

SOME REMARKS ON THE CONFIGURATION OF URBAN SPACE IN THE PRE-MODERN TOWN OF IAȘI

BY
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Abstract:

The morphology analysis of the pre-modern town in the East-European space is encumbered by the lack of maps and zoning plans, as well as by the small quantity of preserved documentary sources. In the case of Iași, the Russian military maps of the 18th century, together with the General plan of Iași made by the French engineer Joseph Bayardi, creates the base for analysis, corroborated by the historical documentary sources recently edited. The general analysis we carry out considers the origins, emergence, evolution and distribution of the town quarters/cores, the streets configuration as well as the size, distribution and evolution of urban plots. The analysis uses both cartographic and documentary sources, supported by analogies with the similar situations in the rest of Moldavia, which are documented by archaeology, and in Central and Western Europe, when the analogy is appropriate.

Keywords: *pre-modern European town, pre-modern Iași, town-planning*

Although the medieval city grows from the village, becoming much more than the original village, and transcends the simple reasons of existence of the rural world, it cannot survive in the absence of the village. In a very similar logic, differing in context and premises, the city cannot be detached from the servitudes of the ground plan, which it shares with the rural settlement. With a part of the body glued to the landscape, like the village, the city as projected horizontally on a plane, devoid of the categories and quantities of the third dimension, offers the “narrator” the geometric components that acknowledge its rural origins. In terms of planimetry, the simplest post-Roman European morphological type consists of a single street, which widens on a portion (which becomes the center of the city) to provide a public space (market), both sides of the street containing plots, with the front-end not more than three times the length. The back of the plots is very often underlined by a small street or a footpath, which is, in most incipient cities, the demarcation line of the urban territory. Reduced to polygons, lines and points, the city becomes a schematic, “anatomical plate” of the urban organism.

The usage of the notion of *organic growth* is, in our opinion, unsuitable for describing the evolution of a medieval city. The physical development of the city depends on the decision of individuals or of the community, or administrative entities, to build or re-build on the territory of the city, which constructions and lands are then inserted in the urban economic growth. From this point of view, and up to this level, all the medieval cities are “planned”. If the ultimate goal of urban initiative and promotion is the production of value, medieval cities should be mere economic and financial engines of *avant-garde* capitalism. But the reality is intensely modified by the intervention of the *space as a social value*. The built environment, whose elaborated expression is the city, is the result of a mobile equilibrium between forces that aim at economic growth and forces that shape the physical space by virtue of one (or several) ideal social model(s)¹, in essence, the culturalization process of the landscape is being completed only by integrating power relations into the resulting spatial matrix.

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¹ ZUKIN 1991: 213.

The defining distinction between the medieval cities taken individually resides in the scale at which these individual or community decisions are adopted. The owner of a building plot in the market-town of Scheia, who decides to divide it to build three or four houses for sale, has another impact on the topography of the city compared to prince Miron Barnovschi, who decides to set the boundary and the building plots from the princely domain, to expand the urban territory of Iasi with the “Market (town) of Barnovschi”.²

The example of the *town hinterland* is the most eloquent when we look for the village roots of the city. An agrarian landscape, the town hinterland is the part of the city closest to the rural way of life. Consisting of pastures, hay meadows, fields and ponds, the hinterland is the almost amorphous space that constitutes the subsistence area of the city, a space given by the prince for this purpose and which is devoid of statutory relief, so that the prince has indiscriminate ownership. From a social, political, economic point of view, the hinterland is thus *de facto* assimilated to the personal property of the prince, although it is, legally, morphologically and topographically, not only the quasi-rural belt of the town, but the delimited perimeter constituting the flat base on which the townscape rises. Consequently, the hinterland of the town appears as the flat foundation, bounded by the landscape, from which, three-dimensionally, the city rises, an equally real statement, from a spatial, political, administrative, fiscal and religious point of view.

The **shape** of the city is determined by its **limits**. Its capacity of living space is given by the manner of relief and resources management. Consequently, the relief and the resources are functions that arbitrate the limits and the form of a habitat, their analysis allowing the reconstitution of the probable geometry and of the respective portion of the historical topography of the locality.

Considering the limits of a given object as the threshold that separates the generality from the territory on which the speciation applies, the limits of a town should coincide with the delimitation of the most peripheral properties having urban legal status. This simple statement raises the extremely complex problem of defining a legal status of urban property, given the absence of a documentary source of legal nature in which this special status is defined or explained as such. The first specific difference between rural and urban property is the clear spatial and personal delimitation of the latter, in the form of the *building plot*, in this case the urban lot that is in hereditary personal property. The mapping of an urban perimeter, using the criterion of the documentary mentions of the building plots, is strongly dependent on the spatial identification of the real estate transactions, an identification difficult to achieve given the precariousness of the spatial data that can be extracted from the documentary sources. The toponymy only allows spatial identification at meso-habitat level: neighborhoods, streets, districts, the degree of definition being relatively low due also to the inaccuracy of the overlap of medieval and early modern topography on the location grid offered by the basic cartographic source, Bayardi's plan of Iasi (1813).

The building plot is mentioned for the first time in Iasi in a donation of prince Petru Șchiopul for the monastery of St. Sava in Iasi, in 1583.³ The location of this donation is given by the phrase “... houses built by our lordship in the town of Iasi, and with the plot of these houses, for our praying friars to live there and to build a church ...”, which places the respective property on the current site of the church of St. Sava. Prior to this date, the criterion of the status of the property is inapplicable and, therefore, the limits of the city prior to the reign of Petru Șchiopul must be defined by other methods.

The perimeter reconstructed on the criterion of the presence of the object of law represented by the *building plot*, is a relatively vague one, but which can be more clearly defined by applying successively different criteria of specificity.

The spatiality of a habitat is determined, first of all, by the relevance of the *ground plan*, which can be regarded as a set of districts which, in turn, consist of groups of properties, of *building plots*.⁴ As a result, the morphology and geometry of the habitat (in other words the topography) are largely determined by the

² *Documente Iași I*: 437-438.

³ *Documente Iași I*: 37.

⁴ LAVEDAN, HUGUENEY 1974: 124.

historical and spatial characteristics of the building plot. In addition to its use as a reference for defining the urban perimeter, the building plot may serve, by the average dimensions documented at one time and in a certain area, to argument the period of the integration of the respective area in the urban cadaster, by extrapolating the speed of division of the initial plot function of the number of generations, i.e., the longitudinal split of the plot by each generation, by its division between heirs. Although only theoretical, this method of evaluation can be used as a comparative tool between plots, between areas of the city or between social classes of owners.

Urban concessions in the new cities of medieval Europe are relatively small. The second *locatio* of the medieval city of Lübeck, during the time of Emperor Henric the Lion (1158), consists of plots of 25×100 feet (7.5×30 m), with the short side to the street⁵, while in Freiburg, during the same period, the plots are of 50×100 feet (15×30 m).⁶

In Prussia, Silesia and Greater Poland, the plots in most of the towns set up at the beginning of the 13th century have a front of 60 feet (20 m) and a depth of 120 or 240 feet (40 or 80 m), not different from the rest of the German space.⁷ The plots in the towns founded towards the end of the century, however, decrease in size, to 50 feet (16 m) the front, with a depth varying between 150 and 200 feet (48-60 m), a reduction also underlined by the decrease of the unit of measure, from the 0.31 m foot to one of 0.28 m.⁸ In Wroclaw, between the Great Square and St. Mary Magdalene Street, the lots are 60×240 feet (20×80 m) in the frontage of the Market and 60×120 feet (20×40 m) in the frontage of the street.⁹ In Krakow, the 1257 *locatio* of the new town gives plots with fronts of 2, 3, 4 and 5 windows (6, 9, 12, 15 m respectively) with a depth of 244 feet (85.5 m).¹⁰

In twelfth-century England, the plots of new *locationes* are of varying size, but with the front/depth ratio of 1:3.¹¹ The plots with the F/D ratio of 1:6 seems to be appear earlier, while those with wider fronts (ratio 1:2) are later (13th and 14th century).¹²

At Stratford, the bishop of Worcester *locatio* of 1196 offers plots of 3.5×12 perches (18×60 m), allowing the burghers, half a century after the foundation, to divide these into two or even three longitudinal slices and rent them.¹³ The city registers show a large number of taxpayers owning a third or a half of plot. The foundation of Hendon, in 1185, consists of plots that are 8×20 perches (39.6×100.6 m)¹⁴ and are divided in half within one generation, without any further divisions. The same situation is recorded in Lichfield (1140-1150), where the founding plots have dimensions of 5×8 perches (25×40 m), the subsequent divisions resulting in plots with frontages of 2.5 perches or less (6-7 m).¹⁵

Archaeologically, it was found that the plots were delineated with the plough, as in the case of small market-towns that failed shortly after their foundation.¹⁶ Small plots with a ratio of 1:2.3 are found in Bury St-Edmunds in 1269, of 3×7 perches (15×35 m).¹⁷

An average frontage width of the building plot, calculated for the Western Europe of 12th-13th centuries, gives an estimate of 30 feet (between 8.75 and 9.25 m)¹⁸, the depth varying within a very wide range of values,

⁵ DICKINSON 1945: 91.

