

# TERRACED LANDSCAPES IN SLOVENIA TERASIRANE POKRAJINE V SLOVENIJI

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MARJAN GARBALS

Dynamic Haloze Hills with its partly terraced vineyards on sunny slopes.  
Razgibane Haloze z delno terasiranimi vinogradi na prisojnih pobočjih.

# Terraced landscapes in Slovenia

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**ABSTRACT:** Slovenia is a country of exceptionally diverse landscapes at the intersection of four major European macroregions: the Alpine, Pannonian, Dinaric, and Mediterranean regions. Terraces, which are a characteristic Mediterranean landscape element, occur in all landscape types, but they vary in terms of density, purpose, and current function. Terraces, which define the most characteristic terraced landscape, are most common in the Mediterranean environment. However, they are also common in Karst-Dinaric landscapes and the wine-growing Pannonian hills, but are more unusual in mountainous Alpine regions, where they occur especially in transition areas to Mediterranean landscapes. Different types of terraces are defined by their purposes: agricultural, viticultural, and fruit-growing. The first type is found across Slovenia, whereas the second and third types are found in hills with favorable climates for cultivating grapes and fruit trees. Agricultural terraces are older; with the declining role of agriculture, increased social mobility, and an ageing and insufficient agricultural workforce, these terraces have lost their former role and their former fields are now almost entirely replaced by meadows. With the exception of the Mediterranean region and some of the Dinaric regions, wine-growing terraces and the less common fruit-growing terraces are the product of modern, mechanized farming, and a different understanding of the quality of vineyard production. This requires greater separation between rows to allow the use of farm machinery between grapevines set further apart.

**KEY WORDS:** geography, terraced landscape, cultivated terraces, rural geography, agricultural geography, Slovenia

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## 1 Introduction

Few countries, even those much larger than Slovenia, can compare regarding the variety of landscapes in this particular region of Central Europe, where the Alps, the Pannonian plain, the Dinaric Mountains, and the Mediterranean, as well as Germanic, Hungarian, Slavic, and Romance cultural influences, all meet and intertwine. As a result, Slovenia is renowned for its natural and cultural diversity, and for its variety of landscapes. Slovenia has four basic regional landscape types and nine subtypes. The basic types are the Alpine, Pannonian, Dinaric, and Mediterranean regions, and the subtypes include the Alpine mountains,



Figure 1: Medana settlement area in Goriška Brda (© Geodetska uprava Republike Slovenije 2005).



ALENKA FIJFAK

Figure 2: Viticultural terraces in Goriška Brda in winter.

the Alpine hills, the Alpine plains, the Pannonian low hills, the Pannonian plains, the Dinaric plateaus, the Dinaric valley systems and corrosion plains, the Mediterranean low hills, and the Mediterranean plateaus (Perko 2001, 80; Perko & Urbanc 2004, 347). This variety and the transitional nature of Slovenia's regions constitute its main geographic characteristic and are important elements of its identity (Perko 1997, 31; Hrvatin and Perko, 2008).

Slovenia is crisscrossed by cultivated terraces in a way that few other European countries are. An important element of the Mediterranean landscape, terraces appear in all types of Slovenian regions, although they differ in their frequency, purpose, and current function. Most of the terraces, which define the most distinctive terraced landscape, are located in the Mediterranean area, but they are also numerous in the Karst Dinaric regions and in the wine-growing Pannonian low hills (Perko 2001, 80), whereas they are rare in the medium Alpine hills, where they are mostly encountered in areas transitional to the Mediterranean regions.

Slovenia's spatial development strategy defines agriculture as the main guardian of this recognizable cultural landscape, including, of course, cultivated terraces. A quality cultural landscape is becoming one of Slovenia's principal values and comparative advantages (Ažman Momirski et al. 2008, 115). The impact of various factors on the maintenance of terraces and their new structures exceed the sectoral framework of agriculture.

There are various types of terraces according to land use and type of cultivation. Vineyard terraces have been greatly predominant in the past decades in terms of both scope and activity. Terraced vineyards are found throughout the country as a result of the application of mechanized cultivation. According to data from the Register of Grape and Wine Growers (Ministry of Agriculture, Forestry and Food 2007), Goriška Brda (the Gorica Hills) boast the largest share of vineyard terraces in Slovenia – as much as 81%. According to the findings of the ALPTER study (Ažman Momirski 2008, Ažman Momirski et al. 2008), 1,446 ha, or 74%, of Goriška Brda, was covered with terraced vineyards in 2005.

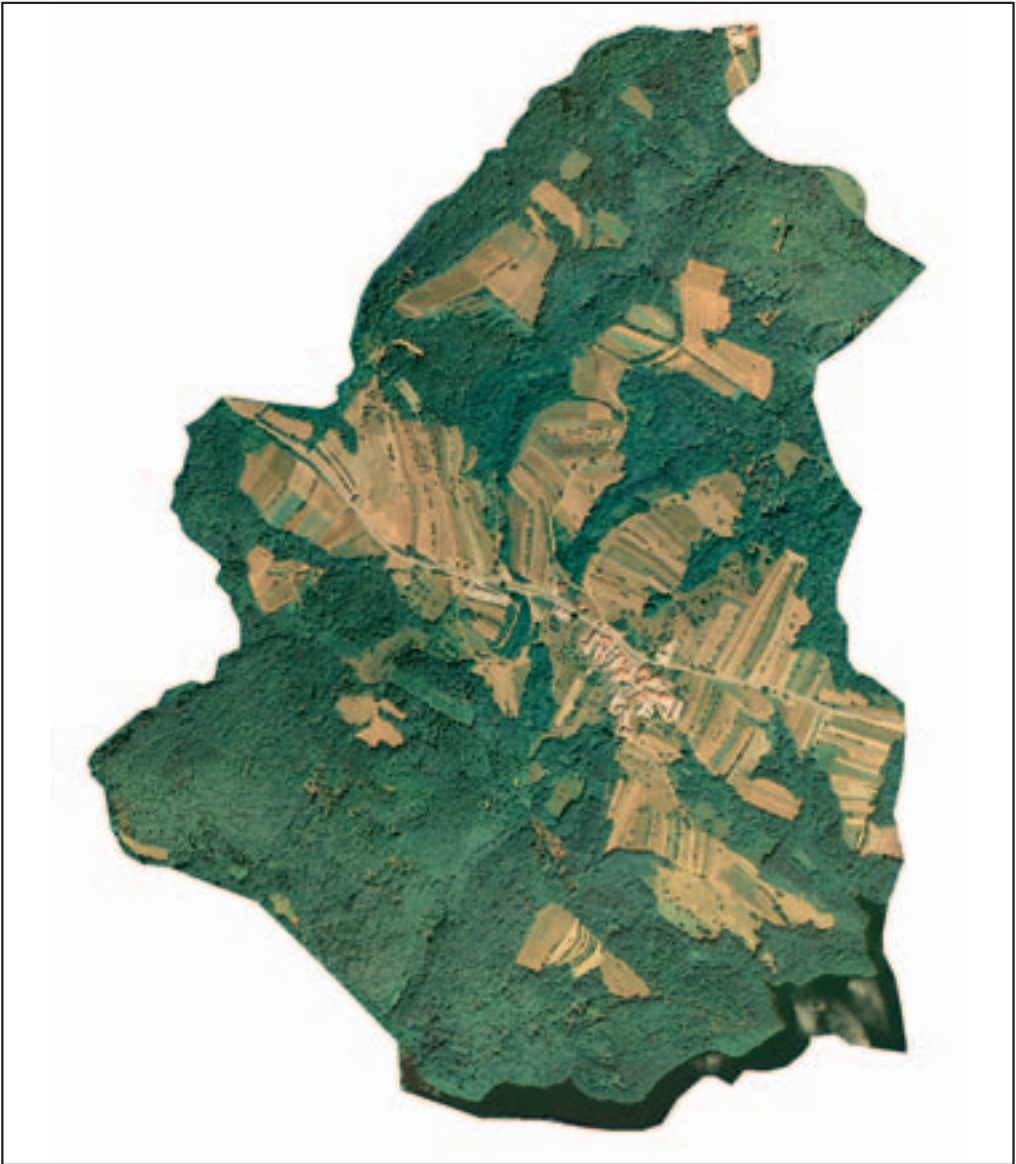


Figure 3: Zajelše settlement area in Brkini (© Geodetska uprava Republike Slovenije 2005).

On the basis of natural conditions, varieties of grape grown, and the characteristics of the wines, Slovenia is divided into three major winegrowing regions: Podravje (the Drava Valley), Posavje (the Sava Valley), and Primorje (the Littoral region). The winegrowing districts are smaller, more homogenous units with relatively uniform natural conditions that identify the specific origin of the wines. There are nine of these altogether (Kladnik 2007, 94).

Besides Goriška Brda, the shares of terraced vineyards in other Slovenian wine-growing districts are as follows: Prekmurje 4%, Kras (Karst) 14%, Dolenjska (Lower Carniola) 21%, Slovenska Istra (Slovenian Istria) 23%, Štajerska Slovenija (Slovenian Styria) 25%, Bela Krajina (White Carniola) 26%, Bizeljsko-Sremič 38%, and the Vipavska dolina (Vipava Valley) 66%. The share for the whole of Slovenia is 37%.



STANE KLEMENC

Figure 4: Agricultural terraces in Brkini.

## 2 Research to date on cultivated terraces and terraced landscapes of Slovenia

Considering that in many parts of Slovenia cultivated terraces are a quite common, and in some places even a dominant landscape feature, one would expect more research to have been conducted in these areas.

