

Plot-Based Regeneration for Inner-City Neighbourhoods: Lessons from Traditional Masterplanning Practice in Glasgow

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Abstract

Conventional approaches to housing development in regeneration areas are failing to provide effective supply on the many derelict and vacant sites currently available in inner city Glasgow, exacerbating the loss of households to the suburbs, and leaving behind abundant developable but vacant land. Plot-based urbanism offers an innovative approach to development, based on the creation and maintenance of a structure made up of fine-grained elements, in the form of plots, capable of incremental development, by a range of agencies.

The proposed approach is based on historical and morphological study of changing urban form and control in Glasgow; it suggests that the disaggregated pattern of land subdivision characteristic of the 19th century city remains of great relevance for future development. Initial results of the study suggest that the physical form and organisation of urban land might relate to the degree of self-organisation possible at neighbourhood level.

By relating the physical characteristics and patterns of control of individual plots of land to the flow of investment into urban development, this study assists future master planning and investment in regeneration of city neighbourhoods, by suggesting ways of making investment more informed, and the development process more responsive, to the changing priorities which are an integral aspect of urban change.

We argue that the publicly-funded sector could adopt the role of provider of opportunity for housing by others, capable of taking on the task of small-scale house building, within a strategically-sound framework established and guided by the publicly-funded sector itself, bringing increased control over the housing process to those participating in it.

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Introduction

The urban fabric of Glasgow has undergone radical change since the early 19th century, initially in the form of rapid expansion in response to sustained economic and population growth and, since the 1950s, of an equally rapid population contraction in tandem with economic, social and environmental decline (CHECKLAND, 1981; KEATING, 1988; PACIONE, 1995). Glasgow has this history in common with other cities in the northern hemisphere founded on heavy industry and manufacturing, such as Detroit, USA, with which it shares the dubious distinction of being a former million-plus city (RYAN, 2006). These periods of change can be seen to have had a pronounced effect on the formation, subdivision and clustering of land, particularly in phases of most intense change: those of the late 19th century, and the 'destructive' phase of inner-city comprehensive redevelopment, from the 1950s to mid-1970s (McKEAN, 1993).

Primarily as a legacy of this 'destructive' phase, Glasgow still contains approximately 1,300 hectares designated as vacant and derelict land (VDL), about 7.5% of total land area of the city, by some distance the highest proportion of any Scottish city (GCC, 2010). Much of this land is in public ownership and located in the inner urban area, close to existing road

networks, services and centres of employment. It is recognised in Government strategy that the reuse of vacant and derelict land could have a direct bearing on the city's potential for both sustainable development, and environmental improvement (SCOTTISH GOVERNMENT, 2013).

There has long been a tendency for middle-income households to be displaced outside the city to the urban fringe (PACIONE, 1991), (GIBB, K et al, 2000), typically to green-field commuter suburbs dominated by car-based speculative development (GCVSPDA, 2012), and partly as a result of decades in which the City Council insisted on retaining virtually all inner-city sites cleared through redevelopment for subsidised housing (CHECKLAND, 1981). This displacement of population to the suburbs has been described as an inevitable effect of the 'centrifugal pressures of private capital' (PACIONE, 1991), to which regeneration can be considered a counter-strategy.

The undeveloped stock of land in the city must be viewed in a growth context, with a population expected to increase after decades of decline by around 90,000 over the next 25 years, or 3-4,000 per year; at the same time, there is a measured shortfall in delivery of new housing against the planned requirement, of over 11,000 in the period 2008-2015 alone (GCC, 2015b). Annual completions of housing for sale fell from a peak of 2,542 in 2003-4 to 955 in 2011-12 (GCC, 2013), and have since remained at these levels.

We suggest here that these three factors- vacant land, middle-income household migration, and shortfall in new private housing- together provide a sufficiently problematic set of circumstances to demand a fresh approach to physical regeneration, an approach based on the study of historical cycles of change in urban form. This work is part of a broader task to establish a normative approach to master planning based on a systematic understanding of city form currently being pursued by the Urban Design Studies Unit (UDSU) in the University of Strathclyde. The study focuses on the delivery of this normative approach, using the exemplary tale of the Gallowgate neighbourhood; but this is only one example of many we are currently examining. The paper will briefly illustrate the case, before going on to draw more widely applicable conclusions from the historical study.