⁶ DICKINSON 1945: note 13.

⁷ At Sroda Śląska, the foundation of Duke Henry the Bearded (LAVEDAN, HUGUENEY 1974: 124).

⁸ LAVEDAN, HUGUENEY 1974: 125.

⁹ LAVEDAN, HUGUENEY 1974: 130.

¹⁰ LAVEDAN, HUGUENEY 1974: 130.

¹¹ PALLISER, SLATER, DENNISON 2000: 162.

¹² PALLISER, SLATER, DENNISON 2000: 169.

¹³ SLATER 1987: 195.

¹⁴ PALLISER, SLATER, DENNISON 2000: 172.

¹⁵ SLATER 1987: 200.

¹⁶ At Chipping Bassett in 1267, the *locatio* contains plots with frontages of 4 perches, bordered by furrows (PALLISER, SLATER, DENNISON 2000: 172).

¹⁷ SLATER 2000: 599.

¹⁸ BROOKS, WHITTINGTON 1977: 287.

function of the local conditions, whether of physical or administrative nature. This European “standard” is only valid in the case of cities or market-towns founded ad-hoc, walled or not, not applicable to the modular open cities or market-towns in Eastern Europe, where urban habitat is much less structured, a densely populated rural habitat of housing equivalent to the urban environment.

A graphical approximation of several probable plot frontages, for houses dated in the 16th -17th century in Tg. Trotus¹⁹, gives dimensions of 9, 12.5, 17 and 22 meters, respectively 4, 6, 8 and 10 sazhens²⁰ (fathoms). The plan was digitized and rectified, the probable routes of the streets were marked, using the distribution of the relatively contemporary houses, as well as the orientation of the buildings and of the accessways. The width of the frontage was approximated, in the four cases that offered this possibility, for the dwellings with territory delimited on both sides, up and down the “street”.

The same procedure is applied to the general plan of excavations in Baia, the sequence 1967-1976, for the houses dated in the second third of the 15th century²¹, and provides an estimate of the plot frontage for two cases of 10.5 and 14 meters (respectively 4¾ and 6½ sazhens).

In the case of the general plan of the excavations from the sequence 1977-1980, in the same medieval town, for the same time horizon²², two possible estimates offered values of the plot frontage of 14.5 and 10.7 meters, (respectively 6¾ and 5 sazhens). The concordance of the estimates between the two sites in Baia (about 700 meters from each other, in a straight line) provides support for our estimates, being close to the values of 4 and 6 sazhens found in Tg. Trotuș, aligning the structure of the foundational plots in the cities of medieval Moldavia (at least for those with a contribution from the Transylvanian population) to the European practice.

In the case of the city of Iasi, the information we have for the reconstruction of the original, medieval burgage is almost exclusively of documentary nature. The initial size of the plot is that of the princely concession at the moment of *locatio*, a quick calculation showing that, in Iași, the size of the documented urban concession should be, on average, 24×28 princely sazhens (about 50× 0 m). This average covers a large number of variations between the estimated dimensions of a concession in Târgul Vechi (Old Market) (16×30 sazhens) and those of a concession in Muntenimea Târgului Nou (28×30 sazhens). The building plots in Iasi range from 8×8 sazhens (15×15 m), evaluated at 50 ducats in 1642, on Cizmăriei street²³, to 9×15½ sazhens (20×34 m), evaluated at 300 thalers in 1641, on the Trapezan street²⁴, 17×18 sazhens (30.5×32.5 m) in the head of Ulița Mare (Grand Street), in 1706, in place of the former princely gaols²⁵, 10½×17½ sazhens (19 × 31.5 m) on the Cacainei street, in 1711²⁶, 9(7)×12¾ sazhens (16.5(12.5)×23 m) a “piece” of plot on Măjilor street, evaluated at 30 thalers in 1712²⁷, 7½×35½ sazhens (12.5×64 m) on Trapezan street, in 1713²⁸, 4×15 princely sazhens (9.5×36 m) on Russian street, in front of the Caravanserai, in 1714²⁹, and up to 35×60 princely sazhens (63×108 m), in the Muntenime quarter, between the Church of St. Prepodobna Paraschiva and the Church of St. Nicholas the Poor, in 1724³⁰.

¹⁹ ARTIMON 2004: Fig. 75.

²⁰ The princely sazhen (*stânjen domnesc*, in the documentary sources written in Romanian with cyrillic characters) is an old unit inherited from the Byzantine (βασιλική) ὀργυιά of 8 spans (σπιθαμῆ) – 1.87 m (ODB: 1532). The Moldavian sazhen was ordinary (*stânjen prost*) of 8 ordinary spans (*palme*) and princely (*domnesc*) of 8 princely spans, and had the variable equivalent value of 2.1 – 2.4 m (STOICESCU 1971: 55).

²¹ NEAMȚU, NEAMȚU, CHEPTEA 1980: Fig. 3.

²² NEAMȚU, NEAMȚU, CHEPTEA 1986: Fig. 1.

²³ *Documente Iași I*: 390.

²⁴ *Documente Iași I*: 384.

²⁵ *Documente Iași II*: 277.

²⁶ *Documente Iași II*: 369.

²⁷ *Documente Iași II*: 373.

²⁸ *Documente Iași II*: 389.

²⁹ *Documente Iași II*: 423.

³⁰ *Documente Iași II*: 554.

A series of measurements applied to a rectified copy of Bayardi's plan (1813) offers a relatively extended range of values, from 22.7 to 64 m (respectively from 10½ to 30 sazhen), consistent with both the frequent values in the plot surveys of the end of the eighteenth century as well as the Measurement of the streets of 1811. Although the dynamic variation of the size of the plot frontage is an argument for an equally accentuated dynamic of the double process of fragmentation and aggregation of the lots, resulting in the formation of the "urban estates" of the boyars and especially of the monasteries, this finding is not very useful in estimating, on an analytical basis, the size and shape of the foundational plots of the old period of the city of Iasi and, consequently, of the medieval burgh of the city, and this enterprise should be left to the extrapolation methods on graphic/geographical basis.

A statistic of urban plots in Iasi in the seventeenth and eighteenth centuries should take into account the following premises:

- The frontage of the plot varies depending on the number of partitions, i.e. the smaller, the more partitioned the initial lot.
- The above assertion is valid in the case of the house plot and not of the shop plot.
- The plot length should remain relatively constant over time, during successive partitions.
- The transverse partitioning that sometimes occurs is accompanied by the appearance of a lane on which the frontage of the "back" partition is supported.
- The subsequent transverse re-partitioning is accompanied by the emergence of an access pathway, the width of which is extracted from the length of the resulting plots.
- Aggregation of plots is a phenomenon initiated by real estate investment, the establishment of urban "large estates" and their separation in lots for lease, such as houses or shops.
- Aggregate properties may or may not overlap the boundaries of foundational plots.
- The division into lease lots is based on the same principles as the previous disaggregation, but most often it does not overlap the limits of the plots purchased in the formation of the "urban estate".

The frontage of a shop plot is relatively constant, i.e. about 2 princely sazhen (4.3 m), which can be used as a standard for evaluating the fronts of building plots or aggregate properties of unknown dimensions.³¹

We can arbitrarily separate the properties with known dimensions in several qualitative zones, depending on the distance from the geometric center of the old city (an arbitrary point located on the street of Podul Vechi (Old Bridge), at an equal distance between the church of St. Nicolae Domnesc, the church of St. Vineri and the church of Dancu):

- The area of the streets Ruseasca, St. Vineri and the Podul Vechi, between Ulița Mare (West) and the Armenian church of St. Gregory the Illuminator (East) (practically the Old Market).
- A convex belt around zone A, delimited by Bahlui (West), the street of Podul Nou (New Bridge) (North) and the Căcaina stream (East).
- The rest of the city: north of Ulița Nouă (New Street), west of the Pevețoaiei ravine, together with the floodplain of the Bahlui below the Princely Court and up to the confluence of Căcaina with the Bahlui (Țigănimea domnească, Herbinte street and the Fishermen's quarter below St. John Zlataust).

