

Rhythmanalysis of Switzerland

Rethinking territorial typologies

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Rethinking territorial typologies

Guillaume Drevon, Yann Dubois, Patrick Rérat, Vincent Kaufmann, Olivier Klein and Frédéric Kaplan

Abstract: Rhythmanalysis is a valuable analytical approach for charting daily rhythms, both for individuals and at the collective level, in order to feel the pulse of a territory and understand the way in which it is inhabited in terms of both space and time. Conceptually, the paper illustrates the importance of understanding the rhythms of territories in order to move beyond traditional spatial typologies, which focus mainly on functional and demographic aspects, by looking through the three-dimensional lens of time geography to focus on the potential behaviours in which individuals may engage in a given space at a given time, taking into account any constraints. The analyses reveal significant differences in different spaces in terms of rhythmic intensities and the types of activities practised. This spatio-temporal approach makes it possible to deploy a new reading grid of territorial differentiations and, more generally, to refocus on the issue of urbanisation and metropolisation, based on the rhythms of daily life of the residents. Such an approach facilitates an understanding of the urban phenomenon that goes beyond strictly functional aspects to focus on the way in which territories are inhabited both in space and in time.

Introduction

In light of the acceleration of the rhythms of life driven by the growth of frequent and rapid mobility (Antonioli et al. 2021; Kaufmann 2005), resulting in increasing congestion of transport infrastructures and public spaces as well as increasing pressure from tourism and leisure activities on natural environments (Dodds, Butler 2019), analysis of the temporalities and rhythms of territories represents a central issue for planning and transportation policies (Antonioli et al. 2021). Conceptually, the rhythmanalysis proposed by Henri Lefebvre (Lefebvre 1992) has had a strong impact on literature focusing on the social and spatial times of territories, across the disciplines of geography, sociology and architecture.

Henry Lefebvre's rhythmanalytical approach shows how individual and collective rhythms

tend to produce different territories through their variable occupations in space and time (Lefebvre 1974). For some authors, however, the science behind the rhythms of territories still needs to be forged from the "melody" of daily activities. For example, Brighenti and Kärrholm (2018) suggest that the notion of rhythm could be explored not only in terms of the recurring patterns of association it defines but also with reference to the situations it generates and, ultimately, territorialises.

Using a rhythm-based approach, this paper responds to this challenge by proposing new methods for analysing territories through the development of a typology of territorial rhythms based on the spatio-temporal behaviours of the residents of Switzerland. The Swiss terrain lends itself particularly well to our analysis since the country has an urban framework distributed over a small scale (30–50 km) and has particularly efficient individual and collective motorised transport networks, which facilitate the deployment of daily, long-distance forms of mobility (Viry et al. 2015). The development of transport and communication infrastructures has profoundly altered lifestyles and their spatio-temporal profile, as evidenced by the development of large-scale commuting associated with work (Dessemontet et al. 2010). Thus, neighbourhoods and cities are no longer the only frames of reference for the daily life of the Swiss population (Drevon 2019). At the level of the wider urban area, the metropolitan area, and even the country as a whole, travel occurs not only for work but also for leisure and other social activities. These population movements, which take place on different timescales, e.g., commuting during the weekday rush hour, or gravitating towards leisure areas (metropolitan areas, tourist areas, etc.) on the weekends, suggest a specialisation of Swiss territories depending on temporalities.

Drawing in particular on the conceptual and methodological corpora, relating to time geography and urban rhythms respectively, this paper uses an original conceptual toolkit to reveal the rhythms of territories within a country based on the individual spatio-temporal behaviours measured by the Swiss national transport survey (Mobility and Transport Microcensus) (Vodoz 2004).

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Yann Dubois completed a PhD at the Swiss Federal Institute of Technology Lausanne after studying geography at the University of Neuchâtel. He has been working at Bureau Mobil'homme since 2020. His work focuses on various aspects of mobility, such as modal choice, leisure mobility, cross-border mobility, residential mobility and, more broadly, urban and regional issues.

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The paper is divided into four sections. The first is dedicated to a review of the literature, while the second section presents the methodology and data used. The third section then establishes the rhythmic profile of the territories through the activities of their users and presents a typology of the rhythms of the territories. The conclusion reviews current knowledge and the contributions made by the proposed approach.

1 Current knowledge

The conceptual framework is based on different fields of research which have analysis of the spatial and temporal distribution of activities in common. From this perspective, the paper first draws upon time geography and the activity-mobility approach, with an analysis of individual activities in time and space (Brighenti, Kärrholm 2018). The paper also centres on the analysis of the territorial rhythms which form part of Henri Lefebvre's reflections on rhythm-analysis (Lefebvre 1992).

1.1 The time geography approach

Over the past 50 years, sociology and geography have largely integrated the temporal dimension (Hägerstraand 1970) in terms of the analysis of both individual behaviour and urban contexts at night (Gwiazdzinski 2016) and in the 15-minute city (Moreno et al. 2021). Thus individual temporalities mingle to shape the tempo of cities and, more broadly, of territories (Drevon et al. 2017).

An individual approach to daily rhythms has been widely developed in the field of time geography (Ellegård, Vilhelmson 2004; Hägerstraand 1970), and more broadly in spatio-temporal approaches to mobility. This approach has been used in particular in the field of transport in the analysis of distances travelled (Lipps, Kunert 2005), travel time budgets (Crozet, Joly 2004; Drevon 2019; Schafer, Victor 2000; Zahavi 1974) and activity programmes (Herz 1982). The contributions made by time geography are threefold: (1) the consideration not only of space but also of time, by adopting a three-dimensional prism which shows the potential behaviour of individuals within space and time given their constraints, thus proposing the notion of spatio-temporality; (2) analysis of movement constraints (which relate to capacity, coupling (interactions, synchronisation) and authority (under the control of an

individual or group) (Hägerstraand 1970), all of which underlie the notion of accessibility (Pirie 1979), where 'accessibility' ultimately refers to the space-time budget available to an individual to carry out their programme of activities; (3) the attention paid to all travels as a whole, testifying to a plan, a lifestyle, rather than a series of independent sequences. These approaches have also underpinned the development of the analysis of 'space-time paths', which correspond to the movements of individuals in space and time, illustrating the scheduling and sequence of daily activities (Chapin 1974; Lenntorp 1976). This type of analysis has revealed the plurality of daily rhythms as well as their social determinants.