In a sense, this especially applies to geography, whose complex cause-and-effect approach basically makes it perfect for discovering numerous unknown factors in the formation of terraced landscapes, their structure, the processes within these landscapes, and the human and economic effects on maintaining terraces and the intensity of their use. As early as 1965, Ilešič observed on the dust jacket of Titl's work *Socialnogeografski problemi na koprskem podeželju* (Sociogeographic Issues in the Landscape around Koper, 1965) that the chapter on cultivated terraces as a characteristic feature of the Mediterranean cultural landscape was one of the rare works in professional literature thus far. This is still true because a systematic study of the origin, range, extent, and the types of cultivated terraces in Slovenia and their state has not yet been carried out.

There are only individual regional studies, among which Titl's (1965) is most notable. His study at least partly relies on Melik's rather in-depth discussion on cultivated terraces in the countryside along the Slovenian coast (Melik 1960, 167–171). Titl was also the first to develop a typology of terraces; he distinguished between viticultural/agricultural, fruit-growing/agricultural, purely viticultural, and purely fruitgrowing terraces. Terraces in Koprška Brda (the Koper Hills) are dealt with in Drobnjak's article on the physiogeographic significance of cultivated terraces and typology (Drobnjak 1990), and in Kladnik's article on the possibilities of their intensification (Kladnik 1990). An in-depth study on Goriška Brda (Vrišer 1954) devotes some attention to cultivated terraces, mostly concerning field division and cultivated plants. Thus, an interdisciplinary, geographic, historical, ethnographic, and architectural study of



Figure 5: Rinčetova Graba settlement area in eastern part of Slovenske Gorice (© Geodetska uprava Republike Slovenije 2005).

the terraced landscape of Goriška Brda (Ažman Momirski et al. 2008) is surely the most comprehensive presentation of this topic in Slovenia thus far.

Eastern Slovenia and its more recently created terraces are mentioned only once by Bračič in his study of the Haloze wine-growing region (1967). More on this topic was written by Belec in his monograph



MILAN KLEMENČIČ

Figure 6: Single-row viticultural terraces in Slovenske Gorice.

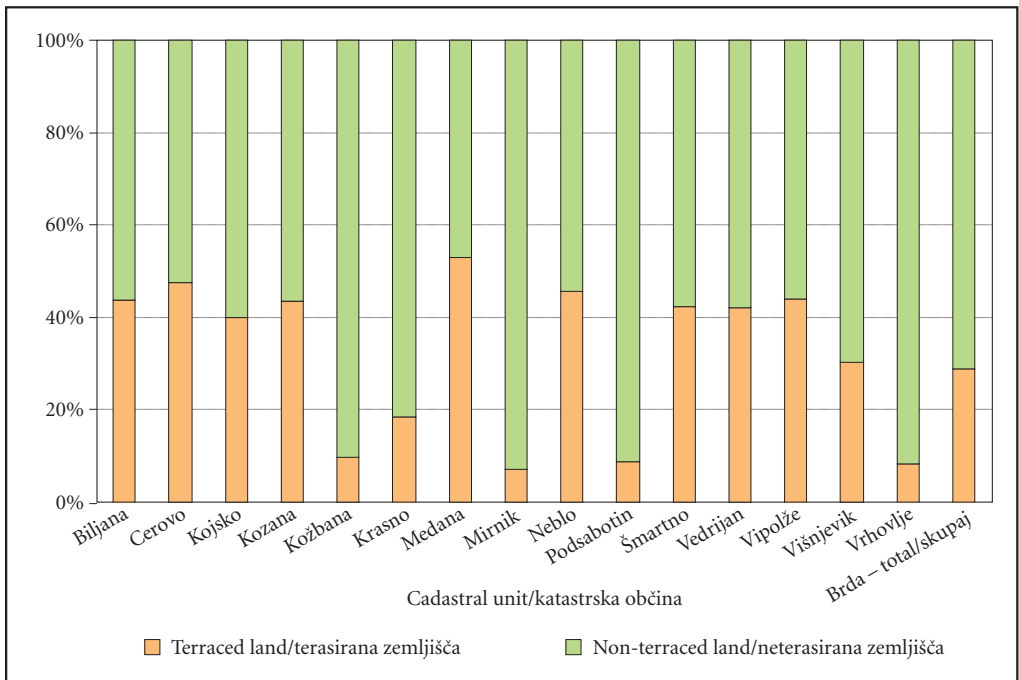


Figure 7: Terraced and non-terraced areas in cadastral units of Goriška Brda.





Figure 8: Construction of viticultural terraces in the village of Drašiči in Bela Krajina in the year 1963 (Dular 1994).

*Ljutomersko-Ormoške gorice* (The Ljutomer-Ormož Hills, 1968). This monograph also mentions the completely altered landscape image that was caused by the terraces.

It is interesting that, thus far, historians have almost completely ignored the topic of cultivated terraces. This is best shown in the otherwise comprehensive monograph *Zgodovina agrarnih panog* (History of Branches of Agriculture, 1970), which does not mention terraces in its text at all, not when dealing with types of land (Valenčič 1970b) or when dealing with viticulture (Valenčič 1970a). Perhaps the reason lies in the lack of geographic studies to draw upon. Some information about the existence of terraces can be obtained from the otherwise rather scant illustrations. Interesting photographs include one of an olive plantation on stone terraces near Piran, and one of terraced fields near Beka between Socerb and Kozina that were abandoned due to erosion. Even more remarkable is Valvasor's depiction of grapevine shoots set between trees near Lože Castle in the Vipava Valley that resembles terraces; otherwise cultivated terraces cannot be seen in the illustrations in Valvasor's *Die Ehre deß Hertzogthums Crain* (The Glory of the Duchy of Carniola). Terraces are, however, clearly visible in a drawing of vineyards with cottages near Rogatec from 1782. Terraces can also be made out in a panorama of the town of Kanal on the right bank of the Soča River from 1752. This picture is part of a series of six panoramas kept at the regional museum in



GIANNANTONIO CAPELLARIS (1727-1807)

Figure 9: Terraces in a panorama of the town of Kanal on the right bank of the Soča River from 1752 (Mavrič 2006).



MARJAN GARBAUS

Figure 10: The oldest terraces in Slovenia are in Kopraska Brda, hilly area just above Adriatic Sea.



ALENKA FIJFAK

Figure 11: In some places piles of stones, which remained from the built terraced slopes, remind on the former terraces.



ALENKA FIKFAK

Figure 12: Narrow viticultural terraces on steep slopes in the northern Goriška Brda.



LUČKA AŽMAN MOMIŠKI

Figure 13: Contemporary terraces in the southern Goriška Brda are adapted to the machine maintenance and have different number of the rows of vines.

Nova Gorica. Only this panorama includes a depiction of planned space – a »lavish garden«. Terraces with planted grapevines can be clearly made out in the drawing (Mavrič 2006, 481–492).

In contrast to historians, ethnographers have proven themselves in research on cultivated terraces. Particularly interesting is a study on viticulture in villages in the countryside around Koper from the mid-19<sup>th</sup> century to the 1950s (Presl 1995), which also discusses terminology in connection with terraces and old cultivation techniques connected with viticulture.

Agricultural experts are mostly interested in the planning and the construction of viticultural and fruit-growing terraces. In everyday practice, the construction of terraces does not follow a preset plan, but instead the experience of winegrowers, agricultural experts, and builders (i. e., bulldozer operators).

Surprisingly, initiatives to prepare a plan to renovate terrace vineyards can be traced back to 1959 (Simčič 1959, 90–95): »... after first drawing up a plan, the ground needs to be leveled, and then the terraces need to be marked out in the direction of contour lines, and finally the ground needs to be plowed...« Around 1960, a number of investment programs were developed to renovate the vineyards and orchards in Slovenske Gorice (the Slovenske Gorice Hills; 1959, 1960, 1962). The most prolific author is Colnarič (1971, 1985, 1991), who, alone or with others, sometimes more technically and sometimes in a more popular manner, presents the factors that affect the construction of terraces. In his works, one can find specific instructions for the construction of terraces, which also makes it possible to follow the development of agricultural technology and subsequently the methods of terrace construction alongside changes or improvements to agricultural machinery. Recently, these authors' efforts have been complemented by other experts (e. g., Vršič and Lešnik 2001, Škvarč and Kodrič 2007).

### 3 Landscape terracing

The older cultivated terraces were built in order to adjust farming to natural conditions and to reclaim new agricultural land. They were made in areas where manual tillage was the predominant farming technique. In contrast, terraces were nonexistent in areas where the slash-and-burn method (Baš 1984) was predominant due to the instability of the land under cultivation because terracing it would not have been economical in the relatively short time of its intensive use due to the high labor input.

The creation of cultivated terraces successfully prevented the adverse effects of erosion, including erosion of soft soil during heavy rainfall, and terracing helped retain more moisture and keep the soil moist longer. Water was drained by slanting the terraced surfaces towards the slope or away from it (Titl 1965, 50; Hrvatin, Perko and Petek, 2006). In the southern Goriška Brda, for instance, exposure is not of crucial importance for the position of the vineyard terraces and vineyards. It is characteristic of the orientation of the terraced slopes that only 7.7% of all terraces have northern exposures in the northern Goriška Brda, whereas the terraces in the southern Goriška Brda are fairly evenly distributed on the slopes, oriented towards all four cardinal directions. Vineyards greatly predominate on the terraces in the district of Medana (Ažman Momirski et al. 2008, 115). The terracing of sunny-side slopes in areas with less favorable climatic conditions made cultivation possible on more productive land ensuring larger and better crops. These regulated terraced surfaces made land cultivation easier, but the regulation of access roads was a major problem. The reclamation of farmland through terracing was especially important for viticulture in hilly and mountainous areas, but also for fruit cultivation, horticulture, and subsistence agriculture.

