



**Research**  
at the  
**Urban Design Studies Unit**

**DEPARTMENT OF ARCHITECTURE**

This handbook has been produced by

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on behalf of the Department of Architecture,  
University of Strathclyde.





## **Urban Design Studies Unit (UDSU)**

Directors: Prof Sergio Porta, Dr Ombretta Romice

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<https://www.strath.ac.uk/research/subjects/architecture/urbandesign/>

<http://www.udsu-strath.com>



# Urban Design Studies Unit (UDSU)



“ Our mission is to study which spatial structures support the complex process of development and self-organisation of cities, typical of how they have evolved and flourished. ”

The Urban Design Studies Unit (UDSU) at the University of Strathclyde studies cities, their form, functions and impact, with the ultimate goal of designing them better, and for the long run.

In particular, we aim to understand the major interrelated dynamics posed by recent urbanization processes, in both informal settlements and established cities, which we treat as self-organizing systems. Our goal is to understand and learn how to design the resilient city.

We are committed to research, teaching, and knowledge exchange beyond academia, including consultancy and training. All our research is applied in our teaching and contributes shaping our approach to the urban design and placemaking.

**To do research at UDSU contact:**

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# RESEARCH AT UDSU

## About us

The Unit was set up in 1988 by Hildebrand Frey, to address problems of urban rehabilitation, renewal and restructuring. Its research originally focused on the city and its origin, its development, form and structure and then expanded to study its impact on people and community engagement. Currently the Unit, led by Prof Sergio Porta and Dr Ombretta Romice, is growing in interests and expertise, to include the complex relationships between urban form and the broad dynamics of change and evolution. We have a collaborative ethos and we strongly believe in the value of research-based teaching.

## Our research interests

The Unit has developed international expertise on urban analysis from both a morphological and an experiential angle. We have a portfolio in urban planning and design, community engagement, identity and sociability of public spaces, network analysis and environmental psychology. Our research is interdisciplinary, with inputs from urban morphology, urban geography, environmental psychology, evolutionary biology, system ecology, physics of complex networks and architecture.

## We encourage PhD applications on a variety of topics

UDSU has an international and diverse cohort of PhD students and has attracted Fulbright researchers. Our PhD students are involved in teaching, so they develop key skills for their future. Topics of interest include:

- analysis of urban form and relation to socio-economic dynamics;
- resilience in urban systems;
- informal settlements;
- urban design quality assessment;
- environmental-behavioural studies and user engagement;

# KEY RESEARCH AREAS



## Science of Urban Form & Evolution

Our work on urban science is an evidence-based investigation of urban form and how it changes in time. We seek to understand the contribution of urban form to the larger evolution of cities in their social, economic, institutional and environmental aspects.



## Urban Design & Masterplanning for Change

Work in this area focuses on how we as urban designers can help generate a sustainable and resilient urban form. We study how to link building density, street centrality, transport, service and retail nodes and ecological networks in an innovative process of masterplanning.



## Environmental Psychology & Quality of Life

Whilst strongly encouraged by the UK government and now a compulsory feature of planning, user engagement in design is still not fully understood or effectively performed. Our expertise in the area of public engagement ranges from design to environmental psychology.



## Radical Architecture Construction

This line of research is about processes of community-based housing production centred around human experience. Community participation is brought to the next level combining end-users construction and person-centred interaction into community building.

All these research topics are introduced and applied in our MSc in Urban Design and urban design studio in Year 5: students have contributed, over the years, to the development of these areas, and in particular 'Masterplanning for Change', our approach to the design of the resilient city.

# PHD TOPICS WE SUPERVISE



## Past PhD theses

*Prosperity & slums: a dynamic trajectory for positive development.*

Aisha Abubakar



*Resilience & Urban Design: a systems approach to the study of resilience in urban form. Learning from the case of Gorbals, Glasgow.*

Alessandra Feliciotti



*Understanding the Urban Form of Informal Settlements.*

Maddalena Iovene

*Finding the Plot: A plot-based housing development model applied to physical regeneration in Glasgow.*

Gordon Barbour

*Designing for “Life between buildings”: modelling the relationship between streetscape qualities and pedestrian activity in Glasgow, Scotland.*