Urban form is linked to the nature of the investment activity which produces it; this form is evident in scale, location, density and urban character depending on the nature of the capital that is harnessed to its production, management and maintenance. It is possible therefore, through the study of changes in urban form at the level of land subdivisions, to observe cycles in the relationship between form and the investment which generated it. Regeneration sets out to enable a city or neighbourhood to attain a self-perpetuating state of complexity and diversity, beyond the capacity of market forces (SCOTTISH GOVERNMENT, 2011). Clues about the nature of previous investment cycles can be taken from this study of a typical regeneration area in Glasgow, in which a clear cycle of historic change is apparent in the process of plot formation.

By understanding these cycles it is possible to suggest the form that investment should take in future to better support regeneration activity, as it has been defined above. The process of land subdivision that might be adopted is particularly important for a more effective investment strategy that could actually increase development activity and bring wider public access to the control of individual plots of land. This idea of broadly spread control, as it relates to physical change brought about by a range of means and by various agencies over

the course of time, has been considered a significant factor in successful built form (HABRAKEN, 2000), (AKBAR, 1988), making the housing development process more responsive to changing priorities and demands than other, less differentiated provision.

Approach to analysis

The principles of analysis based on the plot- this being defined succinctly as ‘the smallest expression of undivided ownership, and *therefore decision-making*, within the townscape’ (TARBATT, 2012) - are well-established in the field of urban morphology (CONZEN, MRG, 1960; SAMUELS, 1990; PORTA and ROMICE, 2014). To study the changes in the formation of plots over time, we identified key determinants of plot character measurable on plan, and applied these determinants to large-scale map records of the Gallowgate, an inner-city neighbourhood in Glasgow, at points from the mid-19th Century to the present. This area was selected for its status as a current regeneration priority area, and because its history of physical change is typical for the inner city.

One of the key characteristics of the urban fabric is the relationship between the plot (as defined above) and the street edge to which it belongs; hence the street edge can be viewed as an assembly of plots, rather than the plot being derived from the subdivision of a larger block (PORTA, et al, 2011). The study allowed us to uncover the relative, or potential, autonomy of the individual plot with its potential to respond flexibly to changing demands and needs, independent of the larger urban organisation (PORTA and ROMICE, 2014).¹

Thus, we recorded how plot size changed over time, and how in a related way larger, but directly connected, urban elements also changed, that is: street edges, and blocks formed from these street edges. The five periods selected for study correspond broadly to recognised British morphological or plan-periods, in which significant formative processes lead to urban form of a particular character (CONZEN, MRG, 1960):

- i. Mid-Victorian (1851-75)
- ii. Late Victorian (1875-97)
- iii. Edwardian (1897-1914)
- iv. Inter-war (1918-1939)
- v. Post-war (1945-)

Whilst urban morphology is not yet recognised as having normative implications, to us, its capacity to express temporal clustering or grouping of plots is revealing, and can be used to move from a process of analysis, to one of prescription, in enshrining specific physical characteristics of plots considered important for the promotion of particular modes of development, through the formulation of ‘form-based codes’ governing the design parameters of that development.

The analysis is set out in the following figures:

- Plot boundary plans (Fig 1-5)
- Number of plots (Fig 6)
- Plot size distribution (Fig 7)
- Proportion of area defined in plots (Fig 8)
- Change in plot size distribution (Fig 9)
- Length of plot street frontage (Fig 10)

Plot boundaries were as closely defined as the detail of map sources allowed, and were categorised by area. Individual plots could be occupied, over the selected period, completely by buildings, partially by buildings, or vacant. All may be regarded as plots, provided they display the basic characteristics of 'regular' plots in being a defined piece of land that: a) has been developed; b) faces a street; and c) has access from the street on a primary edge.² This is a useful definition in its clear relation of plot to street, both as a reminder of the overall urban structure within which the plot exists, and in highlighting the presence of an independent means of access as an essential property, from which the potential for independent control and development of the individual plot is derived.

