New approaches in urban development
How do they work and do they potentially achieve sustainable urban form?
Background to the presentation

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Publication of final reports
www.city-form.org/uk/publications_plus.html
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Some conclusions and questions
(1) The notion of the city as a modular construct
Reviewing the urban structure of the city at different development phases

The key characteristics of the European medieval town

- The town: an agglomeration of urban quarters around the town centre.
- The central area of urban quarters accommodate a local church, guild hall, market place, fountain, and other amenities serving daily needs.
- The urban quarter is compact, dense and of pedestrian scale.
- There are strong, even enforced socio-economic ties of inhabitants with their urban quarter.
- Up to the 1850s, this structure of a town remains largely unchanged.
Railway towns mid 19th century and car towns in the first half of the 20th century

First considerably large expansion of the town/city
- Railway lines start radiating out from the city.
- Dense, pedestrian-scale urban quarters with local amenities develop around railway stops.
- Access to local amenities is on foot.

Controlled further expansion of the town/city in the inter-war period (1920s to early 1930s)
- Development of lower-density and pedestrian-scale ‘garden suburbs’.
- The generally low population density supports only basic local services; the centre is poorly defined.
- Access to district, town and city amenities is by public transport.

Uncontrolled further expansion of the city from the 1960 on
- With mass car ownership low density development starts to sprawl to any place that is accessible by car.
- ‘Car suburbs’ have no viable local services and facilities, no public transport. They have no modular structure, i.e. no centres.
- Access to district, town and city amenities is necessarily by car causing pollution and congestion in the more central urban areas. The car suburb is not sustainable.
The call for a reduction of car traffic

- Rising pollution and road congestion leads to the search for ways to reduce the use of cars in inner-city areas.
- In the UK, the Urban Task Force Report (1999) suggests the return to an overall compact city with links between urban quarters, district, town and city cores by a hierarchical public transport system. The building block of a compact town and city is the urban quarter.

Social links no longer tied to a common space

- Social ties today extend to networks within the city, country and far beyond. So many believe the urban quarter is outdated.
- Nonetheless there are common needs of inhabitants in any urban area: access to amenities that cater for people’s needs.
- The dense and connected urban quarter is no longer a unit of social ties, but it remains a unit of convenience.
Limits to achieve a fully compact city

- Hierarchical sets of amenities and public transport modes already exist in many cities.
- To achieve a fully compact city would require
  - either the implosion of the city that would cause a huge social upheaval and enormous costs;
  - or developing dense urban quarters in all sprawl areas that would require a considerable increase of the population (in Glasgow from now hardly 600,000 to over 1,200,000).
- Regenerating urban areas into compact urban quarters is therefore only viable in areas with access to public transport and the potential of sufficiently increasing its population.
- The resulting city form is likely to have an overall non-finite, non-compact urban form with compact and ‘connected’ urban quarters, districts, and towns (the hard city) and interspersed low density and ‘disconnected’ areas (the soft city).
- The neither urban nor rural soft areas ought to take on functions of the city’s ‘hinterland’.
The modularity of greater Glasgow

From: H Frey (1999) *Designing the City - towards a more sustainable urban form*, Figure 5-15.
With the city centre, existing and potential town and district centres and existing neighbourhood centres the plan shows clear signs of modularity and hierarchy within an overall irregular and loose urban structure.
(2) Developing a tool for target-based urban regeneration

The call for sustainable (urban) development

- Global conferences organised by the UN between 1972 and 1992 formulated the key aspects of sustainable development and what needs to be done to achieve it.
- Of particular importance to this discussion is the call for sustainability targets and threshold values. Further UN conferences have largely not achieved this.
- Agenda 21 (Rio Summit 1992) lists indicators of sustainable cities and regions but no targets and threshold values.
- Therefore, up to now, there is no common and generally accepted agreement on the values the city ought to have.
- The research team decided to formulate targets and threshold values of urban areas.

