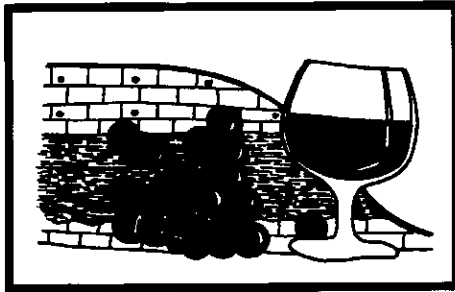


SERIES



Geology and Wine 4. The Origin and Odyssey of Terroir

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SUMMARY

As a wine term *terroir* dates from the glorious years of 14th century wine-making in Burgundy, France. The term was first applied to certain top-quality wine-producing properties along the Côte d'Or, Burgundy. Outside France *terroir* is being applied more loosely, to properties producing less than top-quality wines, not the original purpose of the term. *Terroir* recognizes many of the physical elements of wine-making, including good drainage, soil structure, nature of clays, and the existence and interaction of chemical compounds such as calcium carbonate, iron, magnesium, and others in an almost mysterious alchemy in the wine-growing process. Although the physical and chemical interactions that affect the growing of wine are not well understood, the spread of the term *terroir* is encourag-

ing better use of geology, soil, climate, and culture in producing better wines.

RÉSUMÉ

Dans son acception vinicole, le mot *terroir* date des années glorieuses de la culture du vin au 14^e siècle, le long de la côte d'Or de Bourgogne en France. Ce terme a d'abord été utilisé pour désigner certaines propriétés vinicoles essentielles à production des meilleurs vins de la côte d'Or de Bourgogne. Hors France, le mot *terroir* est utilisé plus librement et pour des vins de qualité moindre que supérieure, contrairement à l'intention originale. Le mot *terroir* implique l'existence de nombreux facteurs physiques dans la production du vin, dont un bon drainage, une structure de sol, la nature des argiles, et l'existence de composés chimiques tels le carbonate de calcium, le fer, le magnésium, etc., qui interagissent selon un procédé extrêmement complexe. Bien que les interactions physiques et chimiques de la production de vin ne soient pas bien comprises, l'usage du mot *terroir* pousse à un meilleur usage des connaissances géologiques, pédologiques, climatiques et des pratiques culturelles dans la production vinicole.

TERROIR: ITS 14TH CENTURY ORIGIN

The 14th century encompassed glorious years of wine development in Burgundy, eastern France, under the Valois dukes (Fig. 1). For several centuries the Benedictine and Cistercian monks developed viticulture to a high standard. *Terroir* is a Burgundian wine term from that period. It was applied originally to certain wine-producing properties along the Côte d'Or

that had established themselves as top quality; the guardians of that quality were the *gourmets*. The *gourmets* were responsible for the efficacy of the *terroir*, and were independent of the wine growers, mayors, and magistrates. The term "gourmet" is familiar today applying to judges of good wine and good food, but is no longer a professional group, having been replaced by interprofessional societies and the INAO in France (*Institut National des Appellations d'Origine de Vins et Eaux-de-Vie*). The *Appellation d'Origine*, usually shortened to *Appellation Contrôlée* (AOC or AC), on a French wine label is the consumer's guarantee that the wine in that bottle originated where the label says it does, was made from authorized grapes from that property, and vinified under very strict, legal controls. The category AOC is INAO's highest rank, and today would be equivalent to the *terroir*. The concept of *Appellation Contrôlée* has never been adopted in the United States and Canada; however, there are both state and federal bureaus who vie to regulate the wine industry in the United States. In Canada the Vintners Quality Alliance (VQA), established at the provincial level, serves as a quality control function similar to the *Appellation Contrôlée* of France.

The term *terroir* is being found more and more in the English wine vocabulary and appears in danger of being applied loosely to properties producing less than top-quality wines. That concern is the main thrust of this article. The principal source of the early history of these terms is an article by Monsieur Jacky Rigaux titled *Le Terroir et le Gourmet* in a recent issue of *Tastevin en Main*, the semi-

¹ James E. Wilson is the author of *Terroir: the Role of Geology, Climate, and Culture in the Making of French Wines*, published in 1998. This award-winning book, reviewed by Geology and Wine Series Editor Simon Haynes in *Geoscience Canada*, v. 27, p. 47, 48, introduced and publicized the French concept of *terroir*, with all its nuances of bedrock geology, soil, climate, and viticulture, to the English-speaking world. We are very pleased to publish Dr. Wilson's account of the origin and use of this important term. R.W. Macqueen, editor.

annual journal of the *Confrérie des Chevaliers du Tastevin* of France (Rigaux, 1999).