The structuring of the city is done on the skeleton established by the main arteries and streets, the secondary access roads appearing only after the clear delimitation and the fencing of the plots, elements that conclude the process of structuring the urban space. The frequency of mentioning the setting aside, from one or more surveyed plots, the 2 sazhen wide "alley" from the measured plot, or the 4 sazhen wide street "wide as for the passage of an oxcart", increases after 1680. Of course, the increased frequency of occurrences may

³¹ The most well-known measurement of the streets in Iași, the one of 1811, caused by the street lighting project, offers several sets of dimensions for shop plots. Even though the data refer to a period too late to affect our reconstruction attempt, it can be seen that the front of a shop plot has a minimum width, which is necessarily constant and is determined by the standards of good working conditions, and the commercial and physiological and circulation needs of an average person.

also be due to the number of documents preserved, which increases exponentially in proportion to the passage of time. Comparing the literal mentions with the spatial grouping of the documented sets of values gives us a general idea about the sequence and chronology of urban foundations in Iasi (see Table 1).

The distribution diagram of the dimensions of the house and shop plots known in Iasi between the middle of the seventeenth century and the middle of the eighteenth century shows a minor preponderance of the square-shaped plots (generally 8×8 princely sazhen - 17.3×17.3 m) and those of the ratio approximately 1/1.25 (13×16 princely sazhen - 28×34.5 m).

The same data, graphically analyzed by the value distribution of the of the building plot frontages, in the left, show two dominant areas, one in the range 6-8 and a second one in the range 10-16, allowing the hypothetical size of the frontage of a foundational urban plot of approx. 15 sazhen, with a later division, after one or two generations, of the majority of the initial plots, into longitudinal plots of 1/2 or 1/3 of the plot, as indicated by the moderate peak in the range 4-6.

Table 1

Târgul Vechi (Old Market)	Târgul Nou (New Market)	Târgul lui Barnovschi	Târgul cel Mare (Grand Market)	Târgul de Jos (Lower Market)	Târgul de Sus (Upper Market)
	1610				
	1623				
1644	1644				
1646					
1647					
1648					
		1649			
		1651			
1652					
1656					
1658		1658			
1661					
					1667
1668					
				1669	
			1677		
1678					
				1680	
					1681
				1687	

Analyzed graphically by the value distribution of the depths of building plots, on the left side, the extracted spatial data show two dominant areas, one in the range 10-18 and a second one in the range 26-32, allowing the hypothetical depth of a foundational urban plot of about 30 sazhen to be extrapolated, with a subsequent transversal division, after one or two generations, of the majority of the initial plots in halves, with an access pathway between 1.5 and 2.2 sazhen wide.

The same data, analyzed graphically by the building plot frontage value distribution, by streets, in sazhen, with minimum-medium-maximum, allows the adoption of a hypothesis that could attach a temporal vector to the horizontal axis of the graph. Thus, a sequencing that takes into account the minimum values of the plot frontage, by virtue of the premise that directly correlates the age with the degree of fragmentation, indicates the Podul Vechi (Old Bridge) and the Ruseasca street as the areas of the first *locatio* of the medieval city of Iasi (in accordance with the chronology offered by the churches, this area being attached to St. Vineri and St. Nicholas respectively). The same sequencing attaches the Chervăsăriei and Bărboiului streets to the initial nucleus, as expansions of the first *locatio*. In theory, the streets grouped to the right of the minimum frontage value of 7 sazhen could be part of a new *locatio*, respectively Târgul Nou (New Market) (Hagioaia, Ulița Strâmbă, Măjile, the quarters of Muntenime, Fânărie, Flour Market) and Târgul lui Barnovschi (Cizmăria and Trapezan street). If the high maximum values that appear on the left side of the graph are

documented as aggregates for the purpose of forming “large urban estates”³², the high maximum values on the right side are actually frontages of very large plots granted in the quarters in the eastern and northeastern periphery of the city.

This hierarchy becomes relevant in relation to the documentary data regarding the “center of Iasi town” in the first half of the 17th century, for the purpose of defining the geometry of the successive phases of the old city, from the “non-documentary” period.

The final statistics of the 1774 census, for the Iași town³³, provide a similar structure of the distribution of streets and quarters in different categories of “urban energy”. Of course, given the purely fiscal nature of the census, the statistics do not really reflect the important presence of the shops owned by Golia and Dancu monasteries (on Strâmbă street), Barnovschi (on the Trapezan street) and Three Hierarchs, by the Metropolitan Church and the Catholic Church (on the Grand street). This absence does not, however, significantly alter the spatial conclusion that we can draw from the numerical data statistics.

As one can see, the commercial concentration of the town overlaps the two Markets: the Old one (or the Lower one) delimited by the Russian street, the Old Bridge and the Grand street (perpendicular to the slope axis) and the New one (or the Upper one), delimited by the Hagioaiei Bridge (perpendicular to the slope axis) and the Caravanserai street (parallel with the direction of the slope). Logically, these two areas of commercial concentration should correspond to the nuclei of two successive *locationes*, the oldest being the Old Market area.

The measurement of the streets in 1811 gives us the possibility to make a comparison between the size of shop plots frontages in the commercial area of the town. Thus, for Ulița Mare (the Grand street), the highest frequency is for shops with a frontage between 2 and 3 princely sazhen (4.3 - 6.5 m), with an average of 2¾ sazhen (6 m). In the conditions in which the frontage of a shop plot is given (in a building contract concluded by Ion the master carpenter with the prefect of the catholic church in 1749), as 2 and 3 sazhen respectively³⁴, and an average width of a shop front in the 15th century Western Europe was regarded to be 4-5 m³⁵, we can conclude that the shop fronts on Ulița Mare could be used as an ad-hoc standard for the 18th century, with which we can compare the minimum and average values obtained for the other streets measured in 1811. The subsequent partitioning of these plots resulted in narrower fronts, even smaller than one sazhen. Such frontages appear in the measurement of 1811 on the Lower Market street (Old Market street)³⁶, on the Podul Vechi³⁷, Cizmăriei street³⁸ and on St. Vineri street.³⁹

The cumulative histogram of the total properties with shop plots measured in 1811 gives a relatively predictable result: out of a total of 1122 shop plots on the main streets, the vast majority have frontages in the range of 1½-2¾ sazhen (773 plots, 68.9% of the total). From this majority, the absolute peak of 219 shop plots have frontages between 1¾ and 2 sazhen (3.78 - 4.32 m). These values are due to the very large number of shops with fronts narrower than 1½ sazhen, on Ulița Târgului de Jos, Podul Vechi, Ulița Cizmăriei and Ulița Hagioaiei.

An analysis graphically represented in the form of a min-med-max chart, ordered incrementally by the value of the minimum frontage values of a shop plot (again, the measurement from 1811), shows to the left

³² Like the ones owned by Grigore Ureche mare vornic on Ulița Cizmăriei – Ulița Rusească (*Documente Iași I*: 537, 538; *Documente Iași II*: 118), by Miron Costin mare logofăt on Ulița Strâmbă (*Documente Iași II*: 66), by Hristodor mare jitnicer on the Podul Vechi – Ulița Strâmbă (*Documente Iași II*: 179), by Gheorghe mare ușer on Ulița Ciubotărească – Ulița Feredeelor (*Documente Iași I*: 486) and by Solomon Bârlădeanu on Ulița Brăhăriei – Târgul Nou (*Documente Iași I*: 448, *Documente Iași II*: 122, 343).

³³ *DocStat I*: 128-129.

³⁴ *Documente Iași IV*: 401.

³⁵ VIOLLET-LE-DUC 1868: 240, *sub voce* „boutique”.

³⁶ *DocStat I*: 281-284.

³⁷ *DocStat I*: 288-291.

³⁸ *DocStat I*: 286-288.

³⁹ *DocStat I*: 284-286.

of the graph Ulița Târgului de Jos (Rusească), Ulița Cizmăriei and Podul Vechi, a contiguous group of streets, to which is added Ulița Hagioaiei, with a high degree of fragmentation of the plot frontages, in the sense of a result from a natural economic process of optimizing the productivity of real estate property in a monetary economy (which the economy of urban modernity certainly is):

foundational lot → capitalization of the frontage → division up to the size of a shop plot → aggregation in urban large estates → fragmentation of the front in the form of uniform size shop plots for lease.

The same area is shown by the analysis of the spatial data extracted from 17th-18th century documents, as the area with maximum fragmentation of the building plot frontage.

The numerical distribution of the shop plots by streets, based on the measured length of the streets (1811 measurement) and on the theoretical number of shop plots (the length measured with respect to the average frontage width of the shop plot for the respective street), highlights again Ulița Târgului de Jos (Ruseasca) and Podul Vechi, with a number of 272, and 213 shop plots respectively. The internal ordering of the chart reflects an ad-hoc index of commercial density, which is the ratio between the actual number of shop plots listed in 1811 and the theoretical maximum number of shops with an average frontage width that would fit, for a commercial density of 100%, in the measured length of the street. It is obvious that an index of commercial density larger than one marks very high values of intensity and dynamism, while an index below 0.5 clearly marks a predominantly residential area. The ordering of the streets according to the statistical analysis of the 1811 data clearly separates the commercial streets: Podul Vechi, Ulița Rusească and Ulița Cizmăriei in the Old Market, Ulița Hagioaiei in the New Market, from the streets with reduced commercial activity: Ulița Sf. Vineri, Ulița Razului, Ulița Târgului de Sus. On the measurement/recording level of 1811, the commercial/residential structure of the city is homogeneous with the qualitative data provided by the 1774 census.

