Lines and squares:

Towards a configurational approach to the morphology of open spaces

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Abstract

The research this paper is concerned with aims at extending the results of previous research on the relation between centrality and configuration to the specific urban element of the square. Wide open spaces, in fact, seem to escape the configurational analysis based on axial maps of the settlements, vanishing and leaving their place to the lines that connect them and the other convex spaces. Though it has been shown that the geometrical features of a settlement get internalised within the respective axial map, all the same such a view cannot actually recognise and represent two dimensional elements: in particular, axial analysis cannot account for the presence of squares, nor support any interpretation of their position and their morphology as related to their specific urban role. The research is hence a first attempt to study the specific configuration of urban squares, so as to identify the configurational conditions for their actual working as meeting and interaction spaces. With that purpose, we have taken as our case studies some Italian towns; each of them is located in Tuscany and appears characterised by the presence of a prominent main square. The study provides some remarkable evidence that allows us to extend the results of the research so far on the matter of urban centrality. Still, even more significant, such results can be applied in supporting the present planning of public open spaces, highlighting the reasons which the evident modern decline of a fundamental town planning element can be ascribed to.

1. Introduction

Undoubtedly, space syntax appreciates urban space by means of lines. Roughly speaking, in a configurational vision people comprehend urban space through visual perspectives (that is lines) and under their guidance move from place to place on paths consisting of segments (that is lines); then activities locate in order to maximise the benefits deriving from the density of movement flows along the streets (that is lines). Lines can hence be recognised as the basic element of space syntax, that identifies the framework (and the intimate essence) of the urban space in the complex of the lines which cover its extension. Most of the researches and the works which refer to space syntax actually explore the way the relations between lines are to be appreciated in order to account for the structure of urban settlement or to support town planning decision making.

This kind of approach has been proved to be highly effective in order to account for the distribution of urban activities, and tested in several case studies which had previously been exposed (Bortoli and Cutini, 2001; Cutini, 2001): urban centrality, defined in term of attractiveness, does then arise as a spatial process, a function of configurational indexes (Hillier, 1999a). Setting aside the presence of the located activities, the position of central places strongly depends on the distribution of integration value (both global and local) and then frequently shifts as a consequence of its transformations. On the basis of the configurational indexes of the lines of an axial map it is hence possible to preview (and then to control) the centrality level of each part of a settlement. Urban space, therefore, can be reduced to a complex of lines, by means of a one-dimensional view that apparently disperses with any reference to the morphology of the open space that is actually crossed by their grid.

What could be mistaken as a sort of indifference towards the morphology of settlements has been revealed to be a mere appearance (Hillier, 1999b). Morphological features are implicitly included, even if concealed, under traces, so as to say, within the results of configurational analysis: the distribution of configurational indexes in the lines of the urban grid, in fact, underlie the location of activities along the correspondent streets, and, at the same time, internalises within the structure of the grid the geometric properties of the urban space.

All the same, it cannot be denied that the system we approach by space syntax techniques hardly bears any sign of the morphology of the urban spaces which gave rise to the lines: if lines can somehow be assimilated to road paths (and then to the urban streets), on the other hand in the axial map we lose the trail of the wide open spaces: squares in axial maps simply do not appear, in configurational analysis they simply do not exist.

Whilst studying urban settlements (here I particularly refer to small and medium size towns in Italy) common experience points out a specific bidimensional element – the *piazza* – whose presence cannot but be recognised as one of the most prominent elements in the genesis and consistency of urban settlements, so as to be acknowledged in most cases as the real centre, the very heart of the town. Here the Italian term *piazza* is deliberately used, since it does not seem easy to find an appropriate translation: in Italy a *piazza* is not a mere open space, nor a pedestrian path, nor necessarily a wide or regular space, nor always a junction of streets. A *piazza* is a public open living space, the meeting and relation space par excellence, where people gather day by day, so that the term itself easily get extended to other meanings: in the Italian language, “scendere in piazza” (literally “to go down to the *piazza*”) means to revolt, “ascoltare la *piazza”* (literally “to listen to the *piazza*”) means to sound out public opinion: in current speaking the *piazza* does definitely mean the people. Although in the following the Italian term will be presented translated into *square,* we are at pains to advise the reader of its actual understood meaning.