The 1860 plan (Fig. 1) shows the area in the process of urbanisation, with main streets already laid out, but some large plots occupied at low density by single villas, or unoccupied. By 1895 (Fig. 2) urbanisation has progressed and the process of subdivision has extended over much of the area, increasing the number of defined plots, the majority of which are used for blocks of tenement housing. Plot definition is advanced, and new streets are formed, accompanying the process of regular plot formation. By 1933 (Fig. 3) the number of plots is seen to have peaked, and some evidence of consolidation is evident where larger plots are formed through a process of amalgamation to accommodate public buildings, cinemas and factories within the existing urban fabric and street structure.

The 1980 map (Fig. 4) post-dates the comprehensive redevelopment of the area, running from about 1960 to 1980, and represents a phase of 'metamorphosis', in which the urban structure is completely revolutionised (CONZEN, MRG, 2004). This reflects the adoption by the municipal authority from the late 1950s, of a comprehensive development strategy of inner-city renewal, in which the public acquisition of land and buildings was a prelude to widespread demolition and reconstruction following modernist planning principles.³

Two features of this latter stage of the urban process are particularly striking: (i) the urban structure has fundamentally changed, so that the main street geometry internal to the area has altered from established north-south orientation (with a single exception) to east-west; and (ii) the proportion of land that is left over, that is, undefined in plots, has risen considerably. The relationship of plots to streets has become far more difficult, notably in the northwest corner of the area now occupied by housing. While the majority of plots can still be said to be 'regular' (they are clearly defined, and directly entered from a street), new plots apparent in the diagram have rather more ambiguous relationships to streets.

The later period is marked by successive phases of redevelopment, the most recent of which being an attempt to move back to a structure in which the plot-street relationship is strengthened and clarified after the chaotic interventions of comprehensive development. In the 2014 map, (fig 5) the essential structure established in 1980 is maintained, the notable changes being the clearance of clusters of plots in the north and south of the area, with their partial replacement in a rather more regular pattern on a new street running east-west.

Analysis and interpretation

Having delineated the individual plot boundaries through the series of five maps, and captured these as individual shape files on a Geographic Information System (GIS), the data was then interrogated to capture the points in the figures listed above.

Number of plots 1860-present (Fig.6):

The simplest linear analysis of change in plot numbers is clear. From 1860, the number of delineated plots increases significantly to 1895, where it reaches a peak before declining slightly to 1933, mainly as a result of the amalgamation or accretion of existing plots to accommodate larger building types, an aspect of cyclical renewal of built form through the process of plot repletion. Land development was at this point carried out by small investors, usually following guidelines set down by the landowner and endorsed by the municipal authority. Plot numbers are then seen to decline steeply in the period between 1933 and 1980, when the physical structure also changed dramatically following the specific policies of comprehensive development in that period. There is both a reduction in overall number of plots, and in the area defined in regular plots (Fig. 8).

Plot size distribution (Fig.7)

Figure 7 shows the distribution of a range of plot sizes, ranging from the very small of <50m² to the very large, >1,000m². While the period up to 1933 has a relatively consistent distribution, but for a discernible shift downwards in the size range from 1860 onwards, the really striking element is the narrowing of the range of plot sizes post-redevelopment, in 1980 and 2014; now virtually no plots fall into the small (<100m²) or large (>500m²) categories. There has been a tightening of plot size distribution, corresponding to the provision of much more uniform built form through the process of redevelopment, with a simplification of the urban structure and reduction in its resilience.

Proportion of area defined in plots (Fig.8)

Returning to the reduction in crude number of plots, Figure 8 shows the effect of redevelopment on the proportion of total area actually defined within plot boundaries, which is seen to fall remarkably, from 70% and above in the period 1860-1933 to around 30% in the years after 1933. Whilst some of this change might be accounted for in the difficulty of plot definition around non-conventional built forms (such as multi-storey blocks), which may tend to under-record the area included in plots, and while some open space may have been allocated for amenity use, it remains clear that undesignated area has risen dramatically.

