

KATARZYNA JANICKA-ŚWIERGUŁA

ORCID: 0000-0002-4536-3679

Lodz University of Technology, Poland

# ARCHITECTURE AND ENOTOURISM: SYNERGY OF TECHNOLOGY, AESTHETICS AND CULTURAL EXPERIENCES

## ARCHITEKTURA I ENOTURYSTYKA: SYNERGIA TECHNIKI, ESTETYKI I DOŚWIADCZEŃ KULTUROWYCH

### Abstract

In the face of cultural and socio-economic changes, the approach to architecture related to enotourism is changing. Leading vineyards, exceeding the limits of their traditional function, engage world-class architects to create technologically unique spaces that become an attraction in themselves. The aim of the article is to examine these phenomena on the example of selected objects in the context of their interconnections and implications for contemporary cultural space. The author performs a comparative analysis of characteristic aesthetic features and technical solutions and examines the impact of iconic architecture on the commercialization and spread of vineyards.

*Keywords: iconic architecture, enotourism, vineyard, winery*

### Streszczenie

W obliczu zmian kulturowych oraz społeczno-ekonomicznych przekształceniu ulega podejście do architektury związanej z enoturystyką. Wiodące winnice, przekraczając granice swojej tradycyjnej funkcji, angażują światowej klasy architektów, aby stworzyć unikalne technologicznie przestrzenie, które same w sobie stają się atrakcją. Celem artykułu jest zbadanie tych zjawisk na przykładzie wybranych obiektów w kontekście ich wzajemnych powiązań oraz implikacji dla współczesnej przestrzeni kulturowej. Autorka dokonuje analizy porównawczej charakterystycznych cech estetycznych i rozwiązań technicznych oraz bada wpływ ikonicznej architektury na komercjalizację i rozpowszechnienie winnic.

*Słowa kluczowe: architektura ikoniczna, enoturystyka, winnica, winiarnia*

## 1. INTRODUCTION

Since ancient times, vines and wine have been an integral part of the economic and cultural activities of many thousands of people. Like food, they have become inseparable from the daily lives of members of royalty, nobility, soldiers, sailors and laborers.<sup>1</sup> Originally, the

<sup>1</sup> D.J. van Zyl, *Vineyards and wine and history*, p. 32, [http://wine.wosa.co.za/download/0341\\_0001.pdf](http://wine.wosa.co.za/download/0341_0001.pdf) (access: 3.06.2024).

architectural form of vineyards played a secondary role, and the main emphasis was on the final product itself. Today, with increasing consumer expectations of wine producers and their marketing, we are seeing changes in the approach to winery construction. The development of new technologies and the international wine market, as well as the division of this market into mass and luxury, contribute to the need to create a unique and recognizable brand image that has a positive impact on consumers and sets it apart from the competition.<sup>2</sup>

In parallel with these changes, the world of oenotourism is experiencing its own revolution. Leading vineyards, aiming to go beyond the limits of their traditional function, are engaging the world's top architectural talents to create unique buildings that become attractions for tourists in themselves. Today, vineyards are no longer just a place of wine production, but an eye-catching destination for visitors, offering not only fine spirits, but also exclusive culinary experiences, luxurious accommodations and picturesque natural surroundings.

The aim of the article is to analyze new trends in the design of vineyards, combining advanced winemaking technology and the shaping of architectural form with local tradition and the inclusion of buildings in the landscape context. These facilities are classified as so-called "authorial wineries," i.e. designed by leading architects whose names are intended to increase the prestige of a given complex, associate it with the image of modernity and distinguish it from the competition. Therefore, the transformation of vineyards into cultural and tourist spaces offering aesthetic, cultural, oenological and recreational experiences becomes clear, and production optimization is no longer the main guideline for designing new buildings or expanding existing complexes.

Due to technological solutions, cultural and historical issues, the research in this article is narrowed down to selected European facilities from the leading wine producing countries of Italy, France, Spain and Portugal. In Europe, there is a tendency to use a mixed system (a combination of gravity and pumps) more often than a pump system. This affects the production method – the wine does not undergo friction or heating while passing through the pipes and is not subjected to excessive pressure. Gravity transfer results in a greater investment in technology or a very specific arrangement of tanks, requiring the facility to be at least two stories high. In Europe, wine also matures more often in cellars or spaces dug underground, which is also important when designing architectural forms.<sup>3</sup>

## 2. EVOLUTION IN THE SHAPING OF VINEYARDS OVER THE CENTURIES

The history of wine is very distant. Archaeological research has shown that as early as 8,000 years ago, wine storage spaces were built next to the huts of peasants living in Asia Minor. Increased development in the production of this drink occurred during the ancient period. Although the Greeks are considered the founders of winemaking within the Mediterranean, the ancient Romans developed it on a large scale and became the creators of the first

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<sup>2</sup> H.G. Woschek, D. Duhme, K. Friederichs, *Wine and architecture*, Edition DETAIL, Munich 2012, p. 7.

<sup>3</sup> C. San-Antonio-Gómez, F. Manzano-Agugliaro, J.-I. Rojas-Sola, *Analysis of design criteria in authorial wineries*, "Scientific Research and Essays" 2011, no. 6(19), p. 4100. DOI: 10.5897/SRE11.393.

freestanding buildings dedicated to wine production, which were built at the beginning of the first century AD.<sup>4</sup>

*Villa rustica* was a typical rural Roman estate built on a slope with a large courtyard. Around it, were arranged auxiliary buildings. The brick cellars, depending on the water level, were either completely or partially underground and held wine or provisions. The complex had wine pressing and fermentation rooms of up to 400 square meters. Cultivated fields and vineyards could cover about 30 hectares, which meant that these establishments had large presses (beam or stone) or presses for crushing grapes. *Villa urbana*, on the other hand, was a landed estate with a residence and a manor house with cellars for wine storage. Until the second century AD, these buildings were erected of wood or mixed materials, with a stone base and wooden frame. In his treatise “The Ten Book of Architecture”, Vitruvius gave recommendations for the planning of such estates: the wine storage room was to be located close to the oil press and kitchen. Its windows should face north, which naturally prevented the temperature from rising and the influence of incoming sunlight.<sup>5</sup>