John Alexander Maxwell



*Urban Morphometrics: Towards a Science of Urbanism.*

Jacob Leonard Dibble



## Current PhD topics

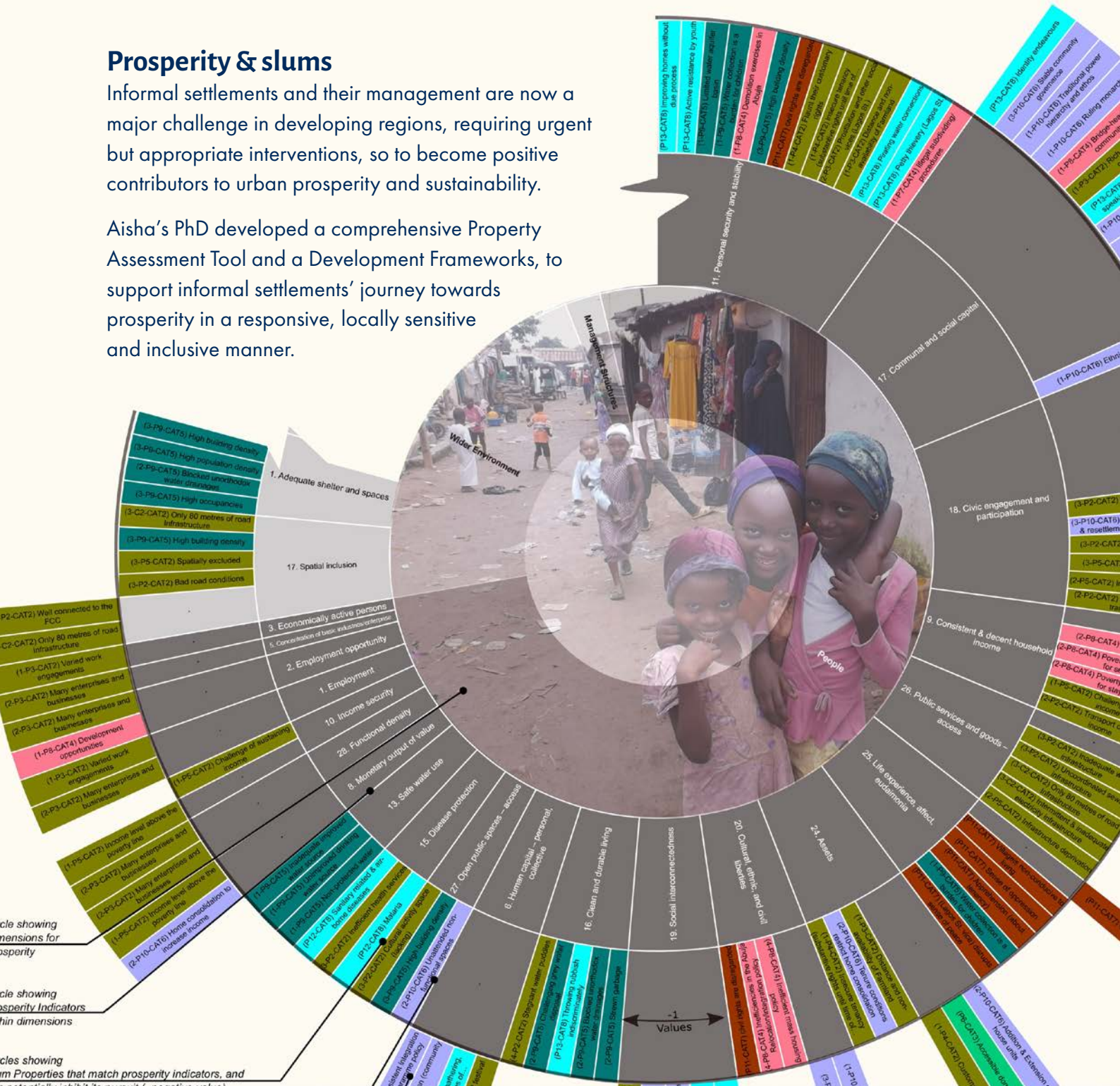
- Measuring urban form and urban life in Baghdad;
- Tools and frameworks for a quantitative analysis of urban form;
- Traditional morphology of settlements in Botswana;
- Users' perception and understanding of resilience in housing;
- Generative and bottom-up urban regeneration in South Africa.



# Prosperity & slums

Informal settlements and their management are now a major challenge in developing regions, requiring urgent but appropriate interventions, so to become positive contributors to urban prosperity and sustainability.

