The Vines of San Lorenzo explores indepth the making of wine by telling two fascinating stories. The main one focuses on a single wine, Sorì San Lorenzo 1989, following the grapes from vineyard to bottling. Interwoven with this story is the tale of how Angelo Gaja transformed an obscure Italian wine, Barbaresco, and made it an international celebrity.
Above all this is a celebration of wine, written by Edward Steinberg with passion and humor.

Born in Alabama, Edward Steinberg studied and taught at Harvard University before moving to Rome, where he lives. He is married to a Finnish flutist and has two children. He was co-founder of the Forum School of Rome and served as director of the Gaumont Film School in Rome. He has conducted wine tastings at a leading roman wine shop, worked as a consultant for the European Community and written for *Newsweek*. He is currently a freelance writer.

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SORÌ SAN LORENZO *The making of a great wine in the new tradition*

Edward Steinberg

THE VINES OF SAN LORENZO

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To my wife's parents,
Jussi and Liisa Tenkku,
and
to the memory of my own,
A. D. and Sadye Steinberg

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E. S.

THE VINES OF SAN LORENZO

IN SILENCE AND DARKNESS, in the depths of the soil, the slumbering vine begins to stir. Rootlets grow, water and minerals are absorbed, sap inches upwards.

Many feet above, in the bud eyes at the nodes of a cane, ensconced in padding and protected by two hard, dark scales, embryonic shoots await the welcoming warmth of spring. The eyes grow plump, the scales drop off, and the tender tip emerges with its tiny, folded leaves. The shoot stiffens as it grows. More leaves appear. Coiling tendrils. Inflorescences that look for all the world like miniature clusters of grapes.

An inflorescence is composed of dozens of diminutive flowers, each attached by a stem to a larger stalk and covered by a five-petaled cap. The cap slips off, pouches at the tips of the stamens split open, and grains of pollen drift down onto the stigma below. Enchanting the nose as well as the eye, the hermaphrodite fertilizes itself. A grape is born, the pollinated ovary of a single flower. Unfertilized flowers fall to the ground. The hard, green pinheads that remain, the newborn bunches, slowly start to grow.

Suddenly, one here, one there, apparently at random, the grapes change color as if scarlet or yellow fever were spreading through

the vineyard. The race to ripeness has begun. They darken, soften, sweeten.

Harvesters come and go. By now the shoots are wooden canes. The leaves explode in a riot of color, the final fireworks before they fall and the vine sinks slowly back into slumber.

"In the end," writes Émile Peynaud, the most influential enologist of our time, "it's everywhere like in Bordeaux." Despite the infinite variations possible, the story of the growing of grapes on one plot of land and their subsequent transformation is the story of Everywine.

October 26, 1991

BRAVO!" booms a voice.

"Bravissimo!" chimes another.

More than a thousand people are on their feet. It's a standing ovation.

On the stage, as if taken by surprise, the performer seems uncertain of what to do. At the theater next door, the Richard Rodgers, or the one across the street, the curtain would have come to his rescue by now. The video camera continues to roll.

On the long tables in front of each row of seats lie sheets of paper with notes on the show. The applause is a crescendo already two minutes long. The reviews will surely be raves.

This is Broadway, but the star seems uneasy about taking a bow. And the rest of the cast is out in the audience, in thousands of glasses and hundreds of small spittoons.

This is the New York Wine Experience, where agriculture drops its first two syllables. No light entertainment here. No Lambrusco, Beaujolais nouveau, or white Zinfandel. The seminars are serious stuff: swirl and sniff, sip, study, spit. But no less than the people who will soon be filing into the stadium out in Minneapolis

for the sixth game of the World Series, the students here are fans. Emotions run deep.

Playing here two days ago was Burgundy's most prestigious producer, the Domaine de la Romanée-Conti. Yesterday it was Penfolds from Australia and its Grange Hermitage, perhaps the New World's greatest wine. Tomorrow it will be Château Latour, one of the grandest glories of Bordeaux.

The applause goes on. In the Bacchanalia of Broadway, the man on stage has stolen the show.

The video replay would no doubt leave the uninitiated wondering what all the ado was about. There he is, Angelo Gaja, in his dark suit, putting on his reading glasses behind the lectern. Unlike when he first visited the United States seventeen years ago, he is now a well-known figure. Wine writers no longer have to tell their readers that his name is pronounced "guy-ah," with the accent on the first syllable. But he still takes nothing for granted. Matter-of-fact, he starts from scratch.

