Layout structure of rural settlements and adjacent new developments in Czechia: Classification system and implications for urban planning

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ABSTRACT
In this article a spatially integrative classification system of rural settlements based on their historical layout structure is proposed and applied to all eligible rural settlements in Czechia. This classification is then used to assess spatial characteristics of recent suburban developments, including the structure of their street networks and their spatial relationship to historical cores. Based on orthophotomaps, historical maps, and old classifications from the last century, a six-type classification system was created and applied to all rural settlements with less than 3,000 inhabitants in Czechia. In addition, based on a randomly selected subsample of 60 suburbanized settlements, the street network layout of the new developments (geometrical/organic/combined) was identified, and the adjacency of the new and old developments analyzed. The village-square type was the most common historical layout (52%), followed by stripe-type (26%), small (8%), plot-type (4%), and dispersed types (2%). All the remaining layout structures, aggregated into the Others category, represented 8% of settlements. New developments in the two predominant types of historical layouts are mostly geometric and, with a few exceptions, adjacent to the original settlement core. The developed classification system can serve as a basis for a discussion about suitable and sensitive planning of new developments that preserve the historical value of the original settlements while supporting their sustainable growth.

KEYWORDS
rural settlements; historical layout; settlement structure; suburbanization; street network; rural landscape; conservation, Czechia

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1. Introduction

Rural settlements have an irreplaceable position in the landscape. In Central Europe, most of them acquired their basic form in the 11th–14th century and give witness to their continuous development in relation to the farmland and surrounding landscape. Agriculture and the relationship of settlement inhabitants to the surrounding landscape significantly influenced the settlement layouts and their structure (Perlín et al., 2010). In Eastern and Central Europe, the relationship of rural settlements to the landscape experienced major changes during the Industrial Revolution and (particularly) the second half of the 20th century, when collectivization and formation of agricultural cooperatives led to major changes in the landscape and settlement structure (Bičík 2002; Bičík et al. 2001; Hanušin et al. 2020; Kupková et al. 2021). Scholars like Iordachi (2013) have explored similar transformations in rural landscapes across Europe, highlighting the widespread impact of industrialization and collectivization on settlement patterns.

With the turn of the millennium, the rural landscape, especially that in the background of major cities, was challenged with a new trend – massive suburbanization (Baše 2004; Ouředníček 2003; Sádlo 2008). This phenomenon has been extensively studied internationally, emphasizing the socio-economic and environmental consequences of suburban sprawl (Hirt 2012; Moudon and Hess 2000; Scheer 2019). In many cases, an insensitive approach to the new developments – from the urban planning as well as architectural perspectives (Hanušin et al. 2020) – began to massively disturb the original character of rural settlements (Roberts 1997; J. Roberts and Wrathmell 2003; J. Sýkora 1998). Interactions of the original and new settlement structures from both the cultural and social perspectives have been the subject of many studies (Ouředníček 2007, 2015; L. Sýkora 2009; L. Sýkora and Mulíček 2014).

To fully appreciate the dynamics of rural settlement development and preservation, it is crucial to incorporate a comprehensive theoretical background. The importance of rural settlements extends beyond the local context (Fanta et al. 2022), reflecting broader geographical, social, and environmental interactions that are globally relevant. For instance, Smardon (2022) and Tress et al. (2005) highlight the multifaceted role of landscapes in rural areas, emphasizing their ecological, cultural, and socio-economic dimensions. Similarly, Antrop (2005) discusses how landscape changes in Europe are driven by a complex interplay of historical, economic, and policy factors. Scholars like Pedroli et al. (2007) argue for integrated landscape approaches that balance conservation with sustainable development, ensuring that rural settlements can evolve without losing their distinctive character.

The typology of settlement structures in old villages is a crucial aspect of studying the historical development of rural areas (Kadlec et al. 1961; Láznička 1946, 1956; Máčel 1955; Máčel and Viklický 1954; Pešta 2000; Roberts and Wrathmell 2003; Škabrada 2022; Škabrada and Voděra 1975; Viklický 1953). Settlements in various geographical and cultural contexts exhibit specific features closely linked to the landscape and its resources. In Europe, several basic typologies can be identified, including street villages, village-square settlements, dispersed settlements, and planned settlements that emerged during periods of colonization or industrialization.

One of the most common types is the street village, characterized by a linear arrangement of houses along a main road. This typology often reflects the historical importance of transportation routes and accessibility to resources (Thompson et al. 2020). The linear pattern facilitated efficient communication and transport, crucial for agricultural societies (Fanta et al. 2022; Houfková et al. 2015). The regularity of street villages indicates a planned approach to settlement, often seen in regions with a long history of centralized governance (Whitehand and Morton 2004).

Another prevalent type is the village-square settlement, where houses are arranged around a central open space or square. This layout is particularly common in Central and Eastern Europe and often indicates a communal approach to village life, with the square serving as a focal point for social, economic, and administrative activities. The central square typically housed important community structures such as churches, markets, and meeting halls, reinforcing its role as the village nucleus (Kuča 2013).

