Quite simply, qualities are attributes. It is only when human values are overlaid on these attributes that the concepts of ‘good’ and ‘bad’ quality have existence.

In an objective sense, both the presence or absence of an attribute, and the extent to which an attribute is present, will define whether any goods or services have the appropriate ‘fit’ for its intended use. In the more subjective sense ‘good’ quality relates to those attributes that are seen to be highly desirable by the users of the goods or services—if one likes, the customers. Later we’ll look at the ‘customer’ in more detail.

Quality management systems relate to maximising the number of desirable attributes possessed by a product or service or increasing the level of an individually desirable attribute. In the present era of total quality management (TQM) there is also a need for continuing improvement to be an integral component of quality management.

Traditionally, quality control and assurance systems have related to ensuring that goods (and to a lesser extent services) possessed enough desirable attributes to meet minimum standards for fitness for use. More often than not, these attributes related to individually manufactured items. A with so many manufacturing industries the wine industry has come down this traditional path. We have, for example, spent time in the cycle of process definition, setting our control parameters and measuring our performance during the manufacturing cycle against these parameters, examining the resultant data, discovering areas for improvement both in the manufacturing process and/or our quality management system and heading back to repeat this cycle through ongoing iteration.

These processes extend to raw materials; in the case of wine, to grapes. However, the quality assurance of natural produce, subject to the vagaries of nature has been slow to come under the umbrella of TQM. There has also been the problem of poor process definition and the difficulty of setting appropriate measures to specify satisfactory quality outcomes.

For example, one unique parameter for the wine industry to evaluate quality in this way has been taste. It is unique in the sense that where colour may have been determined in terms of ionised and total anthocyanins and directly related to pigment levels in grapes and control of the extraction process, taste is multi-factorial in its origin with several factors interacting to give the final outcome. As a result only broad definitions of the process exist to determine a ‘quality’ taste and a model which might enable us to control all of the input parameters and thus obtain a predictable outcome does not exist.

Indeed, as research efforts have yielded results, we have found that the rather simple historical view we had of quality, gathered by the somewhat basic tools we had to measure these quality attributes, were inadequate. For example, now that we understand more of the chemistry of the flavour compounds in grapes, we are aware that rudimentary measurements such as acidity and Baumé don’t necessarily reflect optimum ‘maturity’. And although we’re actively developing tools to measure this most vital quality attribute (which in reality is made up of many attributes) we still have a substantial distance to go.

If in no other area, we see that the determination of the optimum state for any batch of grapes to be picked will be the greatest change in the future. And in arriving at this determination the viticulturist will have faced and solved many of the subordinate problems of process definition, and the determination of the appropriate quality measures.

A nother example of this gap in our knowledge is the view of colour as stated by the simple measurement of ionised and total anthocyanins. We now know some of the other important molecular species involved, such as the colourless flavonol quercetin which plays an important role in the stabilisation of the available colour. That the production of this flavonol is influenced by sunlight helps to explain the vineyard observation that sun exposure of fruit influences the colour of the resultant wine. Many other examples of this process of refinement can be cited.

However, while we were (and are) still grappling with some of these problems in quality definition and assurance relative to our product, quality management has moved on.

The customer
Who is the customer referred to above? The traditional answer has been the winemaker and while this is correct the customer is also the end consumer and it is these final consumers who are placing increasing demands on the quality of vineyard produce today.

W ine journalist, Robert Joseph, writing in the March 1996 edition of WINE says: ‘Today’s consumers of wine expect consistency of quality, if not style. And they don’t understand why they have to put up with difficult vintages.’

So while we, in the industry, agonise about the vagaries of nature the consumer is in the main disinterested in these problems. They are aware that vintages vary, but they don’t have any of the bad vintages in their cellars.

There’s an old saying in retail trade that if you make your sales pitch aimed at a greedy seven year old you won’t lose the sale from underestimating the market.

