

# 125 URBAN DESIGN

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**MIXED STREETS**



**URBAN  
DESIGN  
GROUP**

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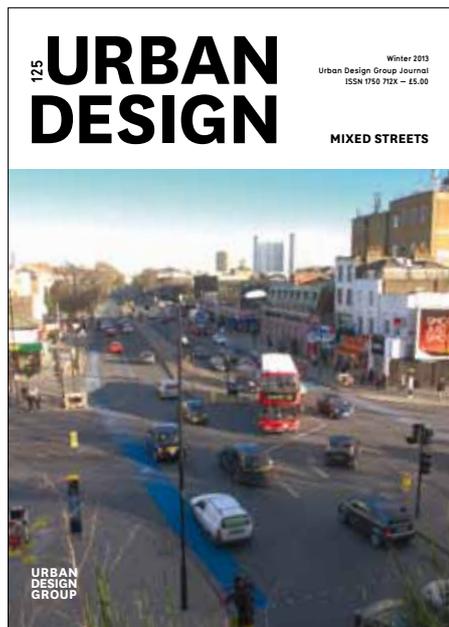
Mile End Road, London  
Photograph Claudia Schenk

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# DIARY OF EVENTS

Unless otherwise indicated, all LONDON events are held at The Gallery, 70 Cowcross Street, London EC1M 6EJ at 6.30 pm. Tickets on the door from 6.00pm. £3.00 for full price UDG members and £7.00 for non-members; £1.00 for UDG member students and £3.00 for non-member students. For further details see [www.udg.org.uk/events/udg](http://www.udg.org.uk/events/udg)

## TUESDAY 8 JANUARY 2013

### Urban Design & Built Environment Quiz Night

Kick off the New Year with this fun event. Come along on your own or with a team, ready to answer obscure questions on urban design, planning, towns, transportation, public health and a host of other subjects.

## WEDNESDAY 23 JANUARY 2013

### Mixed Streets

Introduced by Matthew Carmona and picking up the theme of *Urban Design* issue 125, this

event will look at the future of mixed streets including long term economic and social changes and the decline in place-based retail through to practical urban design options.

## WEDNESDAY 6 FEBRUARY 2013

### National Urban Design Awards 2013

Our annual celebration of excellence in urban design will be held at the Royal Overseas League, St James's. Awards will be presented for practice, local authority and student project work, in addition to the urban design publisher prize and the UDG's annual lifetime achievement award.

## TUESDAY 26 FEBRUARY 2013

### The Middle East

Following on from the recent issue of *Urban Design* on this topic, this event will look at the latest developments in urban design in the Middle East with speakers including Farnaz Arefian (topic editor of issue 124) and input from Dar Al Handasah.

## WEDNESDAY 13 MARCH 2013

### Alternative Housing Models

In recent years, residential development in the UK has been dominated by major

housebuilders. This event will explore the alternatives on offer and asks the question to what extent does the future lie in self-build, co-housing and similar 'emergent' models?

## WEDNESDAY 27 MARCH 2013

### Airports

Spoke, hub or integral part of the urban fabric? This event, led by Ben van Bruggen, will look at airport policy as viewed from urban eyes.

## WEDNESDAY 17 APRIL 2013

### Intelligent Cities

Led by Riccardo Bobisse, this event will look at the growth in importance of information in urban systems, both as a tool for the city and a tool for urban designers and managers.

# MULTIPLE CENTRALITY ASSESSMENT

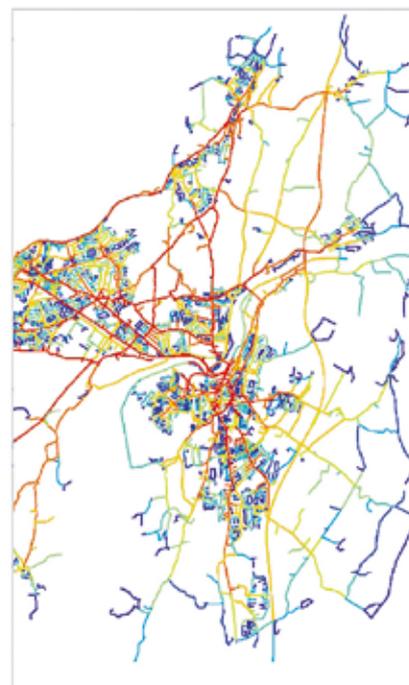
Sergio Porta and his colleagues apply a computer based methodology to mixed use streets