After a few remarks about Italian wine today, he moves on to speak about his own winery, founded in Barbaresco by his great-grandfather in 1859. The village is located in the northwestern corner of Italy in the region of Piedmont, about thirty miles southeast of the country's fourth-largest city and former capital, Turin, where Fiat automobiles are made.

The winery is not large. Production is about 250,000 bottles a year, half of which is Barbaresco, made from the Nebbiolo grape: a regular bottling and three single-vineyard ones. Then several other red wines made from local grapes such as Barbera and Dolcetto and small amounts of red and white from international varieties. In 1993 they'll release the other major Nebbiolo wine, Barolo, which they hadn't produced since they decided thirty years ago to stop buying grapes from other growers. It comes from a vineyard they purchased just three years ago in the district of that denomination on the other side of the nearby town of Alba.

Angelo is speaking with the aid of only a few notes. The English he has learned as an adult stumbles now and then as the pace quickens. He introduces his winemaker, Guido Rivella, and his vineyard manager, Federico Curtaz, both of whom are sitting in the front row.

Now for some slides. Here are the steep, vine-covered hills of the area around Alba, on the right bank of the Tánaro River. Called the Langhe, the region is famous for truffles as well as wine. That's Barbaresco perched on top of the hill with its tower. The Tanaro is flowing past below.

On to the tasting. Gaia & Rey 1990. This Chardonnay is named after his older daughter and his paternal grandmother. "What's the price?" someone asks. "Sixty-five dollars," he replies. The audience murmurs. Gaia & Rey 1983. "Our first vintage of this wine." Vignarey 1988. "Barbera is a grape usually associated with cheap, inferior wine, but it's finally showing what it can do if given a chance." Darmagi 1986. Angelo smiles for the first time as he tells a story about his father's reaction when he had Nebbiolo vines ripped up right below their house in order to plant Cabernet Sauvignon there. The audience laughs. Sorì Tildìn 1985. "If you want to like Barbaresco, you have to love tannin." More laughter. He does not mention that when this vintage came out, *The Wine Spectator,* which organizes the Wine Experience, wrote that it was "a wine of incredible depth, suppleness, and elegance," perhaps "the finest Italian red ever made." With the other two single-vineyard Barbarescos, Sorì San Lorenzo and Costa Russi, it's his most expensive wine. Coming up are older Barbarescos—the 1971, 1961, and 1955. In 1955, Angelo was a fifteen-year-old schoolboy.

Seated in the front row is Michael Broadbent, head of Christie's wine auctions and one of the most eminent figures in the world of wine. Although the notes he is so intently writing now will not make it into the revised edition of his monumental *The Great Vintage Book of Winetasting,* which is just being published, he does praise several of Angelo's wines in the eight pages dedicated to Italy. That may seem pitifully few compared to the two hundred eighty on France, but it is still eight more than when the collection of notes was first published in 1980.

The book reflects the history of wine. The wines Christie's deals in are overwhelmingly French. Two hundred years ago, in 1792, one of Broadbent's predecessors was already auctioning the 1785 vintage of Château Latour. Sixty years ago, when Angelo's father, Giovanni, started to help out at the family winery, the connoisseurs' consensus on Italian wine was reflected in Julian Street's

popular book, *Wines*, published in 1933. There are ten pages on Italy and seventy-three on France; Barbaresco is not discussed at all. "The fine points of wine-growing are wearisome details to Italians," Street writes. Their wines are characterized by "quantity rather than elegance. Compared to French wines, they are coarse."

For an Italian producer to be treated as the peer of the greatest of France would have been as unthinkable as teams from places like Atlanta and Minnesota playing a World Series. Indeed, the situation was very much like that of baseball in the United States at the time. Membership in the two eight-team major leagues had not changed since 1903, and there were no teams west of St. Louis or south of Washington, D.C. In the world of wine, the major leagues were called Burgundy and Bordeaux.

When Angelo started to work in 1961, the situation had not changed. Even ten years later, Hugh Johnson's pioneering *The World Atlas of Wine* granted France a seventy-two-page chapter to itself, while Italy was relegated to a catchall one on "Southern and Eastern Europe and the Mediterranean" and dispatched in fourteen pages, nine fewer than Germany got.

Nor were greater claims being made for the wines by the leading authorities on Italian food. In the 1963 edition of her classic *Italian Food*, Elizabeth David still advised readers to approach Italian wine "in a spirit of optimism and amiable inquiry, rather than with harsh comparisons to the wines of France," while Waverley Root's *The Food of Italy*, published in 1971, damned Italian wines with the defensive claim that they were better with Italian food. "Who would think of drinking a fine Médoc with a dish of spaghetti and tomato sauce?" he asked rhetorically, thereby inadvertently ridiculing the food as well.