Such an important significance is proved by the presence, within each Italian urban settlement, of a main square, generally hosting the prominent political, administrative and religious activities and the most frequented public uses and events, so that it is plainly assumed as the heart of the public life of the town. This kind of role is particularly evident in small and medium size towns, where only one place within the settlement stands out with those features.

Is it possible to identify the configurational features of a square? Or, in other words, can we find (just as we did with the most attractive streets) a configurational setting such as to assign an urban open place the functional role of a square? Definitely, can we configurationally recognize a square?

2. Case studies

On such a basis, we have assumed as our case study a set of 10 urban settlement, all located in Tuscany, in central Italy: Arezzo, Grosseto, Lucca, Massa Marittima, Montalcino, Montepulciano, Pienza, San Gimignano, Siena, Volterra. Strong differences actually distinguish those settlements, with reference to their dimensions, their morphology, their historical genesis, their importance. However, one key element also joins all them: every one is characterised by the presence of a remarkable *piazza*, which in most cases is well known all over the world for its architectural and morphological pregnancy and anyhow in all cases is locally recognized as the main public place, the heart of the public life of the settlement, and the location of the prominent administrative, political and religious activities.

A further peculiarity, highly useful for our purposes, is the availability of the Catasto Leopoldino, a cadastral registry drawn up in 1824-25 by the Lorraine grand duke, 35 years before the union of Italy. The maps of the Catasto Leopoldino cover the whole Tuscan territory (urban settlements and country) at a 1:1250 scale, providing a fluid and reliable graphic representation of the territorial situation before the transformations which occurred in XIX and XX centuries. In the selected case studies the consistency of the ancient urban core in 1825 has not been affected by significant transformations since their genesis; other Tuscan urban cases, even famous, cannot be said to be so similar to their original conception. The available maps allow us to appreciate the original consistency of the settlements and to evaluate the actual correspondence between the intimate structure of the urban space and its configuration.

The first operation on this group of settlements was the analysis of their configuration, worked out by the construction of their respective axial maps and their subsequent processing by Axman software.

For each of the ten selected case studies, we have analysed both the consistency between the 1825 map and the present one, which in all the studied cases corresponds to a much wider axial map. In figures 1 and 2, it is possible to appreciate the difference of the axial maps between Grosseto at the two dates of 1825 and 2002 and the different distribution of global integration value in the respective lines.

In each case, we have hence obtained a couple of complete sets of configurational indexes (an ancient one and a current one) so as to compare their different distribution all over the grid and, above all, the different distribution of the levels of centrality that the integration value allows us to draw out.

In two of the ten cases (that is Arezzo and Grosseto), we can easily observe a remarkable shifting of centrality from the inner lines of the ancient urban core towards new development areas, located outside the town walls. In the other eight settlements (that is Lucca, Massa Marittima, Montalcino, Montepulciano, Pienza, S. Gimignano, Siena and Volterra) urban centrality (or, roughly speaking, the position of integration core, that stands as its main indicator) firmly remains tied up to the lines of the original nucleus, within the ancient core, despite the deep and extended transformations the respective urban grid had suffered during the last 180 years, mainly outside the town walls.

Setting aside this significant difference, a further assertion arises from the comparison between the distribution of configurational indexes (here I particularly refer to the global integration index) and the presence of activities along the lines. More in detail, we have studied the correlation between the integration value of the lines and the density of urban activities resulting from direct observation on

Figure 1: The distribution of global integration value in the lines of the axial map of Grosseto in 1825)