Aisha's PhD developed a comprehensive Property Assessment Tool and a Development Frameworks, to support informal settlements' journey towards prosperity in a responsive, locally sensitive and inclusive manner.



# INTERNATIONAL EVENTS & FORUMS

**2018**

**Launch of STRELKA Educational Institute. Moscow, Russia.**

Sergio Porta and Ombretta Romice, invited speakers

**IAPS 25<sup>th</sup> International Congress. Rome, Italy.**

*“Transitions to sustainability, lifestyles and human wellbeing: cultural, environmental and political challenges”.*

Ombretta Romice, Keynote speaker

**2017**

**Innovation districts and the example of Tel Aviv. Tel Aviv, Israel.**

*“The Case of Tel Aviv”.*

Sergio Porta, Invited speaker

**2016**

**Workshop on Vital Public Spaces. Geneva, Switzerland.**

*“Designing and managing public spaces for inclusive, safe, resilient and sustainable cities”.*

Sergio Porta, Invited speaker

**Urban Design Institute of South Africa Conference. Tshwane, South Africa.**

*“Urban+trans+formation: Considering a Vision for the Gauteng Inner-city”.*

Ombretta Romice, Keynote speaker

**2015**

**7th Annual Symposium of Architectural Research in Finland. Espoo, Finland.**

*“Archi+Tectonics: Architecture, Communities and Cities under Change”.*

Ombretta Romice, Keynote speaker

**2012**

**EBRA 10<sup>th</sup> International Symposium. Changsha, China.**

*“History and reality: environment-behavior studies in the perspective of multidimensional transformation”.*

Dr. Ombretta Romice, Keynote speaker

**Engage with Strathclyde. Glasgow, UK.**

*“Sustainable Homes & Communities: holistic design, total place”.*

Sergio Porta, Invited speaker

**2011**

**4<sup>th</sup> Dortmunder Lectures on Civic Art. Dortmund, Germany.**

*“New Civic Art”.*

Sergio Porta, Plenary Lecture

**IAPS-joint Network Symposium. Daegu, South Korea.**

*“Continuity and Change of Built Environments”.*

Ombretta Romice, Keynote speaker.



## Launch of STRELKA Educational Institute

Following UDSU's support to Strelka in the Masterplanning of the town of Svobodny, in Russia, the Strelka Institute for Media, Architecture and Design, with the support of DOM.REF (Russia Housing and Urban Development Corporation) invited us to present our work on Masterplanning for Change, and help disseminate our ideas on housing and urban planning to practicing architects, young bureaus and city representatives responsible for urban development.

# KNOWLEDGE EXCHANGE

## Consultancy

The Unit has experience in offering consultancy and design advice. With our Year 5 and PGR students we routinely work with local authorities across UK to develop long term strategies and detailed design proposals. We have recently delivered consultancy on the strategic development of the city of Svobodny (Russia) for KB Strelka.

## Teaching

UDSU teaches urban design at undergraduate and postgraduate level. It runs the MSc in Urban Design and is part of the Building Beauty PG Diploma in Architecture. We also deliver courses and training for professionals and local authorities. These include Masterplanning training programmes, the latest one delivered to Strelka Education in Moscow, the Urban Design Representation CPD and the GIS & Spatial Analysis course.

UDSU regularly takes part to International assessment panels for research and teaching. Our last experience was on behalf of the Portuguese Science and Technology Foundation (FCT), the Portuguese national Research Funding Organization (RFO) for all areas of knowledge, where we reviewed the area of Architecture and Urbanism for all National Research and Development (R&D) units.

## Knowledge Exchange Events

UDSU has organised and hosted international congresses, workshops and symposia, including:

- EEPUM Workshop and Round Table;
- International Summit on Plot Based Urbanism;
- 22<sup>nd</sup> IAPS International Conference in Glasgow;
- EPUK Environmental Psychology Conference in the UK;
- Multimodal Representation of Space Conference;
- Designing with Communities International Conference.



## EPUUM Workshop

PhD students at UDSU recently organised and hosted an international multi-disciplinary cooperation workshop aiming to explore the ecological and evolutionary perspectives in urban morphology, trying to link the smallest scale of the individual unit to macro-regional aggregations and built a new shared language to apply ecological methods and models to the study of the urban environment.



