into the wine either at bottling or post-bottling—in a creative way, to manage the development of the wine so it is at its optimum when it is consumed. I don't think zero permeation is ideal for many, if any wines. I wouldn't use such a closure to seal my wines. But this is perhaps missing the point: variable levels of oxygen ingress will create different wines. This is the key point from our closure trial: we took one wine and bottled it with 14 closures. Since then we have taken one wine and bottled it with various numbers of closures. You get different wines, and they look different after as little as three to six months. They are not all heading towards the same endpoint: they are going off in different tangents. We are past the question of whether or not the wine needs oxygen.
- Lee:* My short answer is no: I think as we learn more about the impact of oxygen on wine development it will allow us to put products in the marketplace that have certain characteristics at certain times. This will be the future.
- Forrest:* For six years we have been using screwcaps across 14 different varieties, five reds and nine whites. Every screwcapped wine has been equal or superior in trials

of cork versus screwcap over this period. I have a closure that I'm commercially happy with.

Goode: With the tin-lined screwcaps, in all the trials that have been done so far, one of the conclusions each time is that the screwcapped wines have scored high for struck flint/rubber, a descriptor of reduction. Is reduction a real life problem when it comes to wines sealed with tin-lined screwcaps? If not, why not, when this has been a finding in all the closure trials?

Godden: Our trials show ratings for reduction. I would point out that the overwhelming majority of screwcapped wines in the Australian marketplace are not reductive, though. But this is an important issue. Reductive characters are there. You say a 'high rating'. In our trial we use a 0 to 9 scale, and we might get a rating of 1 or 1.5 for reduction. Going back a few years in our Advanced Wine Assessment courses where we have guest judges, we have put the closure trial wine in under various closures, and it has regularly received high silver and gold medals: so although it has this reductive character, I think too much has been made of this. With hindsight I am glad that we saw it: it is a major issue that has to be addressed and understood, but the overwhelming majority of commercial wines are not reductive and this is not the dominant character of the screwcapped wine in our trial.

Lee: This is a classic example of the wine industry jumping in on a new technology without a full understanding of the impact of that technology on either the chemistry or microbiology of the wine. What has to happen now is that the scientists need to come along and sweep up the problems that have been created by the introduction of the new technology. I am not saying that we shouldn't introduce new technology, just that it is often introduced from empirical observations. There have been some good hypotheses put forward to explain the development of these reductive characters. We need to test these out with a bit of good science. One of the theories is that the tin-lined screwcaps have very low oxygen transmission rates: I'm sure we'll be able to come up with a wadding that has a higher oxygen transmission rate. If the hypotheses are correct about the formation of these reductive characters then the problem will be solved.

Ferriera: I am a little more cynical. Back home if we had screwcaps and corks in a comparative tasting you'd definitely find someone who will pick up the screwcapped wine and say it is reduced because it is common knowledge that screwcaps will give reductive characteristics.

Forrest: There aren't many reductive screwcapped wines out there in the marketplace. Go and try 100 out there today, and you won't see 25% reductive as the cork industry claim. It is just a nonsense. In NZ at our national wine shows, the wine faults are recorded. There was a lower proportion of screwcapped wines rejected for sulphide problems than there was for corked wines. Reduction is a winemaking problem.

Godden: During our last three Advanced Wine Assessment Courses (AWACs) we have gauged the ratings for reduction for cork and screwcap. For two of those courses

there's been a slightly higher rate under cork. It's a problem for all closures. By any standard of technology adoption, the rate and extent of adoption of screwcaps in Australia and New Zealand has been extraordinary, especially considering the technology being replaced was so entrenched. This will not happen if there are intrinsic problems with that new technology. One of our fears, perhaps, is that if there is a mass rush into screwcaps or other low-permeation closures in Europe, where there are more wines that have a greater propensity to go reductive in bottle, there could be problems. This is what we have actively been trying to manage for the last three or four years. I was consulting to a couple of wineries in Italy last year who both wanted to put a red wine under screwcap. Neither of them have done it, which I think is a wise decision, because the situation with the wines going to be used, or the equipment going to be used to apply the screwcaps just wasn't right. It broke all the rules that we have been laying down for the Australian industry for the last six years. It is important people don't make this switch until they are ready and are technically able to do it properly.

Lee: I think it is unfortunate that the screwcaps have copped the flack on this. If the hypotheses are correct that it is largely a function of low-permeation closures, we have been measuring OTR in closures for at least 10 years and sometimes we find corks that have OTRs similar to screwcaps. If this is a problem, you could have it with any low permeation closure.