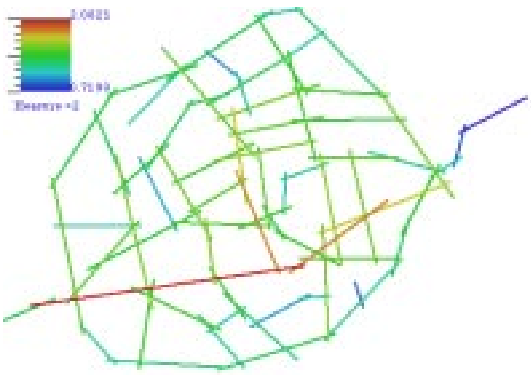
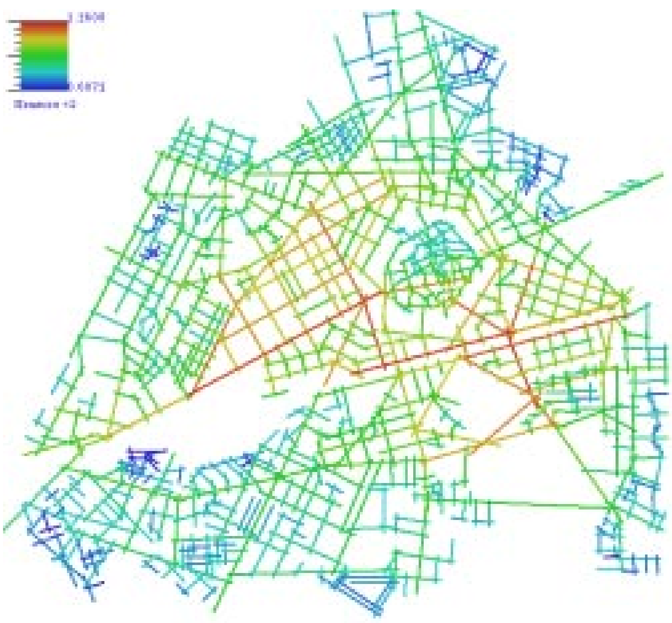


Figure 2: The distribution of global integration value in the lines of the axial map of Grosseto in 2002)



the correspondent paths. While referring only to the lines lying within the perimeter of the 1825 settlement (that is, in all cases, the respective town walls), we can instead notice a remarkable correlation between integration and activities both in the 1825 axial map and in the 2002 one, in all the eight settlement where centrality remains in the ancient core; in the other two cases, such a correlation slightly declines, while the density of activities still remains strongly correlated with the local (radius 3) integration index.

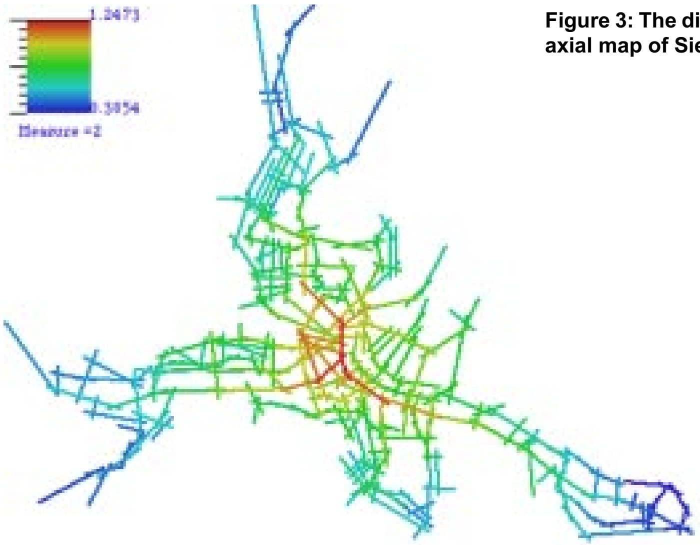


Figure 3: The distribution of global integration value in the lines of the axial map of Siena in 1825

In order to disperse with the effects of incidental factors on the location of activities, and then to minimise the (sometimes ad hoc) contribution of single lines, the regression analysis has been carried out disaggregating the whole number of the lines of each axial map, listed according to their integration value, in twelve groups. This degree of subdivision was selected after a few tests, as it appears the most suitable both to assure a narrow reproduction of the correlation, clearly highlighting its actual form, and to preserve it from the influence of incidental elements. In every settlement, each group consists of n = k/12 lines (k is obviously the number of the lines of the whole axial map) and provides a couple of variables: the mean value of global integration and the mean density of activities (number of activities per 25 meters) along the correspondent streets. In figure 4 it is possible to appreciate the strong correlation resulting from the regression analysis in the cases of Siena and Volterra.