With this in mind, meeting the customer’s basic quality expectations could be expressed directly in terms of:

- flavour (how good it tastes)
- consistency
- typicity (trueness to declared area of origin, variety, vintage, and winemaker description)
- appearance, packaging
- performance (how good it looks and works)
- cost
- absence from taints
- stability
- few or no threats to health
However there are other issues which flow from these and are not so obvious but which are of much concern to those servicing this market, such as:

- the ability to meet the consumer's expectation in regard to quality and availability at an expected price level
- meeting 'just in time' criteria so that inventories are minimised while still guaranteeing supply and image
- the expectation that we use traditional methods, e.g. aged in an oaken barrel, 'bush vine' pruned
- the ability for a producer/distributor to deliver not only the product but the information necessary to effectively market and inform real and potential consumers
- absence from agrichemical residues and satisfying the audits of the 'watch-dogs'/regulators

Not only do these issues make the role of the viticulturist more complex but it also makes it more difficult to define exactly what is a quality outcome.

The position is made even more complicated in that it is now necessary for products, and probably more significantly services, to meet not only the expectations of consumers, but also to meet the expectations of the communities in which these goods and services are manufactured and/or consumed. Product attributes such as the protection of natural resources through environmentally friendly vineyard practices (clean/green), using conservation oriented manufacturing processes, and through the use of recyclable packaging, meeting occupational health and safety standards and other issues based on the community's expectations regarding social justice and equity are also examples of these non-traditional consumer/community demands in regard to product quality.

When the UK government introduced the Food Safety Act in 1990, a new obligation was placed on those of us in the food and wine industry to ensure that the vineyard owner, as the process owner, has the responsibility for complying with legislated requirements. Specifically it requires producers to be able to demonstrate due diligence in ensuring that their product complies with the Act's minimum health and safety standards.

As a result the viticulturist, and not just the winemaker, must be able to provide assurance to the consumer on the status of the agrichemical residues (MRLs) in their products.

The environment has not only become a large current issue but looms as an even greater one. Organically grown grapes are used to make organic wines which are sought by a dedicated group of consumers. But even generally, consumers now prefer products that are manufactured in an environmentally friendly way where, for example, they minimise greenhouse gas emissions and do not degrade soil and water resources utilised in their production.

The winegrape and wine industry uses a considerable proportion of the nation's land and water resources. We consider that these resources are properly utilised and return a good dividend to the country for their use. However in the coming era, with the present concerns regarding the environment, we envisage that the industry will be asked to formally state its compliance with the National Strategy for Ecologically Sustainable Development.

As this strategy says there are two main features which distinguish an ecologically sustainable approach to development:

- the consideration, in an integrated way, of the wider economic, social and environmental implications of our decisions and actions for Australia, the international community and the biosphere; and
- we need to take a long-term rather than short-term view when taking those decisions and actions.

Not only will the industry need to account for itself in order to sustain its present use of our limited natural resources and its future increased use as set out in the Strategy 2025 plan, but individual grape and wine producers should plan for a future where the lodgement of a farm licence will also be part of a vineyard quality management system.

The emphasis placed on vine improvement in some of the other papers delivered here today clearly identifies that this is a key element in vineyard quality management. The use of disease and/or insect resistant grape material supplied from accredited breeding and propagation sources must underpin our product integrity.

The establishment of gene pool repositories for the Vitis genus is progressing around the world and genetic improvement through breeding and clonal selection has been carried on for centuries. With present day technology, there is now the possibility of directly manipulating the vine's genetic material. Before this occurs it will be necessary for us to discern what are the attributes concerning genetic manipulation that our consumers consider of high quality. Do they consider that freedom from genetic manipulation is a desirable 'quality' for wine grapes? Or are they happy to take the advantage of consistency and cost reduction which may be implicit in such manipulation but require that we give guarantees that (say) no mammalian genes are incorporated into grape vine material? Much debate has yet to occur before this issue is clarified for both the consumer and the industry.

So complex has 'quality' already become that quality management systems, such as that set out in the ISO9000 protocols have grown up to satisfy the need to manage this complexity.

Further, under this over-arching management system, management sub-systems have grown up such as IS014000 which deal with specific areas such as environmental quality management in this example.

In conclusion we are led to think that, most importantly, we need to continue to expand efforts in the quantification of the quality parameters in viticulture and to optimise our performance as measured by these parameters. We also need to focus on the many facets of our final customers' needs, including efficiency and the resultant value for money, concern for the environment, the responsibility for delivering goods that both comply with the 'clean–green' feelings and are downright healthy for the consumer.