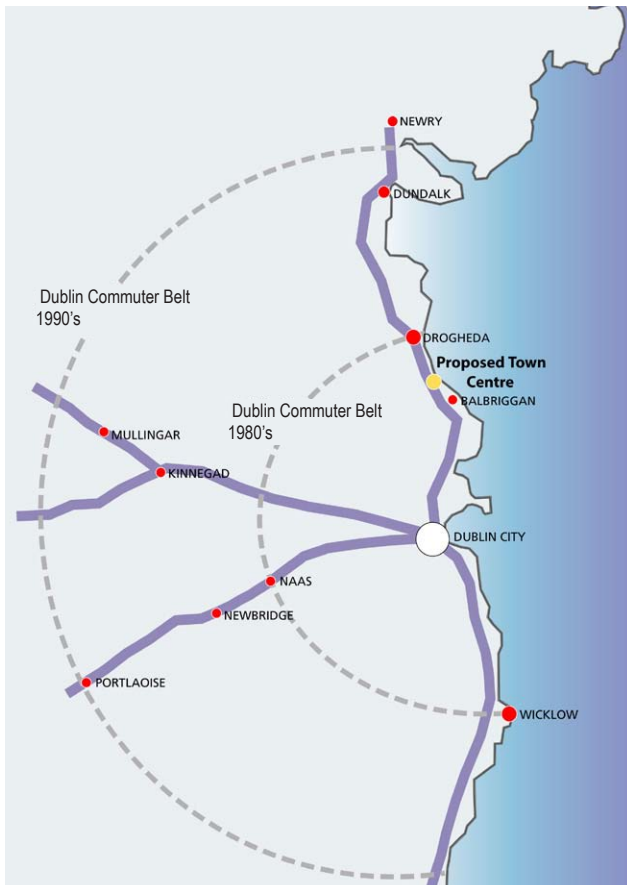


Urbanism and Road Design



Lateral expansion of the Dublin Commuter Belt

The path is the first discernable and patterned form or mark made by man in the wilderness. Many of those most ancient paths are still trod today. Hence it states the obvious to say that roads have and will continue to have a profound influence on our cultural landscape and built environment, just as the great technological leaps of canals and rail-lines at their zenith profoundly re-orientated human settlement patterns and commerce. All leave paths and transport modes leave their mark on the geography of the island, confined not only to their physical impression but also in their catalytic impacts. By changing the means of getting around we fundamentally shift our perspective of landscape and time. What were once distant are now connected. While the influence of canal and rail on the landscape are somewhat neatly defined understood by time and nostalgically packaged, the influence of motorised road based transport is still at approaching its zenith beyond our horizon.

It could be said road transportation is the single greatest influence on our contemporary patterns of settlement and socio-economic activity. Motorised transport permits mobility, choice and geographic flexibility unprecedented in the history of human settlement. A degree of mobility unprecedented in its relative accessibility to the greater majority of the population. A new mobility which is constantly re-shaping our geographic concepts of the possible and dissolving what are now redundant boundaries of city, town and countryside. Rural is predominantly now a state of mind versus a way of living. We live in an era where the 90 minute commute is no longer exceptional

Today we talk about the geographical commodities of regions and economies: fluid and connected realms of movement and occupation, unbounded and multiplicitious. The Irish Planning system recognised the new reality of changing settlements and economic patterns with the introduction of the Regional Planning Guidelines under the 2000 Planning and Development Act.

The private car will perhaps have had the greatest influence on the look and feel of the Irish landscape than any other human innovation since the enclosure of agricultural lands and the potato. Just as the potato had a profound influence on the population and settlement of the island 18th and 19th century Ireland leading to surge in population on the marginal lands of the western seaboard and in upland areas, today it is the motorised vehicles that will provides the mechanism for sustaining the contemporary population in those locations peripheral locations.



Portobello Bridge Dublin, morning rush-hour negotiated co-existence of vehicular traffic, pedestrians and cyclists

Road infrastructure has been the dominant driver in the emerging form of our towns and cities during the past half century. The linear provincial towns that crept along the route of main roads, incremental ribbon development, dispersal and sprawl and as such this describes the non-planned or ad-hoc settlement. The great arced lines of suburban collectors, distributor roads, relief roads, are unmistakable signifiers of the pre-eminence of road mobility in the design of our built environment, often to the detriment of all others concerns.