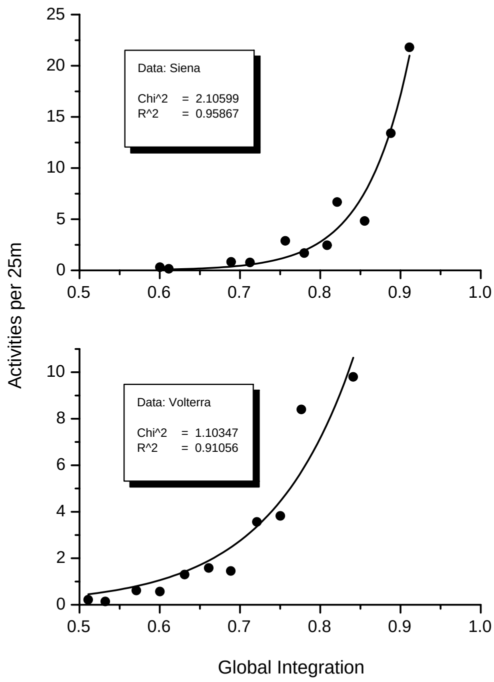


Figure 4: Global integration versus activities in the historic centres of Siena (above) and Volterra – group correlation

The resulting high correlation values, which are summarised in the table below, show in each case the existence of such an outstanding correlation.

CENTRE	NUMBER OF LINES of the present axial map	NUMBER OF LINES within the historical centr	R^2 Global integration versus density of activities
Arezzo	1212	166	0,483 (0,712 versus local integration)
Grosseto	876	81	0,563 (0,875 versus local integration)
Lucca	1440	302	0.871
Massa Marittima	168	100	0,925
Montalcino	177	130	0,867
Montepulciano	241	164	0,767
Pienza	72	54	0,812
San Gimignano	211	160	0,785
Siena	910	295	0,959
Volterra	365	145	0.911

A result like that seems to indicate that, though the attractiveness of the whole historic centre in some cases weakens for the benefit of more accessible external areas, nevertheless within its boundaries the hierarchy of the streets, with reference to their attractiveness towards activities, remains substantially unchanged with respect to their original consistency.

All that is confirmed by the evidence of the persistent importance of the lines of the original integration core: in particular, it is possible and easy to recognise a "main street" (roughly correspondent to the most integrated line), that even as centuries go by still remains the most attractive street, the most crowded and therefore the most filled up with commercial activities.

As it often appears, the weakening of attractiveness of the lines of the historical centre causes the shifting of several activities towards peripheral areas and the consequent emptying of the urban core. Yet, in our studied cases both the historical importance and the acknowledged architectural pregnancy of the inner area does anyhow attract visitors, and their presence (that is to say their movement) is likely to concur in determining the persistent attractiveness of the ancient integration core and to allow the survival of the located activities.

But what can be said about the wide open spaces, the squares, which are invisible for the methods of configurational analysis and, on the other hand, in some cases lack of the positional desirability that causes the gathering of the commercial activities along the surrounding streets?

As we have already noticed, those spaces appear as the elective location for the most prominent public functions (political, administrative, religious, recreational). Does this undoubted actual role match with any particular configurational aspect of those spaces? Or, in other words, do these singular urban elements (not so attractive towards commercial activities, but still a typical and constant location for public utilities) have any specific spatial features, which can be revealed by configurational analysis?

Focusing on our selected case studies, we can recognise, within each of them, several wide spaces. Still, in all the cases one of those spaces can be easily identified as the most prominent, the main square, so as to be considered, either by the resident population and by visitors, the heart of the public life of the settlement.

All those spaces can surely be assumed as highly interesting and representative from several points of view. Some of them (in particular, Piazza del Campo in Siena, Piazza Grande in Arezzo, Piazza Pio II in Pienza, Piazza dei Priori in Volterra) are even well known all over the world as outstanding urban elements.