The tasting is over; the cheering is on. In the World Series of wine, Angelo has hit a grand slam.

From Barbaresco to Broadway: things have changed indeed since he started out. Could the young man of twenty-one have dreamed of this swift succession of scenes during a brief Manhattan stay?

Lunch in a popular downtown café. Along with dessert the waiter brings an unordered bottle of Château d'Yquem. "From the gentleman over there," he explains, nodding toward a table at

the other end of the room. The gentleman owns a wine shop in Detroit.

Dinner in a French restaurant on the Upper East Side that has just been rated the best in the country by the Gault-Millau guide. The owner comes to the table. There are some people in the other room who are drinking a bottle of Angelo's wine. They've heard he's here. Would he be so kind as to autograph the label?

Dinner after the performance in a fashionable midtown steakhouse. "Here he is!" announces a waiter as Angelo walks in. "The king of Italy." The owner is beaming as he shows him to his table. "When are you going to run for President?" he asks. After the referendum of 1946, will Italy have to choose again between monarchy and republic?

Back at Angelo's hotel, where the Wine Experience is taking place, an Italo-American comes up to him as he waits for the elevator. "I gotta have your wine for my restaurant," he blurts out with moist eyes. "What you did out there today made me feel proud to be Italian."

Upstairs in the lobby, an American is telling a Japanese acquaintance that he's leaving for Italy the next day. He has some business in Turin.

"Turin?" asks the Japanese. "Where's that?"

"You know," explains the American. "It's near where they make Barolo and Barbaresco."

The Japanese nods, but it's obvious that the map has still not quite come into focus. Then a broad grin suddenly flashes across his face.

"Ah, Barbaresco!" he exclaims as his head bobs up and down. "Gaja!"

Great wine works wonders and is itself one.

What do you have to do to make a great wine? Is there a secret?

In 1977 André Mentzelopulous bought one of the most famous wine estates in Bordeaux, Château Margaux, which had not produced a great wine since 1961. He engaged Émile Peynaud as a consultant and told him that he wanted to make the best wine in the world.

"That's not so hard," Peynaud replied. "All you have to do is give me the best *grapes*."

October 7, 1988

THE LAST CONTAINER of grapes has been loaded and the tractor starts off down the narrow road that runs along the bottom of the vine-clad slope.

To someone familiar only with table varieties, the grapes might seem almost as "unpromising" as those at Château Margaux did to the English writer Angus Reach a century and a half ago. They were a "homily against appearances," he wrote. "If you saw a bunch in Covent Garden you would turn from them with the notion that the fruiterer was trying to do you with overripe black currants." Not only are they smaller than table grapes, they are sweeter, too. Your hand becomes sticky right away if you crush one with your fingers. They are juicier and less crunchy when you bite into them, with a higher ratio of skin to pulp.

There are numerous varieties of all food plants, and the differences can be dramatic. Uncle Ben's may be OK to boil, but like the rice you use when cooking Chinese, it will ruin your risotto. Carnaroli and Vialone Nano are two varieties that can make it a delight.

Most people have tasted only a tiny fraction of the extant varieties of the fruits and vegetables they eat, not to speak of those that

no longer exist. Sometimes a variety simply degenerates and disappears, as happened in England during the nineteenth century to the bittersweet Redstreak apple, from which the celebrated Herefordshire cider used to be made. More often it is economic factors that sound the death knoll. Commercial interests determine that most varieties are cultivated for reasons other than excellence and individuality of flavor: high yields, resistance to pests and disease, uniformity of appearance, ease of harvesting and transportation. The name of the insipid Moneymaker variety of tomato says it all.

A British potato enthusiast, Donald Maclean, once had more than four hundred varieties growing in his collection, but just six account for over 80 percent of commercial production in the United States. Who writes about the differences between the common varieties of potatoes and rarer, more interesting ones like the Pink Fir Apple, and how many consumers are willing to pay the difference in price?

Grapes are one of the few crops that can fetch a price that rewards the growing of demanding, low-yielding varieties: the ones that can make wine an "experience."

You can make decent wine out of other fruits: apples, for instance, or currants. Robert Parker, America's most influential wine writer, reviews the apple wines made in Vermont by Joseph Cerniglia and gives them high scores. They, too, vary with the variety, but it is doubtful that wine lovers will ever get worked up debating the relative merits of Granny Smith, Macintosh, and Northern Spy. Delightful as they are when young, these wines should be drunk within a year of the harvest and will not live to develop the complexity that is part of greatness.