For several years now, the time geography has been marked by a thematic renewal (Ellegård 2018). The time geography approach is, for example, used to better understand different exposures to urban environments, particularly in the field of health (Campbell et al. 2021). Time geography is also a particularly relevant conceptual tool in the context of analysing gendered activity spaces (Scholten et al. 2012) or segregational dynamics in urban spaces (Cagney et al. 2020). Time geography continues to represent a significant approach in the field of transport and, in particular, in the context of understanding the matching between the transport supply and demand in terms of daily mobility (Axhausen 2008; Hägerstraand 1970). In Switzerland, approaches based on time geography have put the diversity of daily rhythms into perspective. This diversity manifests itself through the complexity of activity programmes, the spatial scope of activity spaces, and temporal anchoring during the day (Drevon, Gumy 2020). These analyses have demonstrated comparisons and contrasts between different rhythmic frameworks that are common to certain groups of individuals who share the same social characteristics. Although these analyses afford a detailed description of spatio-temporal behaviours, they do not reveal specific spatial determinants. This paper seeks to overcome this limitation by revealing territorial rhythms based on the spatio-temporal behaviour of individuals. The literature on urban rhythms is particularly enlightening in this regard.

1.2 Urban rhythms: an approach based on collective temporalities

Rhythm-analysis has inspired many studies analysing the transformation of social and political relationships (Hassan 2007), bodily experience

in the public space (Drevon et al. 2017; Mareggi 2013; Simpson 2008) and urban temporalities (Pradel 2010). Rhythmanalysis as a field of research is not yet clearly defined, and a science of rhythms has yet to be developed (Brighenti, Kärrholm 2018).

As suggested by Brighenti and Kärrholm (Brighenti, Kärrholm 2016), this science of rhythms could be integrated into a general science of territorialisation which corresponds to the modalities of use and appropriation of space (Rossi 2019) as well as socialisation processes (Kärrholm 2007) by contrasting the melodies and refrains revealed by the deployment of daily activities that take place with varying levels of intensity (Brighenti, Kärrholm 2018). In this context, the literature advocating a rhythmic approach proposes taking into account both the spatio-temporal forms of rhythms suggested by time geography (Lenntorp 1976; Pred 1977) and the social interactions generated by periods of social synchronisation (Launay et al. 2016). The association between the forms of rhythms and the resulting social relationships tends to reify places and define different forms of territoriality (Edensor 2012; Mels 2016). This standpoint makes reference in particular to Henri Lefebvre's approach to the production of space, which depends on the location in time and space of social relationships and their intensities (Lefebvre 1974).

Other works on the relationship between rhythm and territory also suggest that rhythm is a powerful means of reducing the social and cultural tensions generated at the territorial level by demographic pressures such as tourism. In this context, rhythm becomes a territorial planning tool and a lever for public policies. In effect, rhythms are regulated through the opening hours of amenities and facilities, such as public transport, shops, schools, nurseries, public administrations. In Italy (in the 1990s) and then in France, local authorities opened 'time offices' specifically assigned to managing the rhythms of daily life and implementing policies in this regard (Gwiazdzinski 2014). These rhythm-based planning approaches aim to redistribute flows and influxes across time and space and, therefore, reduce the pressures on territories (Flemsæter et al. 2019).

This innovative approach to rhythm regulation calls for a broader reflection on rhythm policy with the aim of limiting the pressures on environments and individuals (Antonioli et al. 2021; Moreno et al. 2021).

As we can see, much of the current research focuses on everyday social and urban rhythms.

There are relatively few approaches offering a rhythmic analysis of territories. However, recent works (Antchak 2018; Drevon, Gummy 2020; Edensor, Larsen 2018; Ourednik 2010) show the interest of analysing territorial rhythms to contrast differences in the use of the territories and their temporalities. This approach also makes it possible to reappraise the methods used for categorising territories.

2 Case study, data and analysis methodology

2.1 Case study

Switzerland is organised around a polycentric network of cities: Zurich is the largest, followed by Geneva and Basel. Bern (the capital) and Lausanne are also among the most populous Swiss cities. Around three-quarters of the population lives in urban areas. The relative proximity of the various towns and regions, combined with a motorway and rail transport system (trains run several times an hour on lines that connect the main cities) allow frequent travel (particularly commuting) within and between agglomerations, promoting the development of long-distance commuting in particular (Kaufmann 2008). The country is notable for being made up of four linguistic regions: German-speaking Switzerland, French-speaking Switzerland, the Italian-speaking part (mainly located in the canton of Ticino) and the Romansh region¹.

Topographically, three main areas can be determined: the Alps (and the Pre-Alps), which cover 58% of the total area of the country (41 285 km²) but are home to just 11% of the Swiss population; the Central Plateau, which extends from Geneva in the west to Zurich and up to Saint-Gallen in the east, and which is the most urbanised area in the country and home to the main cities; and the Jura Arc, which is a low mountainous area and accounts for 11% of the national territory.

2.2 Data: Mobility and Transport Microcensus 2015

The main source of data is the Swiss Mobility and Transport Microcensus. This is a survey conducted by the Federal Statistical Office (FSO) and the Federal Office for Territorial Development (ARE), which provides information on all travels made by a representative sample of residents aged over 6 years old. The survey

dates from 2015 and was conducted with a sample of 57 000 respondents. This survey takes place throughout the year using a telephone survey protocol (CATI). Participants are asked to describe all the travels they made the day before the survey is conducted. These are broken down into three categories, known as loops (one or more successive travels starting and ending at home), travels (one motivation for travel but one or more modes of transport) and trips (only one mode of transport). The place of departure and arrival (X-Y coordinates), the time and the distance travelled are collected for each travel and (re)calculated using route calculation tools. Other information is also collected to characterise the respondents and the members of their households, such as their equipment (cars, bicycles, season tickets, etc.) and their socio-demographic characteristics.

A new database was created by us on the basis of the travels made, this time considering

the activities performed, the duration thereof, their motivations and locations. The travel data make it possible to describe the travel from point A to point B, and the activity data make it possible to better take into account the activity carried out at point B, in association with the duration of activities in particular. The data used do not provide detailed information on the activities carried out, for example, during periods of work or the return home. An accompanying survey on time use could have improved the quality of the data.