From an architectural point of view, the morphology of the selected spaces is quite heterogeneous: in some of them (in Arezzo, Grosseto and Montepulciano) we find an exact rectangular square, while in others (Montalcino and Siena, for instance) the space is geometrically highly irregular; in others (Lucca and Pienza), we recognise a perfectly geometric shape: a trapezium at Pienza and an ellipse in the examined square of Lucca, that results from building over the remains of an ancient Roman amphitheatre.

From now on, we shall regard the primary importance of these squares (each of them with respect to its own settlement) as an invariant, even if such an assumption depends on common experience and plain evidence and cannot be numerically measured (for instance, in terms of density of activities, of shops, etc.).

On such a basis, our research aims at finding out and highlighting the configurational elements the squares of the ten selected cases have in common, setting aside the remarkable functional, historical and architectural differences which undoubtedly distinguish them. Those features, if actually existing and identified, will be acknowledged as the configurational pattern of the square, or, what is even more significant, the spatial condition for its actual working.

As mentioned above, the presence of a square in an axial map is not represented by a single specific element, but generally emerges from a complex of lines converging at that space. The distribution of the integration values coming out from the configurational analysis of the axial maps of the ten selected settlements provides some singular constant results: in all the studied urban cases the lines converging at the square are mostly result included in the integration core of the settlement; moreover, among the lines converging at the square, in all cases the most integrated line is no more than one step deep with respect to the prime global integrator, that is to say, at least one line converging at the square is directly connected with it.

No kind of relation has been found between the number of lines converging at a square (and hence their respective connectivity value) and the expected prominence of the space: obviously we can in fact observe several points of intersection which do not actually correspond to a square (nor even to a simply wide space).

In order to establish an actual correspondence between the configuration of the settlement and the morphology of its open spaces, we then proceeded to analyse the selected case studies by mean of the methods of visibility graph analysis. In other words, the public space of each settlement has been reduced into a spatial system not by the introduction of the lines connecting its convex spaces, but by its filling up with a uniform grid of points, and then studying the visual relations connecting each of them with all the others (Turner et al., 2001). The mesh of the grid has been dimensioned so that each single path of the settlement would be covered with at least a row of vertices, fitting as narrow as possible the articulation of the urban space; therefore, on the basis of the selected cases we've chosen a grid with a 1.00 meter mesh: every street, even the narrowest of the most restricted historic centre gets hence represented by a set of vertices, as well as every other significant urban element can be said to be sufficiently reproduced.

On this regard, it is worth noticing that processing a visibility graph (by Depthmap software) is obviously far heavier than working on an axial map (by Axman software), because it involves the processing of a much larger number of elements: the visibility graph of the small settlement of Siena in 1825, for instance, consists of around 16,000 vertices, which composes an enormous system when compared with the 295 lines of the corresponding axial map.

Obviously, the fundamental elements resulting from the previous configurational analysis remain substantially unchanged: still the integration core of each settlement remains clearly hinged around the street which was previously identified as its main integrator. All the same, this kind of analysis allows a more fluid extension of the results so far: it is possible to appreciate the distribution of integration value all over the extension of all the convex spaces, and not only with reference to the line which connect them to each other (Batty, 2001). It is worth specifying that the convex space is here assumed as the composition element of the urban grid, since it is the only areal element that configurational analysis does actually provide. The convex space does hence emerge, as composed of a set of vertices, characterised by their own configurational values. It will then be possible to appreciate the configurational value of the convex space, as the mean value of the configuration of its inner points. Even the square, therefore, seen as a particularly "fat" convex space, can be analysed from a configurational point of view.

On such basis, which elements can we recognize as common to all the main squares of the selected settlements? Certainly, the high value of integration (that is to say, numerically, the low value of mean depth): as we noticed before, those spaces are constantly included within their respective integration core. Such a result is particularly clear in the cases of Grosseto, Massa Marittima, Pienza, San Gimignano, Siena and Volterra, but also in the remaining ones the main square can easily be recognised in the immediate proximity of the prime axial integrator. In order to compare such results and to appreciate this substantial analogy, here we present in figures 5, 6, 7 and 8 the distribution of the integration in the vertices of the visibility graphs of four of the ten settlements..