Glasgow city centre and beyond, 1960s: the outcome of disparate, badly co-ordinated and often competitive projects for specific purposes: mobility & transport, social housing, conservation of historical areas, development of industry and business premises etc. This way sustainable urban form is not achieved.
Developing a tool for the measuring of (un)sustainability levels of urban areas
for details visit the CityForm website: www.city-form.org/uk/publications_plus.html

• **The sustainability tool has three components:**
  – A set of indicators, threshold and target values of sustainable urban areas.
  – The measurement of the current values of urban areas.
  – The formulation of a regeneration programme based on the difference between target/threshold values and existing values. A list of priorities helps to overcome the conflicts caused by competitive values.

• **A comprehensive investigation includes indicators and values of**
  – **Physical (formal, spatial, structural, organisational) sustainability**
  – **Social sustainability**
  – **Economic sustainability**
  – **Sustainable transport and mobility**
  – **Environmental / ecological sustainability**
  – Indicators and targets for transport/mobility and environment/ecology have been adopted from the Freiburg-Vauban best practice case study which will be presented shortly.
(3) Testing the sustainability tool
Laboratory test of Govan-Drumoyne, Glasgow
Laboratory test of the sustainability tool
Developing a regeneration programme for Drumoyne in Glasgow’s Govan area

In stark contrast to the area north of the river Clyde, Govan is one of the most deprived areas of Glasgow.

Glasgow Harbour project immediately opposite Drumoyne: Executive housing

The pedestrian bridge between the Conference Centre and the area of the Science Museum east of the Govan area
Survey of Glasgow–Govan
Built fabric in comparison to new river front development

Top left: typical housing mix in Govan; top right: river front area of Govan with low-key industry
Bottom left and right: low-key housing close to Govan's river front & new executive housing at the Clyde
Survey of existing lack of connectivity inside Govan and between Govan and surrounding areas
Drumoyne’s current land size is almost as large as that of two target urban quarters but accommodates only around 8,000 people (target: 15,000). A ‘one urban quarter’ scenario was investigated but achieved little improvement. A ‘two urban quarters’ scenario seemed therefore a better choice.
Location of the services and facilities in Govan and Drumoyne

At Govan-Drumoyne local services and facilities are dispersed or forming clusters off-centre; access is therefore poor to very poor.
Economic and social values and deficiencies of Govan–Drumoyne and regeneration targets

Regeneration targets

• Massive local education and training sessions and the creation of traditional jobs to improve unemployment and deprivation levels
• Form two urban quarters by developing the largely disused river front site and the central void of southern Drumoyne
• Attract around 6,700 economically active people with higher education levels to Drumoyne
• Maintain and improve current housing and generate higher density dwelling areas of high design and living standard for the incoming population
• Improve the design and landscaping of public spaces and facilities
• Relocate services and facilities of sufficient quality and variety into the central areas of the two urban quarters
• Reorganise public transport routes to serve the new core areas of the urban quarters
The ‘two urban quarters’ scenario for Drumoyne

Drumoyne North
Drumoyne South
Govan Centre

Energyday 6 - approaches
Developing a three dimensional model of the two neighbourhoods
Existing condition of the Govan-Drumoyne area
The three dimensional model of the two neighbourhoods
The potential built form (diagramme) of Drumoyne South and Drumoyne North
A defined core area to the south & north, dense development to the north, a boulevard linking N-S
What we learned from the study of areas in Glasgow

- The full implementation of the regeneration programme would achieve all target and threshold values.
- For the planning system of Glasgow and Greater Glasgow the approach is ‘too rigorous’; we were therefore ‘politely’ told not to talk with the local population of the areas investigated.
- With few notable exceptions (e.g. the Plymouth Department of Development), planners in the UK are not prepared, or not able, to use our sustainability tool.
- They deal with individual disconnected and largely small-scale development projects. The importance to focus on urban quarters with a substantial size of population and area is not easily understood.
(4) Applying the tool
Measuring the levels of sustainability of Freiburg–Vauban
Location of Freiburg and its new urban quarters
Freiburg i.Br. – the urban quarter Vauban
The characteristics of the city and the surrounding countryside

• Freiburg is one of the famous old German university towns as well as a major commercial, intellectual and ecclesiastical centre.
• Freiburg, frequently called the ‘green city’, is known for its high standard of living and its enhanced environmental practices.
• Freiburg has a population of about 220,000 (2008), the city region of Freiburg, including the city, a population of about 620,000 (2008).
• Freiburg is well known for its extensive pedestrian zone in the car-free city centre, its excellent public transport system with a continuously expanding web of tram routes and feeder buses.
The history of the urban quarter Vauban, Freiburg i.Br.
A short summary