Dispersed settlements represent a different typology, where houses and farms are spread out over a large area rather than concentrated along a road or around a square. This pattern is often found in regions with abundant arable land, where agriculture dictates a more spread-out settlement to maximize land use. Such settlements can be indicative of historical land ownership patterns and agricultural practices that required proximity to the fields (Pedroli et al. 2007).

Planned settlements, which emerged during colonization periods or industrialization, often exhibit a grid pattern (Škabrada 2022). These settlements were systematically designed to optimize land use, infrastructure, and accessibility. The grid pattern, commonly associated with Roman urban planning, was later adopted during various periods of territorial expansion and economic development in Europe. This type reflects a high degree of planning and control, often linked to state-driven colonization efforts or company towns established during the industrial era.

The context of the valuable original character of rural settlements is, unfortunately, often neglected. While some highly valuable settlements are protected as heritage, this is not true of the majority of rural

settlements throughout not only the Czechia but entire Europe. It is, of course, impossible to conserve the status quo in such settlements – the pressure on new developments is immense and the settlements generally tend to grow. Land use planners are, however, often faced with the dilemma of whether new developments should be constructed adjacent to the original village core or if they should be rather created in completely new areas separated from the original valuable core. Taking into account the original settlement layout and structure could help in this decision-making.

The original layout type generally does not draw sufficient attention from land use planners. Many works have focused on the structure from the perspective of transportation infrastructure (Gil et al. 2012; Huang et al. 2007; Southworth 1997; Wheeler 2015; Whitehand and Morton 2004). However, the layout of the core parts, which, besides reflecting the historical development of the settlement over time as mentioned above, can be also characteristic of certain regions and/or contains valuable ecological structures, is only rarely studied (Hanušin et al. 2020; Kuča 2009, 2013; Pešta 2000; Roberts 1997; Škabrada 2022). In the Czechia, this has been the subject of studies during the second half of the last century (Kadlec et al. 1961; Láznička 1956; Máčel 1955; Máčel and Viklický 1954), when several relatively complicated classification systems were developed. Since then, this topic has, unfortunately, been neglected, although a few studies in Czech journals have been published by Pešta (2000), Škabrada (2022) or Kuča (2013), whose classification system distinguished 22 types of rural settlements. That system is, however, quite complicated from the perspective of its applicability in large areas or automation using artificial intelligence (AI) techniques. International perspectives, such as those provided by Evert Meijering et al. (2007), who discuss the complexities of rural transformation in different European contexts, can offer valuable insights into how rural settlements can be classified and managed.

The influence of suburbanization on rural areas in Czechia became particularly pronounced in the 1990s and 2000s, especially in the suburban zones of large urban agglomerations (Ouředníček 2003; L. Sýkora 2003). The rapid growth of new residential developments at the edge of traditional villages during this period often undermined historically evolved spatial structures (Baše 2002b, 2004; Maňas and Kabrhel 2024; Šťastná et al. 2015, 2018) and disrupted the cultural landscape. While typological knowledge of rural settlements is essential for understanding the foundation upon which these transformations occur, it is equally important to analyze how suburbanization interacts with these existing forms (Baše 2001, 2006; Cílek and Baše 2005). In this context, the classification system presented in this paper is not an end in itself but a tool for assessing and guiding new developments in a way that respects the inherited structure and identity of rural settlements.

In this paper, therefore, we aim to: (a) formulate a new simple, yet effective, system of rural settlement classification based on the previously published typologies, (b) evaluate the representation of individual layout types in rural settlements in the Czechia and discuss the regional variability in the representation of individual types. Further, on an example of 60 rapidly developing rural settlements that have, until recently, maintained their original layout, to (c) investigate the types of new developments (geometrical vs organic) and to compare the representation of these two types from the perspective of the original layout type. In addition, (d) the adjacency of the new developments to the original settlements was analyzed. Finally, (e) based on these results, contribute to the discussion about the impacts of suburbanization on rural settlement integrity and outline directions for more context-sensitive planning strategies.

This study addresses two critical research questions regarding rural settlements. (1) How do new developments in rural settlements differ in their street network structure compared to the original settlement cores? And (2) what is the spatial relationship between new developments and original settlement cores in rapidly suburbanizing rural areas?

To correspond with objectives (a) and (b), two additional questions are formulated: (3) How is the current regional distribution of rural settlement layout types in Czechia structured? (4) To what extent can the morphological characteristics of rural settlements be differentiated using the proposed simplified classification system?