2.3 Methodology

The methodology we deployed is innovative in two major respects. Firstly, it combines a mobility analysis of the travels made with an analysis of the activities performed (by motivation and by location), inspired by the works on time geography (Borruso, Porceddu 2009;

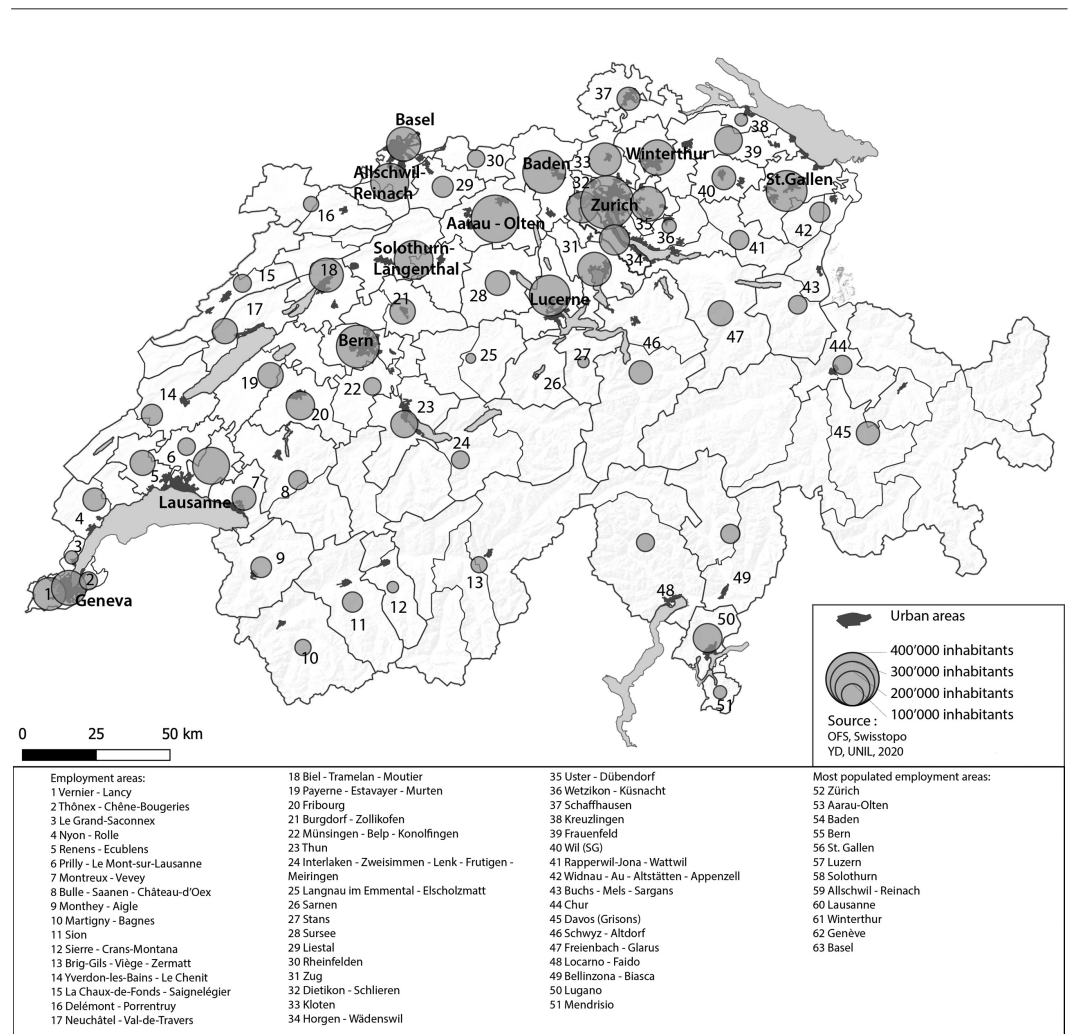


Fig. 1: Analysis by employment area.

Ellegård et al. 1977; Miller 1991; Tabaka 2009), but also reflections on the presential economy (Segessemann, Crevoisier 2013). Indeed, such an approach makes it possible to determine the presence of individuals at a certain time in a territory, the time spent and the activities performed in certain territories, and therefore the importance these have in the daily lives of individuals. Secondly, our approach puts geo-statistical and cartographic visualisation tools at the service of the rhythm approach in social sciences. The method used in this paper is not innovative in terms of analysis techniques. On the other hand, the proposed approach provides a better understanding of the rhythm intensities in each of the areas and puts different types of territories into perspective.

As our goal is to analyse the rhythm of the territories, we sought to have the highest possible level of detail, while respecting the minimum statistical requirements in terms of representativeness. In Switzerland, the two main administrative and statistical territorial units are the municipality (LAU3) and the canton (NUTS3). The numbers are insufficient for our analyses to work at the municipal level, and an analysis by canton would be too coarse. Thus, we used 'employment areas', as broken down by the Federal Statistical Office, which divides Switzerland into 101 regions on the basis of commuting. We grouped together certain contiguous employment areas in order to have a sufficient sample size. The map below (Figure 1) gives an overview of the initial employment areas (101; boundaries marked with thin lines) and the grouped employment areas (63; boundaries marked with thicker lines), as well as the main towns and cities.

2.4 Indicators to understand the rhythms of territories

Based on the literature on spatio-temporal behaviours of individuals and urban rhythms, we propose an analysis of territorial rhythms encompassing four dimensions: (1) temporalities (times of day; weekdays vs. weekends), (2) travels (speed, distance, duration), (3) proximity in lifestyles (immobility and proximity) and (4) temporal specialisation in terms of activities performed in the territories (share of leisure activities). These four dimensions will be used to create a typology of regions based on their socio-spatial rhythms.

The first dimension, temporalities, focuses on the links between collective and individual temporalities. This dimension is made up of

three indicators: time of the first travel of the day, time of the last travel in the evening on weekdays and also on weekends. The distinction between weekdays and weekends, also applied to other variables, appears to be fundamental both in the description of individual activities and the rhythms of the territories.

The second dimension, travel, is characterised by the duration, distance and speed of the travels. These elements make reference, among other things, to the works on time budgets (Zahavi 1974), activity spaces (Schönfelder, Axhausen 2010) and speed (Heike, Knox 2006; Rosa 2013). More generally, these are indicators for understanding mobility and individual lifestyles (Acker et al. 2010; Kaufmann 2002; Lanzendorf 2002). More specifically, the indicator relating to the share of individuals making travels of more than 100 km during the day deals with 'high mobility', an important facet of daily mobility in Switzerland and in Europe more widely (Schneider, Meil 2008; Viry et al. 2015).

The third dimension concerns proximity in lifestyles and issues around anchoring and immobility, whether the latter is through choice or constraint.

The fourth dimension measures the type of activity and, therefore, the location and temporalities. This dimension also relates to issues around the presential/residential economy (Segessemann, Crevoisier 2013; Talandier 2013) and the location of expenditure (and activities) (Guo et al. 2020) by looking into the presence of individuals in certain territories and at certain times. This fourth dimension is particularly relevant because it allows the analysis to take account of the activities carried out in the territories and to consider immobility. The four indicators used relate to the specialisations of the territories in terms of work/study and leisure, as well as the attractiveness/repulsion and retention power that the territories exert on their residents and the residents of other regions. Firstly, it is necessary to measure the proportion of individuals who stay in the area where they live over the weekend, compared to all the people present (whether they are tourists, visitors, consumers, etc.). Secondly, it is necessary to measure the proportion of people who are in a given territory at the weekend when they do not live there, to address the issue of attractiveness of the territory.