A terraced landscape has been a constant of the Mediterranean environment for millennia. Terraces were probably built as early as Roman times (even though there is no direct archeological evidence of this) because it is hard to imagine that grapevines and olives, already the main crops during Antiquity, were cultivated on steep slopes. In subsequent periods, population growth and the resulting need for higher yields led to the expansion of terraced areas (Titl 1965, 47–48). All the work in terrace regulation was performed by hand, and terrace building and maintenance was considered one of the hardest jobs in agriculture. A large number of laborers were also required for the manual preparation and transport of manure, intermediate goods, and crops, but there were sufficient numbers of such laborers in earlier sociopolitical systems because the vast majority of the working population was engaged in agricultural cultivation during an era when subsistence farming was prevalent. In 1771 the share of farmers in what is now Slovenia was as high as 88.6%, and it was still high as late as 1910, when it was 66.7% (Natek 1998, 164).

However, the abandonment of agricultural terraces is not a new phenomenon because early studies by Vrišer (1954), Melik (1960), and Titl (1965) reported the extensive abandonment of cultivated terraces in Koprška Brda and Goriška Brda. This suggests that abandonment is a long-term process with numerous causes. Because industrialization and the reduction in labor-intensive agriculture led to a drop in the number of farmers, the terraces began to lose their former role due to the restratification and ageing of the population and the shortage of agricultural workers; consequently, the terraces underwent extensification. In their final stage, terraces in many locations became overgrown with forest and disintegrated, which marked a degradation of the traditional landscape characteristic of the traditional Slovenian terraced regions. The incompatibility of terrace farming with the effort to modernize agricultural production at the time by introducing mechanization became even more pronounced under conditions of land fragmentation due to the poor maintenance and, consequently, low capacity of the access roads to the terraces, which in many places made access to the lots impossible for heavy agricultural machinery. It is clear that only machinery could have compensated for the shortage of farming labor, but its introduction would have required the regulation of access roads (Titl 1965, 71–72; Kladnik 1990, 144).

On the other hand, as large state-owned holdings expanded after the Second World War, the terracing of vineyards and, to a lesser extent, orchards, was promoted due to easier and more profitable farming on steep slopes. Mechanized terraced viticulture and fruit cultivation appeared in all wine-growing areas at the time, helping preserve the terraced landscape in western Slovenia to some extent. In eastern Slovenia terracing was a completely new phenomenon. Data indicate that the first terraced plantation in wine-growing area Podravje was built in the settlement of Gruškovec in Haloze (the Haloze Hills) as early as 1892–1899 (Bračič 1967, 127). Today vineyard terraces and, less often, orchard terraces are the result of more modern, mechanized farming and a different quality assessment of vineyard cultivation.

## 4 Types of terraces

Broadly, types of terraces can first of all be defined according to their purpose, or land use in its widest sense. There are:

- Agricultural terraces,
- Viticultural terraces, and
- Fruit-growing terraces.

The first type can be found all over Slovenia, whereas the second and the third types are found in low hills with a climate suitable for wine- and fruit-growing.

Older terraces (with the exception of the oldest viticultural ones in Koprška Brda) are agricultural but they have lost their former role due to reasons already mentioned. This is why grass has almost completely replaced the fields that used to be there. In many parts of remote areas experiencing demographic decline, terraces have been almost entirely overgrown with woods.

With the exception of Mediterranean and to some extent Dinaric landscapes, viticultural and rare fruit-growing terraces are the result of more modern and mechanized farming and a different understanding of the quality of production in vineyards. This requires larger distances between rows, which enables the use of agricultural machinery between rows of vines set further apart. Such terraces are especially characteristic of the Pannonian landscapes of northeastern and eastern Slovenia.

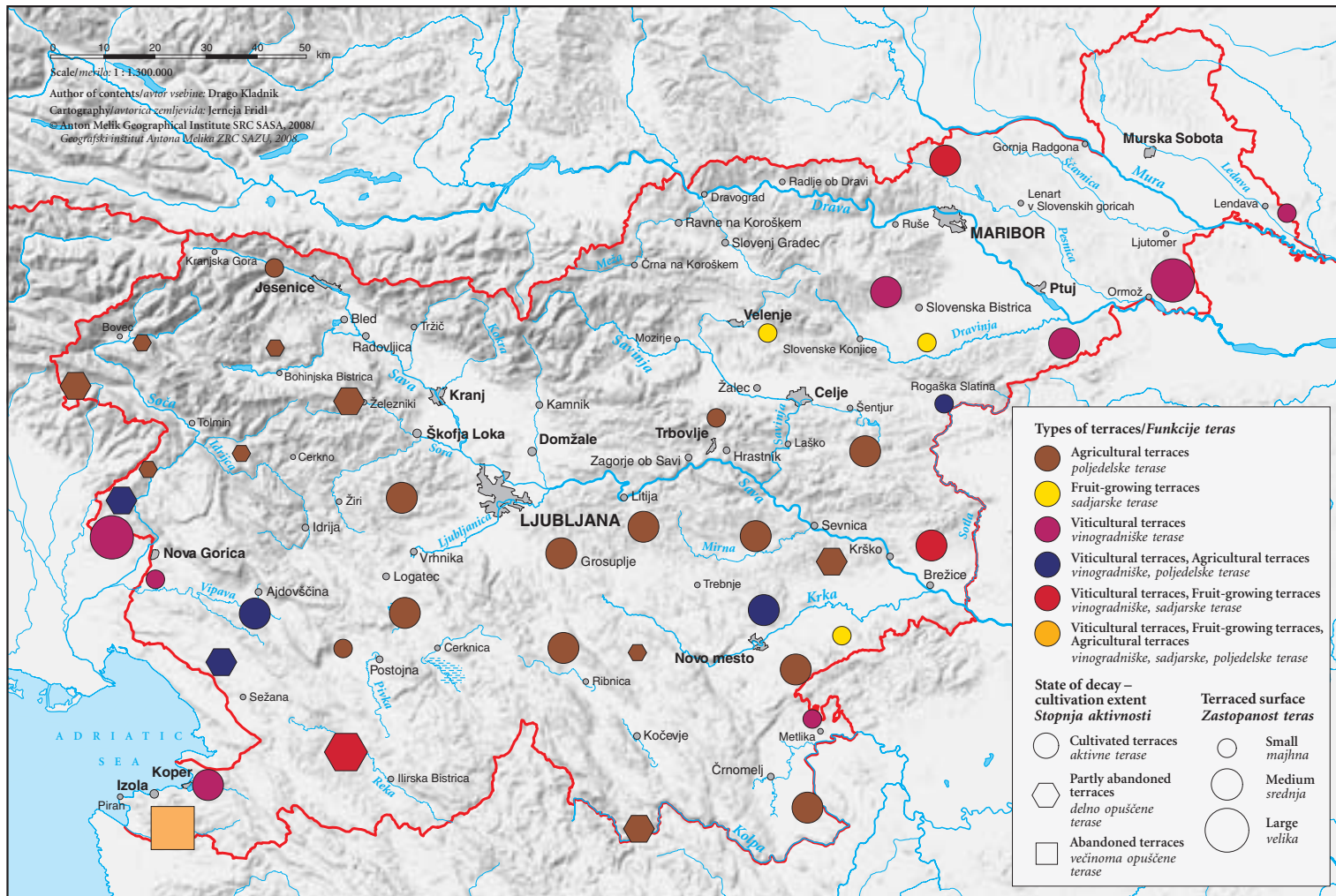
Viticultural terraces can be further subdivided according to the way they were constructed and the width of a terraced surface. Taking into account different ways of constructing viticultural terraces, Colnarič and Vrabl distinguish between the following types of terraces (1991, 90–96):

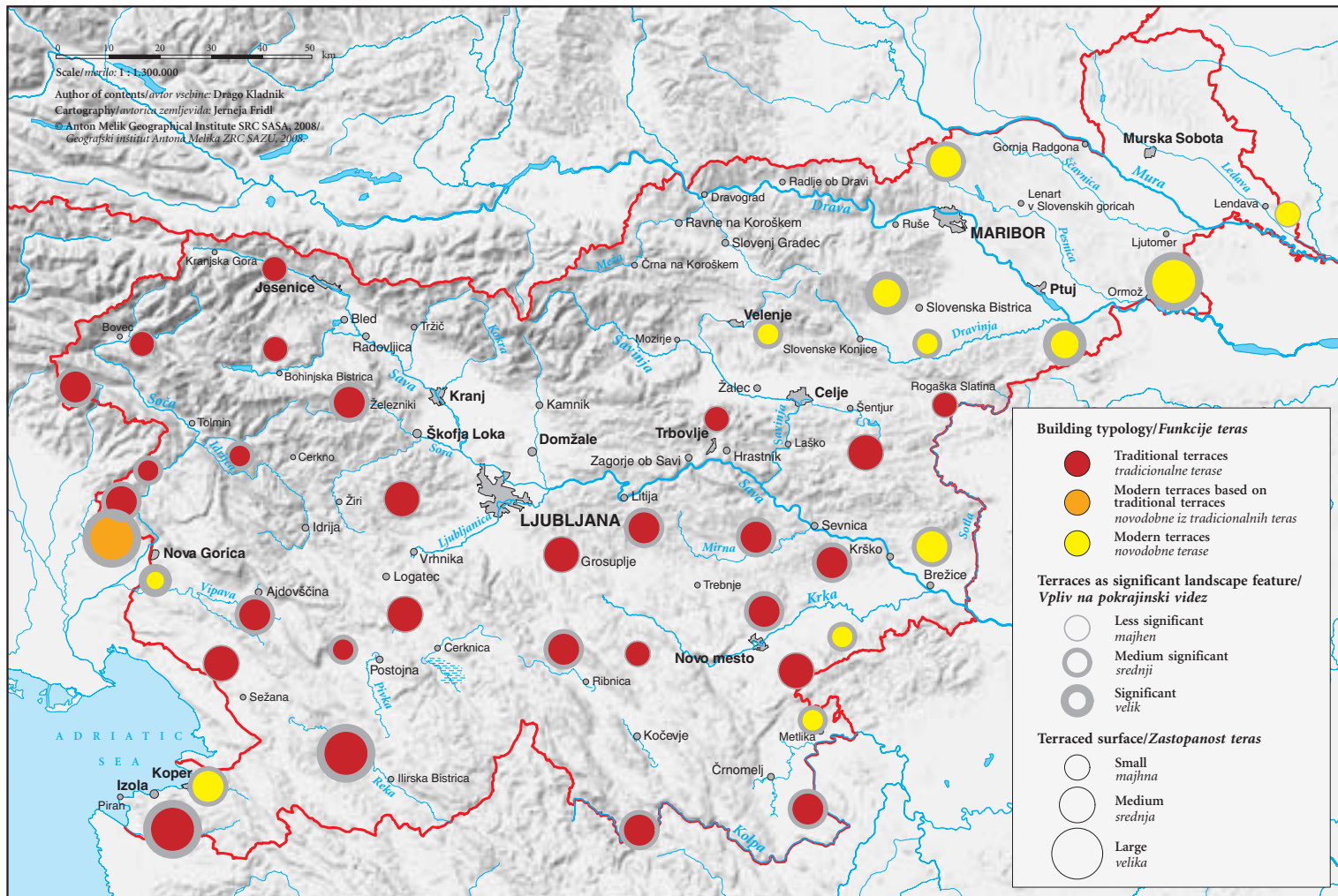
- Closed-furrow terraces (terracing with closed-furrow plowing),
- Open-furrow terraces (terracing with open-furrow plowing),
- Banked terraces (terracing with an embankment), and
- Dug terraces (terracing followed by plowing and leveling with a leveling board).