The grapes moving down the road belong to the *vinifera* species of the genus *Vitis: Vitis vinifera,* "the wine-making vine," from which over 99 percent of all the wine in the world is made. In the United States you can still purchase brands such as Manischewitz and Mogen David that are made with the Concord variety of the native *Vitis labrusca*. When Mae West gave her legendary order in the movie *I'm No Angel* ("Beulah, peel me a grape!"), one hopes for Beulah's sake that the species in the bowl was the slipskin *labrusca*. *Vinifera* skins adhere tightly to the pulp.

It was the United States that heightened the world's awareness

of wine grape varieties. As long ago as the post-Prohibition thirties, the influential writer and importer Frank Schoonmaker labelled his selections of California wines with varietal names rather than place names made famous by French and other European wines, as was standard practice in those days. Eventually "varietal" became a noun and a synonym of fine wine as opposed to the cheap jug wines that had tarnished the image of those places in the consumer's eye. Thus "Cabernet Sauvignon" became a code word meaning "This is *really* like Bordeaux."

The road has now begun to curve and climb as it finally takes on the hill. The grapes in tow behind the tractor are one of Italy's countless varieties of *vinifera*. There are so many that the ancient Roman poet Virgil wrote that numbering them would be like counting the waves of the sea or the grains of sand blown by the wind in the desert.

20 Two men are sitting on the tractor and talking. You may have studied Dante in the original, know Verdi's operas by heart, and have no trouble conversing with the natives in Rome, but you wouldn't understand a word they're saying. And that's not because of the noise the engine is making as it strains up the slope. They are speaking Piedmontese, the dialect of Piedmont.

Until the unification of Italy in 1861, Italian was only the third language of the region. Since 1720 Piedmont had been part of the Kingdom of Sardinia, which included not only Italy's second-largest island, but Savoie and Haute-Savoie, and the city of Nice in present-day France as well. Dialect was the language of private life and everyday business, while the educated used French for public affairs. The main architect of Italian unity and first prime minister of the Kingdom of Italy, Cavour, was described in school as distinguished in French, but mediocre in Italian. He was an accomplished orator in the former language, but stiff in the latter. "You realize he's translating," a contemporary wrote. In the exciting days of the birth of the new state, one Piedmontese town after another voted to conduct its affairs in Italian, which, as one resolution declared in French, *"est la langue de notre patrie"* ("is the language of our country").

The tractor passes below one of the local landmarks, known

simply as the Bricco, the Hill. Rising out of the vines is the modern, dark red house where Angelo Gaja lives with his wife, daughters, and parents.

The road has now become via Torino, Turin Street. On the left, at number one, lives Federico Curtaz's predecessor as Angelo's vineyard manager, seventy-five-year-old Luigi Cavallo, who is sitting in his courtyard. Cavallo has never been to Turin. "I've always been here," he says. Up to the end of the nineteenth century, peasants from this world apart, the Langhe, could be heard referring to Piedmont as if one had to cross the Tanaro River to get there. "We're going to Piedmont," they would say. "In Piedmont they do this and that."

The tractor is now driving through what locals refer to as the "square," where the two roads leading into town converge after skirting the opposite sides of the Bricco. It is heading toward that stretch of via Torino that is lined on both sides by buildings and is 21
the only part of town where the visitor feels with any confidence that this is it, that this is Barbaresco, with its six hundred or so inhabitants.

Up ahead, at the end of the street, is the tower. From the top of its one hundred twenty-five feet, on a clear day, with the Alps staring you in the face, you can see over into the Barolo area and even make out the hill of Superga just outside Turin. You can follow the course of the Tanaro as it bends around Alba, snakes past below, and flows on to the town of Asti, not quite twenty miles away, and beyond.

On the left, as tractor and grapes go by, is the little town hall. Its archives offer glimpses of a past in which both nature and man were often less than benign. Two hundred years ago hail ravaged the vineyards three years in a row. On top of that came the wars fired by the French Revolution and Napoleon. Austrian artillery units got stuck in the mud a few miles down the road and villagers had to go with their oxen to haul them out. Barbaresco was ordered by the French to supply them with "bread, wine, munitions, straw, four oxen and forty-four pairs of shoes." The French general Flavigny had all the bells in town melted down to make cannons. Not many years later, even a happy event turned to

sorrow. On October 1, 1821, a bonfire welcoming King Vittorio Emanuele I to the Langhe destroyed the roof of Barbaresco's tower.