Goode: So if we have a potential risk of the development of sulphur compounds that cause reduction with using low-permeation closures, given that there are closures available that don't have quite such low OTRs, isn't it a safer bet to opt for these rather than using the tin-lined screwcap, with its attendant risks? Putting this question a slightly different way, what benefit is there from using an ultra-low permeation closure over some of the alternatives that allow a little more OTR, but not enough that the wines oxidise rapidly?

Forrest: Can I ask what that option is at the moment?

Goode: I'm loath to mention closure brand names. For a start, there are a range of synthetic options: obviously the OTR with many of these is higher than might be ideal for wines destined for longer ageing, but synthetics have come a long way since the initial AWRI studies. Then there are technical closures such as Diam, which is available in two different permeabilities. There are barrier methods such as ProCork, and the saranex-only lining for screwcaps. This is used quite widely in Europe, and recently some producers have started trials in Australia. So there are options of consistent manufactured closures with different OTRs. Is there a benefit to using a tin-lined screwcap with its attendant risks when alternatives exist?

Lee: The reason why a lot of wineries have moved to screwcaps is the cork taint issue. We were not able to convince the cork industry that they had a problem for about 20 years, and then finally along came some competitors which forced them to acknowledge they have a problem and got them to do something about it.

Perhaps there is less of a reason for going to screwcaps today with some of the other closures available. The other point I was going to make is that in the last 10 years we have probably seen more innovation in closures for wine bottles than we have in the past 100 years. A near monopoly of one type of closure stifled innovation. The competition has even caused the cork industry to innovate, which is great. It is an exciting time at the moment with closures for wine. It is going to continue to be so.

Godden: I make the point again: the overwhelming majority of wines that are under the Saranex-Tin liner are not reductive. If other combinations of liner were offered, people would trial them. Things I have read recently have suggested that because lots of people are trialling Diam in New Zealand, that means they are dissatisfied with screwcaps. I think this is a fairly negative interpretation. It is inevitable that if there are other closure technologies available, people will have a look at them. The original objective of our study was that we wanted better, more-reliable closures, and a greater choice of them. We are at a very exciting time, and I'll make the point that we have only come so far in terms of our understanding in the last three or four years because we have been using closures such as screwcap which give us a reliable result. If we didn't have the reliability and the data that come from using those closures, our understanding would be way back where it was five years ago.

Forrest: The move to Diam by some New Zealand producers is market driven. The wineries concerned are commercially frightened to take on some markets head on with a new closure system. Some of the Asian markets have a conservative, traditional understanding of wine. TCA wasn't the main reason I gave up cork. I found random oxidation, flavour scalping and the negative influence that sap from cork gives the wine, resulting in a diminution in the purity of fruit. This loss of purity of fruit in any variety is negative in a wine. TCA was a smaller reason.

Ferreira: We have been trialling other closures since they were made available. It isn't so easy to say overnight we are going to change from using cork to screwcap. But it was fairly easy for us to understand the dimensions in wine styles how to adapt going from cork to synthetic closures. This has benefited our product in the marketplace: we have had fewer returns on TCA and other cork-related complaints.

Goode: One of the most interesting conclusions to emerge from the large closure study conducted by the AWRI was that if you take a single wine and bottle it with 14 closures, from that moment on you have 14 different wines. The idea here is that the oxygen transmission differences among the different closures impact significantly on the development of the wine. Of course, there are other bottling parameters that have an effect on the way the wine will develop, but it seems to me that chief among these is the closure. I hope I'm not misquoting you, Peter [Godden], but you said tongue in cheek once that closure choice is more significant than terroir in shaping the flavour of wine. Along those lines, we now have on the market a range of different closures offering a range of different

OTRs. In the past, cork was the one-size-fits all solution for all wines, with all its attendant issues. Are we looking for another closure to take cork's mantle as the new one-size-fits-all solution for wine bottles, or is there room in the market for a range of closure types? And can OTRs be used creatively as part of the winemaking process? In a sense, what we have here is winemaking beyond bottling, with closure choice seen as an active decision by the winemaker according to the type of wine.

Godden: I need to correct a statement you made about the trial. You only mentioned OTR as a factor which created different wines. I'd suggest that there are other factors. In particular, flavour scalping. So there are other reasons why those wines are looking different from the start; otherwise, I'd agree with what you said. Your premise there is what I have been saying for several years: the corollary of this observation is that if you can do this reproducibly, then you can match the closure to the wine. We started using the term 'designer closures' quite a long time ago. Whether or not winemakers and the trade will think it is important enough, now we have eliminated variability and taint issues, is another question.