2. Methods

2.1 Classification system

In the first step, we developed a new system of settlement layout classification based on the classification systems published previously (Kuča 2009; Máčel 1955; Máčel and Viklický 1954; Pešta 2000; Škabrada 2022). As these classification systems were useful but, at the same time, probably unnecessarily complicated for the intended analyses (Tab. 1), the new system was to a large degree simplified, containing only 6 basic types of settlement core layout structures (Fig 1): **Village-square type** (or square-type, Fig. 1a) is characterized by a village square, which used to form the center of the settlement. Entrances to individual farmsteads open into the square, backyards then continue into fields. Typically, these settlements were originally linked with the surrounding settlements by just one or two roads and their layout was typically circular or ellipsoid. **Stripe-type** settlements are characterized by a central road and individual buildings open into the road (Thompson et

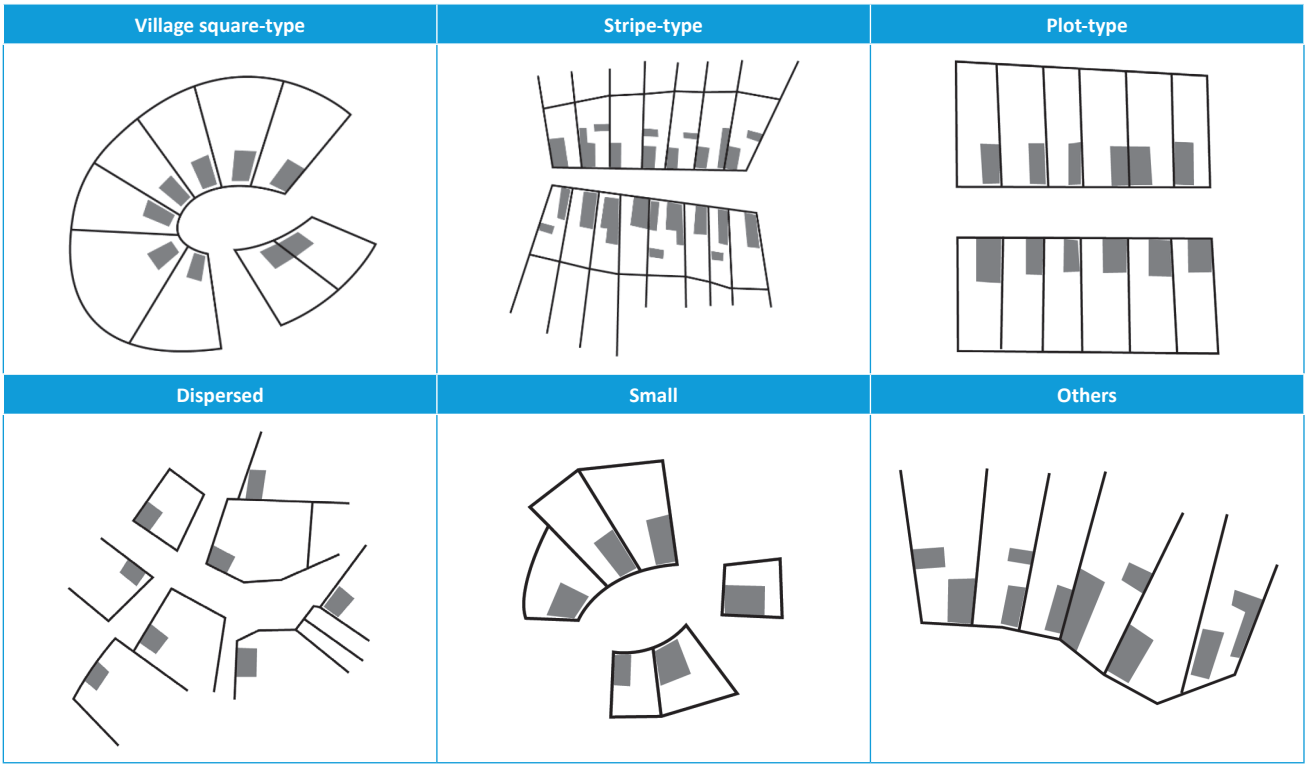

Fig. 1 Basic layout-based typology of the cores of rural settlements.

Tab. 1 Classification systems for rural settlements in the region of the Czechia reported in the literature previously.

Author	(Máčel 1955)	(Černý 1979)	(Frolec and Vařeka 1983)	(Kuča 2013)
Number of types	24	9	7	22

al. 2020). This also determines the long and narrow shape of the settlement. **Plot-type** settlements are similar to the stripe-type ones, the main difference lies in more precise determination of individual plots, often of equal sizes. This is caused by the fact that this type of settlement is much younger than the previous ones – only approx. 200 years. **Dispersed-type** settlements are typical of submontane and montane regions where the landscape morphology does not support a compact layout. **Small-type** settlements can vary in shape but they are generally so small that they cannot be clearly defined to belong to one of the fully developed morphologies described above. Lastly, the class **Others** aggregates types that are not small but do not fit any of the above-described morphologies – for example, settlements situated only along one side of a road or with unclear shapes.

This new classification was derived through comparative visual analysis of previous typologies. The six types were selected to simplify redundant distinctions and emphasize basic spatial features relevant for further analysis. Prior typologies were compared side-by-side and interpreted using orthophoto and cadastral maps. Subsequently, this typology was used to classify approximately 5,000 rural settlements in the Czechia.

It should be noted that some categories (particularly the stripe-type) include morphologically similar settlement forms that, however, originated under different historical and colonization conditions (e.g., organically developed street villages in southern Moravia vs. planned Waldhufendörfer in northern Bohemia). The present classification groups them based on layout characteristics relevant for spatial analysis, but these internal historical distinctions may be important for deeper landscape or cultural studies.