The diagrams resulting from the statistics of the spatial data provided by the 1811 measurement lead to some conclusions:

- Most of the shop plots have a frontage width of approximately 2 sazhen (4.25 m).
- The average frontage of shop plots is relatively constant in Europe during the pre-industrial period.
- The maximum concentration and the maximum degree of fragmentation coincide, in Iasi, with the location offered by the documentary data prior to the 1811 measurements.

If the degree of frontage fragmentation is directly proportional to the desirability of the space for commercial purposes, fragmentation of the plots **as a surface** is an estimative measure of the age of habitation within a given perimeter (urban or not). Both reasonings converge towards the location of a perimeter both central and old, under the conditions of relatively stable housing in intensity and quality. This convergence is located in the perimeter bounded by the points of the church of St. Nicolae Domnesc, the western end of Podul Vechi, the church of St. Sava, the monastery of Barnovschi and the Customs (the church of St. Lazarus), which centers theoretical on the church of St. Vineri and which can be assimilated to the Old Market. The attachment of the ends of Ulița Ruseasca (the later Lower Market street) and of the Grand Street to the church of St. Nicholas argues for this logical hypothesis.

If the documentary information is not sufficient for the reconstruction of the old burgh of the city, the plan analysis, corroborated with the spatial data provided by the documentary sources, analyzed statistically, allow the creation of several hypotheses of high probability. Thus, analyzing the morphology of the Old Market (in the theoretical configuration mentioned above), delimited to the west by Ulița Mare (Grand street) and to the east by the monastery Barnovschi and Ulița Cizmăriei, the three arteries parallel to the edge of the plateau, from north to south: Podul Vechi, St. Vineri + Trapezan streets and Ulița Ruseasca are separated by intervals with an average width of about 100 meters. In the map each of the three streets is centered in a strip 50 meters wide. The boundaries of the strips are approximately collinear until the intersection with the theoretical limit of the Old Market (prior to the construction of Barnovschi monastery), from where they become divergent. It is relevant that the southern boundary of Ulița Ruseasca strip broadly coincides with the lip of the plateau, the alleys that accompany Ulița Ruseasca to the south being placed immediately inside this

corridor. If we accept an average value of the plot depth in the Old Market area of approximately 50 meters (23½ sazhens), based on the plan analysis, results a relatively high difference between this value and those given by the statistics of the documentary data, which indicates a corrected average value of 30 sazhens. Far from making the mistake of modifying the data to fit the theory, we can only assume that statistics do not have enough data and that, at least for the value of the depth of the foundational plots, the obtained average should only be used as an indicative value. Moreover, this discrepancy between the result of the plan analysis and that of the documentary information statistics can be explained by the difference between the fields of application: if the documentary information comes from the period 1640-1740, the spatial information treats a perimeter that is demarcated by the churches of St. Nicolae Domnesc, St. Vineri and St. Sava, a perimeter that should be dated in theory two centuries earlier.

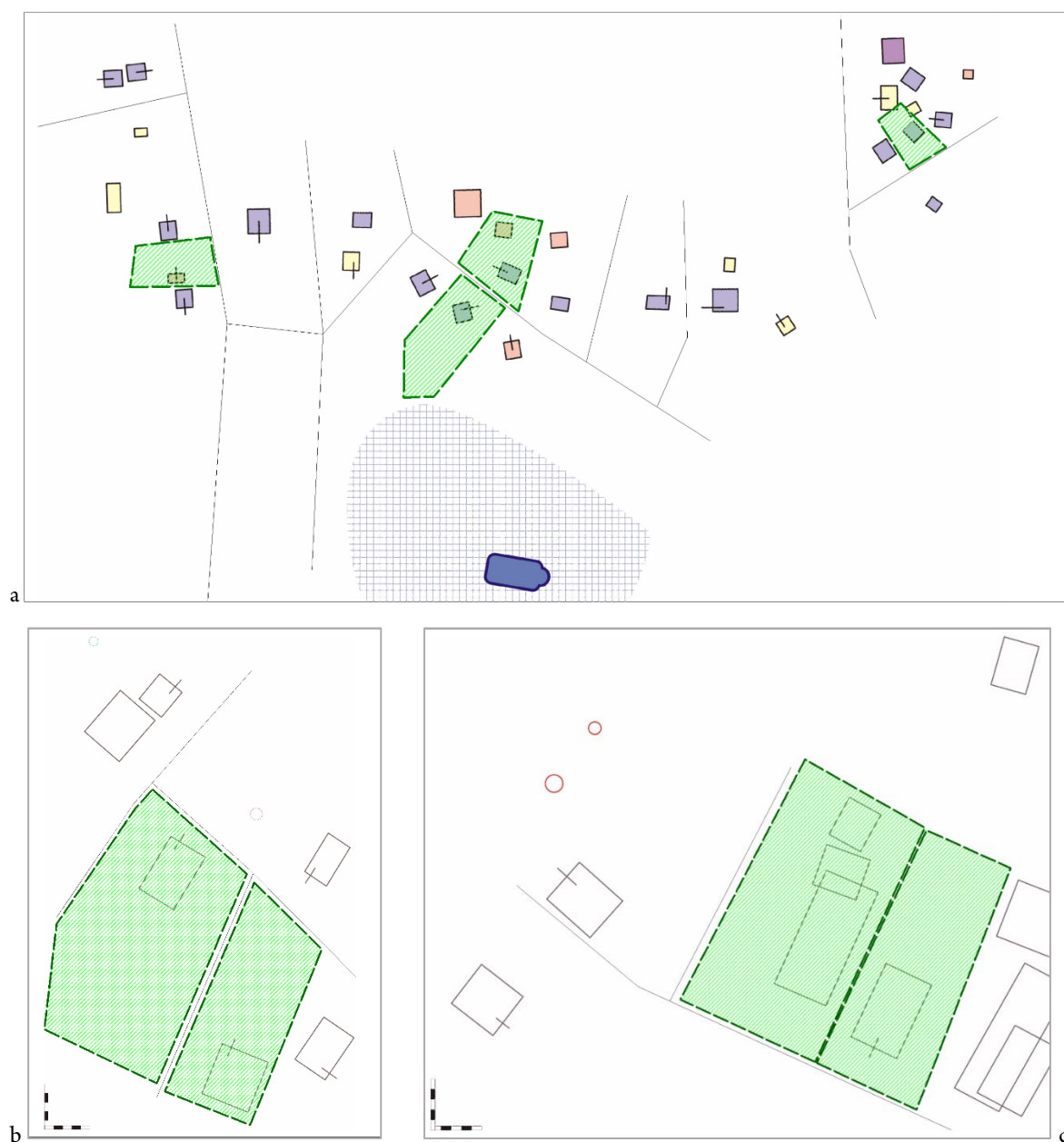
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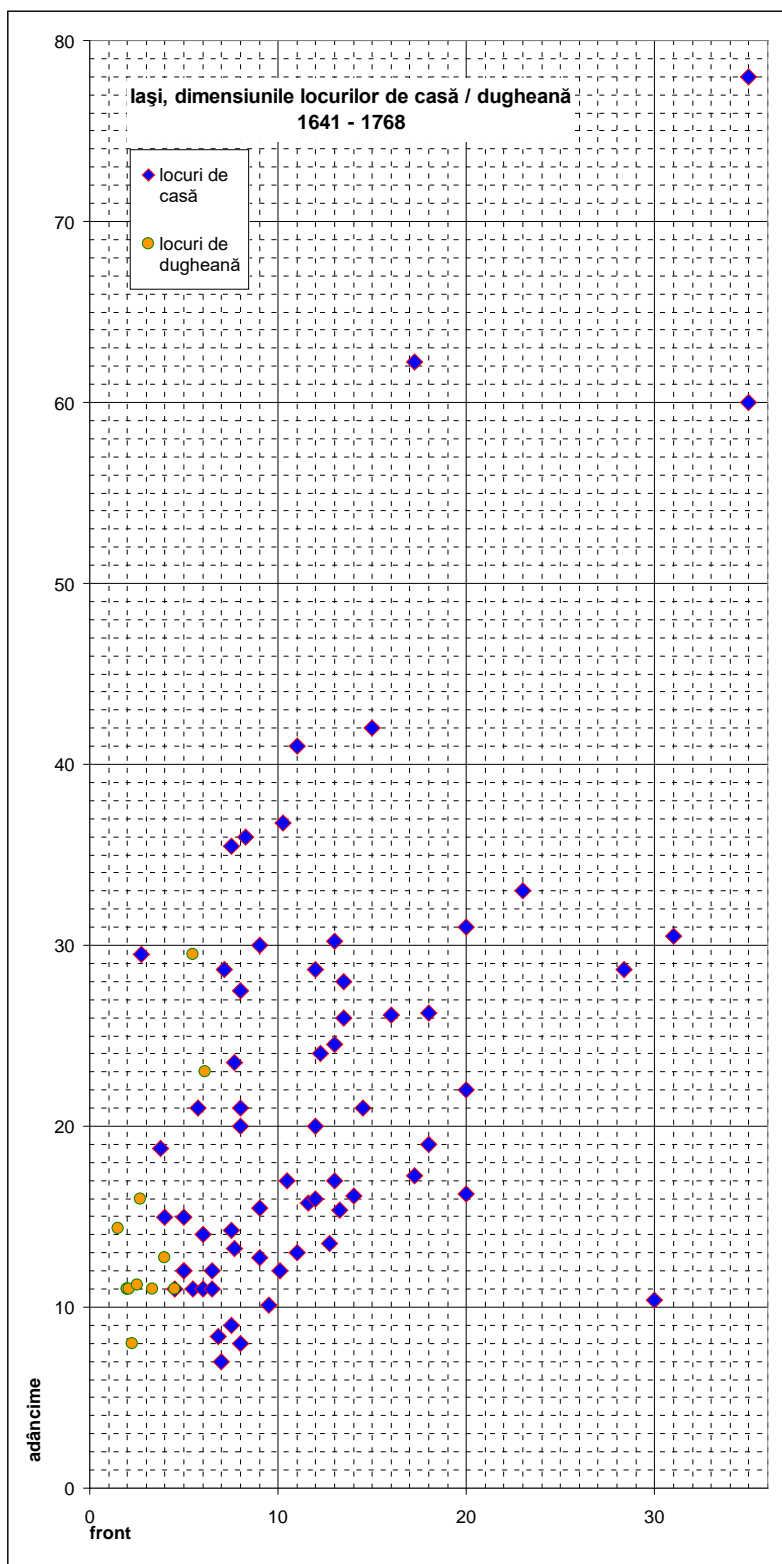
Pl. 1