Cellars in landed estates were not always large enough to allow extensive storage of wine, hence multi-level warehouses were built for this purpose, where up to several thousand amphorae could be stored. Remnants of these, dating back to the 2nd century AD have been found in Trier, among other places. Caves dug in the slopes from prehistoric times or tunnels that were remnants of the extraction of building materials were also used to store wine. Some of them are still used by the wine industry.<sup>6</sup>

In the late Middle Ages in German-speaking regions, Roman wine villas gave way to complexes of Alemannic and Frankish buildings. They consisted of a main building and auxiliary buildings grouped around a central courtyard. A characteristic element of such designs were wide entrance gates topped with an arch enabling the passage of a cart filled with barrels. Only a few wine-growing farms had buildings intended for wine production. In later centuries, winepresses were built on the slopes near vineyards, sometimes integrated into complexes connected by underground alleys (most often in the regions of Lower Austria and the Czech Republic). In the Mediterranean countries, wine storage facilities were usually placed at ground level or slightly recessed, and from the 12th century, north of the Alps, cellars became the main place for storage.<sup>7</sup>

From the early Middle Ages, monasteries, ecclesiastical institutions and hospitals were in charge of wine production. They had spacious buildings to house equipment, wine presses, as well as barrels and materials necessary for barrel making. From the 11th century, the Cistercian order played the role of pioneers in wine production. In 1136, they founded the Eberbach Abbey in Germany’s Rheingau region. The complex of buildings, which has survived to this day, is seen as a reflection of the 800-year continuous tradition of wine production. In the 16th century, Eberbach Abbey was the largest wine estate in the world. Yields reached 250,000 liters per year. The abbey’s cultural wine heritage is now managed by the State Vineyards of Hesse.<sup>8</sup>

Around the 14th century, the fashion among princes changed. They began to prefer more lavish residential buildings to citadels resembling fortresses. Cellars were added to castles,

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<sup>4</sup> H.G. Woschek, D. Duhme, K. Friederichs, *op. cit.*, p. 10.

<sup>5</sup> *Ibidem*.

<sup>6</sup> *Ibidem*.

<sup>7</sup> *Ibidem*, pp. 10–11.

<sup>8</sup> *Ibidem*, pp. 11–12.

some of which were used for wine production and storage. Over time, they grew to substantial sizes, creating a new term – “wine castle.” It meant both a majestic structure with battlements, pavilions and landscaped grounds and a country house or residence whose owner is engaged in wine production. The term “*château*” is linguistically related to “castle,” but quite ambiguous, especially in relation to wine production in the Bordeaux region, where the name is associated with a particular *cru* (meaning location and *terroir*, or type of land). Thus, the term is not synonymous with a sign of excellence or reputation of a wine.<sup>9</sup>

In the period between the Renaissance and the Baroque, castle estates were transformed, auxiliary buildings and wine cellars were added to them to store increasingly larger barrels. In the 17th century, huge facilities were built that could accommodate barrels with a total capacity of up to 250,000 liters of wine (e.g. the no longer existing Riesenfass in the Königstein fortress in Saxony). Wine cellars had walls two to three meters thick, which allowed them to maintain a constant, cool temperature. At the same time, high structural strength allowed it to withstand lateral forces generated by the vault structure. The cellars were placed on the north-south axis. Entrances were placed on the north side and equipped with sliding stone doors.<sup>10</sup>

The traditional capitals of the wine trade such as Bordeaux, Florence, Venice and Verona were settled by aristocratic dynasties such as Antinori, Frescobaldi and Ricasoli. These families, in addition to building impressive city residences, also owned country estates built in the style of the Italian and French Renaissance. From the 16th century, the influence of classicism, especially Palladianism, became visible, with clean lines and forms taken over from antiquity. An example was Villa Barbaro, designed by Andrea Palladio, built in 1558 in Maser near Treviso. In addition to private living spaces located on the first floor, it included reception areas, work rooms, and in the side pavilions, wine cellars, stalls and other utility rooms.<sup>11</sup>

In the Bordeaux area, owners of agricultural estates and vineyards reached mainly for classicism in the design of their mansions (although there are buildings inspired by Neo-Gothic or Neo-Renaissance), which allowed them to create a representative image. At Château Haut-Brion, built in 1525 in Pessac (now a suburb of Bordeaux), most of the space was devoted to wine storage rooms, with fermentation vats and maturing barrels. Characteristic elements of the architecture were corner rounded turrets and French windows.<sup>12</sup> Castles and wine cellars inspired by historicism also appeared along the Loire and in the Champagne region of France, northern Spain and Germany.<sup>13</sup> In other wine regions, vineyards were generally built using local building materials. In Germany, slate was used, quarried along the Moselle, Middle Rhine and Nahe rivers, as well as colored sandstone and rubble limestone in Rheinhessen, Palatinate and Rheingau. The favorable political and economic alignment allowed many vineyard owners to erect grand estates in a rustic version of the Baroque, Neoclassical, or Empire style.<sup>14</sup>

Visible changes in wine production have occurred since the late 19th century. New technical developments such as grape crushers, storage tanks made of metal, plastic or steel increasingly began to replace traditional wooden fermentation barrels. At the same time, smaller

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<sup>9</sup> *Ibidem*, p.13.

<sup>10</sup> *Ibidem*, p. 14.

<sup>11</sup> *Ibidem*.

<sup>12</sup> *Ibidem*, pp. 14–15.

<sup>13</sup> *Ibidem*.