The authors mention that terracing also includes the planting arrangements with sowing along contour lines, but in this case terraces are not formed until the farmland is worked.

Figure 14: Functions and degree of activity of terraces in Slovenia. ► p. 20

Figure 15: Types of terraces and their influence on landscape physiognomy in Slovenia. ► p. 21





None of the above methods for constructing viticultural terraces are used today because terraces are mainly constructed only with an excavator or a bulldozer (Vršič and Lešnik 2001, 107).

Terrace types are also defined by different widths of terrace surfaces. A terrace is made up of two basic formal elements: a terrace surface and a terrace slope. The width of the terrace surface depends on the incline of the slope, the cultivated culture, and the method of cultivation; however, in practice, most commonly it depends on a combination of all three factors. The method of cultivation is the way vines and fruit trees are cultivated by establishing a typical habitat and ensuring constant produce (Vršič and Lešnik 2001, 127). It determines to what extent the vine is loaded with grapes, how much it is exposed to the sun's rays, and consequently the quality of the produce. The cultivation method is also determined by the distance between rows, which depends on the location as well as farming equipment.

According to agricultural recommendations, grapevines in a vineyard can be arranged as follows:

- Single-row terraces,
- Double-row terraces,
- Double-row terraces with a passage for a tractor between the row and the slope, and
- Multi-row terraces.

## 5 Overview by landscape type

The four landscape types mentioned in the introduction serve as the basis for the overview of terraced landscapes.

The overview begins with the Mediterranean landscape, where cultivated terraces have been a significant feature that has helped shape the appearance of the landscape for centuries. Terraces are much more common in Mediterranean flysch hills than in Mediterranean karst plateaus, where their construction is made much more difficult due to the removal of extra rock and using rocks to underpin the terraces. The tra-



ALENKA FIKČAK

Figure 16: Terraced Mediterranean landscape: Goriška Brda is considered as one of the most attractive cultural landscapes in Slovenia.





MARJAN GARBAS

Figure 17: Terraced Pannonian landscape: In Lendavske Gorice (the Lendava Hills) only vineyards in previous social sector are terraced, but not those in private ownership.

ditional viticultural, fruit-growing, and agricultural (or gardening) terraces in flysch hills have mostly been abandoned and in many places are falling into decay. In some places, especially in Brkini (the Brkini Hills), grass has replaced fields. In areas with the most suitable climate (especially in the southern Goriška Brda, Biljensko-Vrtojbenški Griči (the Bilje-Vrtojba Hills), Vipavska Brda (the Vipava Hills), and Koprška Brda in the countryside immediately outside of Koper), modern viticultural terraces were constructed after mechanized farming was introduced. They are regularly renovated and rebuilt, and are thus in good shape in comparison to terraces in other areas. New methods of terrace construction make the landscape appear very geometrical. The majority of terraces on Mediterranean karst plateaus are located in Kras (the Karst region). Most of the terraces in this region are viticultural, and they are mostly located in places where Teran production is still prevalent. The less common terraces with fields have either fallen into decay or have been transformed into winegrowing terraces. Due to their rarity and general flatness, the karst terraces affect the appearance of the landscape to a lesser extent.

A slightly less terraced area is the Pannonian region in eastern and northeastern Slovenia. There, cultivated terraces can only be found exclusively in the Pannonian low hills (Perko 2001, 80), in the form of modern viticultural and, in places, also fruit-growing terraces. As one crosses over into Dinaric landscape in the south (Krško gričevje (the Krško Hills), and Podgorje below Gorjanci (the Gorjanci Hills)), traditional agricultural terraces, where once prevalent fields are being replaced by grass, can also be found. Viticultural and fruit-growing terraces are more intensively cultivated, and agricultural terraces are more extensively cultivated; however, they are mostly well-kept and thus not falling into ruin. Because of terrace construction, the appearance of the landscape is distinctly altered in the far northeastern part of Slovenske Gorice, the eastern part of Haloze, in many parts of Podpohorske Gorice (the Under Pohorje Hills), in some parts of Dravinjske Gorice (the Dravinja Hills), and in Bizeljsko (the Bizeljsko Hills).

Cultivated terraces are also a relatively frequent occurrence in the Dinaric landscape, and they can be found both on karst plateaus as well as in valley systems and corrosion plains, but most can be found in areas where both sub-regions meet. There would be even more terraces if the plateau were not so sparsely populated due to its high elevation and harsh climate. With the exception of the far northern part of Bela Krajina with its modern viticultural terraces, traditional agricultural terraces prevail everywhere else.



IGOR MAHER

Figure 18: Terraced Dinaric landscape: In many places terraces are less intrusive, like in Velikolaščanska pokrajina south from Ljubljana.



MILHA PAVŠEK

Figure 19: Terraced Alpine landscape: In many places very difficult construction of terraces was necessary in order to be able to even cultivate certain land.

They are usually quite a persistent landscape element, although the prevailing farmland from the time of intensive farming at the end of the 19<sup>th</sup> century has been replaced by grassland. Such terraces are less intrusive in the landscape because their surface is usually not entirely flat and the slopes between them are not very high. However, upon careful examination, one can still notice characteristic features of the terraced landscape. The most terraced areas within the Dinaric region are Bela Krajina, Raduljsko Hribovje (the Radulja Hills), Velikolaščanska pokrajina (the Velike Lašče area), and Dolenjsko Podolje (the Lower Carniola valley system); terraces are also frequent in its western part, which directly borders the Mediterranean landscape.

Even though the Alpine region is an area with the least suitable relief and climate conditions, cultivated terraces appear all over this area except in high mountain areas or in level places in the middle of elevated areas. The only areas without terraces are medium uplands with non-carbonate bedrock (Pohorje (the Pohorje Mountain), Kozjak (the Kozjak Hills), and Strojna (the Strojna Mountain)). The most common type are traditional agricultural terraces that used to have fields but now have meadows that are still either mowed or are becoming overgrown. Very difficult construction was necessary in many places in order to be able to even cultivate certain land. Steep slopes were made less extreme by constructing terraced surfaces and intermediary scarps, and in many places on carbonate surfaces it was also necessary to remove extra rocks from the site. It was easier to construct terraces on dolomite surfaces. The southern part of the Alpine region – crossing into the Mediterranean or Dinaric landscape – has the most terraces (Breginjski Kot (the Breginj Combe), Šentviška planota (the Šentvid Plateau), and the southern part of Posavsko hribovje (the Sava Hills)). The already dramatic Alpine landscape makes its terraces look less imposing.

## 6 Terrace-building techniques

When looking at the development of terraced landscapes, one cannot ignore the influence that terrace construction techniques have on their formation. These are changing from manual to mechanical techniques, which became established together with mechanization in the construction business.

Terraced landscapes are built, constructed landscapes. As with all physical systems, their alteration is a process that undergoes numerous transformations. The physiognomy of terraced landscapes also constantly changes, and this transformation has three stages: planning, construction, and decay.

Changes to physical space can be spontaneous or planned. When they are spontaneous, they appear to be disorderly, anarchic changes that arise unplanned and result in a geometrically unarranged system. When they are planned, the changes can be entirely thought through; they come into existence because they were planned, and they are defined as concepts (Ažman Momirski 2004, 207).

The construction and the decay of terraces were the two prevalent stages of transformation during the manual construction era. However, new construction methods require that more attention should be devoted to the planning stage.

The planning of terraces includes the preparation of a plan for the construction of terraces. The purpose of the plan is to arrange the terraces entirely according to reliable data and carefully considered decisions so that the consequences of the arrangement can be anticipated.

Only such an approach guarantees control of all the effects and rational arrangement of the terraces. Such a process for constructing terraces would therefore be economical – that is, it would assure higher stability of the terraces, the least quantity of earth movement, and the largest possible area of usable land.

The elaborated plan seeks to prevent or slow down the transformation process for certain attributes of the terrace system (e. g. slope sliding) and thus for the terrace system itself, and consequently to maintain the identity of the system and the terraced landscape.