Change in plot size distribution (Fig.9)

The movement in plot size distribution over time is indicated for each of the four intervals, in which degree of change is indicated by line gradient. Periods of greatest change occur between 1860 and 1895 (accounted for by the process of subdivision of large plots), and between 1933 and 1980 (illustrating the levelling process in the range of plot sizes after redevelopment). The latter change takes place in parallel with the major reduction in total plot numbers shown in Figure 6.

Length of plot street frontage (Fig. 10)

Measurement of plot street frontage indicates change in the pattern of 'regular' plots, these being plots with access to the street on a primary edge, therefore contributing to the function of the street network of the neighbourhood. Gradual increase between 1860 and the 1930s plan is evidently the result of the formation of plots on streets; this formation has been inhibited in the Gallowgate by the construction of a railway cutting on the northern boundary, preventing significant extension of north-south streets after 1860. After the 1930s the street frontage length declines, as much of the new municipal housing has been designed without

a recognisable plot-street interface; the new housing, in other words, does not contribute in a functional sense to the street. By 2010 this housing has been demolished, and development has once again been formed on plots facing new streets, indicated by a modest increase in the measured plot street frontage.

Summary of findings

The results of the analysis of plot development and change over the period 1860-2014 in this series of graphs consistently describe two distinct periods of development: the period from 1860 to 1933, in which significant change in the composition of the Gallowgate took place through subdivision and repletion, and to some extent in later years, amalgamation of plots, developing, strengthening and clarifying the urban structure; and the period after 1933 in which radical change, or 'metamorphosis' was apparent which comprehensively redefined the plot definitions of the area, along with its buildings. In this latter stage a number of processes are seen to act, if not together, then certainly at the same time. The number of plots reduces, mainly as a result of an increase in undefined land; the relationship of plots to streets becomes more difficult and indirect in respect of entrances and fronts on to streets; and the diversity of plot sizes diminishes.

These findings, corroborated by further similar case studies in Glasgow not presented here, provide the basis for observations which, we argue, can assist in the regeneration process in inner-urban areas which, like the Gallowgate, are subjected to redevelopment blight.

An obvious consequence of comprehensive development is the wholesale removal of existing buildings; what this study has shown is that the removal of existing urban structure and plot definition is just as important, since these two elements have been seen through this study to be capable, over time, of embracing change and modulating the new with the existing, without a loss of overall coherence, diversity and, ultimately, resilience. The historical, cultural and economic background to Glasgow's development confirms that its evolution from mid-19th to mid-20th century frequently happened in a rather spontaneous and intermittent manner depending on the availability of capital, within an interconnected urban layout, well integrated into the wider urban context. From the mid-20th century, the Gallowgate was redeveloped on radical spatial principles, disconnected externally, and made to be reliant on fewer, less complex internal streets.

New plots and streets were comprehensively imposed on the existing layout, suggesting the co-ordinated and systematic intervention of a single authority. These are the circumstances known to have existed during the period of comprehensive development in Glasgow, guided by central planning by a municipal authority with wide powers to acquire and redevelop land. The built form apart, what remains as a legacy of that process is a set of land subdivisions that, in themselves, do not contain the structural complexity capable of supporting future redevelopment other than the type initially created and equally destined to failure; it is then a self-perpetuating form. In order to change, renewed master planning seems to be inevitable, and such plans have indeed been commissioned in recent years by the public agencies leading the current regeneration of the area.

Implications for master planning

Our historical analysis, combined with complementary work by UDSU on master planning and urban morphology, suggests that a historical perspective on the role of urban structure

at the level of the plot can help to re-establish sound approaches to dealing with the physical regeneration of inner-city sites in future, opening these up for development in new ways.

If we consider the urban structure to be made up of relatively independent elements- the streets, plot boundaries and buildings occupying individual plots- the potential durability of this basic structure appears to provide the desired conditions for diversity of use and of occupant control, even when individual parcels or plots change (TALEN, 2006). Change in both its synchronic and diachronic aspects is seen to be possible, so that diversity of development, and evolution of use over time, are capable of being accommodated within an established and enduring plot structure (TARBATT, 2012), (WHITEHAND, 1992).