The terminology of road engineering (collector, distributors, relief, by-pass) are more redolent of sewers, piping and emergency heart surgery, than the root and branch structure for modern living. Perhaps within this lies a paradigmatic problem of conceiving transport infrastructure in problem solving and utilitarian values alone and not as holistic parts of another larger inhabited environment. The cuts and boundaries in the landscape created by road construction reflect the vehicular performance issues such as; design speed, vertical alignment, horizontal alignment.

Today society broadly accepts the negative impacts of combustion engines and carbon emissions on our environment and climate change and it is conceivable that within a generation the energy of mobility may be overhauled to utilise environmentally benign technologies. However we will still have to cope with the spatial impacts of roads and vehicles, and the safety of road users.

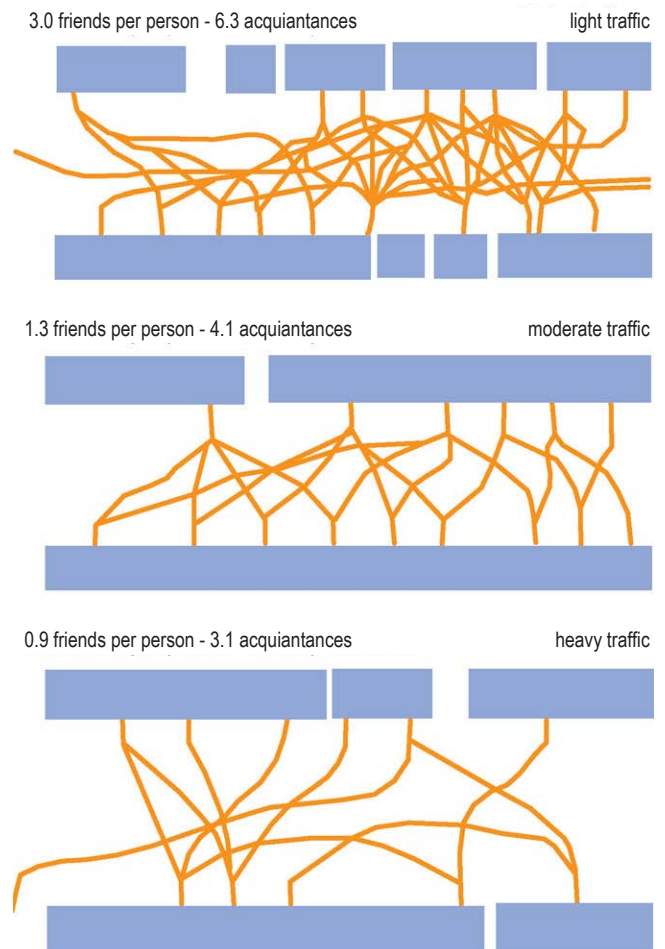
Road Safety

Road safety in Ireland has improved greatly over the past 30 years or more from 1972 when 640 were killed in road collisions to 2006 when the equivalent figure was 368. Considering the subsequent growth in the national population (2.97million in 1971 to 4.2million in 2006) and the exponential growth in car ownership the decrease is even more impressive despite this road accidents and road mortality are to the fore in public discussion and daily news reporting. Perhaps in itself a reflection on the relatively peaceful and politically stable society we live in, where the violence and carnage of a road traffic accident is both shocking and unacceptable, yet imminent and also close to our everyday life experience.

It is therefore incumbent on the built environment professions of engineering, urban design, planning, architecture and landscape architecture to reflect on their capacities and roles in addressing road safety, and what are life and death issues.

