influence that natural movement – the tendency of the structure of the grid itself to be the main influence on the pattern of movement – has on the evolution of the urban pattern and its distribution of land uses. To test this properly we must translate back from graphics to numbers. Figure 28.6a selects a small area within the system, more or less coterminous with the named area of Barnsbury, and assigns precise 'integration values' to each line. Figure 28.6b then indexes observed movement rates of adult pedestrians on each line segment throughout the working day. Figure 28.6c is a scattergram plotting pedestrian movement rates against radius-3 integration. The R-squared value shows that about three-quarters of the differences between line segments in their movement rates are due to their configurational position in the larger-scale grid. Note, by the way, that we are still calculating integration with respect to a much larger system than that shown in Fig. 28.6a. Movement is not only largely determined by configuration, but also by configuration on a fairly large scale.

Readers can consult published texts for detailed results, but similar results have been achieved across a great range of studies, and even better (though slightly different) results have been found from studies relating vehicular movement to spatial configuration.[8] These studies show that the distribution of pedestrian movement in the urban grid is to a considerable extent determined by spatial configuration, with the actual levels also strongly influenced by area building densities (though the effects of building density are not in general found at the level of the individual line), while vehicular movement is strongly influenced by spatial integration in association with net road width, that is the width of the road less the permitted car parking. In the case of vehicular movement the second variable, net road width, does influence movement on a line-by-line basis and plays a more significant part in the larger scale road network.[9]

We may investigate another key component of successful urbanism, the informal use of open spaces for stopping and taking pleasure, by using a similar technique. Figure 28.7 is a 'convex isovist' representation of the City of London's few, informal open spaces, which vary remarkably in their degree of informal use. Attempts to account for the pattern of well and poorly used spaces in the City in terms of commonly canvassed explanations have been singularly unsuccessful. For example, some spaces hemmed in by traffic are several times better used than adjacent spaces without traffic, exposed spaces often perform better than spaces with good enclosure, some of the most successful spaces are in the shadow of tall buildings, and so on. The only variable that correlates consistently with the degree of use of observed informal spaces is, in fact, a measure of the 'Roman property', noted in Fig. 28.2c, which we call the 'strategic value' of the isovist. This is calculated by summing the integration values of all the lines which pass through the body of the space (as opposed to skirting its edges). This makes intuitive sense. The primary activity of those who stop to sit in urban spaces seems to be to watch others pass by. For this, strategic spaces with areas close to, but not actually lying on, the main lines of movement are optimal. The main fault in most of the modern open spaces we have observed (with the most notable exception of Broadgate, which has the most successful spaces in the City of London) is that the designers have given too much attention to local enclosure of the space, and too little to strategic visual fields – yet another instance of an overly localized view of space. The general rule seems to be that a space must not be too enclosed for its size. The visibility field must be scaled up in proportion to the scale of the space.

Once we have the trick of correlating numbers indexing observed function with numbers indexing spatial patterns we can extend it to anything that can be represented as a number and located in space. When we do so, it turns out that everything seems to relate to space, and therefore to movement in some way: retail, building densities, indeed most types of land use seem to have some spatial logic which can be expressed as a statistical relation between spatial and function measures.

Now let us look at other aspects of how things are distributed in the urban grid. Take, for example,

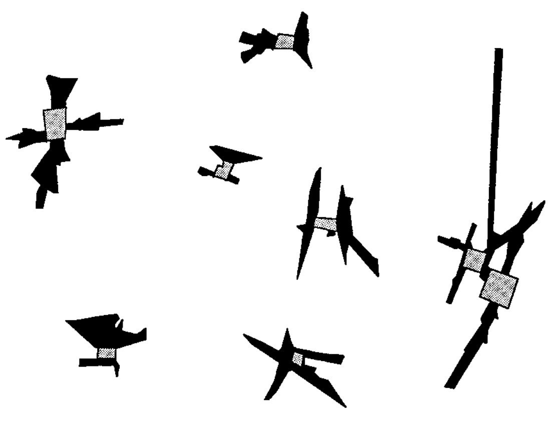

FIGURE 28.7
Convex isovists from eight City of London squares.