Basic synthetic map for Iasi town. Source: the plan of the Russian occupation army, 1789, published by Mariana Șlapac in *Arta Urbanismului* / Scanned, rectified with Global Mapper, digitized, overlapped with the 1 m contour lines / All the churches existing between 1495-1799 are marked / The contours follow the boundaries of the blocks (*insulae*). (Russia's Military-Historical Archive in Moscow, F.846, reg.16, d.2543, f.1) (SLAPAC 2008: 79).



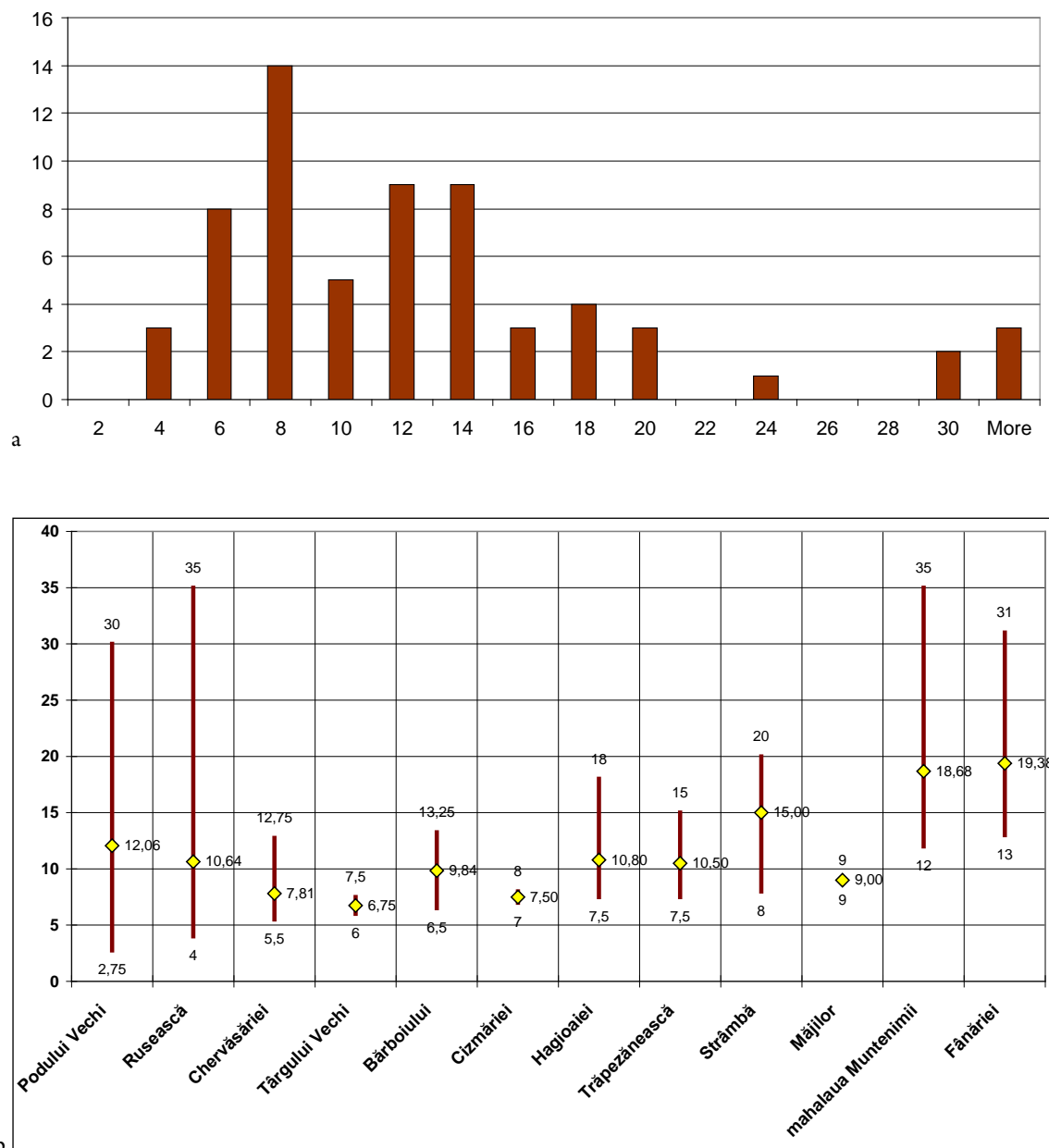
Pl. 2

- a. A graphical approximation of several probable building plot frontages, for houses dated in the 16th- 17th century from Tg. Trotus, provides dimensions of 9, 12.5, 17 and 22 meters, respectively 4, 6, 8 and 10 sazhens. The plan was digitized and rectified, probable street routes were marked, starting from the distribution of contemporary relative dwellings, orientation of the construction and accessways (after ARTIMON 2004: Fig. 75).
- b. A graphical approximation of several probable building plot frontages according to the general plan of the excavations in Baia, 1967-1976 sequence, for the dwellings of the second third of 15th century. The estimation provided a frontage estimate for two cases of 10.5 and 14 meters (respectively 4¾ and 6½ sazhens) (after NEAMȚU, NEAMȚU, CHEPTEA 1980: Fig. 3).
- c. A graphical approximation of several probable building plot frontages according to the general plan of the excavations in Baia, 1977-1980 sequence, for the dwellings of the second third of 15th century. The estimation provided a frontage estimate for two cases of 14,5 and 10,7 meters (respectively 6¾ and 5 sazhens), (after NEAMȚU, NEAMȚU, CHEPTEA 1986: Fig. 1).