# RESEARCH GRANTS & PROJECTS



Ax:son Johnson  
Foundation

**EPSRC**



ROYAL  
ACADEMY OF  
**ENGINEERING**



CONSORZIO COOPERATIVE COSTRUZIONI  
CCC  
Società cooperativa



**Architecture+Design**Scotland  
Ailtearachd is Dealbhadh na h-Alba



**RTPI**

Chartered Town Planner

## **Urban Form Resilience Project**

with Ax:son Johnson Foundation and Arup Engineering.

## **GALE, Global Accessibility to Local Experience**

EPSRC grant in collaboration with University of Cambridge Computer Lab and the Queen Mary University Institute for Complex Systems.

## **Distinguished Visiting Fellowship**

Royal Academy of Engineering.

## **L'Abitare Futuro / The Future Inhabiting**

commissioned by National Consortium of Construction Cooperatives of Italy.

## **Multiple Centrality Assessment (MCA): a strategic modelling tool for use in urban regeneration**

KTA grant in collaboration with Robert Adam Urbanism.

## **Plot-Based Urbanism: A Field Guide to Masterplanning**

"Bridging the Gap" by the Faculty of Engineering, University of Strathclyde.

## **Under the Microscope: Small Scottish Towns**

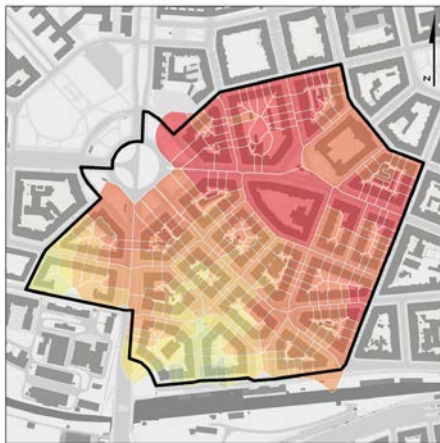
Research & Development and Architecture & Design Scotland grant.

## **Gateways to Professions: Urban Design**

granted by the Department for Education and Skills, with RTPI.

# The Urban Form Resilience Project and MoRE

In partnership with the Ax:son Johnson Foundation, UDSU is developing a Morphological Resilience Evaluation (MoRE) web-app to measure changes in characters of urban form that affect its resilience. MoRE uses five morphological attributes of urban resilience - diversity, connectivity, redundancy, modularity and efficiency.



## Dejvice, Prague

PLACE-TYPE: Compact fabric



Typical score in this place-type category:



Typical score in Prague:



In terms of Plot Diversity...

- 3<sup>rd</sup> out of 24 in Prague
- 1<sup>st</sup> out of 4 in Compact fabric place-type
- 22% of plots have a diversity value over 0.75
- 0% of plots have a diversity value below 0.25



## Zahradní Město, Prague

PLACE-TYPE: Terraced houses



Typical score in this place-type category:



Typical score in Prague:



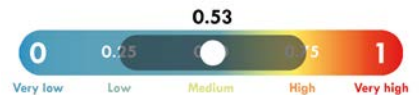
In terms of Plot Diversity...

- 16<sup>th</sup> out of 24 in Prague
- 4<sup>th</sup> out of 4 in Terraced houses place-type
- 3% of plots have a diversity value over 0.75
- 0% of plots have a diversity value below 0.25



## Sídlíště Ďáblice, Prague

PLACE-TYPE: Modernist estate



Typical score in this place-type category:



Typical score in Prague:



In terms of Plot Diversity...

- 21<sup>st</sup> out of 24 in Prague
- 2<sup>nd</sup> out of 4 in Modernist estate place-type
- 0% of plots have a diversity value over 0.75
- 0% of plots have a diversity value below 0.25

# PUBLICATIONS BY RESEARCH AREA

## Science of Urban Form & Evolution

Feliciotti A, Romice O, and Porta S, (2018). From system ecology to urban morphology: towards a theory of urban form resilience, in: "International Forum on Urbanism: Reframing Urban Resilience Implementation", UIC School of Architecture, Barcelona.

Dibble J, Prelorendjøs A, Romice O, et al. (2017). On the origin of spaces: Morphometric foundations of urban form evolution. *Environment and Planning B: Urban Analytics and City Science*: 1-24.

Venerandi, A, Zanella, M, Romice, O, Dibble, J & Porta, S (2017), Form and urban change: an urban morphometric study of five gentrified neighbourhoods in London, in: *Environment and Planning B: Planning and Design*, vol 44, no. 6, pp. 1056-1076.