Figure 5: The distribution of global integration value in the vertices of the visibility graph of Massa Marittima in 1825)

Figure 6: The distribution of global integration value in the vertices of the visibility graph of San Gimignano in 1825

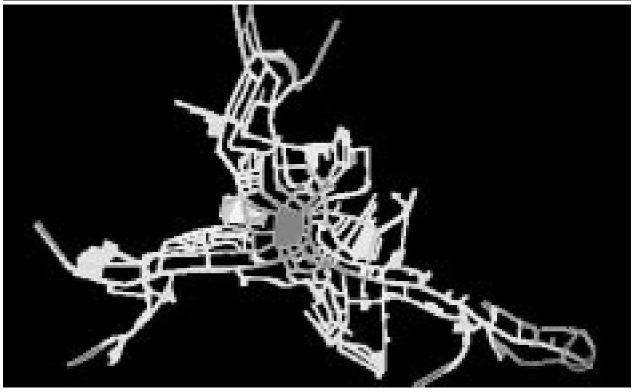


Figure 7: The distribution of global integration value in the vertices of the visibility graph of Siena in 1825

Figure 8: The distribution of global integration value in the vertices of the visibility graph of Volterra in 1825

Moreover, two local configurational variables seem to mark out our squares, so as to let them arise as outstanding spaces, fully marked in red, in their respective chromatic representation: neighbourhood size and clustering coefficient. We have therefore identified a global configurational index and two local ones; a high value of each of those three parameter seems hence to be a necessary condition for a convex space to work as a square; only the co-presence in the top rating of all them seems then to be a sufficient condition for such a role.

Such evidence is worth expounding. First, the global integration value: undoubtedly a square is a place where people do meet and gather, wherever they come from all over the urban area. The proximity to the most crowded paths will hence be an obvious fundamental condition, in order to intercept their flows. On the other hand, it has already been proved that, under certain circumstances, the distribution of configurational indexes (and of integration, in particular) clearly approximates the distribution of movement, and that such a relation seems to follow an exponential trend, due to the multiplier effect the activities appear to play: they locate in order to maximise the benefit of the existing movement, and their location produces additional movement, attracting other activities and generating further movement (Hillier et al., 1993; Cutini, 1999a; Cutini, 1999b; Desyllas and Duxbury, 2001). The position of a wide space in a well integrated area will hence increase the chances of (even accidental) encounters. A remarkable integration value, and even more the inclusion within the integration core, will then assure the square the nearness to the strongest movement flows, vital nourishment for its specific function.

As to the neighbourhood size, that is the number of directly visible vertices from the considered location (or, if the distribution of vertices is uniform, the physical size of its isovist) (Turner, 2001), the bigger the result of mean value for the points of a convex space, the more effective its working as a meeting and relational space seems to be. In such a view, a square does hence arise as a set (as large as possible) of points in direct visual connection with as many other points as possible.

A remarkably high value of the clustering coefficient is the third qualification. The clustering coefficient is defined as the mean area of intersection between the generating isovist and all the isovists visible from it, as a proportion of the area of the generating isovists itself (Turner et al., 2001); in spatial terms, this index parameterises the convexity of the isovists at a considered location (Watts, 1999), and its value varies from 0 (in case of extremely "spiky" isovists) to 1 (in case of perfectly convex isovists). A convex space has high mean values for the clustering coefficient when in a great number of its locations all the visible points are in visual connection with each other. If in this expression we substitute the term point with the term people (that is to say we consider each point to be a potential location for people), the clustering coefficient easily appears as a spatial indicator of the potential perceptibility of co-presence and "therefore the potential to form groups or to interact" (Turner et al., 2001): in other words, the vocation for working as a square.

Another significant correspondence between the specific spatial function of a square and the configurational pattern that this research seems to certify concerns morphological perception. One of the fundamental features of each square is its spatial unity, that allows us to identify it (whatever articulation it actually has, even if geometrically irregular) as a single urban element. It seems that we may give, on this basis, a further interpretation of the high mean value of clustering coefficient the selected squares achieve. A high value of clustering coefficient, in fact, means, for a considered location, that its isovist approximates a convex space: moving anywhere from it will not hence involve a significant visual change (Turner et al., 2001), so that that space will be likely to be perceived as a unitary entity.