<sup>14</sup> *Ibidem*, p. 15.

barrels called *barriques* displaced large oak barrels. The development of wine technology influenced the emergence of new aesthetics: cellar floors were carefully lined with ceramics, and rough walls were covered with light-colored plaster contrasting with wooden ceiling beams. All this gave an expression of cleanliness. The industrial revolution also brought the replacement of stone pillars with iron supports, brick and cement were increasingly used in basements, and cast-iron or reinforced concrete structures became an alternative to wood or brick structures in above-ground warehouses.<sup>15</sup>

The 19th century was also a time of global export successes and intensified activities of producers of champagne, sparkling wines, and sweet sherry or port wines. This brought about the need to build facilities of unprecedented dimensions. For example, to remove sediment from millions of produced champagne bottles, they had to be placed on the so-called *pupitre*, i.e. special wooden stands with holes in the shape of an inverted letter V. These stands were placed in basements and underground tunnels, which reached impressive sizes. The basements and tunnels at Mœt & Chandon reached a length of 28 kilometers. To distinguish themselves from the competition and seeking publicity, champagne houses gave their reception and administrative buildings original forms. Initially, rural and Renaissance-inspired styles were in vogue in Champagne, as well as the Gothic revival. A famous example of this was the Pommery estates in Reims from the 1870s, which drew on the style of English mansions.<sup>16</sup>

World wars and economic crises left their mark on the sale and production of wine. In the second half of the 20th century, builders, not architects, were usually employed for reconstructions and extensions. Only since the mid-1980s has there been a sense of “renewal” in wine architecture. Initially, the focus was on comprehensive modernization of mainly production buildings while the administrative and residential parts remained unchanged. One of the first examples of the new approach was Ricardo Bofill’s 1987 cave design for Château Lafite Rothschild. It uses technical solutions to improve wine production and eliminate the need for refrigeration. The reinforced concrete *chai* (French for wine storage) could hold approximately 2,000 barrels in concentric circles in an octagonal shape, and a light well in the center surrounded by 16 columns gave the cave the appearance of a “wine crypt.”<sup>17</sup>

The evolution of winery architecture over the centuries has been subject to various influences depending on country, region, economic and cultural issues. Nowadays, the subject of modernizing and making vineyards architecturally more attractive is being approached more and more openly, seeing it as an expression of their aspirations through a distinctive visual presentation.<sup>18</sup>

### **3. WINE PRODUCTION – TECHNOLOGY, MODERN TRENDS AND CULTURAL CHANGES**

Today, wine is gaining new popularity as a cult beverage (especially in Western Europe and the Far East). Consumers are showing a growing interest in its production and the world of

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<sup>15</sup> *Ibidem*, p. 16.

<sup>16</sup> *Ibidem*.

<sup>17</sup> *Ibidem*, pp. 17–18.

<sup>18</sup> *Ibidem*, p. 19.

winemaking, which is influencing the growing appreciation of new architectural designs for the industry. Vineyards and wineries see themselves as tourist attractions, and the impressive architectural creations created by leading world-renowned designers testify to a special challenge and fascination inherent in the purely functional and technological sphere. For traditionalists accustomed to the romantic landscape of old vineyards with brick cellars, the new approach to architectural form may be controversial. However, increasingly modern aesthetics, transparency, the need to build an original image and follow contemporary trends and technological innovations are becoming crucial for vineyard owners. All this contributes to maintaining the fascination with the world of wine and building an atmosphere of luxury around it.<sup>19</sup>

The basic principle of winemaking has not fundamentally changed since ancient times, when people crushed grapes by trampling them with their bare feet. Nowadays, in an era of advanced technology and consideration of sustainability aspects, physical, chemical and technological processes are used to optimize, streamline, as well as refine the resulting beverage. The method of making wine differs between producers: some value tradition and avoid any chemical processing, others experiment and seek new flavor notes.<sup>20</sup> The architectural form of the winery is closely related to the production technology and its stages such as fruit collection, fermentation and ripening. The design of the functional and spatial layout is often based on the use of gravity by creating structures of at least two stories, to naturally support and accelerate production processes.

Enotourism combines learning about and visiting wine regions with wine tasting and sales. It is currently a thriving branch of tourism. Modern wine architecture, responding to the needs of the market, combines the eye-catching form of the facility with its adaptation to the processes of wine production, maturation and storage, as well as the attractive presentation of products.<sup>21</sup> The storage areas for tanks and barrels usually make the biggest impression on visitors. Depending on whether they are located at ground level or in the cellar, they define the architectural form of the winery and provide potential for interior design. No less important are the tasting spaces and company stores, which, by offering an attractive presentation of products, become a place for education and discovery of the world of wines.<sup>22</sup>

There is a growing tendency for winemakers to cooperate with famous architects, often winners of the Pritzker Prize, which allows vineyards to be perceived as contemporary expressions of a combination of tradition and technological innovation based on agriculture, production and hospitality. Architects such as Frank Gehry, Renzo Piano, Norman Foster, Santiago Calatrava, Álvaro Siza, Zaha Hadid and many others designed new vineyards or revitalized and expanded existing ones, arousing widespread public interest and influencing brand recognition around the world. These objects have become a symbol of technological innovation, often with deep cultural connotations.<sup>23</sup> As a result, the wine estates being built today use the harmonious and traditionally sanctioned centuries-old vineyard landscape as a backdrop for bold,

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<sup>19</sup> *Ibidem*.

<sup>20</sup> *Ibidem*, p. 20.

<sup>21</sup> I. Sykta, *Współczesne tendencje w kształtowaniu krajobrazu i architektury winnic*, "Czasopismo Techniczne, Architektura" 2012, no. 8-A, p. 239.

<sup>22</sup> H.G. Woschek, D. Duhme, K. Friederichs, *op. cit.*, p. 23.