2.2 Study area and data

In this paper, we used data describing the Czechia (Central Europe). For the classification of the entire area of the Czechia, we employed cadastral maps and orthophoto maps available from the State Administration of Land Surveying and Cadastre, along with the original classifications of settlements from previous works (Kadlec 1961; Kadlec et al. 1961; Kadlec and Smržová 1970; Kuča 2009, 2013; Láznička 1956; Máčel 1955; Máčel and Viklický 1954; Pešta 2000; Škabrada 2022). Based on these data, all village-type settlements (i.e., those with populations of less than 3,000) in the Czechia were classified using the above-described classification system.

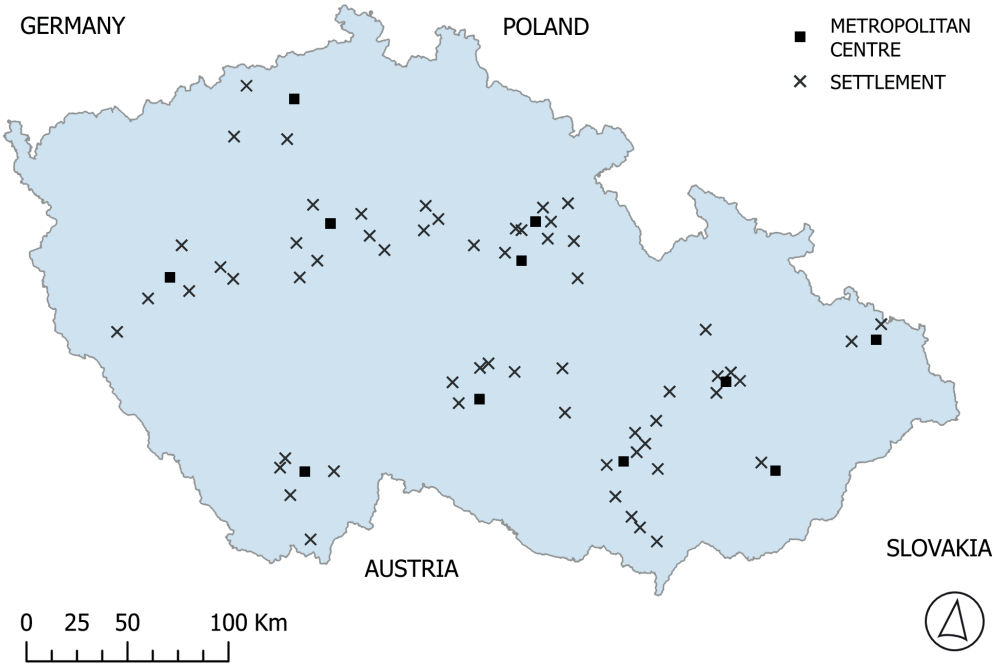

Fig. 2 The location of analyzed rapidly developing rural settlements within the Czechia.

Altogether, approximately 5,000 rural settlements meeting the defined population and spatial criteria were included in the classification.

The classification was performed manually through visual interpretation of orthophoto and cadastral maps, focusing on key spatial features such as the structure of the street network, the orientation of built-up plots, and the overall compactness of the settlement form.

In this study, the term settlement refers not to administrative units (such as municipalities or cadastral territories), but rather to a compact built-up structure identifiable in orthophoto and cadastral maps. This includes the core inhabited area of a village or town-like entity, typically excluding scattered farmsteads or isolated housing unless clearly associated with a coherent built-up layout. The spatial boundaries of each settlement were visually interpreted based on the continuity of the urban fabric, building density, and connection via road or infrastructure networks.

Applying the above threshold of a ≥100% increase in housing stock between 2001 and 2021 revealed that roughly every tenth rural settlement – around five hundred of the five thousand classified – can be regarded as rapidly developing. From this subset, 60 settlements distributed across the principal suburbanisation zones of Czechia were then randomly selected for detailed analysis, with the additional requirement that their historic core and the newly built-up areas remained clearly distinguishable in the ortho-photo imagery.

Selection was based on housing statistics and visual assessment of aerial imagery to ensure that both the original structure and new development were clearly distinguishable and suitable for comparative evaluation.

From the preliminary results of the classification of settlements from the entire Czechia performed in the previous paragraph, we knew that village-square-type and stripe-type settlements constituted a vast majority of suburbanized settlements. The plot-type, dispersed, and others were found more frequently in remote regions and not many such settlements were suburbanized. The same is, logically, valid for small settlements – these settlements, remaining small, did not undergo suburbanization. For this reason, we finally analyzed the structure of new developments only in settlements of the village-square-type (30) and stripe-type (30) settlements from suburbanized regions throughout the Czechia.

2.3 Analysis of new developments

As no suitable complex layout-based typology of new developments that would take into account multiple criteria was found in the literature at the time of the analysis, the new developments were classified solely on the basis of the character of the street network into geometric and organic types according to (Kostof 1991). Classification of the new developments according to the street network is common in literature (Frey 1999; Marshall 2004; Rickaby 1987; Satoh 1998) as it is very characteristic of structures formed in the era of individual automobile transport (Marshall 2004; Thompson et al. 2020). In this, the structures of these sites inherently differ from the original (core) historic parts of settlements, which were formed largely in relation to the surrounding (agricultural) landscape.