The observed correspondence of the prominence of the squares with the three configurational indexes hence appears anything but occasional or incidental: it goes to the heart of the working of the square, as it is generally understood.

On such a basis, we could think of joining together the three highlighted indexes so as to obtain a single parameter, an indicator of the potential of a convex space to be successfully used as a meeting, gathering and interacting open space, that is to say a square. At first, we can assume this parameter (shall we call it interaction index?), as resulting from the simple expression: $K = N\ C / M_d$ where N, C and M_d are the mean values of, respectively, the neighbourhood size, the clustering coefficient and the mean depth of the vertices included within the considered convex space.

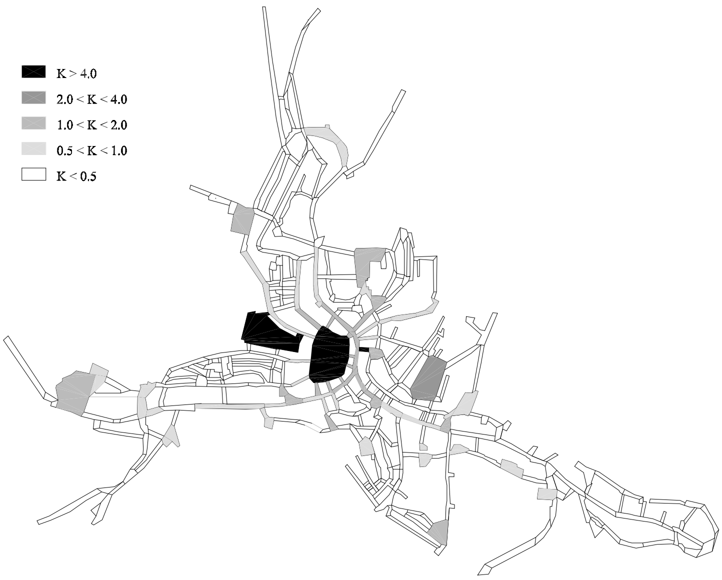
The usual opportunity of normalising that coefficient, in order to make it indifferent with respect to the dimensions of the graph and to compare the situation of different settlements (or of the same settlement, when its space has been covered with differently meshed grids), induces as to substitute the N and M_d indexes with those resulting from expressions such as the following ones: $S = N / k$

$I = 2\ (M_d - 1) / (k-2)$ k being the number of the vertices of the whole visibility graph. Of course, the limit value 1 of normalised neighbourhood size will belong to a hypothetical convex space that coincides with the whole extension of the urban grid, while the limit value 0 of integration will be due to spaces whose points are in visual connection with all the other points of the graph. We hence obtain the aimed index, as resulting from an expression of this kind: $K = 100\ S\ C\ (1-I)a$ Since I varies from 0 to 1, the term (1 – I), substitutes it as a factor of K in order to make it increase with the increasing of visual integration: the more visually integrated a vertex actually is, the higher the term (1 – I), and then K, will be.

In order to make each of the factors concur with a similar weight to determine K, it is necessary to raisethe term (1 – I) to the a^{th} power so as to increase the difference between its value in the most small range (0.86-0.92) in the case of Siena, for instance). The value a = 2 was then empirically proposed as providing, in the studied cases, the expected result. The factor 100 is then added to numerically increase the K values, otherwise generally values far lower than 0.1. Therefore the value of the K index will obviously vary from 0 to 100 according to the increasing potential of the convex space to favour the gathering and the interaction. Of course, a convex space actually coinciding with the whole urban space (a “one square town”) will achieve the full 100.00 value.