A different approach to planning and constructing terraces includes interdisciplinary work (which is also a consequence of greater awareness that spatial intervention affects the quality of the human habitat). It is important to incorporate the different methods of the participating disciplines when elaborating the plan.

The improved method of terrace planning and construction that was developed and demonstrated within the ALPTER project (Ažman Momirski et al. 2008) involved the following methods:

- the traditional agronomic and agrotechnical method, which uses only farming techniques when arranging terraces;



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Figure 20: Previous land use of the plot, chosen for terracing within the ALPTER project, was grassland.



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Figure 21: The plot immediately after the earth works, before seeding terraced plains and planting grapevine grafts.

- the geological-geotechnical method, which is commonly used in civil or geotechnical engineering and is not regularly used for constructing agricultural terraces;
- the comparative method, according to which we compared various features of plans created for terraces, and which we then used to define the most suitable plan for actual execution; individual plans were also compared according to the quantity of material moved.

Among the advantages of the method is the cooperation of various professionals and the short construction time of the terraces. The disadvantage of the method is the lack of professionals for planning and construction processes.

## 7 Conclusion

The forms and appearance of terraces have changed along with the method of construction (manual or machine construction) and their cultivation. Earlier the terrace forms varied as a result of manual construction and cultivation because the widths of terraced surfaces varied widely: some were narrower and some wider, and the lengths of the terraces were also uneven. The use of agricultural machinery has made the widths of terraced surfaces and the distances between the rows much more even. The slopes are usually covered with earth, without support walls. The terraces are linked by service roads and tractor turning points.

Mechanized terrace regulation with a repetitive and recognizable pattern has made the landscape geometrical with a much higher degree of regularity (Ažman Momirski et al. 2008, 115). This regularity, coupled with the landscape's diversity, makes for its harmoniousness. A landscape with a diverse but highly regular structure has the highest level of harmoniousness (Marušič & Jančič 1998). This means that the contemporary terraced landscape in Slovenia is one of the most attractive Slovenian landscapes and a landscape unit with recognizable cultural and symbolic meaning (Urbanc 2008).

Vineyard terraces have been greatly predominant in the past decades in terms of both scope and activity. However, there are questions appearing about whether it is economically justified and realistic to maintain these terraced vineyards, due to the high costs of their reconstruction and the ongoing costs of growing the vines. A consequence of abandoning terraced vineyards is the loss of the typical cultural landscape character, as well as other particularities and opportunities. The terraced landscape contributes to the identity and recognition of the local culture; it is an important part of the quality of people's lives, providing variety and making the region attractive, and in this way enabling the preservation of the settlement and vitality of the rural area.

In the future, then, more in-depth research needs to be done on the phenomenon and importance of Slovenia's terraced landscapes from the points of view of different disciplines. This would focus attention on the various meanings of this type of landscape, while by drawing attention to its presence and distribution, we would be able to make a significant contribution to its conservation.

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## **Terasirane pokrajine v Sloveniji**

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**IZVLEČEK:** Pokrajinsko izjemno raznolika Slovenija je država na stičišču štirih velikih evropskih makro-regij: alpskega, panonskega, dinarskega in sredozemskega sveta. Terasse kot značilna pokrajinska prvina Sredozemlja se pojavljajo v vseh pokrajinskih tipih, vendar se razlikujejo po pogostnosti, namenu in sodobni funkciji. Največ teras, ki opredeljujejo najbolj značilno terasasto pokrajino, je v sredozemskem okolju, precej jih je tudi v kraških dinarskih pokrajinah in v vinorodnih panonskih gričevjih, medtem ko se v sredogorju alpskega sveta pojavljajo bolj izjemoma, še največ na območjih, ki se prevešajo k sredozemskim pokrajinam. Glede na namen razlikujemo poljedelske, vinogradniške in sadjarske terase. Prve so prisotne povsod po državi, druge in tretje pa so vezane na gričevja z ugodnim podnebjem za gojenje vinske trte in sadnega drevja. Starejše so poljedelske terase, ki so z zmanjševanjem vloge kmetijstva, preseljevanjem prebivalstva, ostarevanjem in siceršnjim pomanjkanjem kmečke delovne sile izgubile nekdanjo vlogo, zato je na njih nekdanjo njivsko rabo skoraj v celoti izpodrinila travniška raba. Vinogradniške in redkejša sadjarske terase so z izjemo sredozemskih in delno dinarskih pokrajin proizvod sodobnejšega, mehaniziranega kmetovanja in drugačnega vrednotenja kakovosti pridelave v vinogradih. To zahteva večje medvrstne razdalje, primerne za uporabo kmetijskih strojev med medsebojno bolj razmaknjenimi vrstami vinske trte.

**KLJUČNE BESEDE:** geografija, terasirana pokrajina, kmetijske terase, geografija podeželja, agrarna geografija, Slovenija

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# 1 Uvod

Po pokrajinski pestrosti se lahko le malokatera, celo precej večja država, primerja s Slovenijo, saj se prav na tem koščku srednje Evrope stikajo in prepletajo Alpe, Panonska nižina, Dinarska gorovje in Sredozemlje ter germanski, madžarski, slovanski in romanski kulturni vplivi. Zato Slovenija slovi po naravni in kulturni raznolikosti, spremenljivosti in prehodnosti. Razlikujemo štiri temeljne pokrajinske tipe in devet podtipov. Temeljni tipi so alpska, panonska, dinarska in sredozemska pokrajina, podtipi pa alpska visokogorja, alpska hribovja, alpske ravnine, panonska gričevja, panonske ravnine, dinarske planote, dinarska podolja in ravniki, sredozemska gričevja in sredozemske planote (Perko 2001, 80; Perko in Urbanc 2004, 347). Prav pestrost in prehodnost slovenskih pokrajin je temeljna geografska značilnost Slovenije in hkrati pomemben del njene identitete (Perko 1997, 31; Hrvatini in Perko, 2008).

Slovenija je kot le redkokatera evropska država prepredena s kulturnimi terasami. Te se kot značilna pokrajinska prvina Sredozemlja pojavljajo v vseh tipih slovenskih pokrajin, vendar se razlikujejo po pogostosti, namenu in sodobni funkciji. Največ teras, ki opredeljujejo najbolj značilno terasasto pokrajino, je v sredozemskem okolju, precej jih je tudi v kraških dinarskih pokrajinah in v vinorodnih panonskih gričevjih (Perko 2001, 80), medtem ko se v sredogorju alpskega sveta pojavljajo redko, še največ na območjih, ki se prevešajo k sredozemskim pokrajinam.

Strategija prostorskega razvoja Slovenije kot glavnega skrbnika prepoznavne kulturne pokrajine opredeljuje kmetijstvo, ki ima s tem seveda na skrbi tudi kulturne terase. Kakovostna kulturna pokrajina namreč postaja ena izmed poglavitnih slovenskih vrednot in primerjalnih prednosti (Ažman Momirski in ostali 2008, 115). Vplivi različnih dejavnikov na vzdrževanje in nove konstrukcije teras pa kmetijski sektorski okvir občutno presegajo.

Slika 1: Območje naselja Medana v Goriških brdih (© Geodetska uprava Republike Slovenije 2005).  
Glej angleški del prispevka.

Slika 2: Vinogradniške terase v Goriških brdih pozimi.  
Glej angleški del prispevka.

Slika 3: Območje naselja Zajelše v Brkinih (© Geodetska uprava Republike Slovenije 2005).  
Glej angleški del prispevka.

Slika 4: Poljedelske terase v Brkinih.  
Glej angleški del prispevka.

Slika 5: Območje naselja Rinčetova Graba v vzhodnem delu Slovenskih goric (© Geodetska uprava Republike Slovenije 2005).  
Glej angleški del prispevka.

Slika 6: Enovrstne vinogradniške terase v Slovenskih goricah.  
Glej angleški del prispevka.

Glede na rabo tal oziroma različno vrsto pridelovanja poznamo različne tipe teras. V zadnjih desetletjih tako po obsegu kot po aktivnosti močno prevladujejo vinogradniške terase. Terasirane vinograde zaradi uveljavitve mehanizirane pridelave najdemo po vsej državi. Po podatkih v Registru pridelovalcev grozdja in vina (Ministrstvo za kmetijstvo, gozdarstvo in prehrano 2007) je v Sloveniji največ, kar 81 % vinogradov na terasah v Goriških brdih, po ugotovitvah raziskave ALPTER (Ažman Momirski 2008, Ažman Momirski in ostali 2008) pa je bilo leta 2005 v Goriških brdih 1446 ha ali 74 % terasastih vinogradov.

Slika 7: Delež terasiranih zemljišč po katastrskih občinah Goriških brd.  
Glej angleški del prispevka.

Na podlagi naravnih razmer, vrst gojene vinske trte in značilnosti pridelanega vina je Slovenija razdeljena v vinorodne dežele Podravje, Posavje in Primorje. Manjše, bolj homogene prostorske enote so vinorodni okoliši z dokaj enotnimi naravnimi razmerami, ki pogojujejo pridelovanje specifičnih vinskih sort. Skupaj jih je devet (Kladnik 2007, 94). Poleg že omenjenih Goriških brd so v drugih slovenskih vinorodnih

okoliših deleži terasastih vinogradov naslednji: Prekmurje 4 %, Kras 14 %, Dolenjska 21 %, Slovenska Istra 23 %, Štajerska Slovenija 25 %, Bela krajina 26 %, Bizeljsko-Sremič 38 % in Vipavska dolina 66 %. V celotni Sloveniji je njihov delež 37 %.