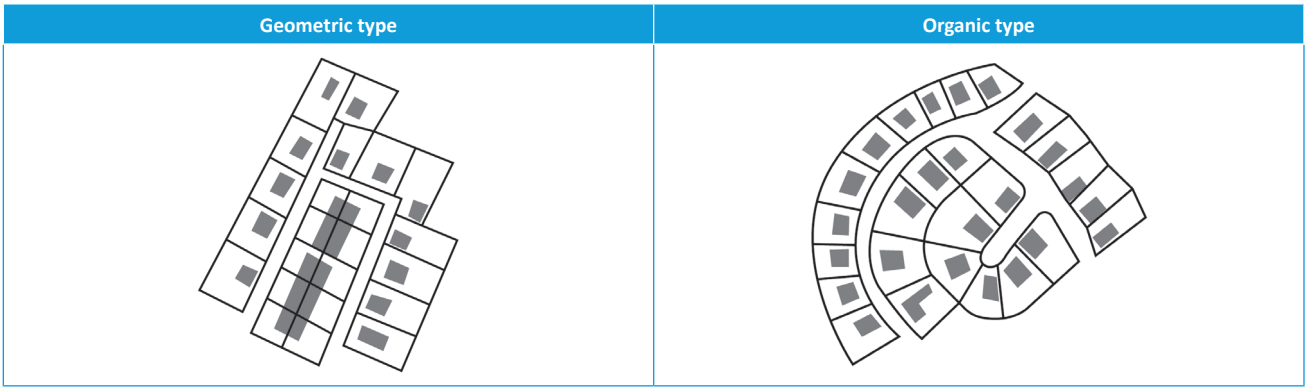

Fig. 3 The basic classification of new developments in the rural settlements according to the street network structure.

Although simple, this approach offers the basic categorization of settlements in various cultures, geographic regions, and time points (Major and Dalton 2018). Where both organic and geometric layouts were present in the particular development, classification was performed based on the predominating layout type (if the representation was >70%, the development was classified as the dominant street network type); where the representation of both types was more balanced (i.e., the predominating type represented less than 70% of the street network), they were classified as the third type – "Combined".

In addition, the interaction between the new and old developments (i.e., whether the new and old developments are connected or separated) was analyzed for each settlement. Old and new developments separated only by a street or with directly adjacent private plots were considered connected.

This assessment was based on visual interpretation of orthophoto maps. Developments were classified as "connected" if the built-up areas were spatially continuous or directly adjacent (e.g., across a road or along shared property boundaries). If the new development was spatially detached, without any direct visual or structural continuity, it was classified as "separated". Consistent criteria were applied across all 60 settlements.

3. Results

3.1 Settlement classification according to the original layout structure

The results of the analysis of the layout of all small settlements in the Czechiaare depicted in Fig. 4.

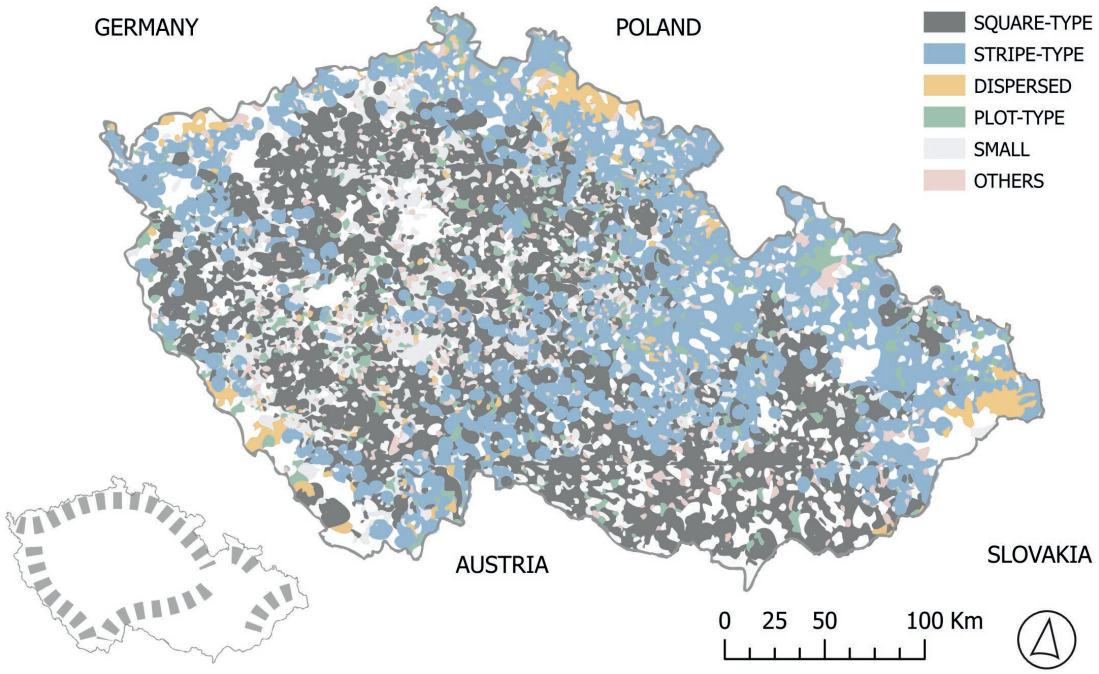

Fig. 4 Main picture: Classification of the rural settlements according to the layout structure of the core (original) parts of the settlements in the Czechia. Small picture: Grey stripes illustrate highland and montane regions.