Urbanism versus road design

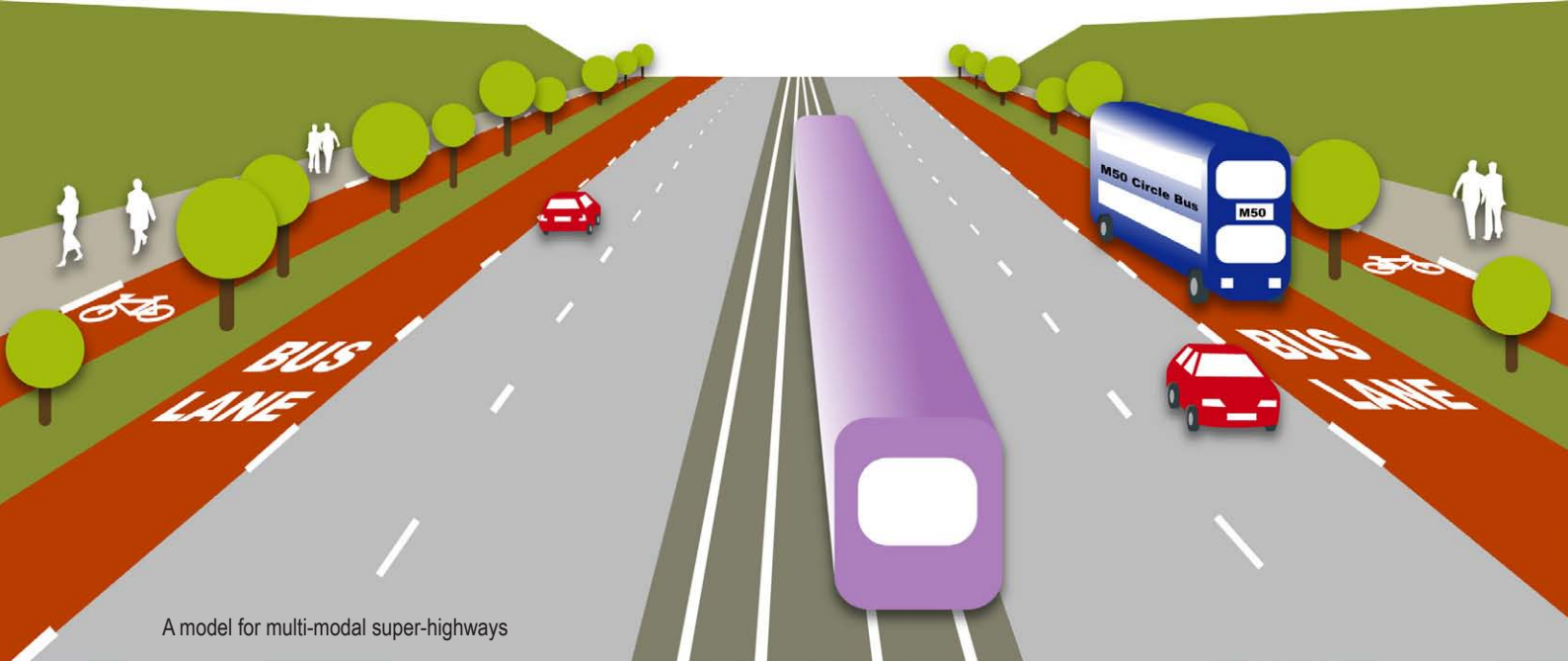
There is an inherent conflict and paradox between road design and urbanism. Urbanism is essentially about living together. It



Relationship of acquaintances and traffic flows on San Francisco streets
Adapted from Appleyard and Lintell (1972)

is about the design and management of human habitat to be functional, comfortable, inviting and inspiring. Urbanism manifest in cities requires the negotiated co-existence of multiple human activities; work, learning, play and living. Paths and roads have been through history the blueprint, circuitry and life force of all cities. Urbanism celebrates the street as the interface and stable co-existence of movement and occupation, of public and private domains.

Road design however promotes a diverging view of the world, a view that is almost exclusively concerned with the speed, safety and capacity for vehicular movement, concepts which are quantitative and measurable. Road design is generally intent on streamlining conditions and risk minimisation. The order and language of road systems is coded and predictable: a hierarchy of colours; blue motorways, green national roads, Ns, Ms and Rs, junction numbers and junctions arms, icon signage, speed limits. This contrasts with the evolved intuitive mind mapping method by which humans naturally relate to their environment; making memories, seeking visual cues, deductive thinking. Road



A model for multi-modal super-highways

design is largely divorced from such concepts, relying heavily on codes and hierarchy.