## 2 Dosedanje preučevanje kulturnih teras in terasirane pokrajine v Sloveniji

Glede na dejstvo, da so kulturne terase v mnogih predelih Slovenije dokaj izrazito, v nekaterih pa celo prevladujoče zaznamovale pokrajinsko podobo, bi lahko na tem področju upravičeno pričakovali več opravljenega raziskovalnega dela.

To velja po svoje še zlasti za geografijo, ki ji kompleksen, vzročno-posledični pristop tako rekoč narekuje razkriti številne neznanke v oblikovanju terasne pokrajine, njenem ustroju, dogajanjih v njej ter prebivalstvenih in gospodarskih učinkih na vzdrževanje in intenzivnost rabe teras. Že llešič je v zavihku Titlove knjige *Socialnogeografski problemi na koprskem podeželju* (Titl 1965) zapisal, da je poglavje o kulturnih terasah kot značilni obliki sredozemske kulturne pokrajine eno redkih del, ki so bila o tej tematiki dotlej napisana v strokovni literaturi. Ta ugotovitev še vedno velja, saj v Sloveniji kot celoti sistematična raziskava o genezi, razprostranjenosti, obsegu, tipih in stanju kulturnih teras še ni bila opravljena.

Imamo le posamezne regionalne študije, med katerimi velja ponovno izpostaviti Titlovo (Titl 1965) študijo, ki pa je vsaj deloma oprta na Melikovo razmeroma poglobljeno razglabljanje o kulturnih terasah v zaledju slovenske obale (Melik 1960, 167 in 171). Titl je tudi prvi izvedel tipologijo teras, pri čemer je razlikoval med vinogradniško-poljedelskimi, sadjarsko-vrtnarskimi ter čistimi vrtnarskimi, čistimi vinogradniškimi in čistimi sadjarskimi terasami. Terasa v Koprskih brdih obravnavata tudi Drobnjakov prispevek o fizičnogeografskem pomenu kulturnih teras s tipologijo (Drobnjak 1990) in Kladnikov prispevek o možnostih njihovega intenziviranja (Kladnik 1990). V sicer zelo poglobljeni študiji o Goriških brdih (Vrišer 1954) avtor kulturne terase le bežno obravnava, še največ z vidika poljske razdelitve in na njih gojenih kulturnih rastlin. Tako je interdisciplinarna, geografsko-zgodovinsko-etnografsko-arhitekturna študija o terasirani pokrajini Goriških brd (Ažman Momirski in ostali 2008) zagotovo najbolj celovit slovenski prikaz obravnavane tematike doslej.

Slika 8: Urejanje vinogradniških kulturnih teras na območju Drašičev v Beli krajini leta 1963 (Dular 1994). Glej angleški del prispevka.

V vzhodni Sloveniji, kjer so terase urejali šele v novejšem obdobju, Bračič v študiji o vinorodnih Halozah (Bračič 1967) terase omenja le na enem mestu, nekaj več pa je o njih zapisal Belec v monografiji *Ljutomersko-Ormoške gorice* (Belec 1968). Slednji navaja tudi zaradi teras povsem spremenjen pokrajinski videz.

Zanimivo je, da so zgodovinarji problematiko kulturnih teras doslej skoraj povsem prezrli. Najboljši dokaz za to je monografija *Zgodovina agrarnih panog* (1970), ki v besedilnem delu teras sploh ne omenja, niti pri obravnavi vrst zemljišč (Valencič 1970b) niti pri obravnavi vinogradništva (Valencič 1970a). Morda je razlog prav v pomanjkanju geografskih študij, na katere bi se lahko oprli. Nekaj malega o obstoju teras zvmemo iz sicer ne pretirano bogatega slikovnega gradiva. Zelo zanimivi sta fotografiji oljčnega nasa-da na zidanih terasah pri Piranu in zaradi erozije opuščeni terasasti njiv na Beki med Socerbom in Kozino. Morda še bolj osupljiv je Valvasorjev grafični prikaz med drevesi razpeljanih sadik vinske trte pri gradu Lože v Vipavski dolini, ki povsem spominja na terase (drugače v Valvasorjevi Slavi vojvodine Kranjske kulturnih teras na slikah ni mogoče opaziti), povsem jasno pa so terase razvidne na sliki vinogradov z zidanicami pri Rogatcu iz leta 1782. Kmetijske terase lahko prepoznamo tudi na upodobitvi vedute Kanala iz leta 1752, ki sodi v sklop šestih vedut, ki jih hranijo v goriškem pokrajinskem muzeju. Edino na omenjeni veduti nas avtor razveseli tudi s prikazom urejene krajine oziroma 'razkošnega vrta'. Na risbi so dobro prepoznavne kulturne terase z nasadi vinske trte (Mavrič 2006, 481–492).

Slika 9: Kulturne terase na veduti Kanala na desnem bregu Soče iz leta 1752 (Mavrič 2006). Glej angleški del prispevka.

Bolj kot zgodovinarji so se pri raziskovanju kulturnih teras izkazali etnografi. Posebno zanimiva je študija o vinogradništvu v vaseh koprskega zaledja od sredine 19. stoletja do petdesetih let 20. stoletja

(Presl 1995), v kateri so obravnavani tudi s terasami povezani izrazi in stare obdelovalne tehnike, vezane na vinogradništvo.

Kmetijske strokovnjake zanima predvsem izvedba vinogradniških in sadjarskih teras. V praksi se terasiranje ne izvaja po vnaprej izdelanem načrtu, ampak praviloma na podlagi izkušenj in priporočil vinogradnikov, kmetijskih strokovnjakov ter izvajalcev – buldožeristov.

Prve pobude o izdelavi načrta za obnovo vinogradov na terasah lahko zasledimo že leta 1959 (Simčič, 1959, 90–95): »... po predhodno izdelanem načrtu planiramo tla ter nato zakoličimo terase v smeri izohips ter rigolamo ...«. Okrog leta 1960 so izdelali tudi vrsto investicijskih programov za prenovo vinogradov in sadovnjakov v Slovenskih goricah (1959, 1960, 1962). Najbolj ploden avtor je Colnarič (1971, 1985, 1991), ki sam ali s soavtorji enkrat bolj strokovno, drugič bolj poljudno predstavlja dejavnike, ki vplivajo na izvedbo terasiranja. Skozi literaturo lahko spremljamo konkretna navodila za izvedbo teras, s tem pa je omogočeno tudi, da ob spreminjanju oziroma posodabljanju kmetijske mehanizacije razvojno sledimo spremembam agrarne tehnike in posledično načinom gradnje teras. V zadnjem času so njihova prizadevanja nadgradili še drugi strokovnjaki (na primer Vršič in Lešnik 2001; Škvarč in Kodrič 2007).

### 3 Terasiranje pokrajine

Starejše kulturne terase so ljudje uredili zaradi prilagajanja kmetijske pridelave naravnim razmeram in pridobivanja novih kmetijskih zemljišč. Urejali so jih na območjih s prevladujočo obdelovalno tehniko kopaštva, medtem ko jih na območjih s prevlado požigalništva (Baš 1984) zaradi neustaljenosti obdelovalnih zemljišč ni bilo, saj se v razmeroma kratkem času njihove intenzivne rabe terasiranje zaradi velikih delovnih vložkov ne bi plačalo.

Z gradnjo kulturnih teras se je uspešno preprečevalo negativne učinke erozije, tudi erozije prsti ob močnih nalivih, s terasiranjem pa so kmetovalci zadržali več vlage in podaljšali talno vlažnost. Odtok vode so uravnavali z nagibom terasne ploskve proti pobočju ali od njega stran (Titl 1965, 50; Hrvatina, Perko in Petek, 2006). Z uravnanimi terasnimi ploskvami so si olajšali delo pri obdelovanju zemljišča, precejšnje težavo pa je predstavljala ureditev dovoznih poti. Zlasti v vinogradništvu, pa tudi v sadjarstvu, vrtnarstvu in avtarkičnem poljedelstvu je bilo pridobivanje kmetijskih zemljišč s terasiranjem pomembno tako v gričevnatem kot v hribovitem svetu.

Bolj ko je podnebje sušno in toplo, manjši je nagib pobočij, kjer se gradijo terase (Drobnjak 1990, 141). V podnebno manj ugodnih okoliščinah so s terasiranjem prisojnih pobočij omogočili kmetijsko pridelavo na bolj donosnih zemljiščih, ki so zagotavljala večji in kakovostnejši pridelek. Pri podrobni raziskavi v Goriških brdih (Ažman Momirski in ostali 2008) pa se je pokazalo, da za lego vinogradniških teras in vinogradov ekspozicija nima povsod odločilnega pomena. Za usmerjenost terasiranih pobočij v severnih Brdih je značilno, da je teras v severnih legah zelo malo, le 7,7 % od vseh teras, medtem ko so terase v južnih Brdih, kjer izrazito prevladujejo vinogradi, dokaj enakomerno razporejene po vseh pobočjih, ne glede na stran neba.

Terasirana pokrajina je v sredozemskem okolju že tisočletna stalnica. Verjetno so terase urejali že v rimski dobi (čeprav za to še niso našli neposrednih arheoloških dokazov), saj si je sicer na strmih pobočjih težko predstavljati gojenje vinske trte in oljke, ki sta bili že takrat glavni kmetijski kulturi. V poznejših obdobjih so se z naraščanjem števila prebivalcev in zato potreb po večji količini pridelka širila tudi terasirana območja (Titl 1965, 47 in 48). Ljudje so vsa dela pri urejanju teras opravljali izključno ročno, zato je urejanje teras in njihovo vzdrževanje veljalo za enega od najbolj težavskih kmetijskih delovnih opravil. Tudi za ročno obdelavo ter transport gnoja, repromateriala in pridelkov je bilo potrebno veliko delovne sile, ki je je bilo v preteklih družbenopolitičnih sistemih dovolj, saj se je v času prevladujočega avtarkičnega in samooskrbnega kmetovanja s kmetijsko pridelavo ukvarjala velika večina aktivnega prebivalstva. Leta 1771 je bil delež kmečkega prebivalstva na območju zdajšnje Slovenije kar 88,6 %, leta 1910 pa še vedno velikih 66,7 % (Natek 1998, 164).