<sup>23</sup> D. Bufquin et al., *The effects of architectural congruence perceptions on winery visitors' emotions and behavioral intentions: the case of Marqués de Riscal*, "Journal of Destination Marketing and Management" 2018, vol. 9, pp. 56–63.

form-surprising solutions and realizations, sometimes created in isolation from their surroundings. The combination of this boldness with beauty and high quality produces surprising results, enriching the landscape with original forms, shaping new architectural icons.<sup>24</sup>

#### 4. CHARACTERISTICS OF SELECTED VINEYARDS FROM EUROPEAN AREAS

##### 4.1. BODEGAS YSIOS, LAGUARDIA, SPAIN – DESIGN BY SANTIAGO CALATRAVA, IMPLEMENTATION IN 2001

The terrain of the Rioja Alavesa region, with the Sierra de Cantabria mountains rising to an altitude of 1,300 meters and favorable limestone and clay soils, provides the vines with excellent nutrients. Amidst this scenery in Laguardia, in the Rioja Alavesa region, is the impressive Bodegas Ysios winery structure. It was designed by Santiago Calatrava on behalf of Domec Bodegas, and takes its name from the goddess Isis – “Mother of the God” or “Mother of the Sun” in Egyptian mythology.<sup>25</sup>

The facility was conceived as fully integrated with the surrounding mountain range and, at the same time, as an autonomous sculpture. Its characteristic element is the roof consisting of rising and falling trusses made of glued wood, up to 42 meters long, covered with natural aluminum on the outside (Ill. 1). The silver color contrasts with the warmth of the cedar wood covering the front façade and enhances the impression of dynamic form. The main entrance, located in the center of the building, was accentuated by the visible rise of the roof, steeply upwards and its projection far forward. Just behind the entrance there is a tasting room with a view of the vineyards. The building was designed as an elongated pavilion measuring 196 by 26 meters on the east-west axis, in which wine production is arranged in a linear manner. Grapes are brought in through one of the side entrances, and at the other end of the facility they are stored in barrels, where they mature for later sale. The water tanks located on the front facade are lined with broken white ceramics, a characteristic material in Calatrava’s work, used, for example, in the construction of the City of Arts and Sciences in Valencia. The rear façade is finished with prefabricated concrete panels with a few narrow openings.<sup>26</sup> The whole creates the impression of a majestic structure in which the kinetic effect of the silvery roof shimmering with light reflections contrasts with the static background of the wall of hills in the depths and the regularity of rows of vines in its foreground.<sup>27</sup>

##### 4.2. HEREDEROS DEL MARQUÉS DE RISCAL, ELCIEGO, SPAIN – DESIGN BY FRANK O. GEHRY, IMPLEMENTATION IN 2006

Just over an hour’s drive south of Bilbao in northern Spain, in the small town of Elciego there is the Marqués de Riscal winery, operating since 1860. In 2000, its managers decided to implement a plan to comprehensively redefine the image of the winery, modernize its

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<sup>24</sup> I. Sykta, *op. cit.*, p. 241.

<sup>25</sup> H.G. Woschek, D. Duhme, K. Friederichs, *op. cit.*, pp. 104–105.

<sup>26</sup> *Ibidem.*

<sup>27</sup> I. Sykta, *op. cit.*, p. 239.

operations, improve the quality of the wine and establish more interactive relationships between consumers and the brand. The world-famous Canadian architect Frank O. Gehry was commissioned to expand the winery facilities with a hotel. Vineyard bosses hoped the project would have a “Guggenheim effect”, creating a tourist hotspot in the area as mesmerizing as the museum in Bilbao.<sup>28</sup>

Gehry’s task was to create a facility that was the perfect integration of tradition and innovation. After expansion, the final result was a 100,000-square-meter complex housing spaces for production, maturation, wine tasting, restaurants, hotel rooms, a spa, as well as conference rooms and a store. The hotel building consists of several simple blocks clad in sandstone and a fancy roof, whose architectural form was meant to evoke the shape of twisted vines (Ill. 2). Its structure, like roots, penetrates eight meters underground starting from the basement. From there, three 16.5-meter-long supports emerge to cross the square in front of the entrance area overlooking the vineyard. They then reach the second floor, where a series of metal beams emerge to support the floor slabs. The metal structure supports tangled ribbons of sheet metal, which are a distinctive feature of the building. Their colors refer to the wine industry: pink titanium is wine, gold symbolizes the zigzag mesh covering the bottles, and stainless steel is the foil covering the cork.<sup>29</sup>

The entrance area leads to the reception and bar. An outdoor terrace provides access to a spa offering wine therapy treatments, while a covered walkway allows visitors to observe the picturesque landscape. The three upper floors house 14 hotel rooms, a tasting room, restaurant, terraces and meeting rooms. The administrative part of the complex is located in an adjacent building and connects to the existing winery facilities and production plant.<sup>30</sup>

#### 4.3. BODEGAS PROTOS, PEÑAFIEL, SPAIN – DESIGN BY RICHARD ROGERS, IMPLEMENTATION IN 2008

The Bodegas Protos vineyard is located at the foot of a high rock with a historic castle on it. Originally, it consisted only of an underground part. The owner commissioned the design of its expansion to the British architect Richard Rogers. As a result, a single-story building for guests was created and an additional area of cellars for wine production underneath, ensuring an optimal temperature from 14° C to 16° C. The above-ground space was divided into five arched pavilions connected with glass facades, with rhythmically decreasing dimensions located on a common triangular-shaped platform (Ill. 3). The ventilated roofs of the pavilions were supported on wooden girders and covered with ceramic tiles. This is not only a reference to the local architecture, but also an assurance that the heat generated in the building is dissipated outside, the design of which reduces the heating of the building by approximately 30%. The expanded part was connected to the historic vineyard by an underground tunnel.<sup>31</sup> The walls of the platform forming the basis of the building were lined with light stone referring

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<sup>28</sup> B. Plaza et al., *Iconic Architecture as a catalyst for wine tourism: a case study of Marques de Riscal*, “European Countryside” 2024, no. 16(1), p. 172.

<sup>29</sup> Marqués de Riscal Hotel, Elciego [in:] *Arquitectura Viva*, <https://arquitecturaviva.com/works/hotel-marques-de-riscal-9> (access: 3.06.2024).

<sup>30</sup> Z. Pastuszczyk, *Rola architektury w rozwoju enoturystyki*, “Środowisko Mieszkaniowe” 2017, no. 19, pp. 175–176.

<sup>31</sup> Protos Winery / Richard Rogers + Alonso, Balaguer y Arquitectos Asociados [in:] *ArchDaily*, 29.04.2014, <https://www.archdaily.com/500502/bodegas-protos-richard-rogers-alonso-y-balaguer> (access: 3.06.2024).

to the facade of the nearby castle. Thanks to the fragmented architectural form, the facility is not overwhelming in scale, and the glass facades give it lightness and integrate with the surroundings.