Pl. 3

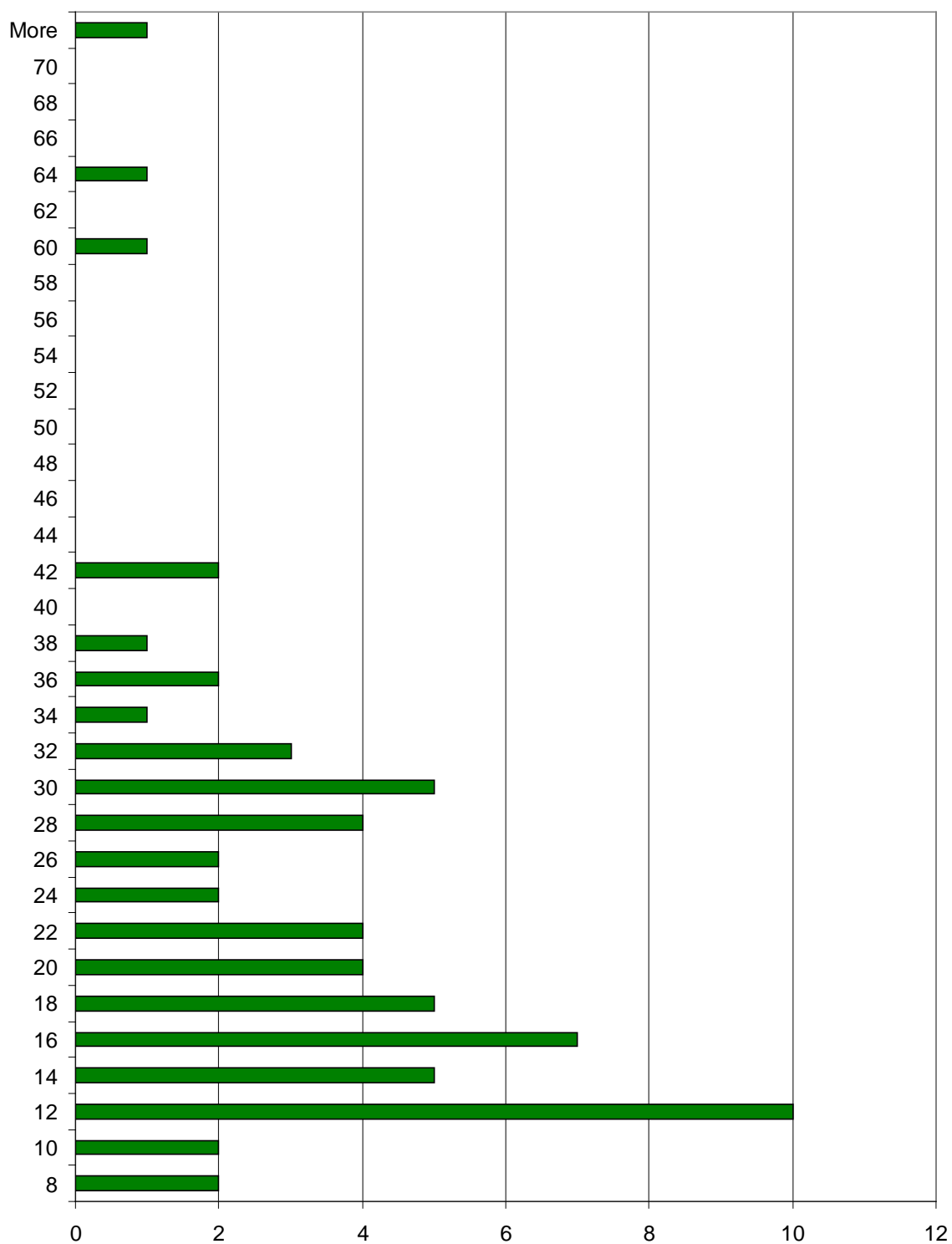
The values distribution diagram for the size of house and shop plots known in Iași between the middle of 17th century and the middle of 18th century, showing a minor preponderance of the square plots (generally 8×8 sazhen – 17.3×17.3 m) and the of the plot ratio of about 1/1.25 (13×16 sazhen - 28×34.5 m) (HRIBAN 2011: 95).



Pl. 4

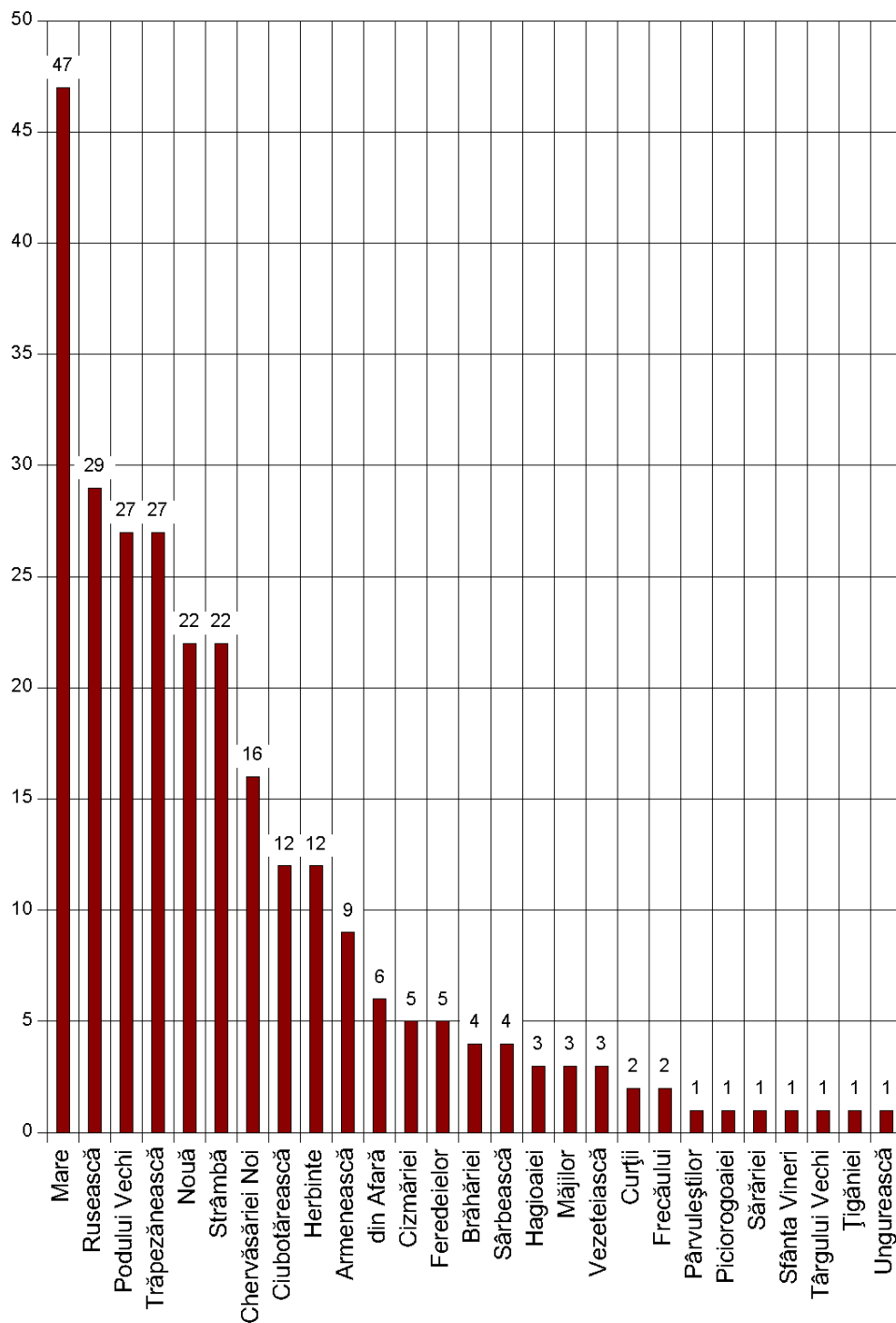
a. The frontage width values, analyzed graphically by the values distribution of the building plot frontage, it show in the left side two dominant areas, one in the range 6-8 and a second one in the range 10-16, allowing the hypothetical frontage size of a foundational urban plot of about 15 sazhen, with a further division, after one or two generations, of the majority of the initial plots, in longitudinal lots of 1/2 or 1/3 of the plot, as indicated by the moderate peak in the range 4-6 (HRIBAN 2011: 96).

b. The graphical analysis of the values distribution by streets of the building plot frontages, in sazhen, with minimum-average-maximum (HRIBAN 2011: 98).