The implementation of all those variables into a GIS is immediate and seems highly useful: we can easily identify each convex space as a polygonal element and assign to it the three above mentioned mean indexes, so as to obtain the distribution of the proposed K index resulting from their combination. On this basis, the distribution of this parameter in the spaces of the convex map of a settlement clearly emerges from a graphic chromatic representation, with the colours of the convex spaces varying from cold tones (violet, blue) up to warm ones (orange, red) with the increasing of the K coefficient. And, of course, in our selected cases this representation will strongly point out in full red the ten squares we assumed as our main subject, clearly standing out against the surrounding areas. In figure 9, we show for instance the distribution of the K index in the case of the historic centre of Siena (at 1825), where Piazza del Campo stands out as by far the most prominent square of the settlement. Obviously, in the presented grey tones representation, colours vary from white to black according to the increasing value of K.

Figure 9. The distribution of K value in the convex spaces of the convex map of Siena in 1825



Of course, we ought to bear in mind that such a result is obtained on the mere basis of the grid configuration, setting aside the presence and the position of the located activities, and in particular those of the monopolistic ones. These, as not constrained by the distribution of configurational indexes, can be located without any reference to the configuration of the urban grid. Monopolistic activities then typically work as non-attracted attractors, and therefore are likely to deform the configurational distribution of attractiveness and hence even to modify the consequent positional convenience of the square.

3. Conclusions

The results so far can be briefly summarised in the following brief inferences.

- As a matter of fact a strong correlation does constantly appear between configurational indexes (in particular, the global integration value) and density of activities.
- The form of this correlation is, with no exception, plainly exponential.
- As a consequence of urban transformations, also the distribution of attractiveness shifts, with the frequent weakening of the original central core and the development of external areas.

- In the studied cases the permanence of the previous centrality is assured to the original main integrators by the presence of monopolistic factors (in particular, the historical and architectural interest towards the ancient urban core).
- The outcome of visibility graph analysis substantially confirms the results of axial analysis, providing mean depth values that in each case nearly approximate the previously obtained values of axial integration.
- In all the selected cases, the co-presence of high values of neighbourhood size, high values of clustering coefficient and low values of mean depth characterise the point of convex spaces that actually correspond to the settlement main square.
- Other wide open spaces, whose inner points on the contrary lack one (or more) of those parameters, actually correspond to squares of far lower importance as gathering and interaction urban spaces.

These results appear worth discussing. No amazement arises from the outcome of axial analysis, that confirms and even reinforces the results of previous research. Further confirmations come out from visibility graph analysis, whose results narrowly approximate those of the axial one, confirming the location of the main integrators, that in our case studies actually corresponds to the most attractive streets.

Some new evidence regarding the main squares of the settlements, concerned their characterisation with high values of neighbourhood size, clustering coefficient and integration, so as to suggest the introduction of a new parameter combining all them. Based on the distribution of that index, it will be possible to work out a sort of taxonomy of the convex spaces of an urban settlement with regard to their predictable potential as urban squares.

The proposed index combines a non-local index, which gives information about the position of the element with respect to the whole urban space, and two local parameters, which contain some information about the local articulation of space. Integration indicates where a space has to be located (or if a space is located) in order to intercept the most crowded movement flows, so as to favour meeting and encounter; neighbourhood size and clustering coefficient – in a way - tell us about its the local geometry.

A further consideration arises from the observation of large number of recently built urban squares, that, though designed so as to work as relational and interactional spaces, never actually achieved that role. In this regard, the results so far allow to explain that widespread failure results from a disregard of the configurational (both global and local) properties such a role actually requires: too fragmentary their space, which is too indefinite at their perimeter and too far and segregated from the main movement flows in term of their position. Summing up, the local properties of such places are not coherent with their functional role, nor, chiefly, coherently related with the global properties of the whole grid.

If a the public space of an urban settlement has impressively been defined as "a mechanism for generating contact" (Hillier, 1996), then in such a mechanism a square represents the place where the contact becomes encounter, meeting, interaction; that is to say, it is the natural harbour where people, moving through the grid of the urban paths "passing each other like ships in the night" (Hillier, 1996), finally pause and gather. Certainly the proposed parameter can be improved and refined, so as to make it as appropriate as possible to describe, to evaluate, to verify, and to manage such an aptitude in a more and more accurate way; nonetheless, the functional role it seems to attest, and mainly the correspondence of that role with the configuration of urban spaces appears as a remarkable conceptual result, ready for use in supporting town planning and promising further developments.

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