Combined, these four dimensions provide a broad overview of the spatial and temporal footprint of Swiss lifestyles and highlight the major spatial challenges of mobility. A list sum-

| | Proximity and centrality | Speed and leisure | Calmness | Lack of attractivity |
|---|-----------------------------|----------------------|-------------|-------------------------|
| | Dimension 1 | Dimension 2 | Dimension 3 | Dimension 4 |
| Percentage of people who only travelled short distances (travels of less than 4 km) | 0.842 | | | |
| Daily distance (median) | -0.809 | 0.409 | | |
| Share of residents who are in their area of residence at the weekend (retention power) | 0.739 | | | |
| Weekend speed (median) | -0.732 | | | |
| Relative number of people frequenting the area during the day on weekdays (compared to residents) | 0.635 | | | |
| Share of people who are highly mobile (more than 100 km during the day on weekdays) | | 0.864 | | |
| First commuter travel (weekdays, lower quartile) | | -0.805 | | |
| Weekday speed (median) | -0.582 | 0.703 | | |
| Last travel (week, top quartile) | | | -0.791 | |
| Last travel on Friday/Saturday (median) | | | -0.785 | |
| Time spent at home on weekdays (average) | | -0.499 | 0.575 | |
| Ratio of people at home during their lunch break on weekdays (compared to 11 a.m.) | | | 0.554 | |
| Share of residents compared to the total number of people present in the area (attractiveness) | | | | 0.835 |
| Time spent on leisure activities at the weekend | | 0.514 | | -0.718 |
| Time spent at home on weekends (average) | | | 0.434 | 0.542 |

Tab. 1: Factorial scores of the principal component analysis.

marising the 15 variables used can be found in Table 1.

Construction of the typology

On a technical level, a principal component analysis was first applied to summarise the 15 variables measuring the rhythmicity of territories. It identified the following four axes (Table 1):

- The first axis relates to the proximity and centrality of territories. It is founded on short distances, low speeds, and the strong presence of individuals (during the week) in the territory in question.
- The second axis relates firstly to speed (and the long distances it allows) and secondly to activities centred around leisure, especially at weekends.

- The third axis relates to tranquillity and activities centred around the home. It relates to early returns home, being home at midday, and generally spending a lot of time at home.

- The last axis relates to a lack of attractiveness of the territory, with few people from outside frequenting it at weekends, a small share of leisure activities and a lot of time spent at home.

A Ward hierarchical classification was carried out (using SPSS software), resulting in a six-group typology (based on the reading of the dendrogram).

3 Results

The Swiss population's daily rhythms of life are characterised by daily travels of around 90 minutes. 89% also left their homes the day before the survey; from Monday to Friday, this propor-

tion was 91.4%; on Saturday, this was 88.2%; while on Sunday, ‘only’ 78.8% undertook an activity outside the home. While in terms of travels, leisure (outside the home) is the motivation for most travels made by the Swiss population, in terms of activities, time spent at home is the most significant (74%), followed by time spent in the workplace (10%, i.e., 40% of total out-of-home activities): thus, this purpose continues

to structure daily life. Leisure represents 5% of the day, while travel represents 6%. Figure 2 highlights the importance of not just analysing travels in and of themselves, but also taking activities into account to describe the rhythms of individuals and territories. The top graph in Figure 2 determines the times of the activities based on the day of the week and the time profile of the activities.

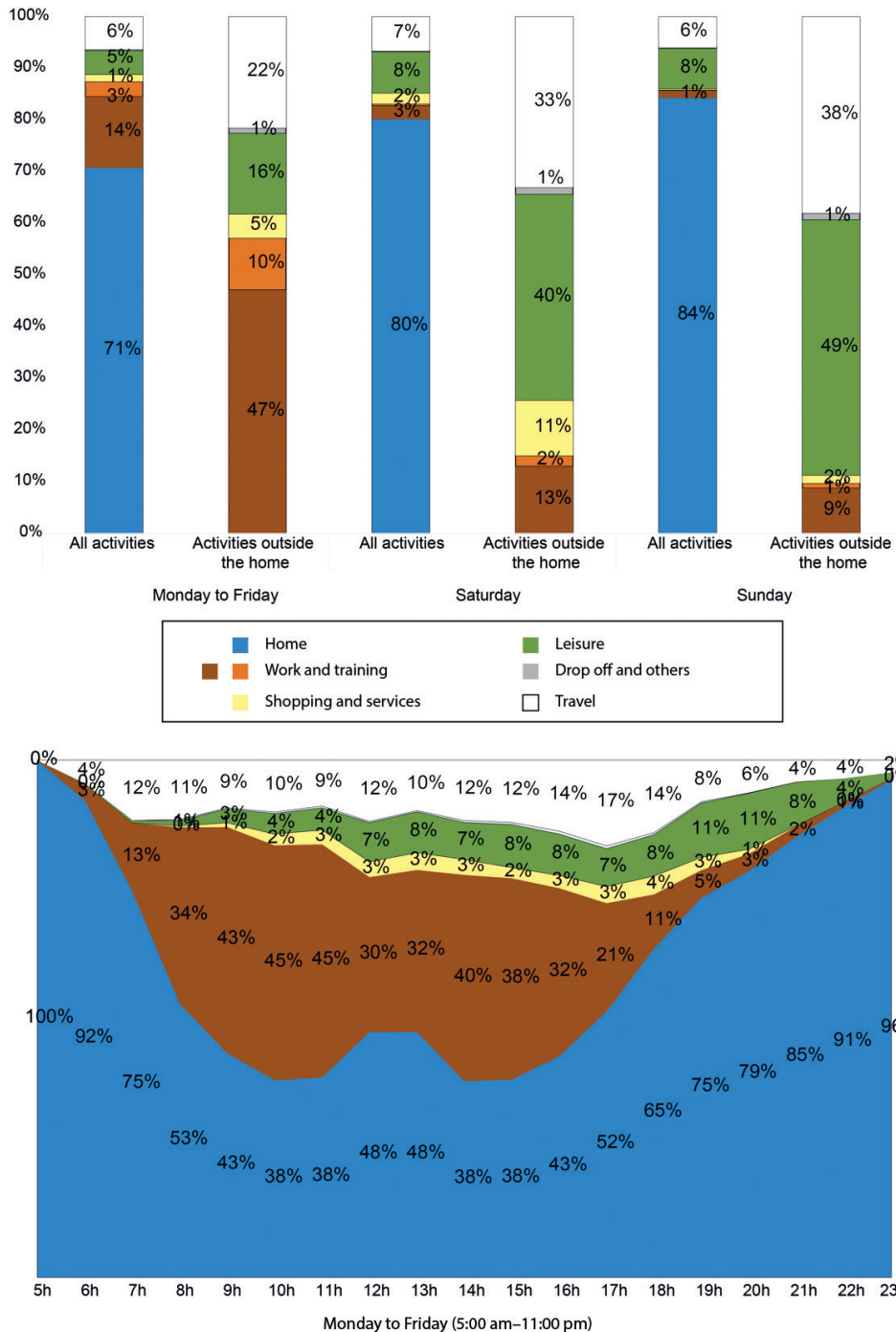


Fig. 2: Time spent by activity on weekdays and weekends (all of Switzerland) and time profile of activities during the weekdays (between 5 a.m. and 11 p.m.)