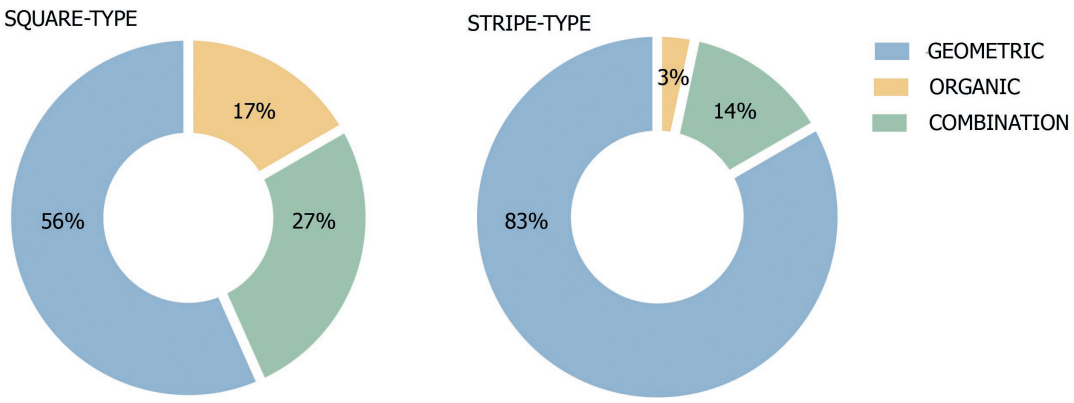

Fig. 5 Classification of new developments according to the street network for village-square type and stripe-type settlements.

Village-square type was the most common, constituting 52% of all settlements. Stripe-type settlements (26%) were the second most common, followed by small (8%), plot-type (4%), and dispersed (2%). All the remaining layout structures, aggregated into the Others category, comprised 8% of settlements. Comparing the distribution of layout types with the morphological map of Czechia (small picture in Fig. 4), we can see that stripe-type settlements are concentrated rather in hilly terrain while on flat terrain, village-square type is dominant. Dispersed settlements are concentrated in mountainous regions, plot-type settlements are relatively evenly distributed throughout the entire territory. Small settlements mostly fill in the gaps among village-square type settlements. Empty (white) spaces in the maps indicate cities, villages with a population of >3000, mining or military areas, and areas near borders where settlements were destroyed or abandoned due to the Iron Curtain.

3.2 Types of new developments

Most rapidly developing rural settlements can be found in the suburban and exurban zones of metropolitan areas, where the demand for housing is high. In this study, the dominant types of such settlements, i.e., the village-square type and the stripe-type, were analyzed further from the perspective of their street network. Purely organic approach to creating new developments was very rare, observed only in 17%

Fig. 6 Examples of new developments unconnected (A) and connected (B) to the original structures. The original cores (square type) are indicated in the pictures. Orthophoto data sourced from the State Administration of Land Surveying and Cadastre 2023.

and 3% of settlements with originally square-type and stripe-type structures, respectively. The geometric street network was clearly predominant in the new developments, dominating in 56% and 83% of settlements with originally square-type and stripe-type structures, respectively. The combined structure was present in 27% and 14% of new developments, respectively (Fig. 5).

3.3 Connection of new developments and the historic cores

In a vast majority of studied settlements, the new developments were connected with the original settlement. The new development remained separated only in four settlements out of the 60 analyzed. Three of those were characterized by the geometric street network, the remaining one was a combined geometric/organic type. The unconnected new developments are characterized by their size – they are always sizeable developments built at one period, in some cases even several times larger than the original settlement.

Where the new developments are connected to the original core structure of the settlement, it is usually at the cost of backyards – so-called pluzina (Houfková et al. 2015; Sauser et al., 2022; Sklenička et al. 2009, 2014) – of the original plots.

4. Discussion

The Czechia is, from the perspective of the typology of rural settlements, an exceptionally interesting and varied territory. Individual settlements reflect the morphological, cultural, and historical associations and conditions for agriculture, providing a multitude of information on the history and past life in these settlements and being of high cultural and urbanistic value. A similar typology can be implemented outside of the Czechia as well – at least in the Central Europe with similar historic development.