#### 4.4. BODEGAS PORTIA, GUMIEL DE IZÁN, SPAIN – DESIGN BY NORMAN FOSTER, IMPLEMENTATION IN 2010

In the commune of Gumiel de Izán, in the province of Burgos, about 150 kilometers north of Madrid, in the Ribera del Duero wine region, lies the Bodegas Portia vineyard. Its design was commissioned in 2004 to Norman Foster, for whom it was the first winery facility bearing his name. For the architect, the starting point was the wine production process itself, the analysis of individual stages and the creation of ideal conditions for development, as well as the beautiful scenery in Ribera del Duero. The building was partially buried in the ground, thus reducing the amount of energy needed for cooling while ensuring visual integration with the surroundings. Foster designed the object in the shape of a three-pointed star, which was to symbolize the three stages of wine production: fermentation, maturation in a barrel and in a bottle (Ill. 4). In the center of the structure there is a reception and administrative rooms. From there, visitors can go on a tour of the cellars. Large glazing in the entrance area allows insight into the three wings of the lower level, each of which supports different production processes. At the back of the reception there is a restaurant serving local delicacies and overlooking the surrounding vineyards. *Barrisques* and bottles are stored in two wings located partially underground. Ultimately, the cellar can accommodate approximately 6,000 *barrisques*, i.e. 225-liter barrels made of American and French oak. Another interesting solution is the bottle cellar, where thousands of bottles of wine placed in vertical oak panels mature in almost complete darkness, only with the help of red light, which gives the dark, cool spaces an intriguing atmosphere (Ill. 5).<sup>32</sup>

The walls of the winery are made of reinforced concrete to protect against high temperatures, and the extended roof provides additional shade. To visually blend the facility into the landscape, the walls were covered with Cor-Ten steel on the outside. During harvest, grapes are collected from two gently sloping access roads that rise to the roof of the facility. In this way, the fruit is delivered to the crusher by gravity, ensuring that it is handled gently.<sup>33</sup>

The building is a tourist attraction of the region and responds to contemporary trends in wine tourism. The parking lot is located at the back of the facility and separated from the entrance by a wall, protecting against unwanted interference with the view of cars from the inside. The spacious area in front of the entrance was designed using concrete, glass and wood, and the lattice fence on both sides was made of old wooden barrels. Bodegas Portia is a combination of functionalism and an impressive architectural style. It is full of contrasts between architecture and gentle landscape.<sup>34</sup>

#### 4.5. ADEGA MAYOR, CAMPO MAYOR, PORTUGAL – DESIGN BY ÁLVARO SIZA VIEIRA, IMPLEMENTATION IN 2006

Adega Mayor rises on a hill in a wine-growing area of Alentejo, near the border with Spain. Its owner is Rui Nabeiro, the largest Portuguese coffee entrepreneur, who commissioned

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<sup>32</sup> H.G. Woschek, D. Duhme, K. Friederichs, *op. cit.*, pp. 31–32.

<sup>33</sup> *Ibidem*, p. 32.

<sup>34</sup> *Ibidem*.

Álvaro Siza to design the vineyard. He had already met the architect while designing coffee cups for his company.<sup>35</sup> Conceptual sketches of the vineyard were created in 2003. Siza designed a simple, functional rectangular structure that would represent the subsequent stages of wine production (Ill. 6). Design analyzes were based on the requirements of Paulo Loureano, one of the best Portuguese oenologists, responsible for creating the taste of Adega Mayor wine. The external facade is white, which naturally reflects sunlight and protects the interior from overheating, while referring to the traditional architecture of Alentejo.<sup>36</sup> Behind the main entrance there is a reception decorated by Siza in white and beige tones with leather furnishings and light wood elements. From there, visitors can get to the auditorium and the shop where, in addition to wine, you can buy local products. Behind the large glass doors there is a passage to the production area. It is dominated by raw concrete and a gray epoxy resin floor. The barrel cellars were also decorated in a raw style. The same finishing materials were used on the first floor as in the reception area. A large window allows you to see the impressive wine cellar from above. The green roof is covered with white marble walls, creating a look that resembles a face with eyes, nose and mouth – Siza’s personal accent.<sup>37</sup>

#### 4.6. QUINTA DO PORTAL, CELEIRÓS DO DOURO, PORTUGAL – DESIGN BY ÁLVARO SIZA VIEIRA, IMPLEMENTATION IN 2010

Completed in 2008, Quinta do Portal represents the dream of owner Eugenio Branco, whose family has lived in the Douro Valley since the 15th century and has been producing port wine for over 100 years. The property occupies 100 hectares and consists of five vineyards, which have been gradually acquired. In 1994, the production of red wine began, which 10 years later won the first awards. When the vineyard began to run out of space, Branco decided to build a new warehouse for aging and storing the wine. It was to be an object incorporated into the landscape, functional and creating together with the other buildings an attractive oenotouristic complex. He also hired Álvaro Siza, who set himself the goal of creating a building in harmony with the environment and fully integrated with it (Ill. 7). The biggest technical challenge was to create a warehouse for port and red wine, as they require different storage temperatures. Branco and Siza decided on a three-story form. Red wine is stored at the lowest level, nine meters underground, at a temperature of about 12°C. The floor above houses Porto Moscatel wine, which requires a temperature of about 17°C, while the highest level is dedicated to a panoramic terrace and presentation rooms.<sup>38</sup>

The structure is steel with concrete elements. Stairs connecting the two lower floors from a distance resemble the letter W. The space is illuminated by ceiling lamps made of white glass signed with the name of the architect. 10 cm thick cork was used as external insulation on the facades. The combination of this characteristic Portuguese material with Douro slate covering the lower part of the building creates an impressive contrast. From the entrance from the car park, guests immediately enter the shop and tasting area, where rustic parquet contrasts with exposed concrete walls and ceiling. Furniture made of Riga fir from Latvia was also designed by Siza.<sup>39</sup>

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<sup>35</sup> *Ibidem*, p. 26.

<sup>36</sup> I. Sykta, *op. cit.*, p. 240.