At number thirty-six, on the right, the tractor turns off the street and honks in front of a huge red metal door. Folding and rumbling as it goes, the door rolls slowly back. The tractor moves forward.

The courtyard of the Gaja winery is ringing with Piedmontese. "We're not talking about the Concorde or one of those high-speed trains they've got in Japan," a voice exclaims. "I just want a photocopier that works!" To the left of the door, wearing a multicolored sweater and blue jeans, Angelo is talking to a man near the low wooden building that houses the winery office. The fierce intensity of his expression is tempered by an incipient smile.

Halfway down the courtyard on the right, standing in his gray smock by the pitlike bin next to the cellar steps where grapes are unloaded, is Guido Rivella. His gentle face is even thinner than usual, the toll that every harvest takes.

At the far end of the courtyard two men are conversing next to the railing that overlooks the paved area outside the lowest level of the cellar far below and the sloping vineyards beyond. One of them is thirtyish Aldo Vacca, who takes care of visitors and foreign correspondence at the winery. The other is Angelo's father, Giovanni, known to everyone as "the *geometra*," after the profession he practiced in addition to running the winery before Angelo took over. A *geometra* is not a geometrician, but someone with the basic skills of a land surveyor and an architect.

Still jaunty at just over eighty, Giovanni Gaja remembers the courtyard as it was sixty years ago, when it belonged to four different owners.

Right there, where he's standing with Aldo, were trees and grass. The courtyard faded into the hillside, which was excavated almost forty years later when they enlarged the cellar. There, in the middle of the courtyard, was the cistern where rainwater collected. They didn't have running water in Barbaresco until 1964, when he had been mayor for six years. Over there, across from Guido, instead of the storeroom was the stall where his father, the first Angelo, kept the mule that brought the grapes he bought back to the winery. Most of the office was the house where the Gajas lived

at that time. The room where Aldo works was the kitchen, while Angelo's office was part of another family's house. Where the entrance is now, with its sliding door, was a small building on the street front.

The tractor stops and backs up toward Guido. Aldo walks over with Giovanni Gaja and tastes a grape. "They look real good," he says. "The best since '85."

When that vintage made its debut, two of Germany's leading wine experts, Armin Diel and Joel Payne, wrote that it had "a multifaceted structure, enormous extract, concentrated fruit, unbelievable richness and a magnificent finish." Robert Parker described it as "exotic, compelling and incredibly complex." Its bouquet, he wrote, "is reminiscent of what a fictional blend of Romanée-Conti and Mouton-Rothschild might taste like."

"What is it?" asks the *geometra*.

"Nebbiolo," Aldo replies. "From San Lorenzo."

October 27, 1988

OBSERVED FROM THE HILL across the valley, Fasèt, Sorì San Lorenzo is like a stage where the lights go on early and are turned off late. You master your first word of the local dialect: *sorì*, a slope facing south, a slope that catches the most sun. In this relatively northern climate—the latitude is that of Bordeaux, well north of New York—and at an altitude of over eight hundred feet, the slow-ripening Nebbiolo grape needs all the sun it can get.

The vine is more sensitive to site than any other fruit-bearing plant. In the world of wine, the lexicon of land is rich in subtle distinctions.

The importance of site was expressed prosaically in the seventeenth century by the English philosopher John Locke, who marvelled that the mere "width of a ditch" separated the great Bordeaux vineyard of Haut-Brion from the lesser one next door, and poetically in our own by the French writer Colette. "The vine makes the savor of the earth intelligible to man," she wrote. "It senses, then expresses in its clusters, the secrets of the soil."

Which is more important—the variety or the site? As with marriage, it's the match that counts, the mutual exaltation. Over a

"الكرمة تجعل مذاق الأرض معلنا للإنسان"

hundred years ago, Robert Louis Stevenson described the courtship process in California's Napa Valley, where there was no long-standing tradition to dictate one's mate. "One corner of land after another is tried with one kind of grape after another," he wrote in 1883. "This is a failure, that is better, a third best." Centuries earlier, Cistercian monks had done the same thing in Burgundy.

Sorì San Lorenzo looks out upon an open valley. It is ventilated and thus less subject to excessive heat and humidity and the consequent danger of rot than it would be otherwise. Off to its right is the Tanaro, which a dam transforms into a quasi-lake just as it flows by the vineyard, increasing its temperature-moderating influence. The crown of the hill protects the vines from cold northern winds. You don't have to be an expert to note these features and understand their importance.