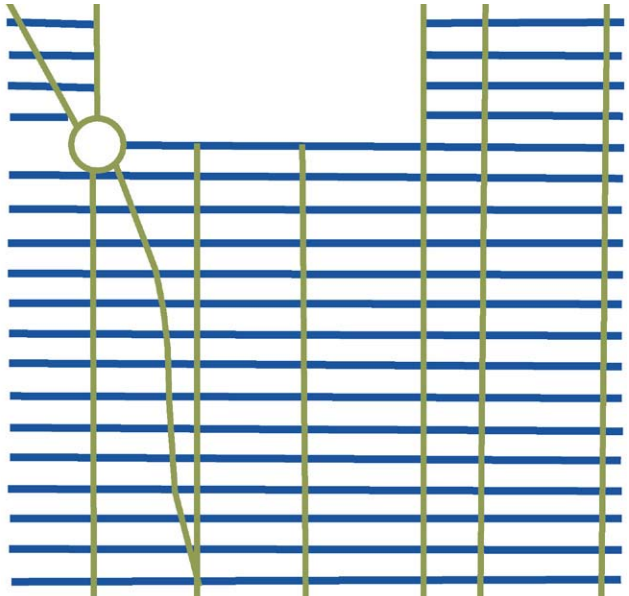
Urbanism promotes virtues of multiplicitious cities that are diametrically opposite to the engineered approach to road design. It is to the dismay of urbanists that road design should have such a heavy influence on the nature of contemporary cities and the belief that a more integrated and holistic approach to settlement and mobility would make a greater contribution to reducing road casualties, than a road design based solution alone.

An urbanist perspective on mobility

The urbanist is not hedonistically dismissive of the imperative of road mobility to sustaining commerce and the contemporary way of life. It is the perspective of the urbanist that efficient and robust networks of mobility can be sustained without prejudicing the comfort and function of cities as human habitat.

The urbanist promotes robust versus rigid transport networks. That within all mobility systems there should be choices and alternatives, choices between modes of transportation and the routes available. The mobility systems of modern cities should be capable of accommodating journey growth and have a tolerance for unforeseen yet predictable events (such as traffic accidents). The urbanist promotes a lattice/grid versus arboreal/pulmonary mobility structures which are too vulnerable at key arteries and trunks to complete malfunction (as has been experienced on two occasions over the preceding months on Dublin's M50 and the N11).

It is the thesis of the urbanist that mobility and all transport modes must be considered and designed holistically (joined up thinking). Why is that in Dublin one can't attach a bicycle to a bus, that there are so few east-west bus routes. The urbanist is concerned with human safety and health collectively versus the



Manhattan Grid based on the Commissioner's plan of 1811 highly permeable network, system of one way streets running east-west and two ways avenues north-south.



Barcelona Grid based Cerda's 1859 plan for the expansion of Barcelona Square block (113 metres wide) structure of the grid gives equal priority to north - south and east-west movement.

predominance in the design of the built environment to reducing traffic risk and maintaining the dominance of vehicular mobility.

It is an imperative of Great cities that they are easy to get around. The mobility system should bring the entire city region within reach of efficient, comfortable and frequent public transport. Great cities should be great to walk and cycle around and yes great cities should be safe and comfortable to drive around.

The social costs of cities built around car transportation are many. One of the major causes of road traffic accidents after speeding and alcohol is driver fatigue. Fatigue caused by inevitably long commutes and long journey times and the lack of choice between driving and other transport modes. The social cost of lost time spent in traffic and the accompanying stress, alienation and frustration. The economic cost of lost time and inefficiencies. In summary the profound misplacement of human potential.

Principle of Mobility and Urbanism

The following discourse puts forward a set of sketch concepts and design principles for mobility in urban planning and design as a contribution to re-establishing a more mutually acceptable balance of mobility and occupation, of car and city, of people and machines. Perhaps what is put forward could form a basis for a new urban contract for mobility and settlement, a contract future proofed for growth and changing circumstances. The urbanist submits that mobility should be considered with longer 100-200 year horizons, as oppose to the prevalent trend to for short to medium term projections (10-20 year).



Ranelagh - Rathmines Dublin
Movement network evolved from radial routes from city centre with the later introduction of new east- west links. Overall a coarse modestly permeable network.

Regional networks

All future motorway corridors should make provision for and/or incorporate public transport corridors, pedestrian routes and cycle routes and room for lateral expansion of road space. Motorways should provide opportunities for enhancing and extending pedestrian and cycle networks. Every motorway built without a public transport corridor has been an easy and cost effective opportunity missed to provide new high speed and high capacity public transport routes. Imagine if the M50 had incorporated enough space for a commuter rail-line; it would be Metro-West made easy. A high speed connection to Dublin Airport integrated with all the radial and road and rail routes into and out of the city.