Ferriera: I have come to the conclusion that winemakers should become designer winemakers. There are methods in cellar practices that can assist the type of closure you are going to use. Poor winemaking could lead to reductivity, for example.

Forrest: It is exciting to me, as a winemaker, that we now have choice. We are experimenting with that choice right now. I have one concern about the marketplace: how do we educate in a positive sense, and not end up with a negative image when we present these options to the consumer?

Lee: Consumers aren't fools, and it is good to ask them what they like. Our approach is to develop a portfolio approach to closures. The main thing is to make sure the closures do the job; then it's up to the marketing people to select the closure for the particular wine or particular market place. Can we use closures to assist in our presentation of wines to consumers? I think we can. One of the suggestions we made to Sabate (now Oeneo) is that we had seen that the original Altec closures had an OTR similar to metal caps. We suggested that since we were in the business of selling a reasonable amount of wine at a fairly young age, it would be nice to have an Altec closure with a higher OTR. As it turns out, they've done this for another reason, but it was a valid suggestion at the time. I think in the future we will have closures with different OTRs and we can carry out winemaking after bottling by making the appropriate closure choice. What we are concerned about is that the product gets into the consumers' hands in the state that they want it in. A significant part of our production is consumed within 3 to 6 months of bottling. We hear a lot of discussion about whether this closure will maintain the wine for 10 or 20 years; it is almost irrelevant. So much of wine is effectively in the category of fast-moving consumer goods.

Goode: This raises the issue that consumers seem to have fixed in their minds the idea that for a wine to be really good it has to be ageworthy. Along with notions of

creating different wines and matching closure type to wine style, with this concept should we be thinking in terms of specifying drink by or drink between dates for wines?

Forrest: That really concerns me, because the next step beyond this is wines that are out of their use by date. What happens to them? You could commit commercial suicide with a delayed shipment or slower sales.

Lee: I can understand your concern if the wine isn't sold, but this issue has always been tackled from the winemakers point of view. You get a wine that comes back from the trade: is it too old? The winemaker says no, it is lovely. What we forget to do is ask the consumer. Increasingly we have to set our shelf life standards based on where the wine stops to meet consumer expectations. Too often, the winemaker or company is deciding. Our shelf-life expectations should be geared to making sure the product is meeting the expectations of the consumer.

Godden: This notion worries me somewhat. There is a lot to be known and improved in terms of transport and storage—variables which could completely undermine drink between or drink by dates. I think you are putting the cart before the horse here.

Lee: I think the rest of the food industry would laugh at you if you made these comments to them, because they are forced to put use by dates on a whole range of products. The wine industry seems to think it's very different from the rest of the food industry; we're not, we are part of it. I agree that we are putting wines through transport conditions that are abominable. You only have to seem some of the results from the data loggers we get. We have to combat this and put the product in the marketplace in a condition that meets consumer's expectations. We want the consumer to come back and buy a second bottle, and a third one.

Goode: Is the trade ready for the idea of matching closure type to different wines? Whose job is it to do the experimenting and trials that are needed to get a firmer idea of which closure types might suit which broad-brush wine types the best?

Forrest: My concern is who is determining those styles? I hope that it is the consumer.

Godden: I can't say whether the wine trade is ready or not. I'd love to see it tested, but we'd need a lot of money from the Australian wine industry to do that. Many Australian producers would consider we're in a much better position than we were five years ago, so it will be hard to get this funding. But I will try to do this.

Forrest: I don't understand sulphur and oxygen chemistry well enough to present this to my consumers. The research is not being done, and until I understand these issues better, I'm not prepared to take that next step into the unknown.

Lee: I think some companies are ready with closures with variable OTRs, but one problem we have to overcome is the ability to measure oxygen transfer through a closure. It's hard and it's expensive. There's also a need for good interpretation that we get. One of the themes we hear at the present is that most of the OTR data on cork are on a cork in a bottle neck but with no wine running up against it. This is a fair criticism, but my answer is how many wines are now handled after bottling standing upright right through the supply chain. More R&D needs to be

done. The equipment we use for measuring OTR is expensive and it requires a lot of skill to operate it. To answer your question, Jamie, one or two companies are ready, but we need quite a bit more work to be done on the measurement techniques and the interpretation of the data.