4.1 Classification system

Several classification systems have been published in Czech in the past (Kuča 2009, 2013; Máčel 1955; Pešta 2000; Škabrada 2022) but were typically too complicated for practical use. On the other hand, papers analyzing the historical layout structure published in the international literature – for example: (Kostof 1991; Major and Dalton 2018; Marshall 2004) – typically used only dichotomous classification, which does not support a complex evaluation, either. The presented classification system offers a suitable compromise between these two approaches. While remaining relatively simple, it allows for a functionally complex assessment that takes into account not only the geometric layout of the settlement, but also its urbanistic structure, its relationship to the surrounding agricultural landscape, and its capacity to spatially integrate or clash with newly developed parts. This broader view of complexity reflects the changing dynamics of rural areas under suburban pressure and provides a framework for analyzing whether traditional and new structures coexist as a coherent whole or result in spatial fragmentation. This system, although applied to the region of the Czechia only in this paper, is likely applicable also to other (not only) Central European countries; with minor adjustments, it could be applicable also to other European countries and for AI-based classification over large areas.

4.2 Settlement classification according to the historical structure

Square-type settlements are the oldest form of settlement layout. It is most represented in the central and eastern parts of the Czechia, i.e., in the parts where colonization occurred in the earliest times of all regions within Czechia (before the 12th–13th century). This is thanks to their favorable physical-geographic conditions (lowlands, near major rivers) facilitating agriculture, which represented the dominant economic activity of the time (Sádlo et al. 2005). Stripe-type settlements dominate in the areas that were colonized later (14th century), when forests were cleared and less favorable hilly and submontane regions were colonized (Kučera and Kučerová 2009; Kuna et al. 2004; Škabrada 2022). Dispersed layouts are typical of montane regions where the individual objects are at greater mutual distances due to the terrain morphology. Plot-type layout is a newer settlement structure developed from stripe-type. These settlements originate predominantly in the 18th century when large farms were split into plots of unified sizes and distributed among small farmers, which led to the formation of relatively smaller settlements with regular layouts.

4.3 Classification of new developments according to street network structure

The new developments mostly differ from the original core structure of the settlement in their layouts, not supporting the formation of full-fledged centers. Moreover, the permeability between the new developments and historic cores is often limited (Fig. 6b) and these new developments are typically accessed by a road (or roads) oriented on the main road leading towards the autonomous center (Fig. 6a, b).

This way of the construction of new developments is not specific to the Czechia – it can be rather observed globally (Moudon and Hess 2000; Scheer 2001; Southworth and Owens 1993). Should we classify the new developments in the same way as the historical cores in the previous part of the paper, all these settlements would be characterized as the plot type (Pešta 2000). This predominance of plot-type

structures disregarding the associations with the surrounding landscape is highly typical of new developments in suburbanized areas. In many cases, new developments are attached to the existing structure without forming spatially coherent centers, which limits permeability and functional integration (Maňas 2020, 2023).

New developments often suffer from urbanistic and architectural heterogeneity, especially when not arising as a single large development but rather as gradual (although turbulent) growth (Fig. 6b). This results from differences in plot sizes, architectural solutions, regulations, and land use planning restrictions valid at different time points. This combination of factors leads to differences in the readability of the space for the users as well as of the plans for the regulatory authorities.

4.4 Ornamental urbanism

The new developments are often not shaped strictly geometrically or organically. Larger new developments are often characterized by something we can call "ornamental structure". Although not part of the formal classification system presented in the Results, these patterns were repeatedly observed during visual analysis and are here introduced as a reflective interpretation. We can, therefore, speak of "ornamental urbanism" that can be easily identified in the layout or on an orthophotomap (it may be difficult to recognize when viewed from the users' perspective, i.e., from the street). Such ornaments can consist of geometric or organic street layouts as well as their combinations. These forms are not proposed as a new typology but rather as a discussion point emerging from observed tendencies in larger suburban expansions. Such ornaments are more typical of large new developments in which the urban planners' creativity and invention could have been applied to a greater degree; at the same time, however, it is necessary to take the original layout and historical core into question and to sensitively connect the old and new developments to prevent the disruption of the original layout and architectural structure by the new development (Baše 2004, 2006; Cílek and Baše 2005; J. Sýkora 1998).

4.5 Unsuitable connections and risks

The ability of different historical settlement types to integrate new development without compromising their original structure varies significantly (Baše 2002a, 2004). In square-type settlements, the original compact core remains visually and functionally distinct, even when new development is added. In contrast, stripe-type settlements tend to expand through additional streets placed behind the original plots. This pattern, often combined with the reduction of plot sizes, can blur the distinction between the historical core and the new extensions.