Milan



Geneva



Lancaster

Non-residential economic activities are the heart of mixed use streets. That makes mixed use streets extremely difficult to plan and develop as the activities they support require certain conditions to flourish. Those conditions, in turn, depend on spatial as well as non-spatial drivers, and equally they depend on each other. Like the emergence and evolution of living organisms, that of mixed use streets goes through an infinite succession of individual and collective initiatives, the vast majority of which are destined to fail due to adverse environmental conditions. Managing such conditions is the only chance that designers have to influence the development and evolution of mixed streets in their plans.

One of the most profound spatial determinants of non-residential uses in cities is street centrality. Multiple Centrality Assessment (MCA) is a computer-operated procedure for mapping the centrality of urban streets and spaces. It applies to spatial cases a set of methods drawn from research into the physics of complex networks in nature, society, culture and technology which emerged in the late 1950s and have gained momentum since the 1990s. Centrality is a critical element of the structure of all complex networks; its importance in spatial networks has been widely acknowledged in geography, transportation planning and regional analysis, as linked to a notion of proximity. In urban design, since the mid 1980s, Space Syntax has developed a wider understanding of centrality in urban systems. The MCA has re-interpreted these as a special class of complex networks. In both,

centrality goes beyond proximity, dealing with how people experience and navigate the system of streets and intersections. The importance of street centrality for urban designers and planners is twofold: it influences collective behavior – impacting on key-dynamics such as real estate values, land use and crime; it is a primal factor in development and evolution of city form over time.