- In 1990 the French military presence in Freiburg came to an official end; in 1992 the last soldiers left the barracks.
- The city buys the 38 hectare area from the Federal Republic of Germany with the aim of demolishing all existing buildings, subdividing the land and selling plots to private house builders.
- A group of people claims to have an interest in the use of the barracks blocks for social and student housing projects.
- Environmentalists and ecologists call for ecological concepts to be implemented.
- Competitive claims and views and aspirations lead first to conflicts but soon to a participatory planning approach at a then unprecedented scale and the formulation of common targets that produce in the end one of the best ‘best practice cases’ of sustainable urban development in Germany.
Energyday 6 - approaches

Vauban Map
Source: images.google.co.uk/ (Quartier Vauban Freiburg)
The built form characteristics of Vauban

- The total area of 38 ha is less than half the research target value of an urban quarter of 88 ha.
- The gross and net population densities and the net dwelling density of Vauban slightly exceed the research target values.
- The expected population is 5,000, the research target value of 7,500 is not achievable.
- Despite its small population size, Vauban shows an astonishing number and variety of local services beyond the threshold services of the research project.
- The reason: Vauban it is very close to neighbouring communities to the west and south-east with public transport connections to the centre of Vauban which acts as a small market town.
Social and socio-economic characteristics of Vauban

- Vauban has a rather young population and a large percentage of children; the average household size is unusually large.
- There is currently pressure for primary school places but soon there will be pressures for further education and for the elderly not included in the development programme. The continued economic viability of services is therefore not guaranteed.

- Vauban has an unusually high percentage of owner-occupied dwellings (70%) and for Germany a rather small percentage of private-rented dwellings (20%) and the German average percentage of social-rented accommodation (10%).
- At Rieselfeld the City Council decided for an equally unusual split of 50% social-rented and 50% private-rented and owner-occupied accommodation. This may have been decided to balance the lack of social housing in the city.
- Vauban is, therefore, socially exclusive. So in a sense is Rieselfeld. In Drumoyne social and owner-occupied housing is also separated but at a very small distance.
Traffic Concept for the urban quarter Vauban

Traffic speed limitations:
- yellow: 50km/h
- red: 30km/h
- blue: the residential streets: 5 km/h
- red lines: walkways and bicycle paths
blue: no parking places at all; yellow: parking on own land possible; red: multi-storey car parks; blue/yellow: car parking for industry allowed on own land.
Vauban targets & achieved values
An ecological traffic/mobility concept

- **Car-free living**
  - this required a new legal framework: the association of car-free living in Vauban, a legal body
  - nearly 50% of all households are “car-free”

- **Car sharing**
  - residents joining the car sharing organisation have access to these cars and receive a one year free pass for public transportation within Freiburg and 50% reduction on every train ticket

- **Extended tram network**
  - to serve Vauban, allowing easy access to other parts of the city and city centre (only 2.5 km away)

- **Two bus lines**
  - connecting Vauban with the city and the railway station

- **Bicycle routes and pedestrian walkways**
  - An extensive network throughout Vauban and the city

- **Integrated transport system**
  - for the city and city region; already in 1998, the system has achieved a balanced use of traffic modes:
    - walking 20.8%
    - cycling 17.8%
    - public transport 20.8%
    - car use as driver 29.7%
    - car use as passenger 9.9%
    - motorcycle 1.0%

(Source: Socialdata, 1998: Modal share of Freiburg)
Typology of dwelling areas – existing and planned (striped areas)

green: builder/developer scheme; yellow: private builder groups; red: private individual builders
Communal installations/services + facilities

- yellow: childcare services; blue: the community centre; red: the primary school with sports hall; green: communal green spaces and play areas

Energyday 6 - approaches
green: improved low energy houses 65 kWh/m²a; red: passive houses 15 kWh/m²a; yellow: plus energy houses selling surplus electricity to the net; blue: low energy houses (no data)