Beyond this general description of the rhythms of daily life, there are many differences in rhythms depending on the territory. Table 2 gives an overview of the spatialisation of the indicators of the four dimensions used to identify the rhythmic profile of the territories.

In terms of timetables, the Swiss begin to travel from 6:25 a.m. on weekdays (first travel,

lower quartile, work motivation). The days start the earliest in the peri-urban regions and satellite towns close to the large urban centres, unlike in the metropolitan areas and towns of Ticino, where they start at around 7 a.m.

In terms of travels, the Swiss cover a median distance of 16.4 km every day on weekdays and 12 km at weekends. The greatest distances are

| | Variables | Swiss values | Minimum values | Maximum values |
|-----------------------------------|--|--------------|-------------------------------------|---|
| Temporalities | First work travel (weekdays, lower quartile) | 6:25 | 6:00 (Kreuzlingen, Sursee, Langnau) | 7:00 (Geneva, Le Grand-Saconnex, Lugano, Locarno) |
| | Last travel (weekdays, top quartile) | 19:53 | 19:00 (Monthey, Sierre, Sion) | 21:00 (Le Grand-Saconnex) |
| | Last travel (Friday/Saturday, upper quartile) | 17:53 | 16:57 (Sierre) | 19:28 (Le Grand-Saconnex) |
| Travels | Daily distance (median) | 16.5 km | 8.25 km (Geneva) | 27.7 km (Münsingen-Belp) |
| | Travel speed (weekdays, median) | 18.8 km/h | 7.8 km/h (Geneva) | 26.9 km/h (Sursee) |
| | Travel speed (weekend, median) | 18.2 km/h | 7.7 km/h (Geneva) | 29.1 km/h (Sursee) |
| | Percentage of people who are highly mobile (weekdays, more than 100 km during the day) | 9.4% | 2.9% (Vernier-Lancy) | 14.7% (Brig-Visp, Freienbach-Glarus) |
| | Percentage of people who only travelled short distances (travels of less than 4 km) | 27.3% | 44.2% (Geneva) | Le Grand-Saconnex (16.1%) |
| Proximity and immobility | Ratio of people at home during lunch on weekdays compared to at 11 a.m. | 1.26 | 1.4 (Frauenfeld) | 1.09 (Brig-Visp) |
| | Time spent at home (weekdays, average) | 16:15 | 15:15 (Zurich) | 17:08 (Locarno) |
| | Time spent at home (weekends, average) | 18:35 | 17:53 (Geneva) | 19:57 (Sierre) |
| | Relative number of users of the territories during the day on weekdays (compared to no. of residents) | 87% | 68% (Chêne-Bougerie) | 131% (Zurich) |
| Specialisation of the territories | Leisure share (weekend) | 22% | 14% (Delémont) | 33% (Bulle-Château-d'Oex) |
| | Percentage of residents who are in their territory of residence at the weekend (retention power) | 85% | 64% (Prilly-Mont-sur-Lausanne) | 85% (Delémont) |
| | Percentage of residents compared to the total number of people present in the area (power of attractiveness) | 86% | 70% (Interlaken) | 94% (Sursee) |

Tab. 2: Indicators relating to the rhythm of territories.

mainly travelled in the outskirts of large cities, as well as to a certain extent in more peripheral areas (weekdays and weekends). Conversely, Geneva and Basel, as well as non-metropolitan regions – Jura massif (No. 15, No. 17), Ticino regions (No. 48 to 51), Alps (except Valais Romand) – are characterised by short distances. These territories are located close to borders, whether these are national, linguistic or topographical, which limits the scope of possibilities for longer travels. Additionally, we have taken into account high mobility (more than 100 km in a day), the average share of which amounts to 9.4%. The high mobility share is highest in outlying areas located on major highways or rail routes, such as the Brig-Visp region (max. 14.7%). It is lowest in Geneva and its suburbs, as well as in Ticino. Finally, in terms of speed, this is lowest in the big cities (and in the suburbs). Interestingly, the notion of ‘rushing’ associated with big cities is not reflected in travel speeds; indeed, use of public transport and active modes of transport contribute to lower speeds in these territories. On the weekends, some Alpine and tourist areas notably slow down due to the lack of intensive mobility for work, which is replaced by leisure travels (hiking or cycling).

Regarding proximity in lifestyles, on average 27.3% of individuals travel only short distances during the day; this share is highest in the cen-

tres of large conurbations (in particular in Basel (39.7%) and Geneva (39.7%)). In 18 territories, more than 30% of individuals only make short travels during the day. At the other end of the scale, the greatest distances are travelled in the Swiss Central Plateau and the outskirts of large cities. Proximity activities were also measured based on time spent at home (weekdays and weekends) and on an indicator measuring people returning home for their lunch break². This practice is not widespread in areas with a large proportion of commuters. Regarding time spent at home, the people of Zurich spend the least time at home on average during the week (15 hours and 15 minutes), while the people of Ticino and the residents of the Jura Arc tend to stay at home the most. The large proportion of elderly people with shorter distances and few with high mobility seems to explain this result.