Godden: The same goes for the identification of compounds that form this characteristic we refer to as 'reduced'. We have people looking at these issues at the AWRI. We know of perhaps 10 compounds at the moment; there could be dozens or even hundreds of them. We need to identify them and develop rapid methods to analyse them. We also need to work out their aroma and flavour thresholds, and the combination of thresholds when we start to combine these is complex. We don't have these tools in place yet, but they will be important in driving this whole thing forwards.

Goode: Connected to this, which data on closure performance do we currently lack? How would you set about getting these data if someone were to provide you with adequate funding?

Ferreira: As Peter Godden has just explained, this will be an expensive analysis. We need to get funding made available, because the next step is to understand what the oxygen transmission of the various closures is, and how this impacts on wine flavour profile.

Godden: There are lots of areas where more understanding is needed. One is working out which compounds are responsible for what we call reduction. How do the concentrations of these change in bottle and what influences that? How do they form? We need a broad-ranging set of trials that take one cherry at a time. We can't try to answer all questions at once. We need to build up the theories we are working on. Putting the tools in place for measuring reductive compounds and OTR is still a fair way off.

Goode: Do you have any more plans at the AWRI to do another trial, or to continue the trial you are doing?

Godden: Yes, we are continuing our trial. We have plenty of wine left, and we will continue testing while we are getting what we consider to be useful data. This trial might well be approaching its close. There is still a lot to come out from the data of the original trial, and we are building up our statistical capacity at the AWRI. I would like to look at the SO₂ data for thousands of bottles of the same wine measured well. We are thinking about a new trial, and consumers will have to be a bigger part of the mix next time round. We are getting consumer sensory panels going now, and if we start a trial in 2008 these panels will be available. But it might be good to have four panels around the world, with both experts and consumers. One of the reasons why we used only one wine, and a white wine, originally is that we realized we could do a much better job with the money we had only analysing one wine, and the oxidative changes/development seen in red wine over time would result in a much broader range of opinions about whether this is positive or negative. At least we could be sure with our Semillon wine that most people would see the same thing and agree on whether it was negative or

positive. It becomes more difficult once you start to have red wines, or multiple wines in the mix.

Lee: I think what we are talking about here is key performance indicators for a good closure. If you are looking at key performance indicators you have to take into account the maintenance of the integrity of the product, whether it runs on my line, and the functionality (what the consumer expects out of the closure). Ten years ago about the only performance indicator we had was if the cork looks good it must be, and we'd pay a lot of money for it and put it in our best wine. We've gone past that with the advent of the new closures. These have had to do a much better job in convincing sceptical winemakers to use their product. They have done a lot of work in developing better measures of closure performance. We still lack good OTR measurements. I suspect that we still don't have a really good performance measure for sealability. It is a compromise between it getting into the bottle, getting it out of the bottle, and also sealing the bottle. We have to look outside our own industry for people with expertise on sealing whatever against glass. We also have to embrace the bottle manufacturing industry. We have tended to concentrate here on closures, but our big partner is the bottle manufacturer. We have to work hard with them to come up with bottles that are consistent in performance. This is particularly important for screwcaps.

Forrest: I think that is a fair comment: the screwcap failures I've known have largely been down to bottle inconsistency.

Goode: What would your predictions be for the closures market in 10 years time? Will there just be one closure? Or a profusion? Will there still be a place for dear old cork?

Lee: As we've indicated, it is a pretty exciting time. Look how far we have come in the last 10 years: it has been extraordinary. It has been through a combination of factors. I think in 10 years time we will have a range of closures that do a good job for whatever we want done with our wines. For synthetics, we have seen versions 1 and 2, but in 10 years' time we will probably have version 5, and it will be an interesting closure. The cork industry has made a tremendous investment in the last five years on new plant, procedures and technology. Some of the new agglomerate corks are excellent closures. We will have great choice and we will know a lot about their performance. As we have been discussing, the industry is now realizing that winemaking doesn't stop when you bottle the wine: it continues until the consumer pours the wine and drinks it. We need to manage that part of the supply chain—from bottling through to the consumer—much better than we have done before.

Ferreira: I agree with Terry: we need to achieve more consistency. It is an exciting time.

Forrest: I'd like to return my earlier statement about consumer convenience being important. This is the big winner. It's a product that people consume and like every modern product convenience is a major factor. For that reason I'd put cork at 30% of the industry in 10 years.

Godden: There will clearly be broader choice. We have come a long way in a short time, and the choice we have now compared with a few years ago is extraordinary. The choice will be synthetic, screwcap and technical cork (whether that is reconstituted cork or membrane corks—cork-based products that offer consistency and are taint free). Natural wine cork will increasingly be shunted into a corner. Who knows how it will pan out?