The development of such a term as *terroir* was almost a necessity in Burgundy because of the many small properties producing excellent wine along the sun-trapping, central curvature or “belly” of the Côte d’Or slopes. This belt of *terroirs* is now the avenue of the *Grands Crus* flanked by the *Premiers Crus*, with the communal wines on the higher slopes and the lower toe slopes.

The components making up a *terroir* were not defined in those days, but the use of *terroirs* was acknowledgment that *terroirs* did in fact produce quality wines. In *terroir*, we now recognize many of the physical elements such as good drainage, moisture-retaining structure of the soils, the nature of its clay, the existence of active calcium carbonate, iron, magnesium, and other chemical compounds in what has to remain a mysterious alchemy (Fig. 2).

The term *terroir* was rarely used outside of Burgundy until recent times. Although there were wines of outstanding

quality produced in the other wine districts of France, they were usually relatively few in number and known by name and reputation. To protect that reputation, the producers of these wines were essentially their own “*gourmets*.”

CHÂTEAUX, AN ALTERNATE CONCEPT TO TERROIR

The vintners of the famous Bordeaux area of southwestern France felt that their “*châteaux*” defined their good vineyards sufficiently, even though many of its tracts might be widely separated: the *château* included all properties of the ownership, as well as buildings and wine-making equipment. Some of the scattered tracts themselves might qualify as a *terroir*; for example, in Château Margaux, the Cap de Haut and possibly the Puch Sem Peyre. In 1855, the Bordeaux Châteaux were given hierarchy ranking. This was brought about when the organizers of the grand exhibition in Paris invited Bordeaux to provide samples of its famous English claret, as Queen Victoria was to attend the exhibition. It was only at the insistence of the organizers that Bordeaux

gave a ranking to its wines, finally submitting five or six categories that they called “growths.” The validity of this ranking was based on a substantial history of market value. This ranking became the famous (or sometimes infamous) Bordeaux Classification of 1855. There have been numerous suggestions for changes or modifications, but by and large it has withstood the test of time.

MODERN USAGE OF TERROIR

The first widely publicized use of the term *terroir* was in 1984 with the appearance of *Terroirs et Vins de France, Itinéraires Oenologiques et Géologiques*



Figure 1 Château de Rully, dating from the 13th century, Côte Chalonnais region of central Burgundy, France. Côte Chalonnais is one of the five wine regions of Burgundy; the others are Chablis, Côte d’Or, Mâconnais and Beaujolais, all globally renowned in wine culture and production. Vineyard in the foreground extending to the castle wall is the Premier Cru vineyard of Bressande (Premier Cru = approximately First Growths, Médoc; see Wilson, 1998, p. 58 for discussion). Photographed in 1994 by Catherine Ponsot-Jacquín, a geologist and former student of Professor Noël Leneuf of the University of Dijon, France (see Fig. 2 caption, this paper).