Most attractive territories are the metropolitan areas (Figure 4): in Zurich, the population has increased by 31% at 11 a.m. on weekdays³, not counting people who are travelling at that time, 15% in Geneva and 10% in Basel (excluding cross-border workers). Conversely, the emptiest territories during the day are found on the outskirts of major cities, such as Thônex (no. 2) in the Geneva conurbation, which experiences a decrease of more than 40% of its population during the day. The territories located in the

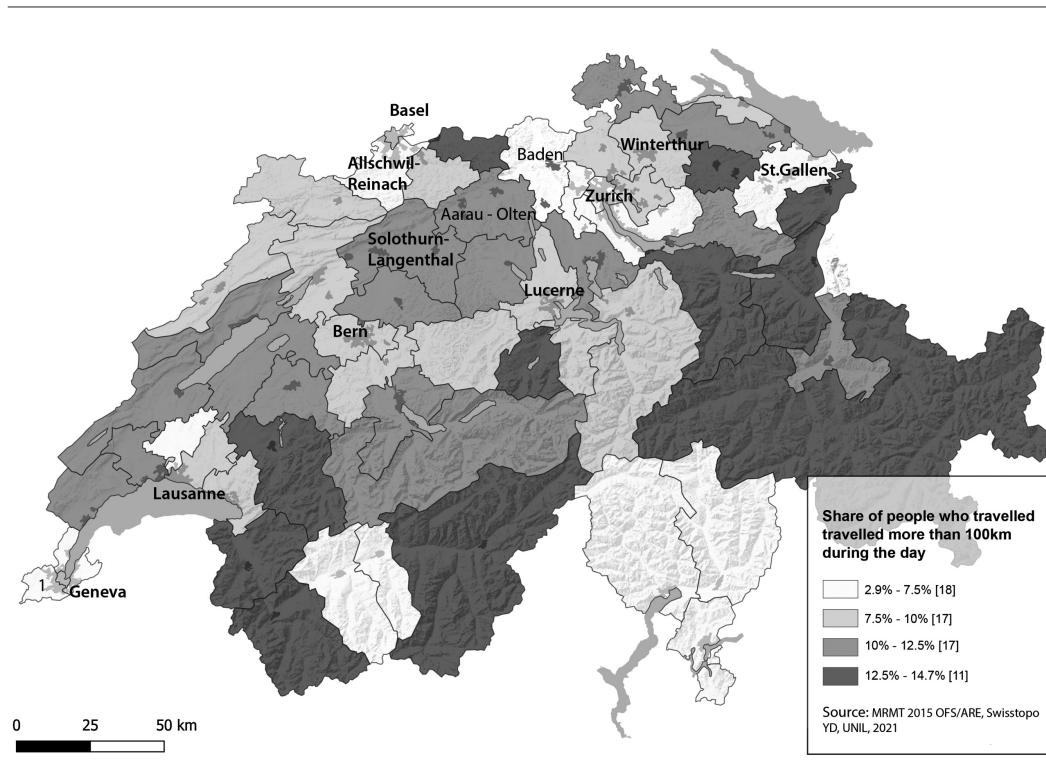


Fig. 3: Long distances (+100 km).

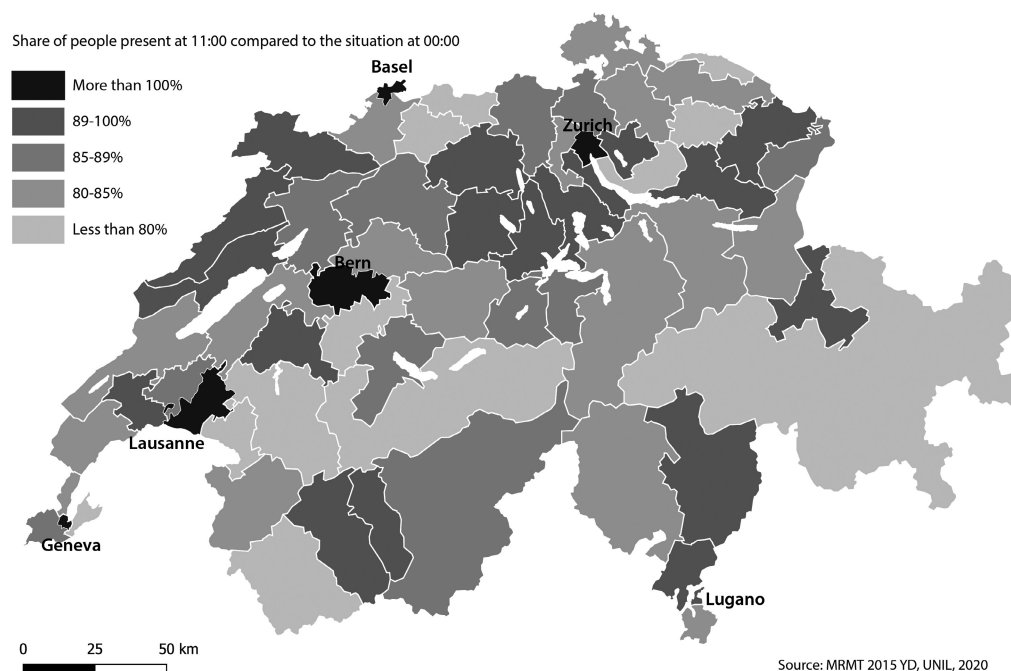


Fig. 4: Relative quantity of people present in the territories (weekdays, at 11 a.m.).

Alps are the most specialised in terms of weekend leisure⁴ (Bulle-Château d'Oex (Gstaad), Davos and Interlaken). In addition to being very attractive from a tourism perspective, these territories are also among the most accessible in the Alps and closest to major cities. The latter present quite different profiles: in Geneva, only 17% of activities are leisure activities, while in Basel, this share is 26% (which could be due to its reputation for cultural offerings).

The last two indicators focus on territories' power of attraction and retention. Several areas of medium-to-high mountains (Jura, Alps, Pre-Alps) are among the territories in which residents stay the most – either to participate in activities there or to stay at home (see above). These results either indicate that there is enough in the area to 'retain' the residents at weekends, or suggest a lack of accessibility, limiting travel. In contrast, several 'residential' territories close to major cities are among the least populated at weekends. Thus, only 64% of the residents of the Prilly region (near Lausanne) are there at 11 a.m. and 2 p.m. on weekends. Finally, concerning the power of attractiveness, it is again the tourist (and alpine) territories of Interlaken and Graubünden that stand out: at weekends, around 30% of the people present (at 11 a.m. and 2 p.m.) are not residents.

From the outset, these indicators offer an unprecedented reading of urbanisation in Swit-

zerland. Cities, especially large ones, as well as the most peripheral and rural territories, are both characterised by an increased local presence of the resident population during the day. Conversely, peri-urban and rural areas are characterised by higher absence rates.

By using a clustering methodology (Murtagh, Legendre 2014), a typology was constructed distinguishing six types of territories to account for the socio-spatial rhythms of the regions.