City networks

The essence of cities is gathering and connecting people. Mobility networks within cities should be efficient, robust and adaptable, offering choice and alternatives. The grid/lattice network approach to city design has proven historically to be the most easily adaptable and enduring, and a better model for accommodating the unforeseen than the arboreal/pulmonary models; that in time may require relief roads and by-passes. This is not to say that cities should be laid out on rigid grid plans which can often be perceived as monotonous and overwhelming, but that the mobility networks of cities should be grid-like with extensive coverage and choice of routes. Cities at eye level should be legible and navigable as oppose to disorientating. The choice of routes, intersections and mobility interchanges in a city should be frequent and regular and designed and located on the basis of comfortable pedestrian accessibility and catchment. Grids by their structure are also highly permeable and allow for



Knocknacarragh Galway
Planned residential area from 1980's to present. Residential estates based on arboreal networks of 'cul-de sacs', connected by a system of Distributor Roads.
A rigid and impermeable movement network

a greater degree of unanticipated journey choices, interactions, movements and exchanges amongst the population of the city.

At the scale of the street.

At the scale of the street we suggest a little less room for vehicles, a little more room for pedestrians, cyclists and outdoor activity; such as children's play and casual neighbourhood interactions. The regeneration of the Ballymun social housing complex in Dublin exemplifies what can be achieved in applying such principles. On primary through routes the road carriageway width is minimised, this along with the presence of regular on-street parking spaces and driveway entrances discourages high speeds and permits easier crossing of the street by pedestrians; this of course does not necessarily prejudice the efficiency of the street as a through route for traffic. At the lower end of the urban hierarchy, shared surfaces are applied in courtyard situations; here the courtyard is presented as a pedestrian environment with a single undifferentiated surface treatment for vehicular access and parking, and pedestrian access.

We promote the concept of shared surfaces where viable from the perspective of mobility and human safety; such as residential streets and courtyards and even within the traffic calmed environments of office and university campuses. The benefits of a shared surface approach are:

- The street surface is reclaimed as social space. A place safe for children to play and neighbours to converse.
- More efficient land utilisation as less room is used for road surfaces and pedestrian circulation.
- The street surface is signified as a pedestrian

surface, encouraging vehicle drivers to proceed with a higher degree of caution.

- The dimensions of the street can be narrower, providing where desirable a greater degree of enclosure and definition of the public urban realm.

The shared surface street is a vogue concept in urban design, but is not entirely new. There are some examples of shared surface streets to be found in the residential suburbs of Dublin constructed during the early 20th century; such as Mount Brown in Kilmainham and the Bulfin Estate in Inchicore.

On busier routes where for reasons of mobility efficiency and human safety, pedestrian, cyclists and vehicles require a high degree of separation, signalised pedestrian crossings should be provided at frequent and regular intervals. Poorly located and infrequent pedestrian crossings can lead to long waiting times for pedestrians to cross roads. Long waits and inconvenient crossings are counter-productive as they discourage walking as a mode and as a result of pedestrian frustration discourage the safe crossing of roads at designated points.

We would submit that pedestrian crossings should be provided across roads at intervals of 80-150 metres. Such frequency should not be an impediment to efficient vehicle mobility considering the traffic lights could be sequenced to activate simultaneously, allowing for the needs of through vehicular and cycle traffic.

At street intersection / junctions on busy routes signalised pedestrian crossings should be provided on all arms of the



Ranelagh Village Dublin
Signal controlled pedestrian crossings located at 80-150 metre intervals



Mount Brown Dublin
Historic precedent for a shared surface residential Street

junction, as oppose to the 'C' configuration of crossings common on road junctions in Ireland, where one arm of a four armed junction will have no pedestrian crossing; thereby requiring safety conscious pedestrians to potentially cross three roads to cross one.

In order to encourage the maximum number of journeys in cities by foot, the location of pedestrian road crossings should respect the inherent pedestrian desire lines and minimise the travel distance for pedestrians.

When we consider the obstacles, inconveniences and deterrents experienced by the pedestrian in moving through the city they are difficulties experienced by all pedestrians regardless of health or ability. Greater still the dismay when we consider the difficulties experienced by those citizens with a physical disability or adults in the company of young children, for whom the modern city can be truly difficult to get around.

Below and right
 Urban Design Framework for expansion of a vilage in North County Dublin based on a network of one way shared surface streets (shown as blue lines on plan)
 by Murray O Laoire

This article is based on the proceedings of a conference paper prepared by the Urban Design and Planning Unit of Murray Ó Laoire Architects delivered at the Institute of Transport and Highway Engineers Conference 'Playing our Part', Tullamore, October 26th 2006.

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