But there are puzzling details, too. The vines of San Lorenzo are planted in horizontal rows that follow the curve of the slope, while those of a contiguous plot run straight up and down it. When you look attentively at the two plots, it definitely seems that the neighboring vines are planted closer together. Then there is the foliage. The vines of San Lorenzo are still full of light green leaves, so a small leafless plot wedged into them on the Tanaro side stands out in its stark bareness, while across the slope is a vineyard where the green of the leaves is blatantly bright.

October 28, 1988

FEDERICO CURTAZ squats down and picks up a clump of freshly turned earth.

"The poverty of this soil is priceless!" he exclaims.

From somewhere up there, Saint Lawrence must have a look now and then at this vineyard that bears his name. Versed as he is in paradox, he would understand. When, as treasurer of the Church, he was ordered by the prefect of Rome to hand over the Church's valuables, he assembled the poor and sick and presented them to the official. "Here," he said, "is the Church's treasure."

Wine may end in the poetry of tasting, but it begins in the prose of the soil. From the way he's beaming, you'd think Federico were examining nuggets of gold, or at least one of those famous truffles. He talks about soil as passionately as wine lovers discuss the finer points of Pauillac and Pomerol.

Federico was born not quite thirty years ago in the Valle d'Aosta, near the French and Swiss borders, but he grew up partly in nearby Asti, his mother's hometown. While still a schoolboy he participated precociously in the radical politics and strenuous ideological confrontations of the seventies. "If you want war,"

Angelo told him when he started to work at the winery in 1983, "you'll have it."

No shot was ever fired. Reflecting on his self-portrait of the viticulturist as a young man, Federico shakes his head. "I'm beginning to think that when you're sixteen you might be better off spending your time in a discothèque," he sighs.

His parents eke out a living from what is not much more than subsistence farming. The soil is in his blood, too, but his perspective is different from theirs. After graduating from a technical school, he worked on a farm in Wales, growing hops and squash. He spent time in London. "Travel is the real school," he says. People and museums encountered far from home have left their mark on him.

Vineyard workers are the forgotten men and women of wine. Leading producers are stars. Top winemakers make not only wine, but a name for themselves as well. Keepers of the vine work far from the limelight.

"You can't do this job with a trade union mentality," says Federico, who had to skip his vacation this year. Work in the vineyards fell far behind schedule because of bad weather in the spring and he had to scramble throughout the summer to catch up. "You also have to have a long-term perspective. It takes years before you see the results of what you're doing."

Federico breaks the clump with his hands. It splits open perfectly. "Like an orange," he says with a broad grin. His results are beginning to show.

To the ignorant feet of a layman, the soil of a vineyard is merely the stuff one walks on there. Little does he suspect in his pedestrian plodding what lies beneath the surface.

"Structure is the most important thing, but the least considered." Federico's voice is fervent. Vines growing in a great vineyard are the aristocrats of the vegetable kingdom, but they have the same physiological needs as their plebeian brethren. Structure determines how soil handles the vital elements of water and air.

The structure of a given soil is related to its texture—the relative proportions of sand, silt, and clay it contains. Sand particles are the

largest and clay the finest; silt is in between. Structure refers to the arrangement of particles into aggregates and how they hold together. Neither light, single-grained sandy soil nor heavy, massive clayey soil would split as Federico's clump did. Neither one has structure. Clay swells with water, the pores close, it doesn't drain. Water stagnates around the roots of the vine and deprives them of vital oxygen. Sand doesn't retain water. If drought is prolonged, as it can be in Barbaresco, the vine will cease to function and eventually die in sandy soil. Tension, to use one of Federico's favorite words, is what you need.

"Drain, but retain!" Federico chants. "That's the refrain." He doesn't suspect that the English language has made him a rhymester.

"The soil of San Lorenzo is 10 percent sand, 20 percent coarse silt, 40 percent fine silt, and 30 percent clay," he says. "It's the silt that gives it its great balance."

Federico has a rodlike device with which he can measure the depth of the soil and obtain a cross section. He plunges it into the ground and pushes it down as far as it will go. The scale reads 28 inches. The soil at the bottom of the rod is rather compact; there are specks of limestone. He walks over to the next passageway and then a few rows down the slope, where the vines have a slightly more exuberant foliage and their trunks are slightly thicker. He strains as he pushes the rod down again: 32 inches.

"There are more temptations for the vine here," he says with amusement. "The more goodies there are in the fridge, the fatter we get, too. This deeper soil increases the vigor of the vine."

It's clear from the way he says *"vigore"* that it's a four-letter word and has no place in a proper viticultural vocabulary. "Weak" is a term that glows with praise. Weakness is a strength.