The first type consists of central territories of proximity, which are Zurich, Geneva, Basel, Lausanne, Bern, Lucerne and Saint-Gallen. They are characterised firstly by the strong centrality of urban amenities, major facilities and jobs. Secondly, the people who frequent them tend to stay in the vicinity and take mainly short-distance trips at low speeds. These territories are characterised by an intensity of activities that lasts from morning to evening as well as on weekends. This continuous intensity contrasts with other types of territories, marked by strong differences, such as residential leisure territories (active at weekends) or residential commuter territories (where people are present mainly in the evening and at night). Among these territories, Zurich is notable for its wider area of attraction for commuters, and Geneva and Basel for the importance of proximity in residents' lifestyles (low speed, short distances).

| | | Typology of territories | | | | | |
|-----------------------|--------------------------|----------------------------------|-----------------------------------|--------------------------|---------------------------------|----------------------------------|-----------------------------------|
| | | Central territories of proximity | Pericentral dependent territories | Intermediate territories | Residential leisure territories | Residential commuter territories | Autarkic territories of proximity |
| Average factor scores | Proximity and centrality | 1.46 | 0.31 | -0.38 | 0.18 | -1.15 | 0.72 |
| | Speed and leisure | -0.53 | 0.78 | -1.13 | 1.00 | 0.32 | -0.27 |
| | Calmness | -1.35 | -0.12 | 0.43 | 0.60 | -0.74 | 1.23 |
| | Lack of attractiveness | -0.16 | 0.71 | 0.02 | -1.52 | -0.03 | 0.90 |

Tab. 3: Factorial scores as an average of the different types of territories.

The pericentral dependent territories form the second type of territory and mainly include medium-sized cities characterised by functional dependence on central territories of proximity. This is true of Winterthur (6th largest city in the country, but located in the area of influence of Zurich), Fribourg (no. 20), Thun (no. 23), Solothurn and Aarau. These territories are very well connected to the motorway network and the main railway lines, allowing easy mobility. Human presence is quite intense and is diversified

in terms of activities and schedules. Associated with the central territories of proximity, the dependent pericentral territories form a network that underpins the idea of a polycentric urban Switzerland within which daily life takes place (Dessemontet et al. 2010).

Intermediate territories have an intermediate profile between the large cities with continuous, sustained rhythms and spaces characterised by more variable rhythms depending on the time of the day (Monday–Friday, weekend).

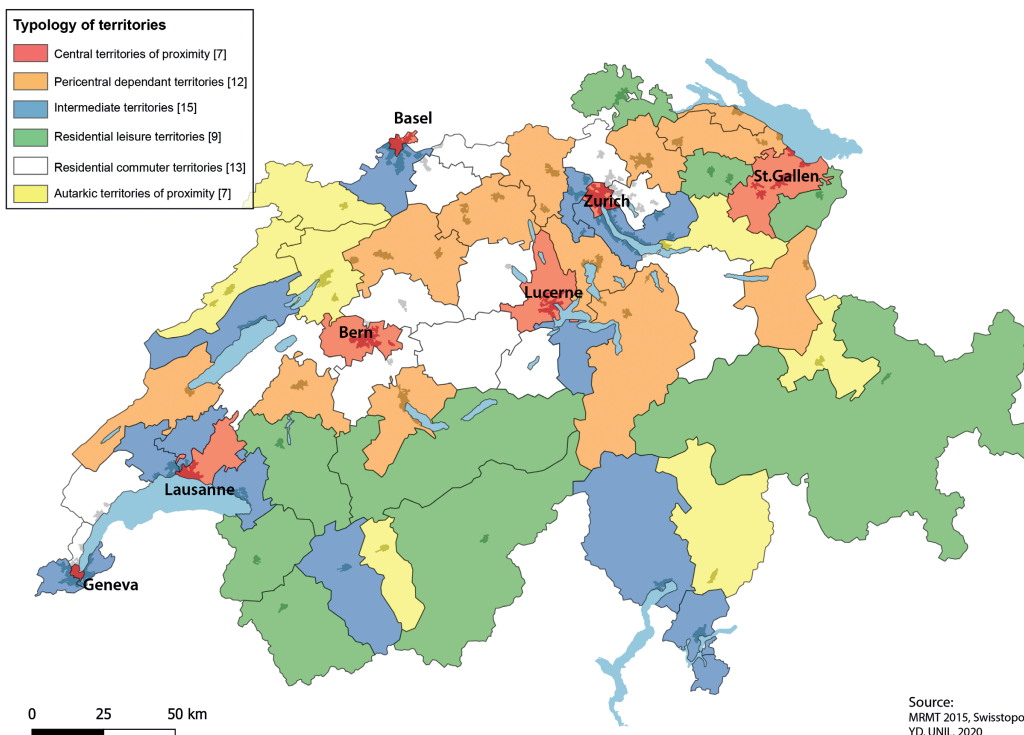


Fig. 5: Typology of territories based on their rhythm.

The two axes that distinguish them are lower speeds and shorter distances (including an absence of high mobility) and a significant at-home presence (including, in particular, returning home at midday). They are made up of both dense suburban territories and medium-sized urban employment areas. The former include Vernier (no. 1, Geneva), Renens-Ecublens (no. 5, Lausanne), Dietikon-Schlieren (no. 32, Zurich) and Reinach-Allschwil (Basel), i.e., important localities in terms of residents and/or activities. The latter include Neuchâtel (no. 17), Sion (no. 11), Lugano (no. 50) and Locarno (no. 48).

Residential leisure territories form the fourth group. Although these territories present a certain tranquillity, especially during the weekdays, they are very attractive and welcome many weekend visitors. Unlike the central and pericentral territories, the temporality and specialisation of these territories fluctuate greatly throughout the day, the week and the season. These territories are characterised by many secondary residents and long-distance commuters who travel to urban areas daily. They are mainly located in the Alps and the Pre-Alps and are characterised by a strong specialisation in leisure and tourism. The Bernese Alps (with the region of Interlaken) and Graubünden are the archetypal regions in this group. They are both very attractive in terms of tourism and very well connected to the network of Swiss cities, making this temporal fluidity easy.

The fifth group is made up of residential commuter territories, or so-called 'dormitory' territories, characterised mainly by the mobility of their residents who travel intensely for work. These regions, located on the Swiss Central Plateau, are highly specialised in residential function. Their residents travel quickly and over long distances compared to other types of territory, leaving their homes early in the morning and returning late, and are unlikely to spend their midday break at home. They also tend to spend time outside their region at weekends. Thus, these territories see the highest 'outflow' of residents during the weekdays and at weekends. The territory of Payerne is particularly interesting since it is located in the area of influence of two central territories (Bern and Lausanne), but also close to two other important local centres (Yverdon and Fribourg).

Finally, the last group is made up of local autarkic territories, which are characterised by their autonomy. Distances travelled (and high mobility) are lower here and, as in the central territories of proximity, a large proportion of individuals live here and only go on short trav-

els (but with a markedly higher or even predominant car usage). These include industrial centres such as the Jura Arc (nos. 15, 16 and 18), the Chur region (no. 44) and Rapperswil-Jona (no. 36). More broadly, these territories combine strong retention power (due to the sufficiency of resources but also the constraints of geographical distance) with rather low attractiveness, especially at weekends. In terms of tourism and leisure, these territories appear less able to attract residents from other territories; this may be because they include mountainous areas and some are close to national borders, which are characteristics that potentially limit travel.