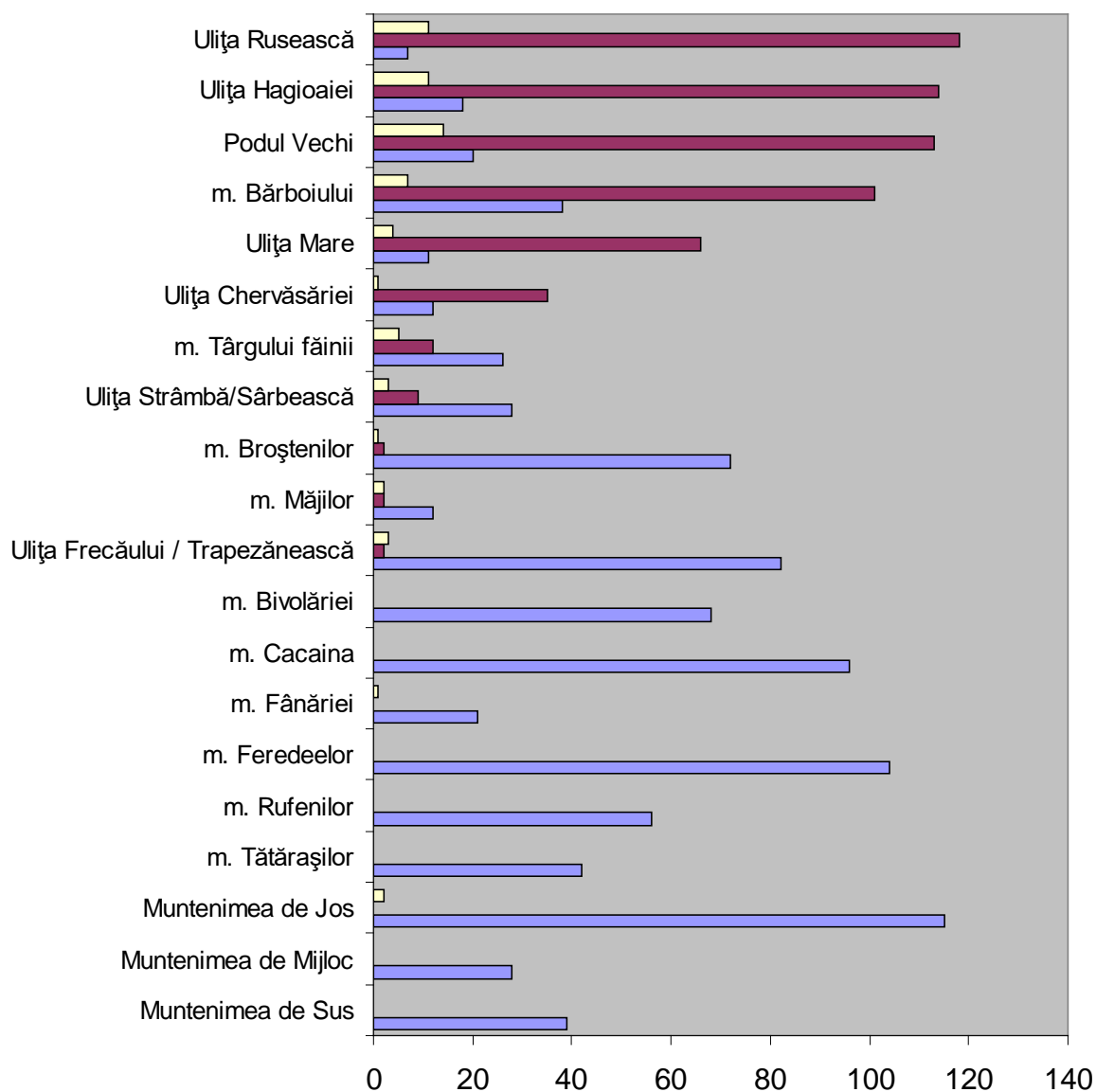
Pl. 5

Graphical analysis of the values distribution of building plot depths, in the left side, the extracted spatial data show two dominant areas, one in the range 10-18 and a second one in the range 26-32, allowing the hypothetical depth of a foundational urban plot to be around 30 sazhen, with a subsequent transversal division of the majority of the initial plots, after one or two generations, in half, with an access path between 1.5 and 2.2 sazhen wide (HRIBAN 2011: 97).



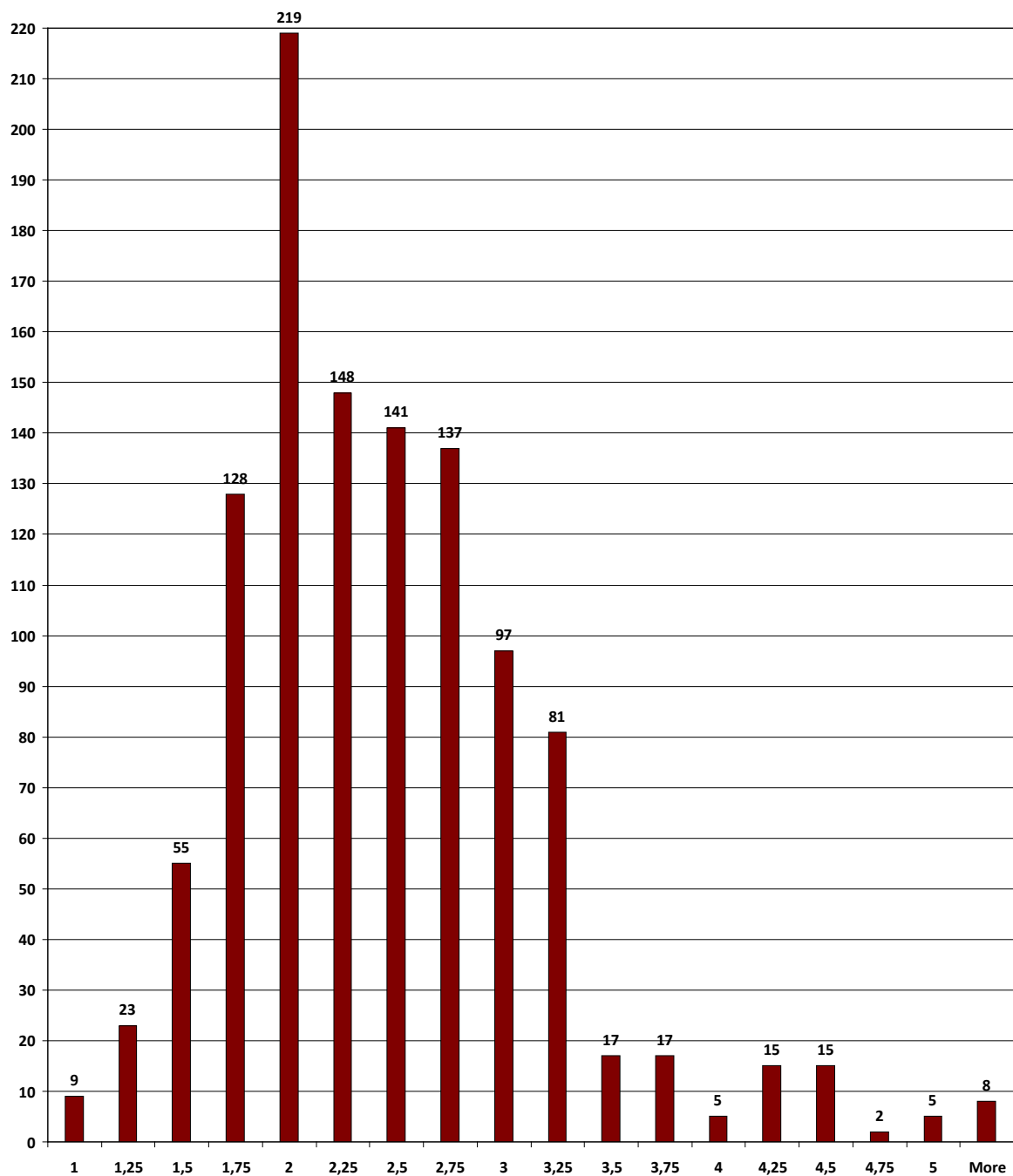
Pl. 6

The statistical correlation of the street names with the transactions involving building plots provides, for the period 1580-1700, a hierarchy that suggests a chronological order in which the streets of the medieval city of Iași appear and develop (HRIBAN 2011: 99).