If not sensitively planned, such extensions may result in the gradual obscuring or fragmentation of

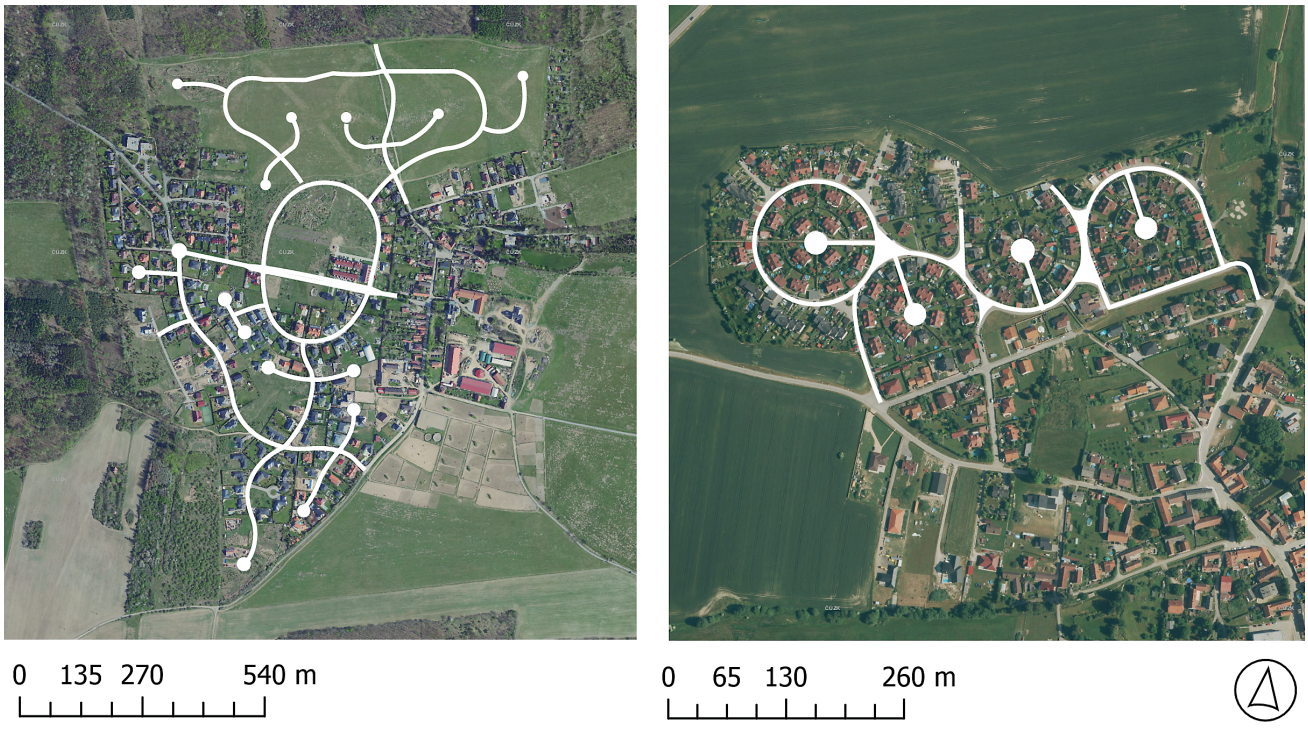

Fig. 7 Examples of ornamental street layouts in two settlements, left: the future development plan in the village of Trnova; right: the realised expansion in Dolní Třebotín. Orthophoto data sourced from the State Administration of Land Surveying and Cadastre 2023.

the original spatial structure. This is particularly problematic when new buildings are constructed directly in former backyard spaces, which historically served as transitional zones between built-up areas and the open landscape. The loss of this buffer can diminish the rural character of the settlement and reduce the legibility of its historical form (Foley and Scott 2014; Scott et al. 2019).

4.6 Possible measures

To preserve the distinctive character of the rural settlements, i.e., to prevent damage by new developments – urban sprawl; (L. Sýkora and Mulíček 2014; Zabik and Prytherch 2013) – the scale and layout of the development must be taken into account. It is advisable to look for spatial reserves in the existing settlement core (e.g., ruins, brownfields) before resorting to creating new developments outside the original settlement layout. If this is done, it is advisable to follow urban design principles based on the settlement pattern.

Where it is necessary to create a new development in the vicinity of the original core structure, it is beneficial to prevent their direct adjacency. Suitable solutions might include a gap (e.g., a narrow park or a boulevard-type street) supporting the growth of tall greenery (Maňas et al. 2023), which can visually separate the buildings characteristic of the core from new developments that are typically of different architectural design and will support the good visual appearance of the settlement. In addition, such a gap will also create a public space suitable for mixing of original and new populations and provide a cooling effect (Maňas 2023).

4.7 Study limitations

The subsample of 60 analyzed settlements is small for making any strong statements about the general character of suburbanized settlements in the Czechia; it is, however, intended rather as a starting point for opening discussion on the topic of the optimization of the development of rural settlements with high urbanistic and cultural value. This subsample can also serve as a pilot study for further research that could utilize artificial intelligence for the identification of new structures and their classification (manual classification would be extremely time-consuming due to the large number of settlements).

5. Conclusion

The presented study introduced a simple classification system of small settlements based on their historical layout and classified all settlements in the Czechia according to his system. Subsequently, on a subsample of 60 suburbanized settlements of village-square type or stripe-type, which dominated among suburbanized settlements, we analyzed the street network layout and adjacency of the new developments to the core. We ofound that most new developments among the analyzed settlements have geometrical street network. The mutual proximity between the new development with geometrical street network and original core with valuable layout structure can lead to the destruction of characteristic features of the original typological groups of rural settlements that allow the identification and cahracterization of their cultural-historical development.

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