4 Discussion and conclusion

The approach proposed in this paper has made it possible to contrast territorial differentiations using a rhythm-based approach. The analyses performed show that rhythmic differentiations are brought about by multiple dimensions. Firstly, centrality, which relates, in particular, to high intensities of activities in proximity. Next, speed, which is associated, in particular, with covering long distances, specifically for leisure activities at weekends. The residential dimension concerns forms of non-mobility that are characterised by rhythms of life centred around the home. Finally, the last dimension relates to territories that are not very attractive for leisure and where low-intensity but local mobility patterns are deployed.

Based on these different dimensions, our analyses contrast strong rhythmic differences between territories. These analyses reveal a different Switzerland to that illustrated by the studies on metropolisation, which suggest that central urban regions are characterised by sustained rhythms of life. The analyses we performed draw somewhat different conclusions, insofar as the metropolitan areas of Zurich, Basel and the Lake Geneva region are characterised by territories with quite contrasting rhythms. The conventional way of defining the profile of the urban emphasises the centralities, often with the aim of establishing hierarchies between territories, effectively highlighting the largest urban centres. This reading grid, viewed through the prism of hyper-places (Lussault 2017), spots, infinite places augmented by technology, in fact, neglects small and medium-sized towns and considers them as spaces with low urban intensity. However, the typology proposed in this paper shows (a) that the outly-

ing territories have multiple rhythms that can be highly dynamic and (b) that, conversely, localities with very peaceful rhythms can be found in metropolitan areas.

These results cause us to reconsider the hypothesis of the metropolisation of Switzerland. Between 1976 and 2003, Michel Bassand (Bassand 1997) observed the dynamics of transformation in Switzerland, and more generally in Europe, from the Swiss Federal Institute of Technology in Lausanne. He noted that territorial meshes are disappearing and that space is developing in a reticular manner, making the traditional distinction between town and country obsolete. The urbanised area located between Geneva, Lausanne, Neuchâtel, Fribourg, Bern, Basel, Zurich, Winterthur and Saint-Gallen thus increasingly functions like a large conurbation, with significant commuter flows and a growing, more integrated job market. Emerging at the end of the 1980s, this idea was provocative in a country whose identity was built on the concept of alpine cultures and rural life.

At the Swiss Federal Institute of Technology in Zurich, the Studio Basel group of researchers hit the nail on the head in 2004 with their 'urban portrait' of Switzerland (Diener et al. 2005). This describes an entirely urban Switzerland, but one whose urbanity is paradoxically expressed by a rejection of 'density, height, mass, concentration'. The authors also evoke a Switzerland locked in conservatism, where each municipality sees itself in competition with its neighbours, and aggressively defends its own city centre, residential areas, industrial zone and forests, etc. According to the Studio Basel authors, this phenomenon is at the origin of the urban fog that we observe on the Swiss Central Plateau. In this 'urban portrait' of Switzerland, cities are places of innovation, assembly and confrontation, but only exist in networks or as metropolitan areas. Thus, small and medium-sized towns are either included in metropolitan areas or located in so-called 'calm' regions, where a semblance of rural life is led while being oriented almost exclusively to following the teachings of metropolitan areas.

This approach to the urban by studying the functional relationships of dependency between spaces tends to blur what makes and persists in making a city. It is not just a node in a network, nor a demographic, economic or political centrality. A city is also a local society, a set of places, buildings and notable events, traditions, antagonisms and rivalries that structure life in its multiple social, economic, cultural and political dimensions. This definition

of the city is based, in particular, on European urban history, characterised since the Middle Ages by the development of a network of small, politically autonomous towns. The city is not to be confused with the urban, and the challenge is thus to grasp what makes a city – even a small one – without rehashing the old town-country dichotomy.

The typology of territories shows that urban territories are associated with high intensity in terms of rhythms. This resistance of urban and territorial forms is particularly identifiable in connection with periods of urbanisation. Our analyses show in effect that territories that were urbanised before the democratisation of the car and the separation of functions within territories, as per the principle proposed in the Athens Charter, are associated with short travels, made using slow modes of transport, and rhythms that are balanced across the daytime and evening, weekday and weekend, as well as across activities. These territories are found in both large and small cities, as well as in rural areas. As Marc Wiel noted more than twenty years ago, these are territories designed around pedestrians (Wiel 1999). Conversely, it is clear that peri-urban spaces marked by the separation of functions enabled by the development of good accessibility to the road network are characterised by discontinuous rhythms, becoming dormitory spaces that are not inhabited during the day. Designed for rapid and reversible mobility, these are effectively spaces with little rhythm.

The research included in this paper dates from 2015, so before the Covid-19 crisis. However, as a result of this crisis, we are witnessing significant developments in remote working. Presence in localities with a large employment offering is thus being transformed in favour of residential areas, with the associated economic consequences for the spatialisation of consumption. This undoubtedly represents an opportunity for territories marked by a separation of functions and high car accessibility: an opportunity to develop a more rhythmic and diversified life. This approach also sheds new light on the residential economy, for example, by offering a comparison between different regions. From this perspective, rhythms help us to understand how residents use their residential areas for their shopping and leisure activities. Conceptually and methodologically, the approach proposed in this paper makes it possible, firstly, to develop a new approach for constructing typologies of territories on the basis of the actual activities carried out in the different territories. Further research could im-

prove our knowledge of how people experience different territories depending on their different rhythms. Secondly, the results presented in this paper make it possible to respond to a number of contemporary challenges by opening up policies to regulate or support individual and collective rhythms. As such, the saturation of urban spaces, long-distance mobility and the over-popularity of certain tourist destinations are particularly important issues in terms of territorial transition. In addition, the return to proximity or tranquillity indicates relatively sustainable rhythms insofar as they are not marked by significant crossings of space or by a high intensity of activity.

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Notes

- 1 Romansh, another national language, is spoken by only 0.5% of the population as their main language; <https://www.bfs.admin.ch/bfs/fr/home/statistiques/population/langues-religions.html>, accessed 19 August 2021.
- 2 Indeed, in most regions, there are no full-day school options, and lunchtime childcare is not guaranteed everywhere.
- 3 This is the ratio of people present in a territory on weekdays at 11 a.m. compared to midnight; this time slot is particularly representative because it is the time of day when the proportion of people who are not travelling is the highest.
- 4 Analysis of weekday leisure activities did not allow us to observe strong territorial trends, so we concentrated on weekends. In addition, since a non-negligible share of the population (16%) travels at weekends, working on the (relative) quantity of people present in the territories was less relevant; this is why we preferred to use the share of daytime leisure activities as an indicator.

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