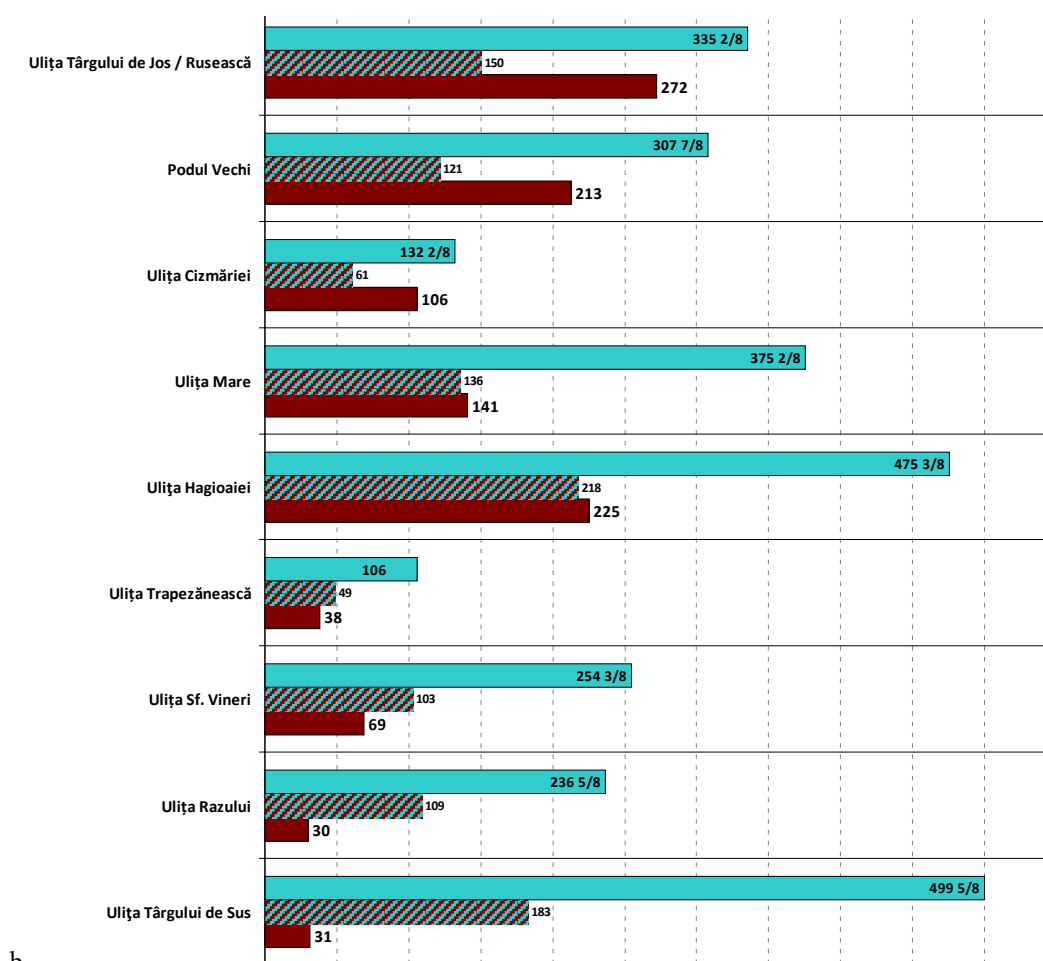
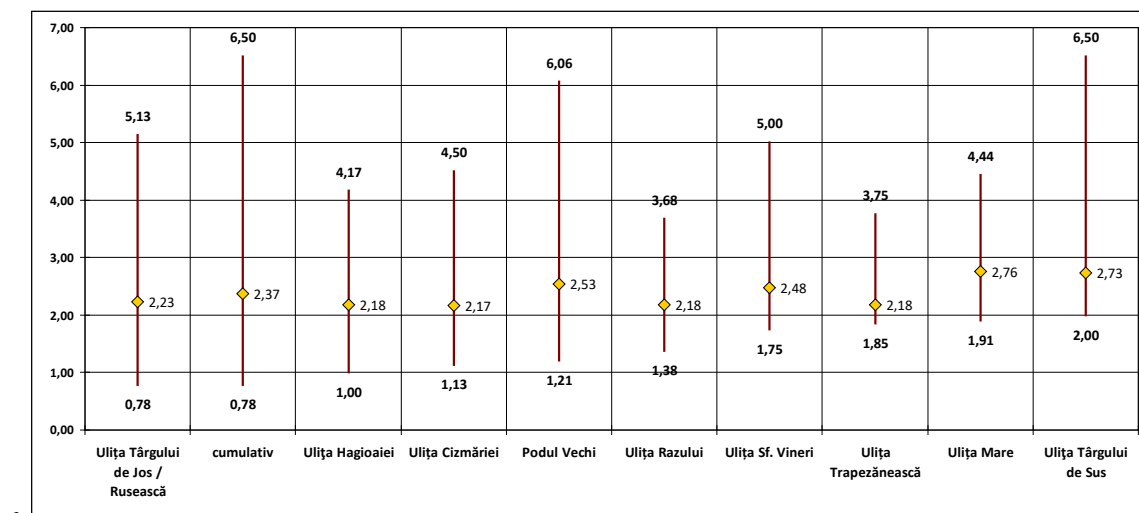
Pl. 7

The final statistics of the 1774 census, for the Iași town, provide a similar structure of the distribution of streets and quarters in different categories of “urban energy”. In light yellow, the taverns, in dark red, the shops, in blue, the houses. Of course, given the purely fiscal nature of the census, the statistics do not really reflect the important presence of the shop plots owned by the monasteries of Golia and Dancu (on Ulița Strâmbă), Barnovschi (on the Trapezan street) and Three Hierarchs, by the Metropolitan Church and by the Catholic Church (on Ulița Mare) (HRIBAN 2011: 100).



Pl. 8

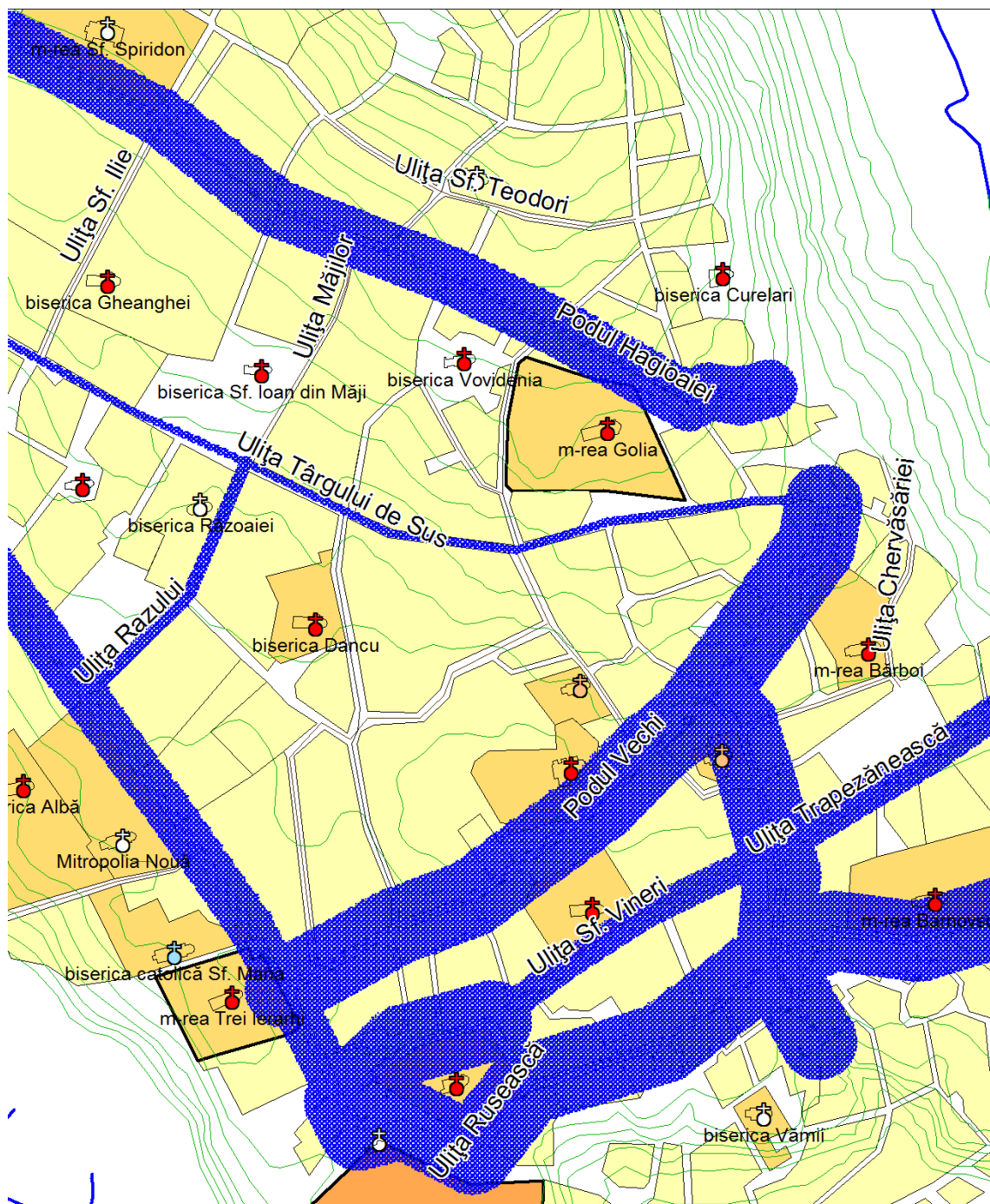
Cumulative histogram: out of a total of 1122 shop plots on the main streets, most have frontages in the range of $1\frac{1}{2}$ - $2\frac{3}{4}$ sazhens (773 plots, 68.9% of the total). Of this majority, the absolute peak of 219 shop plots have frontages between $1\frac{3}{4}$ and 2 sazhens (3.78 - 4.32 m) (HRIBAN 2011: 103).



Pl. 9

a. The graphical representation of the shop plot frontage statistics, in the form of a min-med-max diagram, ordered in ascending order by the value of the minimum size of a shop plot frontage (HRIBAN 2011: 104).

b. The numerical distribution of the shop plots by street, based on the measured length of the streets (the 1811 survey) and on the theoretical number of shop plots (the measured length relative to the average frontage width of a shop plot for the respective street). In dark red, the number of shops, in hatching, the maximum theoretical number of shops, by standard frontage width, in light blue, the total length of the street, in princely sazhen (HRIBAN 2011: 105).



Pl. 10

The important streets of the old city, analyzed graphically according to the commercial density index. The width of the buffer that marks the streets is directly proportional to the value of the commercial density index calculated statistically based on the values of the 1811 survey (HRIBAN 2011: map 6).