Slika 10: Najstarejše kulturne terase v Sloveniji so v Koprskih brdih. Glej angleški del prispevka.

Slika 11: Ponekod na nekdanje terase opozarjajo le še kupi kamenja, ostanki zidanih kamnitih brežin. Glej angleški del prispevka.

Slika 12: Ozke vinogradniške terase na strminah v zgornjih Goriških brdih.

Glej angleški del prispevka.

Slika 13: Sodobne, mehanizirani obdelavi prilagojene terase v spodnjih Goriških brdih imajo različno število vrst z vinsko trto.

Glej angleški del prispevka.

Dandanes so tradicionalne, stoletne kulturne terase zvečinoma opuščene. Vendar njihovo opuščanje ni nov pojav, saj že Vrišer (1954), Melik (1960) in Titl (1965) poročajo o obsežnem opuščanju kulturnih teras tako v severnih Goriških brdih kot v Koprskih brdih. Opuščanje je torej dolgotrajen proces, ki so ga vzpodbudili raznovrstni razlogi. Ko se je z industrializacijo in deagrarizacijo vloga kmetijstva začela zmanjševati, so terase ob preseljevanju prebivalstva, ostarevanju in siceršnjem pomanjkanjem kmečke delovne sile izgubljale nekdanjo vlogo, zato se je na njih začela pojavljati ekstenzifikacija. Ta se je v zaključni fazi marsikje odrazila kot zaraščanje z gozdom in razpadanje teras, s tem pa kot razkroj tradicionalne pokrajine, kar je dodobra zaznamovalo večino tradicionalnih slovenskih terasnih pokrajin. Neprilagojenost terasnega kmetovanja sodobnim težnjam po posodabljanju kmetijske pridelave z uvajanjem mehanizacije je ob siceršnji zemljiški razdrobljenosti prišla še bolj do izraza zaradi ozkih, slabo vzdrževanih in zato slabo nosilnih dovoznih poti na terase, ki so marsikod povsem onemogočale dostop težjim kmetijskim strojem na parcele. Jasno je, da bi pomanjkanje kmečke delovne sile lahko nadomestila le strojna obdelava, za njeno uveljavitev pa bi bilo treba urediti dovozne poti (Titl 1965, 71 in 72; Kladnik 1990, 144).

Na drugi strani se je z razširitvijo socialistične veleposesti po 2. svetovni vojni zaradi lažjega in bolj donosnega kmetovanja na strmih pobočjih uveljavilo terasiranje vinogradov in v manjši meri tudi sadovnjakov. Mehanizirano terasno obdelovanje vinogradov in sadovnjakov se je takrat pojavilo v vseh vinorodnih deželah in v zahodni Sloveniji do neke mere pripomoglo k ohranjanju terasne pokrajine. V vzhodni Sloveniji se je terasiranje pojavilo povsem na novo. Po razpoložljivih podatkih so sicer prvi terasni nasad v vinorodni deželi Podravje uredili že v letih 1892–1899 na območju naselja Gruškovec v Halozah (Bračič 1967, 127). Dandanes so torej vinogradniške in redkejša sadjarske terase povsod po državi proizvod sodobnejšega, mehaniziranega kmetovanja in drugačnega vrednotenja kakovosti pridelave v vinogradih.

## 4 Tipi teras

V grobem lahko tipe teras najprej opredelimo glede na namen oziroma zemljiško rabo v najširšem smislu. Razlikujemo lahko:

- poljedelske,
- vinogradniške in
- sadjarske terase.

Prve so prisotne povsod po državi, druge in tretje pa so vezane na gričevja z ugodnim podnebjem za gojenje vinske trte in sadnega drevja.

Starejše so (z izjemo najstarejših vinogradniških v Koprskih brdih) poljedelske terase, ki so zaradi predhodno naštetih razlogov že izgubile nekdanjo vlogo. Zato je na njih nekdanjo njivsko rabo skoraj v celoti izpodrinila travniška raba. V odročnih, demografsko ogroženih predelih se marsikje tudi zaraščajo ali pa jih je že povsem prerasel gozd.

Slika 14: Funkcije in stopnja aktivnosti kulturnih teras v Sloveniji.

Glej angleški del prispevka.

Slika 15: Vrste teras in njihov vpliv na pokrajinski videz v Sloveniji.

Glej angleški del prispevka.

Vinogradniške in redkejša sadjarske terase so z izjemo sredozemskih in delno dinarskih pokrajin rezultat sodobnejšega, mehaniziranega kmetovanja in drugačnega vrednotenja kakovosti pridelave v vinogradih. To zahteva večje medvrstne razdalje, primerne za uporabo kmetijskih strojev med medsebojno bolj razmaknjenimi vrstami vinske trte. Tovrstne terase so posebno značilne za panonske pokrajine severovzhodne in vzhodne Slovenije.

Vinogradniške terase lahko naprej delimo glede na način izvedbe in glede na določanje širine terasne ploskve. Glede na različne načine izvedbe vinogradniških teras Colnarič in Vrabl razlikujeta naslednje tipe teras (1991, 90–96):

- naorane terase (terasiranje z naoravanjem),
- orane terase (terasiranje z oranjem terase),
- nasipane terase (terasiranje z nasipavanjem) in
- terasiranje s prelopatenjem (terasiranje s poznejšim rigolanjem s planirno desko).

Avtorja omenjata, da spada k terasiranju tudi ureditev nasadov s sajenjem po plastnicah, vendar se v tem primeru terase oblikujejo šele z obdelovanjem kmetijskega zemljišča.

Vsi našteti načini izdelave vinogradniških teras se v sodobnosti ne uporabljajo več, saj se terase urejajo praktično samo še z bagrom in/ali buldožerjem (Vršič in Lešnik 2001, 107).

Tipologijo pa določajo tudi različne širine terasnih ploskev. Teraso sestavljata dve temeljni oblikovni prvini: terasna ploskev in terasna brežina. Širina terasne ploskve je odvisna od naklona pobočja, gojene kulture in načina obdelave, v praksi pa največkrat od medsebojnega prepletanja vseh treh prvin. Gojitvena oblika je način gojitve vinske trte in sadnega drevja, ki vzpostavlja značilno rastišče in zagotavlja stalne pridelke (Vršič in Lešnik 2001, 127). Vinski trti določa večjo ali manjšo obremenitev trsa s pridelkom grozdja, različno izpostavljenost sončnim žarkom in s tem posledično različno kakovost pridelka. Gojitveno obliko med drugim določa tudi medvrstna razdalja, ki je odvisna od lege in uporabljane kmetijske mehanizacije.

Glede na agronomska priporočila je lahko trta v vinogradih zasajena v:

- enovrstnih terasah,
- dvovrstnih terasah,
- dvovrstnih terasah s prehodom za traktor in
- večvrstnih terasah.

## 5 Pregled po pokrajinskih tipih

Temeljno izhodišče pregleda terasiranih pokrajin so v uvodu predstavljeni štirje pokrajinski tipi.

Pregled začnemo s sredozemsko pokrajino, kjer so kulturne terase že stoletja prisotna pokrajinska prvina, ki izrazito sooblikuje pokrajinski videz. Precej bolj pogosto se terase pojavljajo v flišnih sredozemskih gričevjih kot na sredozemskih kraških planotah, kjer je njihovo urejanje zaradi odstranjevanja odvečnega kamena in njegovega podzidavanja v brežine še precej bolj zahtevno. V flišnih gričevjih so tradicionalne vinogradniške, sadjarske in poljedelske (vrtnarske) terase v glavnem opuščene in marsikje propadajo. Ponekod, najbolj izrazito po Brkinih, je njivsko rabo nadomestila travniška raba. Na območjih z najbolj ugodnimi naravnimi razmerami (zlasti južna Goriška brda, Biljensko-Vrtojbenški griči, Vipavska brda in Koprška brda v neposrednem zaledju Kopra) so z uvajanjem mehaniziranega kmetovanja uredili novodobne vinogradniške terase. Redno jih obnavljajo in urejajo na novo, zato so v primerjavi s terasami v drugih pokrajinah v razmeroma dobrem stanju. Novi načini izvedbe teras izrazito geometrizirajo pokrajino. Največ teras na sredozemskih kraških planotah je na območju Krasa. Prevladujejo vinogradniške terase, ki so urejene zlasti tam, kjer se še vedno intenzivno ukvarjajo s pridelovanjem terana. Redkejšje njivske terase so bodisi propadle ali pa so jih spremenili v vinogradniške. Kraške terase zaradi redkosti in splošne uravnanosti površja manj izrazito vplivajo na pokrajinski videz.

Nekoliko manj izrazito terasirana je panonska pokrajina na vzhodu in severovzhodu Slovenije. Tam so kulturne terase omejene izključno na panonska gričevja (Perko 2001, 80), pojavljajo pa se v obliki sodobnih vinogradniških in ponekod tudi sadjarskih teras. Na prehodu v dinarsko pokrajino na jugu območja (Krško gričevje, Podgorje pod Gorjanci) so tudi tradicionalne poljedelske terase, kjer je nekoč prevladujočo njivsko rabo nadomestila travniška raba. Vinogradniške in sadjarske terase so intenzivno obdelane, poljedelske pa precej bolj ekstenzivno, vendar so po večini še vzdrževane in zato ne propadajo. Zaradi terasiranja je pokrajinski videz najbolj izrazito preoblikovan v vzhodnem in skrajnem severozahodnem delu Slovenskih goric, v vzhodnem delu Haloz, marsikje v Podpohorskih gorah, ponekod v Dravinjskih gorah in na Bizeljskem.