<sup>37</sup> H.G. Woschek, D. Duhme, K. Friederichs, *op. cit.*, pp. 25–29.

<sup>38</sup> *Ibidem*, p. 80.

<sup>39</sup> *Ibidem*, pp. 80–83.

On the roof, the architect placed a large keyhole-shaped structure, which created a presentation space for 60 people with wide glazing providing a view of the surrounding landscape. As with Adega Mayor, Siza also designed based on the guidelines given by the winemaker, in this case Paulo Coutinho, who has been responsible for wine production at Quinta do Portal since 1994.<sup>40</sup>

#### 4.7. PETRA WINERY, SUVERETO, ITALY – DESIGN BY MARIO BOTTA, IMPLEMENTATION IN 2003

Founded in 1997 in Val di Cornia in Suvereto by Vittorio Moretti and his daughter Francesca, the Petra vineyard covers an area of 300 hectares. The winery, resembling a huge flower, was designed by the famous Swiss architect Mario Botta.<sup>41</sup> The core of the facility is a cylinder cut by an oblique plane running parallel to the slope. In the middle there are steep stone stairs leading to the observation deck. In the lower zone, the cylinder is formed by pillars protruding in front of the glass façade, which at the rear of the building turns into narrow strips of windows rising arched upwards. The concrete walls of the round “crown” with a garden on the roof rest on pillars. The facades are covered with rough-hewn pink Prun stone from Verona (Ill. 8). On the sides of the cylinder, housing the reception desk and steel fermentation tanks, there are wings resembling the portico. On the upper floors there are rooms related to production and quality control. On the ground floor, outside the central area, a long tunnel cuts through the hill, ending in front of a rock wall, where a tasting area for visitors is located. The interior was decorated quite ascetically and austere. The barrel cellars are additionally made more attractive by lighting effects that spread gently across the arched ceiling. The form of the object has architectural elements reminiscent of other Botta designs, such as a cylindrical core referring to the Museum of Modern Art in San Francisco, and a roof covered with plants, similar to the one that tops the Cathedral of the Resurrection in Évry in France.<sup>42</sup>

#### 4.8. ROCCA DI FRASSINELLO, GAVORRANO, ITALY – DESIGN BY RENZO PIANO, IMPLEMENTATION IN 2007

Rocca di Frassinello, located in the Italian province of Grosseto, is a joint project of the owner of the famous Tuscan vineyard Castellare and Baron Éric de Rothschild, who first met in the 1980s. In 2000, they planted the first vines in Gavorrano. A year later, the winery commissioned Renzo Piano to build a new barrel cellar, bordering on the north side with an open area on the slope of a gently rising hill. The basement resembles an amphitheater with wooden barrels placed on steps leading down towards the center of the space. On the lowest level, in the middle of the basement, there is a tasting area. The only direct source of daylight is a 1.5 by 1.5-meter opening in the ceiling. The basement is the base on which a glazed, light pavilion measuring 20 by 20 meters was placed with a strongly extended openwork eaves,

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<sup>40</sup> *Ibidem*, p. 85.

<sup>41</sup> Petra Winery [in:] Centurion Magazine, <https://www.centurion-magazine.com/travel/experiences/europe/italy/tuscany-petra-winery> (access: 3.06.2024).

<sup>42</sup> Winery Petra, Suvereto, Italy [in:] Mario Botta Architetti, <https://www.botta.ch/en/CANTINE%20VINICOLE?idx=2> (access: 3.06.2024).

giving the impression of levitating above the building (Ill. 9, 10). Inside there is a welcome area for visitors and a sales area.<sup>43</sup>

Laboratories and offices are located in the eastern and western parts of the main building. Despite its considerable size, the facility does not dominate its surroundings. Its characteristic element is the intensely red color of the facade and the tower visible from a distance, reminiscent of the towers of Tuscan city palaces. Inside there are heliostats that reflect light into the building.

#### 4.9. ANTINORI NEL CHIANTI CLASSICO, BARGINO, ITALY – DESIGN BY ARCHEA ASSOCIATI, IMPLEMENTATION IN 2012

The impressive vineyard, nestled in the Chianti hills, located between Florence and Siena, is owned by the Antinori family, which has been involved in winemaking for 28 generations. Designers from Archea Associati sought to achieve a symbiosis of culture, human work and the natural environment. The entire symbolic basis is based on emphasizing deep connections with the earth – both in terms of the matter that gives rise to the product such as vines, and the subtle integration of this vast object into the landscape of the Tuscan hills. This was achieved mainly by designing a green roof for growing vines. It was accentuated with longitudinal “cracks” in the area, in which glazing was placed, providing daylight and a view of the surrounding landscape. Irregularly placed holes were also cut in it, revealing underground interiors. In one of them, there is a spiral staircase connecting the lower floors with the roof terrace (Ill. 11, 12). The main entrance leads to the store area with a tasting room and restaurant. The production area and parking lot are located in the basement, with bottling plants and warehouses above. The wine maturing spaces with their rhythmic sequence of terracotta vaults and subdued light have an almost sacred dimension. Additionally, the facility’s program is enriched with an auditorium, museum, library and administrative spaces.<sup>44</sup>

The facility uses the earth as a natural insulator to maintain a constant temperature. The facades are finished with orange terracotta, referring to local tradition, combined with details made of Cor-Ten steel. Thanks to the diversity of forms, the use of scenic views and natural colors, the complex, despite its impressive area of 50,000 m<sup>2</sup>, maintains scale and balanced proportions.<sup>45</sup>

#### 4.10. CHÂTEAU CHEVAL BLANC, SAINT-ÉMILION, FRANCE – DESIGN BY CHRISTIAN DE PORTZAMPARC, IMPLEMENTATION IN 2011

In 1998, Bernard Arnault and Baron Albert Frère acquired the Cheval Blanc estate, which dates back to 1871. There was already a traditional castle in the area typical of Bordeaux, but over time, in order to improve wine production, they asked the architect Christian de Portzamparc to design a new vineyard. In 2011, a building was built in the shape of two huge waves of white concrete, rising from the ground, with a garden on the roof (Ill. 13).