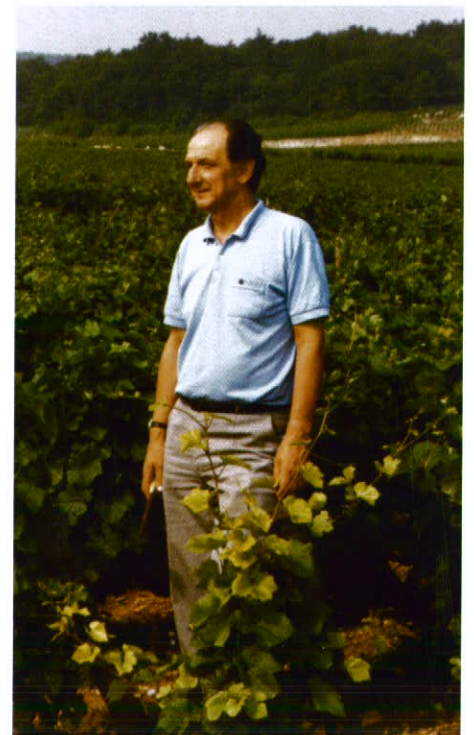


Figure 2 Noël Leneuf, Emeritus Professor of Geology and Pedology, University of Dijon, France, standing in the Grand Cru vineyard of Chambertin, Côte d’Or region, Burgundy, France (Grand Cru = approximately Great Growths, Médoc; see Wilson, 1998, p. 58 for discussion). Professor Leneuf has long been a passionate advocate of *terroir*, and is convinced that “geology and its soils are the critical factors in the *terroirs* of Burgundy” (Wilson, 1998, p. 5). Professor Leneuf was a guide and correspondent in the development of my book *Terroir: the Role of Geology, Climate, and Culture in the Making of French Wines* (Wilson, 1998). Photographed 1994 by Catherine Ponsot-Jacquín.

(Pomerol *et al.*, 1984). This was essentially a field guide book for geologists and, although later translated into English, distribution was relatively limited. My book, *Terroir, The Role of Geology, Climate, and Culture in the Making of French Wines* was published in the United Kingdom in 1998 (Wilson, 1998), giving additional impetus to the use of the term *terroir*. The title of my original manuscript as submitted to Mitchell Beazley, the London publisher, was *Wine on the Rocks, With a Splash of History*. The publisher, however, insisted on using the title *Terroir*, feeling that my title was too American colloquial. The University of California Press in association with the Wine Appreciation Guild, as co-publishers of the book in the United States, in 1999, further spread familiarity of the term.

Terroir Defined

I defined the honoured word *terroir* in my book (Wilson, 1998, p. 55) as "... a concept ... not easily grasped but includes physical elements of the vineyard habitat — the vine, subsoil, siting, drainage, and microclimate. Beyond the measurable ecosystem, there is an additional dimension — the spiritual aspect that recognizes the joys, the heartbreaks, the pride, the sweat, and the frustrations of its history." I am pleased that the book (Wilson, 1998) has been recognized as a definitive reference for the proper meaning of *terroir*.

WINE QUALITY: CALIFORNIA CONCEPTS

Although I understand *terroir* is becoming something of a "buzzword" in wine parlance, the elements of the true meaning of the term have had a somewhat slow acceptance, especially in California. This is perhaps due, in part, to the long-held view that it was the, "heat summation," that was critical to the growing of good wine. I remember well a visit I had in 1985 with the late Professor A.J. Winkler at his retirement home near Davis, California. Professor Winkler knew that I am a geologist and therefore a likely disciple of the soil. I was hardly through the door of his small library to greet him when he waved his book at me saying, "It's all right here — it's not the soil but the heat summation." He related to me

how in the late 1930s he and Professor Maynard Amerine, both professors of oenology and viticulture, had collected grapes from the various wine areas of California, making their own wine from these grapes. After studying the factors that might contribute to quality, Professor Winkler said they concluded that the critical feature was heat summation, which they defined as "degree-days," the sum of the hours when the temperature is above 50°F (10°C) for the months of the growing season. Several wine growers in the Napa Valley told me in 1985 that the hours of sunshine with the stimulation of the catalytic action in the plant were more critical than just the temperature. During the tenure of Professors Winkler and Amerine at the University of California at Davis, this hypothesis, that degree-days and hours of sunshine were definitive controls on wine quality, became essentially a doctrine to the exclusion of the importance of soil. Amerine and Winkler (1944; also see Amerine and Wagner, 1984) developed a five-part heat zonation of California with recommendations for the most adaptable grape varieties to those zones. Another feature about California wine growing is that irrigation is permitted, whereas it is forbidden in France. Production may be improved on a property by soil moisture monitoring and computer analysis of other physical variables. There is a service available for complete analyses and forecasting for properties here and abroad.

In recent years, there's been considerable exchange of students and a younger generation of wine growers between France and California. France has benefited greatly from the American wine-making technology; California has benefited from the French appreciation of the role of geology and soil. There's no question that California produces some "blockbuster" wines that have won first place in blind tastings with French and other foreign wines. But to really qualify for the honoured word *terroir*, a property must have a history of consistently producing fine wines for an appreciable period of time, perhaps a decade or more.

TERROIR: BENEFITS

With the more universal use of the term "*terroir*," the debate also widens as to how much distinction can be made between

the traits imparted by nature and those from the winemakers art. This argument may not be scientifically provable, but certainly the spread of the concept of *terroir* encourages the greater recognition of geology and geological processes, particularly as regards soil, drainage and siting, all to the benefit of wine quality.

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