It may follow, then, that a process of urban development which supports and engenders meaningful levels of individual control has some kind of definable grain, or texture, at the detailed level which distinguishes it from less supportive and engendering forms (JACOBS and APPLEBY, 2013); indeed, there is a view that the 'potential of small plots to enable change and diversity gets inhibited if they are not controlled by different subjects' (PORTA and ROMICE, 2014).

This emphasis on the plot as the smallest unit of urban form differentiates the plot-based approach from conventional urban design techniques, which, while frequently sharing an interest in the basic arrangement of buildings facing streets, take the urban block to be the defining, or primary, unit of that morphology (the approach adopted, for example, in much of the Berlin IBA development zone (DAVEY and CLELLAND, 1987)). It appears that a development process based on fundamentally changing the pattern of land subdivisions across a defined area, removing the majority of historic plot definitions and establishing a completely new and different pattern, is unlikely to come about through an organic process in which the next stage can be seen to emerge naturally from the circumstances of the last.

If new master planning – by which we mean a structural approach establishing the spatial parameters of future evolutionary change – is to be used in the regeneration of numerous physically damaged and disordered neighbourhoods, the present study suggests that the recognition of the fundamental importance of plot definition is a starting point to help escape the fate of a continuing cycle of failure and metamorphosis. The evidence of the period 1860-1933 in the Gallowgate shows that a neighbourhood can undergo significant change and development within the parameters of the existing urban structure, in an incremental fashion and without the loss of the fundamental integrity of urban form based on streets and the land subdivisions which relate directly to those streets. Change can be brought about piecemeal and spontaneously, rather than necessarily large-scale and comprehensively, provided a suitable base is established to start from. This is precisely the scope of the masterplan.

The late 19th century in Glasgow was a period of rapid change, fuelled by the investment of capital which we know was generally held by small investors and therefore released gradually into physical development (MORGAN, 1996); the existing urban structure was capable of accommodating the physical change brought about by this gradual flow of capital. Comprehensive development funded by municipal capital significantly reduced the diversity of plot sizes in the Gallowgate, generating new and inefficient relationships between plots and streets, both of which acted in this process (as much as the clearance of the established

diverse range of land ownerships and functions) to remove the existing ability of the urban structure to self-regulate and change incrementally.

This illustrates what has been observed as a trend in municipal involvement in radical urban change in the use of compulsory purchase powers, deliberately as a means of land consolidation, as the 20th century progressed. Observing quite the same dynamics of urban change in New York in the late 1950s, Jacobs made the distinction between 'gradual money' and 'cataclysmic money' (JACOBS, 1961). While gradual money was believed to build complexity and diversity, cataclysmic money was unable to do so. More than fifty years later, it is probably time to take her words seriously and work for a new plot-based planning agenda where gradual money is the new normal (again).

Municipal development in Glasgow since the 1960s indicates an over-dependence on large-scale planning and the use of compulsory purchase powers to control land and pursue urban development (ROBERTSON, 1998). Indeed the use of compulsory powers in this way, backed by large controlling municipal capital as a means of land consolidation for redevelopment, has been a general trend in the latter half of the 20th century (WHITEHAND, 2001). Even the Urban Task Force of the late 1990s chaired by Lord Rogers, proposed a development approach based on priority areas with reduced bureaucracy and weakened protection for existing ownership rights (URBAN TASK FORCE, 1999). Neighbourhood renewal has indeed often been seen as a process dependent on centralisation of the control of land (COCHRANE, 2007). While central co-ordination may be a necessity, the role for the authority needs to be realigned to the establishment of a suitable framework (both spatial and regulatory), followed by its strategic withdrawal. This balancing of master planning by a central authority with open structure and small-scale opportunity has been characterised as 'top-down meets bottom-up' (CAMPBELL, 2010), a fundamental feature of complex adaptive systems in nature and society (GUNDERSON and HOLLING, 2002).