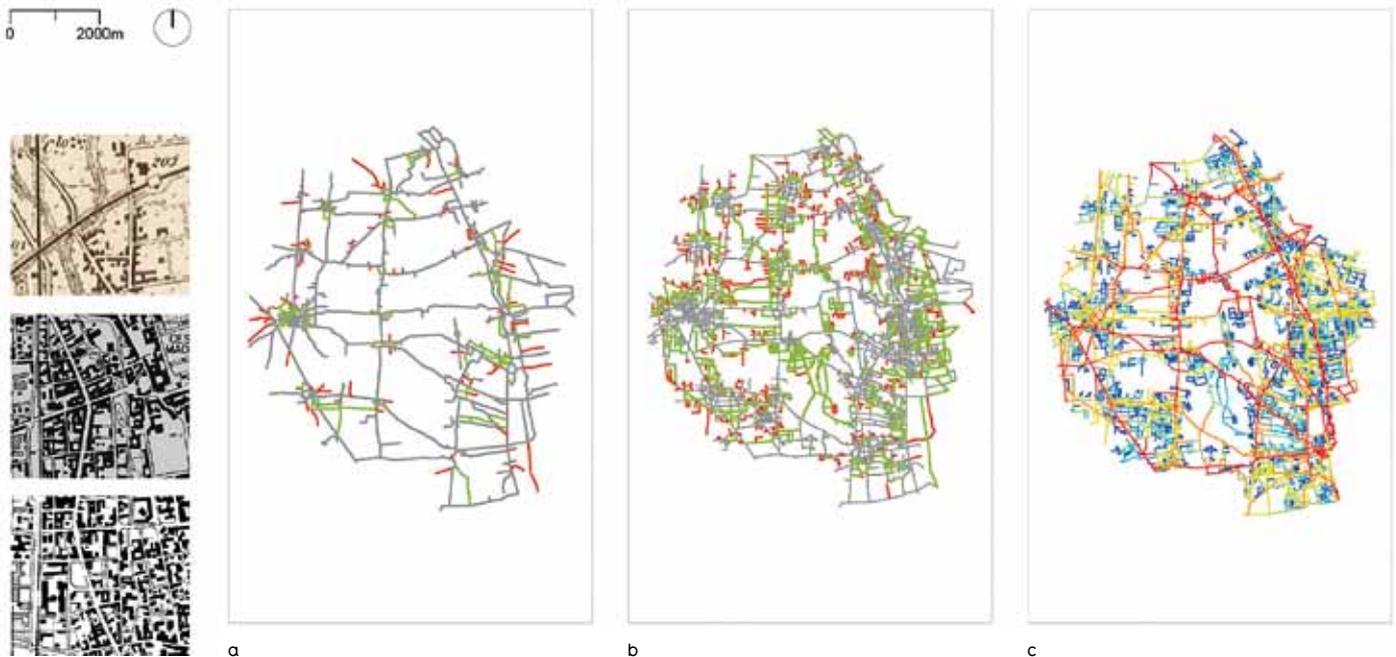
## THE MCA ANALYSIS OF CITIES

In the MCA of street patterns we developed evidence-based knowledge at the interface between form and use of the public realm in three main areas: the structure and evolution in time of street networks; the correlation between street centrality and location of economic activities; and the structure of space – either external (not necessarily streets) or internal to buildings.

We first applied MCA at city scale to comparative studies of dozens of cities highlighting and distinguishing non-planned from planned street patterns, up to a classification of cities, and identifying common universal patterns as well as specificities of the urban form.

We then looked at the evolution of street networks in time, by analysing the process of urbanisation of a 125 km<sup>2</sup> suburban area close to Milan, Italy over two centuries. We found a dynamic of spatial fragmentation that follows two distinct patterns, one of densification and one of expansion (exploration). Remarkably, the structure of very central streets tends to remain constant in the long term despite substantial economic, cultural,

↑ Street betweenness centrality in three cities (red=high, blue=low)



technological and demographic change.

Also significant is the close correlation between centrality and the location of different categories of economic activities; correlation emerges in most different physical, cultural and economic contexts. Surprisingly, however, we found that in cities as different as Bologna, Barcelona and Glasgow, primary activities (eg. rare and specialist shops and services) tend to cluster around central streets, but secondary activities (eg. mainstream shops and services of daily use) require all the centrality they can get, and cluster around peaks of centrality even more than primary ones. MCA captures here a deep determinant of urban form, evolution and life.

#### MCA IN PROFESSIONAL MASTERPLANNING

With most significant masterplanning projects, unless they are in existing city centres, the majority of uses are residential. The commercial rule-of-thumb ratio of retail demand to residential numbers is surprisingly high at between 660:1 and 1,000:1 units. Furthermore, as developments progress at sales rates of 2.5 to 3 units per month, the time taken to create this critical mass can be considerable. Experience has shown that well-located small commercial units, clustered and associated with housing, can contradict negative market predictions based on a simple assessment of supply, without reference to context. Recent investigation into residential sales potential has also shown that sale by location would ideally include proximity to local shops. This indicates that there might be financial justification for subsidising retail outlets at early stages of development in order to create active streets. Mixed use and active streets can, therefore, contradict conventional market assessments, and confirm the widely observed benefits of mixed use and active streets in creating a sense of place and an attachment to that place, the symbiotic relationship between these uses and the social advantages of locally shared facilities.

If the advantages are to have credibility and if the allocated uses are to survive, the location of the uses has to be effective. Centrality and the best location for street activity are often relatively clear but it can be hard to persuade land-holders or regulatory

authorities concentrating on immediate return or rigid regulation. With a scientific tool such as the MCA not only can the best location for active streets be more clearly identified and fine-tuned but can be demonstrated with clarity and effectiveness.

Recently ADAM Urbanism has partnered the Urban Design Studies Unit at University of Strathclyde under the EPSRC-Knowledge Transfer Account programme to study the capacity of MCA in professional urban design. As part of this experiment, MCA was applied to the masterplan of Aldershot, UK. The project is for a new mixed use residential development of around 3,800 homes. The 148 hectare site is surplus military land owned by Ministry of Defence. The scheme will provide community facilities, schools, local centres and leisure uses. The plan will include the restoration and conservation of several historic

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There might be financial justification for subsidising retail outlets at early stages of development in order to create active streets