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<sup>43</sup> H.G. Woschek, D. Duhme, K. Friederichs, *op. cit.*, pp. 86–89.

<sup>44</sup> A. Frearson, *Antinori Winery by Archea Associati* [in:] Dezeen, 4.05.2013, <https://www.dezeen.com/2013/05/04/antinori-winery-by-archea-associati/> (access: 3.06.2024).

<sup>45</sup> *Ibidem*.

A rectangular structure with wooden facades and large glazing reveals itself beneath them. The building replaced energy-intensive systems with economical solutions, which earned it the HQE high environmental quality certificate. Inside, the architect designed concrete vats in the shape of a tasting cup to optimize oxygenation (Ill. 14). They are divided into 52 units, each of which presents a different grape variety. The space in which they are placed is filled with natural light, emphasizing the curvature of the concrete structures. The barrel winery below is designed differently, with brick walls and beams with wavy lines creating the atmosphere of a crypt. The interior of the tasting room and visitor space is minimalist, dominated by concrete and natural wood.<sup>46</sup>

#### 4.11. DÉLAS FRÈRES, TAIN-L'HERMITAGE, FRANCE – DESIGN BY CARL FREDRIK SVENSTEDT, IMPLEMENTATION IN 2019

Since Roman times, the terraced hills above Tain-l'Hermitage have been famous for the best wines in the Rhone Valley. There was a historic wine estate in this area, which Delas Frères decided to renovate and expand. He invited the architect Carl Fredrik Svenstedt to cooperate, who, inspired by the surrounding terraced vineyards, designed a curved winery for Rhône Délas Frères. The new wine cellar and shop created a fence for the renovated manor house and garden. The whole thing is made of local sandstone, which creates ideal conditions for storing wine. Ramps have been designed throughout the area to allow visitors to discover the winemaking process. They lead from the roof terrace with a view of the hills to the bottle cellar under the manor. Sunlight enters the visitor gallery through an oblong skylight, and the undulating wall serves as a light reflector for the tank and barrel halls, where direct light would be harmful. Opposite the undulating stone wall there is a shop (Ill. 15). Its facades are made of irregularly placed sandstone blocks divided by glazing. An old chestnut tree grows on the axis of the entrance located in the rounded part of the façade, providing another contrasting combination of old and new. The historic residence, which is the central point of the garden, houses tasting rooms, a guesthouse, a restaurant, and a historic bottle collection is stored in the basement.<sup>47</sup>

The undulating wall, eighty meters long and seven meters high, has a geometrically stable structure. It is made of robot-carved stone blocks that are tensioned to the foundations and connected horizontally with stainless steel cables (Ill. 16). The resulting gravel was used to pave the garden.<sup>48</sup>

## 5. SUMMARY

The analysis carried out above show that vineyards have undergone transformations over the centuries, but it was only at the turn of the 20th and 21st centuries that buildings with spectacular architecture were introduced. They go beyond their basic production function

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<sup>46</sup> Chateau Cheval Blanc Winer / Christian de Portzamparc [in:] ArchDaily, 9.12.2013, <https://www.archdaily.com/455019/chateau-cheval-blanc-winer-agences-elizabeth-christian-de-portzamparc> (access: 3.06.2024).

<sup>47</sup> P. Pintos, *Delas Frères Winery / Carl Fredrik Svenstedt Architect* [in:] ArchDaily, 13.02.2020, <https://www.archdaily.com/933696/delas-freres-winery-carl-fredrik-svenstedt-architecte> (access: 3.06.2024).

<sup>48</sup> *Ibidem*.

and offer visitors a unique aesthetic experience. This happens in isolation from habits related to the perception of the traditional style in which such buildings should be built. They give new cultural and non-cultural meanings by generating symbolic connections and mental associations in people's minds. This makes it easier to remember places by placing them in the appropriate regions on the world map.<sup>49</sup> They bring profits not only for the vineyard, but also for the surrounding area, offering experiences related to both the wine and the objects they represent. These activities contribute to driving the local economy, creating new jobs, and the iconic winery architecture positions the area as a destination for wine tourism.<sup>50</sup>

The use of architecture based on advanced technological solutions to present and convey the unique characteristics of the product allows to go beyond the world of wine and to present the values embodied by the vineyard. In this way, they promote themselves among consumers and potential investors by building a brand that combines tradition with innovation. This is particularly evident in the case of the Herederos del Marqués de Riscal vineyard, for which the construction of an iconic facility equipped with advanced production technologies changed the perception of the brand on the international stage and allowed it to enter the wine tourism sector. Thus, iconic architecture can be a powerful tool for diversification and symbolic change of position and support the economic growth of the vineyard.<sup>51</sup> When designing this type of objects, not only topography, environment, size, or functionality is taken into account, but above all aesthetic issues and the desire to surprise the recipient. The functional-utility program expands to include non-production spaces, serving mainly commerce and the desire to satisfy the widest possible group of recipients. At the same time, we are still dealing with a product that is considered luxury. Balancing proportions and ensuring uniqueness is extremely important, as aptly summarized by Al Stratford, president of the South African Institute of Architecture: "Good architecture and good wine have much in common. Although architecture may be of a more permanent nature – wine being rather more quickly consumed – both are manifestations of science and technology, art and culture".<sup>52</sup>

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<sup>49</sup> N. Alaily-Mattar, G. Lindsay, A. Thierstein, *Star architecture and urban transformation: Introduction to the special issue*, "European Planning Studies" 2022, no. 30(1), pp. 1–12.

<sup>50</sup> B. Plaza et al., *op. cit.*, p. 169.

<sup>51</sup> *Ibidem*, pp. 171–173.

<sup>52</sup> M. Simon, O. Harea, *Terraced vineyards – architectural responses*, "4D Journal of Landscape Architecture and Garden" 2017, no. 44, p. 24.



III. 1. Bodegas Ysios, front elevation, source: N. Jewell, *Santiago Calatrava's Ysios Bodegas* [in:] Buildipedia, 16.05.2011, <http://buildipedia.com/aec-pros/featured-architecture/santiago-calatrava-ysios-bodegas> (access: 10.06.2024).