Remali, AM & Porta, S (2017), Correlating street network and urban blocks in the city centre of Tripoli, in: *Journal of Urban Morphology* 21(2) pp. 161-179.

Iovene M, Fernández de Córdova G, Romice O, & Porta S (2017). Towards informal planning : mapping the evolution of spontaneous settlements in time. In: 24th ISUF International Conference - City and Territory in the Globalization Age. Universitat Politècnica de València, Valencia, pp. 545-557.

Porta, S., Romice, O., Maxwell, J. A., Russell, P., & Baird, D. (2014). Alterations in scale: Patterns of change in main street networks across time and space, in *Urban Studies*, 51 (16).

Strano, E., Nicosia, V., Latora, V., Porta, S., & Barthélemy, M. (2012). Elementary processes governing the evolution of road networks, in *Scientific Reports*, 2, 1-8.

## Urban Design & Masterplanning for Change

Romice O, Porta S and Feliciotti A, (2018). Urban form Resilience Urban Design Practice: Masterplanning for Change, in: "International Forum on Urbanism: Reframing Urban Resilience Implementation", UIC School of Architecture, Barcelona.



Danenber R, Mehaffy M, Porta S, & Elmlund P (2018). Main street plot scale in urban design for inclusive economies: Stockholm case studies. *Proceedings of the Institution of Civil Engineers-Urban Design and Planning*, 171(6), 258-267.

Porta, S., Romice, O., Feliciotti, A., & Rudlin, D. (2018). Big box, short life: little box, long life: the democracy of resilience: plot-based urbanism, evolution and informal participation. In: *Create Streets*, London.

Abubakar A, Romice O, & Salama A. M. (2017). Defining slums using multidimensional and relational properties: A dynamic framework for intervention. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 34-54.

Feliciotti, A. Romice, O. Porta, S. (2017). Urban regeneration, masterplans and resilience: the case of Gorbals, Glasgow, *Journal of Urban Morphology*, 21(1).

Romice, O. Feliciotti, A. Porta, S. (2017). The road to masterplanning for change and the design of resilient places, in: "Archi+Tectonics: architecture, communities and cities under change, in: *Proceedings of the 7<sup>th</sup> Annual Symposium of Architectural Research in Finland*", Aalto University, Helsinki

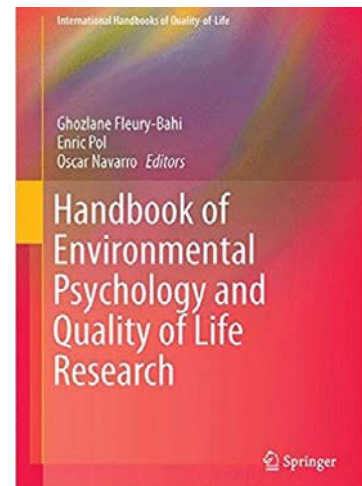
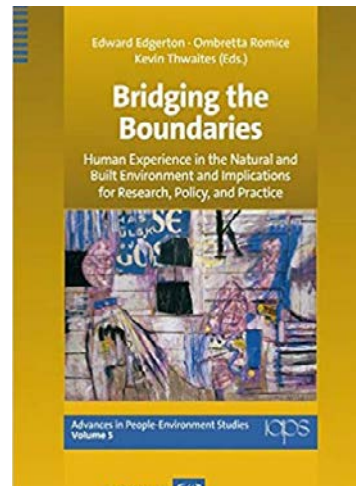
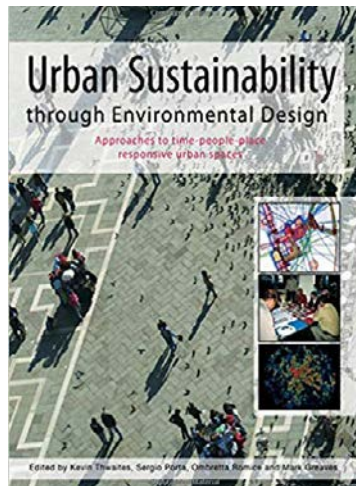
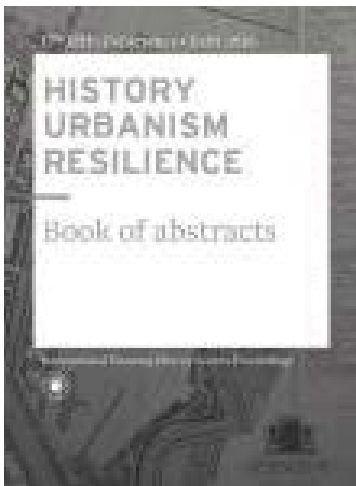
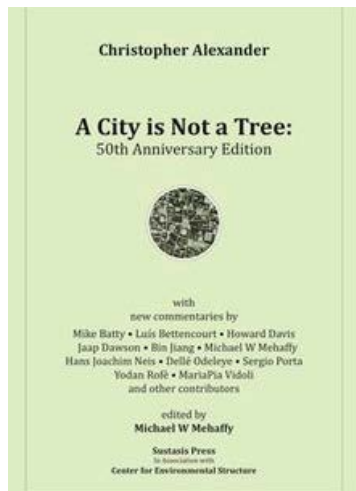
Feliciotti, A., Romice, O., & Porta, S. (2016). Design for change: five proxies for resilience in the urban form. *Open House International*, 41(4), 23-3