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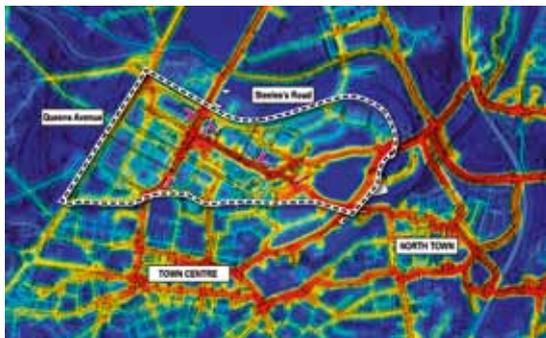
buildings, including the landmark Cambridge Military Hospital. The masterplan is structured on a strong network of well-connected streets and spaces linking the development to the wider area. In this approach, the hierarchy of streets, as nicely captured by MCA, plays an important role in sustaining a variety of uses. Queen's Avenue, the central North-South axis, is the main mixed use street within the masterplan: the neighbourhood centre, a hospital, two churches, a school, shops, offices and houses are facing this street. Another mixed use street is Steele's Road. It intersects Queen's Avenue in the main square of the new development where the neighbourhood centre is located and it is characterised by the presence of a school, offices and houses.

Mapping the density of betweenness centrality in Aldershot shows that the global connectivity of the area improves in a natural manner that

↑ Evolution of street network in the Groane area Milan  
 a) Grey: streets in 1833, green: new streets in 1914, red: new streets in 1914,  
 b) Grey: streets in 1980, green: new streets in 1994, red: new streets in 1994  
 c) Street betweenness centrality in 2007, red: high centrality, blue: low centrality

→ Aldershot: density of betweenness centrality in the proposed masterplan (dashed boundary), with location of mixed use buildings (purple) along main streets

↘ Aldershot, UK, image of the proposed development along a main street



● Sergio Porta, Ombretta Romice, Paola Pasino, Gianpiero Bianchi, Urban Design Studies Unit, Department of Architecture, University of Strathclyde, Glasgow, UK  
 Emanuele Strano, LASIG Laboratory, EPFL Lausanne, CH  
 Alessandro Venerandi, Civil Environmental and Geomatic Engineering, UCL London, UK  
 Robert Adam, ADAM Urbanism, Winchester, UK

adds potential to the social hub of the proposed development: the new neighbourhood is better connected with North Town through a West-to-East axis (Steele's Road) and the good connectivity of the North-South axis (Queen's Avenue) is kept the same. Moreover, it clearly highlights the importance of these streets as optimal locations for a mix of different functions as proposed in the masterplan: in this case, the MCA analysis confirmed and supported the design choices.

**CONCLUSIONS**

The MCA analysis of urban streets and spaces has demonstrated a high capacity to capture their potential to develop into mixed use urban environments. As such, it has been applied as a supporting tool on masterplans designed by ADAM Urbanism in several real professional cases. MCA confirmed and justified a series of design choices regarding the generation and character of mixed use streets and enabled the team to select the most desirable option from several alternatives.

Work continues on the research front at University of Strathclyde as well as on the professional front at ADAM Urbanism, looking at the best methods for presenting the MCA to prospective commercial and regulatory users. MCA's potential lies in how it combines with other more established types of analysis, and how to easily explain its benefits to commissioning bodies, without the recourse to technical language. Currently, presentation techniques are being tested on various client groups and the development of appropriate terminology and case studies is under way. ●

# COMPLETE STREETS: MORE THAN A NEW DESIGN

Barbara McCann suggests a new approach to street design



→ Typical incomplete street in the United States (Joan Hudson)

The Complete Streets movement has swept the US over the past few years, as more than 400 jurisdictions have adopted Complete Streets policies and many more have discussed the concept. Yet the true meaning of the term is often misunderstood, leading to an ultimately fruitless search for the ideal complete street. Those searching for the ideal project may miss the real transformative power of the Complete Streets movement.

In the US, the norm has long been the incomplete street. The US transportation industry was deeply influenced by the massive project of building the Interstate Highway system – a network of 47,000 miles of limited-access freeways that knitted the country together in the 1950s and 1960s. Solving the design and safety challenges in creating this system set an orientation that persists to this day in US transportation planning and design. The goal of transportation projects is usually assumed