Like parents who dedicate so much time and energy to their jobs that they have little left over for their children, vigorous vines grow so furiously and so long into the season that they detract sustenance from the grapes. Ripening is delayed. Skins remain fragile and less resistant to disease. Thick, tangled foliage creates problems for cultivation. Clusters are larger and grapes are less concentrated in flavor.

The vigor of a vine can be measured by the length of the shoots

it puts out in one season and by the thickness of its trunk. You can weigh it.

Federico is at once clinical and paternal as he examines the foliage. "The vines of San Lorenzo give you balanced vegetation," he says with quiet admiration in his voice. Some of them were planted before he was born and, with vines as with people, nothing tempers vigor like age. But his eyes begin to bulge and his tone turns animated when he talks about some vines in the vineyard that Angelo recently bought over in the Barolo area, in Serralunga. He's going to rip them up.

"There's one spot there where the soil is just too deep for Nebbiolo. It's almost Californian." Federico says "Californian" with a mixture of awe and disdain. "When I was there a few years ago, I saw trunks as thick as trees!" he exclaims, indicating the girth with his hands. He shakes his head. "Vines like that are real Mike Tysons: all brawn and no finesse."

Vigor is in great part a function of water and nitrogen. Limit them and you limit vigor.

Federico pulls out a sheet of paper with the results of a soil analysis he's just received from a laboratory. Printed on the form are the percentages of nitrogen that make a soil "poor," "sufficient" or "rich." "Poor" is less than 0.12 percent; the soil of San Lorenzo contains 0.073 percent. According to the laboratory, the vineyard is destitute, a pauper. They recommend the get-rich-quick approach of heavy fertilization.

"The recommendations are standard for other crops," he snorts. "They're OK for corn."

Balance is once again the key. "Staying trim shouldn't mean malnutrition," Federico says, wrinkling his brow. "The way some wine writers carry on about making the vine suffer, you'd think it was the Marquis himself who wrote the standard work on viticulture." An impish grin steals across his face. "I've read de Sade, you know."

He points across the slope in the direction away from the Tanaro. "Take that vineyard over there. The leaves are bright green because the vines have been heavily fertilized with nitrogen." He swivels around and gestures with his head toward the river. "Then there is that enclave that doesn't belong to us. The

leaves fell off early there because the overcropped vines simply ran out of gas."

Between the rows of vines, Federico has planted broad beans and vetches, leguminous plants that "doe manure and fat the soil where they be sowed," as an elegant seventeenth-century translation of the Roman naturalist Pliny the Elder words it. But they make nitrogen available to the vines, as Federico says, "in a properly parsimonious fashion." And the "green manure" delights not only the dietician. After it is mowed in the late spring while in full bloom and turned over into the soil, it will decompose into humus, one of Federico's valiant allies in the struggle to maintain structure. By binding the soil's particles into relatively stable aggregates, humus keeps it permeable to water and air.

"Organic matter is a remedy for almost all the ills of the soil," Federico says, and proudly announces that he's just found a good source of manure—a nearby farm. If that's not the equivalent of striking it rich with a lottery ticket for him, then it's the next best thing. With fewer and fewer animals around, it's not so easy these days. There's manure, and there's *manure*. A lot of the stuff contains antibiotics, which are detrimental to the bacteria that are so vital to the health of the soil. (Federico is pleased that on the farm he's just discovered they don't put antibiotics in the calves' fodder.) You also have to see how much straw is mixed in, he notes. And beware pig manure: a real nitrogen bomb!

Eyes that follow Federico around the vineyard soon wish their vision were less superfical.

The semiotician of the soil points to a sign from the subterranean world: a bulge just above the ground on each trunk. It becomes harder to follow what Federico is saying. He hasn't shifted into dialect, but rather into some kind of jargon or code: "420A," "Kober 5BB," "S04." The upshot of it all is that these proud European aristocrats are unable to stand on their own feet and are totally dependent for survival on humble immigrants from America. The bulge is a graft.

After stowing away on botanical specimens shipped by steamer from the United States, the phylloxera louse disembarked clandestinely in France around 1860 and proceeded to devastate the vineyards of Europe as it chewed its way through them, feeding off

the roots of the vines. The microscopic marauder seemed invincible, and *Vitis vinifera* appeared doomed to extinction. A solution was finally found, which was radical in both the common and botanical senses of the word: grafting *vinifera* vines onto the roots of phylloxera-immune American species.

The question was hotly debated; experts were divided. Would there not be contagion, perhaps some viny V.D.? What if those foreigners brought in other pests with them?