Barbour G C, Romice O., & Porta S (2016). Sustainable plot-based urban regeneration and traditional masterplanning practice in Glasgow. *Open House International*, 41(4), 15-22.

Romice, O. Porta S. Feliciotti, A. Barbour, G. (2017). Masterplanning for Change: Design as a way to create the conditions for time sensitive place-making, in: AlWaer, H. Illsley, B. eds., *Placemaking: rethinking the masterplanning process*, ICE Publisher, formerly Thomas Telford

Greaves M, & Romice O (2015). Exploring whether the UK Localism Act (2011) and effective community engagement can empower communities and deliver place sensitive development. In J., & W-S. E (Eds.), *Tradition and Heritage in the Contemporary Image of the City: Practise and Process* (Vol. 3). Krakow

Romice O, & Porta S (2015). Plot based urbanism: a roadmap to masterplanning for change. *Academy of Urbanism Journal*.



Mehaffy, M. Porta, S. Romice, O. (2014). The 'neighbourhood unit' on trial: A case study in the impacts of urban morphology, *Journal of Urbanism, International Research on Placemaking and Urban Design*

Porta, S. Romice, O. (2014). Plot-based urbanism: towards time-consciousness in place-making, In; Mäckler, C., & Sonne, W. (Eds.), "Dortmund Lectures on Civic Art/Dortmunder Vorträge zur Stadtbaukunst", Sulgen, DE: Niggli, 82-111

## **Environmental Psychology & Quality of Life**

Romice, O. Thwaites, K, Porta, S. Greaves, M. Barbour, G. Pasino, P. (2016). Urban design and quality of life, in: Fleury-Bahi, G. Pol, E. Navarro, O. (eds.) "The Handbook of Environmental Psychology and Quality of Life Research", Springer, 242-273

Romice O., Paul, A. (2015). Multi-storey - changing patterns of regeneration: what can be applied from people- environment studies? In R. Lawrence, & G. Barbey (Eds.), *Repenser l'Habitat - Rethinking Habitats: Donner un sens au logement - Making Sense of Housing* (pp. 279-315). Paris.

Edgerton, E. Romice, O. Thwaites, K. (2014). *Bridging the Boundaries: Human Experience in the Natural and Built Environment and Implications for Research, Policy and Practice*. Hogrefe Publishing, Cambridge, MA.

## **Radical Architecture Construction**

Moore Alexander, M. Zecchi, E. Russell, P. Vidoli, M Caperna, A. Romice, O. Porta, S. (2017). The Timeless Way of Educating Architects: A New Master in 'Building Beauty' in Naples, Italy, in: 'Proceedings of the PUARL 2016 Conference', San Francisco.

Porta, S. Rofè, Y. Vidoli, M. (2016). The production of cities: Christopher Alexander and the problem of 'System A' at large scale, in: 'Proceedings of the Pursuit of Pattern Language for Societal Change – PURPLSOC', Krems.

Porta, S., Rofè, Y. Vidoli, M. (2016). The city and the grid: building beauty at large scale, in: Mehaffy M. (ed.), 'A city is not a tree, 50th anniversary edition', Sustasis Press.

Porta, S., Russell, P., Romice, O., Vidoli, M. (2014). Construction and Therapy: an Integrated Approach to Design Build, in: Cavanagh, T. Hartig, U. Palleroni, S. (eds.), 'Working Out: Thinking While Building', 98-108, Halifax, NS: ACSA Press



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