III. 2. Herederos del Marqués de Riscal, hotel's front elevation, source: Marqués de Riscal Hotel, Elciego [in:] Arquitectura Viva, <https://arquitecturaviva.com/works/hotel-marques-de-riscal-9> (access: 10.06.2024).



III. 3. Bodegas Protos, front elevation, source: Protos Winery / Richard Rogers + Alonso, Balaguer y Arquitectos Asociados [in:] ArchDaily, 29.04.2014, <https://www.archdaily.com/500502/bodegas-protos-richard-rogers-alonso-y-balaguer> (access: 10.06.2024).



III. 4. Bodegas Portia, bird's eye view, source: Portia Winery, Gumiel de Izán [in:] Arquitectura Viva, <https://arquitecturaviva.com/works/bodegas-portia-7> (access: 10.06.2024).



III. 5. Bodegas Portia, bottle ripening cellar, source: Portia Winery, Gumiel de Izán [in:] *Arquitectura Viva*, <https://arquitecturaviva.com/works/bodegas-portia-7> (access: 10.06.2024).



III. 6. Adegas Mayor, bird's eye view, source: Adegas Mayor [in:] *Portugal Finest*, <https://www.portugal finest.pt/places/adega-mayor/> (access: 10.06.2024).



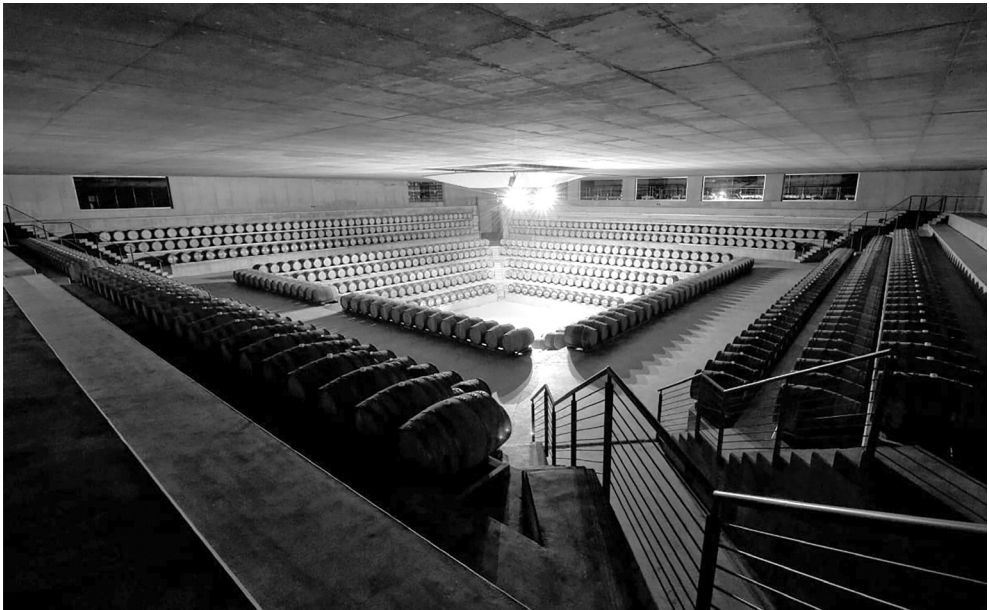
III. 7. Quinta do Portal, perspective view, source: Siza A., Quinta do Portal Winery [in:] archiweb, <https://www.archiweb.cz/en/b/vinarstvi-quinta-do-portal-adeqa-quinta-do-portal> (access: 10.06.2024).



III. 8. Petra Winery, front elevation, source: Winery Petra, Suvereto, Italy [in:] Mario Botta Architetti, <https://www.botta.ch/en/CANTINE%20VINICOLE?idx=2> (access: 10.06.2024).



Ill. 9. Rocca di Frassinello, perspective view, source: Rocca di Frassinello Winery [in:] archilovers, <https://www.archilovers.com/projects/107957/rocca-di-frassinello-winery-gallery?2266260> (access: 10.06.2024).



Ill. 10. Rocca di Frassinello, cellar with barrels, source: Rocca di Frassinello Winery [in:] archilovers, <https://www.archilovers.com/projects/107957/rocca-di-frassinello-winery-gallery?2266257> (access: 10.06.2024).



III. 11. Antiori Winery, front elevation, source: photo by author.



III. 12. Antiori Winery, view of the winding staircase, source: photo by author.



III. 13. Château Cheval Blanc, perspective view, source: Château Cheval Blanc Winer / Christian de Portzamparc [in:] ArchDaily, 9.12.2013, <https://www.archdaily.com/455019/chateau-cheval-blanc-winer-agences-elizabeth-christian-de-portzamparc> (access: 10.06.2024).



III. 14. Château Cheval Blanc, view of concrete vats, source: Chateau Cheval Blanc Winer / Christian de Portzamparc [in:] ArchDaily, 9.12.2013, <https://www.archdaily.com/455019/chateau-cheval-blanc-winer-agences-elizabeth-christian-de-portzamparc> (access: 10.06.2024).



III. 15. Délas Frères, view of the store, source: Chateau Cheval Blanc Winer / Christian de Portzamparc [in:] ArchDaily, 9.12.2013, <https://www.archdaily.com/455019/chateau-cheval-blanc-winer-agences-elizabeth-christian-de-portzamparc> (access: 10.06.2024).



III. 16. Délas Frères, view of the stone wall and historic manor house, source: P. Pintos, *Delas Frères Winery / Carl Fredrik Svenstedt Architect* [in:] ArchDaily, 13.02.2020, <https://www.archdaily.com/933696/delas-freres-winery-carl-fredrik-svenstedt-architecte> (access: 10.06.2024).

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#### Author's Note

**Katarzyna Janicka-Świergula, PhD, Arch.**

PhD assistant professor at the Institute of Architecture and Urban Planning of the Lodz University of Technology. Her design activity is in the field of medium and small architecture. She conducts research on the issues of protection of historic structures and adaptation of historic buildings to modern functions. [katarzyna.janicka@p.lodz.pl](mailto:katarzyna.janicka@p.lodz.pl)