Conclusion

We argue here for a new approach to the planning of development in inner-city regeneration areas like the Gallowgate, which might set out by establishing a sound foundation and suitably strong underlying structure of streets, infrastructure and land subdivisions (rather than buildings, necessarily) to provide for a virtuous cycle of gradual investment, capable of meeting changing human needs over time in a flexible and responsive manner. Such an approach might also, because of its capacity to reduce development risk, be supported by private sector investors (ADAMS and TIESDELL, 2013).

It has been suggested that the UK has historically had a particular problem with such an approach, partly because of a recent tendency towards non-intervention by public bodies directly in planning processes (LARKHAM, 2006), understandable perhaps given the manifold failures of the decades after 1945. This is in contrast to the view in other countries in which the role of the public sector in planning for, and directing, private sector input is better grasped (e.g. the use of the 'B-Plan' in the German planning system (STILLE, n.d.)).

What must be countenanced by the public sector, if it is to take on an effective master planning role, is a process that allows ownership and control of individual pieces of land to become as diverse and broad as possible, in order, primarily, to break the cycle of 'cataclysmic' intervention. This diversification might be assisted by a return to something

resembling the breadth and diversity of plot distribution (but not the built form) seen in the 1895 plan of Gallowgate, achieved through careful master planning that carries with it an awareness of the fundamental importance of plots as the building-blocks of the urban environment. Land subdivision must be decided before ownership.

This requires a fresh look at development processes, offering a better opportunity for low risk development, and an incremental approach which effectively de-risks the process on inner-city sites, making them as attractive an opportunity for private sector interests as the green field urban periphery, but also accessible to a range of interests including the small-scale and individual developer, and a range of delivery methods including self-managed and self-build housing. By offering access to a supply of land ready for development, with the infrastructure in place and the roads network forming (or reinforcing) the structure of the neighbourhood already established, the authority can provide a real opportunity for middle-income households, able to raise mortgage finance, to fund new housing in the form they wish to have it and at the pace of development they wish to follow; the demand for such a break with conventional housing processes appears established, even necessary (PARVIN, et al 2011).

In taking responsibility for infrastructure and observing a critical separation between urban structure and the buildings which populate it, the authority can at the same time as supporting self-managed housing processes, ensure that new development meets the functional planning standards required, and that the roads network and other infrastructure within which plots are delineated is supportive of this approach, being hierarchical, interconnected, and with good connections to the existing street context outside the regeneration area.

Glasgow City Council has recently indicated its interest in accelerating housing production in the city by progressing from an over-dependency on conventional private developers, adopting instead an enabling role, in which its activities will include 'pump-priming sites for development, investing in up-front infrastructure and land remediation, taking new and innovative approaches to ensure flexibility and shared risk between partners'; this is intended to 'increase the range of housing options on offer including self-build and custom-build plots' (GCC, 2015a). While detailed strategy remains to be formed, it is however signalling a clear return to the incremental form of development harnessing the benign force of gradual money, and the small scale, fine-grained and diverse development it can support.

The challenge becomes one of developing, from a morphological approach to the analysis of urban change processes, a set of principles of plot formation on which to base detailed urban design guidance for future development; design guidance that is "performative" rather than "prescriptive" in its approach (MARCUS, 1985), emphasising the primacy of plot characteristics and underlying structure rather than buildings, and therefore capable of both establishing formal constraints, and enabling the orderly passing over of development initiatives to the lowest appropriate level of control.

Guidance in the form of design codes might, indeed, go beyond the governance of the initial formation stages and, taking a cue from this study of the Gallowgate, set out principles that future subdivision and amalgamation of plot form should follow, to support an urban structure capable of adaptive response to changing demands over time, rather than one condemned by its own rigidity to cataclysmic change.

Notes

[1] While noting that morphological analysis must be placed within a context of social and economic factors in order to get the whole story of urban form and change (Conzen, MRG, 1960), the method of physical definition and description of plots is of more immediate interest, given the intention to move towards a prescriptive approach to development based on physically-defined plot structure.

[2] We are indebted to the work of Jacob Dibble of UDSU for clarifying these terms.

[3] 29 Comprehensive Development Areas were declared in Glasgow by 1959. Few progressed significantly beyond the clearance of existing urban fabric.

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