In 1881 the Italian government created an experimental nursery of American rootstocks and appointed as its head Domizio Cavazza, director of the newly founded Royal School of Enology and Viticulture in Alba, who was later to be the prime mover behind Barbaresco's cooperative winery. As a precautionary measure, the nursery was quarantined on the island of Montecristo. Even then the protests failed to subside, and shortly thereafter the government decreed the destruction of the nursery.

Not all these fears were unfounded. A vine disease that was new to the Continent, the so-called "downy" form of mildew, eventually slipped into Europe with the migrating masses. But the grafting movement could not be stopped.

The deepest fear was that the partnership with proletarians would debase the noble *vinifera* wine. But the Americans turned out to be okay. They supported their partners discreetly, staying out of sight and not interfering directly with the grapes themselves. Venerable *vinifera*'s blood remained blue.

The alliance against phylloxera was one of the greatest examples of transatlantic cooperation in history. That nineteenth-century NATO, the North Atlantic Transplant Operation, is still going strong. Billions of American rootstocks are entrenched in European soil, and European nurseries turn out millions of replacements every year.

But not all the tales within the larger success story had a happy ending. Many of the foreigners had trouble adapting to their new environment, and couples frequently proved to be incompatible.

Cavazza had already noted that although it was "easy to see that American roots are thin, tough, hard to cut, and resistant when you pull them; in short, much stronger than ours," it was not so obvious that each species had its own degree of compatibility with

the different *vinifera* varieties and adapted more or less well to the different environments of Europe. "They have to live, as well as resist phylloxera!" Cavazza exclaimed.

American vines evolved in more fertile, less arid soils than those of most European vineyards, and the less vigorous ones find the going rough in the limestone-rich Langhe. Of the three American species of *Vitis* most used as rootstocks—*riparia, rupestris,* and *berlandieri*—the first is the least vigorous and most sensitive to limestone; the last is the most tolerant of limestone, but is very vigorous and roots poorly. *Rupestris* has deep-striking roots and is the most resistant to drought. These differences and other important ones were not understood at first, and indiscriminate use led to failures.

The ultimate solution was to crossbreed: usually two American species, more rarely an American with *vinifera*. Federico's jargon refers to the resultant hybrid rootstocks. S04? Selection number four from the research institute in Oppenheim, Germany. Kober 5BB? One of Mr. Kober's crosses. The two most common rootstocks in Barbaresco are the 420A and the Kober 5BB, both *riparia* x *berlandieri*, as the botanists write it.

There are actually many advantages to grafting. You can tailor the rootstock to the needs of *vinifera* variety and soil. And you can restrain vigor. *Vinifera* vines are more vigorous on their own fleshier, more extensive roots, which is one of the reasons for the negative attitude to manuring that one encounters in nineteenth-century pre-phylloxera works on viticulture. Growers in Monterey County, California rediscovered that vigor after they had planted thousands of acres with ungrafted vines.

(What's more, they have discovered that their area is not immune to phylloxera. And even growers in prestigious Napa and Sonoma are beginning to reel from the realization that they will have to replant about 65 percent of their vines very soon. In 1985 the University of California at Davis identified a mutant of the phylloxera louse—biotype B—which is ravaging with incredible speed vines grafted onto AxR#1 rootstock, a cross between *rupestris* and the *vinifera* variety Aramon. Because of its *vinifera* component, the rootstock is more vulnerable than all-American ones even to the original biotype A, but growers favored it because

its greater productivity more than made up for its briefer lifespan.)

The other *vinifera* varieties may have been shocked as well as relieved when they were first grafted, but for Nebbiolo it was no novelty. When vineyards are planted or replanted, cuttings are used. While the vine is dormant, one-year-old canes are cut into sections with two or more bud-eyes. In pre-phylloxera days, the cuttings were planted without further ado. Nebbiolo's exceptional vigor created problems, however. Lorenzo Fantini, a *geometra* from the Langhe whose writings constitute our most important source of information on viticulture and enology in the area during the second half of the nineteenth-century, noted that "Nebbiolo cuttings bear fruit only after five or six years and most of the time they put out many shoots and no grapes. So Nebbiolo is no longer planted and instead growers plant Dolcetto and Moscatello [two less vigorous varieties of *vinifera*]. After the fourth year they graft Nebbiolo onto the rootstock and the same year they get their grapes."

Federico smiles knowingly.

"That's Nebbiolo's vigor for you," he says as he examines another clump of earth, "It's a truly noble vine only when it lives in poverty like San Lorenzo's."