Slika 16: Terasirana sredozemska pokrajina: Goriška brda so prav zaradi vinogradniških teras ena najbolj privlačnih slovenskih pokrajin. Glej angleški del prispevka.

Slika 17: Terasirana panonska pokrajina: V Lendavskih gorica h so terasirani samo vinogradi v nekdanjem družbenem sektorju, zasebni pa praviloma ne. Glej angleški del prispevka.

Slika 18: Terasirana dinarska pokrajina: marsikje, tudi v Velikolaščanski pokrajini, so kulturne terase manj vpadljive in jih imenujejo kar plastnice. Glej angleški del prispevka.

Slika 19: Terasirana alpska pokrajina: Težaška ureditev teras je bila marsikje nujna, da so določeno zemljišče sploh lahko kmetijsko izkoriščali. Glej angleški del prispevka.

Tudi v dinarski pokrajini so kulturne terase razmeroma pogoste, najdemo pa jih tako po kraških planotah kot po podoljih in ravninah, še največ pa jih je na območjih medsebojnega stika obeh subregij. Teras bi bilo najbrž še več, a je planotast del območja zaradi precejšnje nadmorske višine in ostrega podnebja zelo redko poseljen. Z izjemo skrajnega severnega dela Bele krajine z novodobnimi vinogradniškimi terasami povsod prevladujejo tradicionalne poljedelske terase. Te so praviloma dokaj trdoživa pokrajinska prvina, čeprav je prevladujočo njivsko rabo iz časa največje agrarnosti ob koncu 19. stoletja že pred desetletji nadomestila travniška raba. Pokrajinsko so tovrstne terase manj vpadljive, saj njihove ploskve praviloma niti niso povsem ravne, brežine med njimi pa niso pretirano visoke. Vendar se ob pozornem pogledu opazovalcu marsikje še vedno zarišejo za terasirano pokrajino značilne poteze. Znotraj dinarske pokrajine so najbolj izrazito terasirana območja Bela krajina, Raduljsko hribovje, Velikolaščanska pokrajina in Dolenjsko podo-lje, terase pa so pogostejše tudi v njenem zahodnem delu, ki neposredno meji na sredozemsko pokrajino.

Čeprav je alpska pokrajina območje z najmanj ugodnimi reliefnimi in podnebnimi razmerami, pa se kulturne terase pojavljajo povsod, razen v visokogorju in na ravninah sredi vzpetega sveta. Brez teras je le sredogorje z nekarbonatno matično podlago (Pohorje, Kozjak, Strojna). Prevladujejo tradicionalne poljedelske terase, nekoč namenjene predvsem njivam, zdaj pa so na njih travniki, ki jih še vedno kosijo, ali pa se zaraščajo. Težaška ureditev teras je bila marsikje nujna, da so določeno zemljišče sploh lahko kmetijsko izkoriščali. Strmine so omilili z izdelavo terasnih ploskev in vmesnih škarp, na karbonatnem površju pa je bilo z zemljišča marsikje treba odstraniti odvečno kamenje. Lažje je bilo terase urediti na dolomitnem površju. Še največ teras je v južnem delu alpske pokrajine, na prehodu v sredozemsko oziroma dinarsko pokrajino (Breginjski kot, Šentviška planota, južni del Posavskega hribovja). Ker je alpska pokrajina že sama po sebi izrazito razgibana, so njene terase pokrajinsko manj vpadljive.

## 6 Tehnike izvedbe teras

Pri razvoju terasirane pokrajine ne moremo mimo vpliva, ki ga imajo na njeno oblikovanje tehnike izvedbe teras. Te se spreminjajo od ročne do strojne, ki se je uveljavila z začetki uporabe strojne mehanizacije v gradbeništvu.

Terasirana pokrajina je grajena, konstruirana pokrajina. Kot pri vseh fizičnih sistemih je njeno spreminjanje proces, ki ima vrsto preoblikovanj. Za fiziognomijo terasirane pokrajine je tako kot za druge fizične sisteme značilna tristopenjska preobrazba: zasnova, izgradnja in propad.

Spremembe fizičnega prostora so lahko spontane ali načrtovane. V prvem primeru so to (na videz) neurejene, anarhične spremembe, ki nastanejo nenačrtno in imajo za posledico geometrijsko neurejen sestav. V drugem primeru gre lahko za skrajno premišljene spremembe, ki so nastale načrtno in jih opredeljujemo kot zasnove (Ažman Momirski 2004, 207).

Če so bili v času ročne izdelave teras posegi v prostor nenačrtni in je bila v ospredju interesov graditeljev izgradnja teras, pri čemer je bilo potrebno njihovo nenehno vzdrževanje, pa novi načini graditve teras zahtevajo, da se večja pozornost nameni njihovi zasnovi oziroma načrtovanju.

Zasnova teras vključuje pripravo načrta za izvedbo teras. Namen načrta je takšna prostorska ureditev teras, da je njihova celotna izvedba načrtovana na podlagi predhodno pridobljenih in zanesljivih podatkov ter z dobro premišljenimi izvedbenimi koraki. Le takšen pristop zagotavlja obvladovanje pričakovanih

učinkov in racionalno ureditev teras. Tako je mogoče doseči večjo stabilnost teras, kar najmanjše premike preperine pri njihovi izvedbi ter največjo možno površino koristnega zemljišča.

Z izdelavo načrta je mogoče preprečiti ali upočasniti spremembe določenih lastnosti terasnega sistema, na primer plazanja brežin, s tem pa tudi sprememb sistema samega in posledično njegove identitete oziroma identitete terasirane pokrajine.

Spremenjen pristop k načrtovanju in izvedbi teras vključuje interdisciplinarno delo, kar je posledica večjega zavedanja, da imajo posegi v prostor vpliv na kakovost človekovega bivanja. Pri izdelavi načrta je pomembno, da se uporabijo različne metode sodelujočih disciplin.

Izpopolnjena metoda načrtovanja in izvedbe teras, ki je bila izpeljana in preizkušena v okviru projekta ALPTER (Ažman Momirski in ostali 2008), je vključevala naslednje metode:

- tradicionalno agronomsko in agrotehnično metodo, pri kateri se pri urejanju teras praviloma uporablja samo agrarna tehnika,
- geološko-geotehnično metodo, ki se običajno uporablja v gradbeništvu in doslej pri gradnji kmetijskih teras še ni bila uporabljena,
- primerjalno metodo, s katero je mogoče primerjati različne prvine načrtov teras in med drugim določiti njihovo najbolj primerno tlorisno zasnovo; posamezni načrti so bili med seboj primerjani tudi glede potrebne količine prenesenega materiala.

Med prednostmi te metode velja poleg sodelovanja strokovnjakov različnih profilov izpostaviti kratek čas izvedbe terasiranja. Njeni glavni slabosti sta pomanjkanje strokovnjakov za načrtovanje terasiranja in pomanjkanje usposobljenih delavcev za njegovo izvedbo v praksi.

Slika 20: Za terasiranje izbrana parcela v okviru izvedbe projekta ALPTER je bila pred preureditvijo pašnik. Glej angleški del prispevka.

Slika 21: Izbrana parcela neposredno po opravljenih zemeljskih delih, pred ozelenitvijo in zasaditvijo vinske trte. Glej angleški del prispevka.

## 7 Sklep

S spremenjenim načinom izdelave in obdelave teras iz ročne v mehanizirano so se korenito spreminjali oblike in videz teras. Ob ročni izgradnji in obdelavi so se širine terasnih ploskev med seboj precej razlikovale: nekatere so bile ožje, druge širše, neenake so bile tudi dolžine teras. Z uporabo kmetijskih strojev so terase, širine terasnih ploskev in razdalje med vrstami postale precej bolj enakomerne. Prevladale so nasute brežine brez opornih zidov, terase pa so povezane s širokimi obdelovalnimi potmi in obračališči.

S strojnim urejanjem teras s ponavljajočim in razpoznavnim vzorcem je postala pokrajina geometrizirana, s precej višjo stopnjo reda (Ažman Momirski in ostali 2008, 115), ki skupaj s pestrostjo vpliva na tako imenovano harmoničnost pokrajine. Največjo harmoničnost ima pokrajina s pestro, a zelo urejeno strukturo (Marušič in ostali 1998). To pa pomeni, da sodobna slovenska terasirana pokrajina spada med privlačnejše slovenske pokrajine ali celo med območja s prepoznavnimi značilnostmi z vidika kulturnega in simbolnega pomena pokrajine (Urbanc 2008).

V zadnjih desetletjih tako po obsegu kot po aktivnosti močno prevladujejo vinogradniške terase. Zaradi stroškov obnove vinogradov in stroškov pridelave grozdja se pojavljajo pomisleki o upravičenosti in smiselnosti urejanja vinogradov na terasah. Z opuščanjem teras se izgublja značilen pokrajinski izraz, s tem pa vrsta drugih priložnosti. Terasasta pokrajina prispeva tudi k oblikovanju in prepoznavnosti lokalnih kultur, za ljudi je pomemben del kakovosti življenja, pestrost in njena doživljajska privlačnost pa omogočata ohranjanje poseljenosti in vitalnosti podeželja.

Zato naj bi pojav in pomen slovenskih terasiranih pokrajin v prihodnje osvetlilo bolj poglobljeno raziskovanje z zornih kotov različnih ved. Tako bi opozorili na različne pomena, ki jih ima tako oblikovana pokrajina, z opozarjanjem na njeno prisotnost in razširjenost pa bi lahko pomembno prispevali k njeni ohranitvi.

## 8 Literatura

Glej angleški del prispevka.