

## Corridor development, a dialectical and design-orientated approach

\*Track 8 Urban design and physical form

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### Abstract

Corridor (or belt) development and multi-polar patterns of urbanisation are long known features of the landscape. Corridor development is a form of urbanisation that, for a range of reasons such as merchandise, production, socio-economic and military/strategy, has occurred through the whole history of urbanisation. However it is a pressing topic in (Dutch) spatial planning and research.

New technological developments in fields as transport, ICT and logistics plus the flexibilisation of labour, production and mobilisation this corresponds with, contribute strongly to the multi-polar network- or territory-city. This form of urbanism is an important trend in the post-fordist paradigm which it now being constructed.

Together with the upcoming and consolidation of this pattern comes the corridor or belt development between the cultural, business and production nodes in the network. This type of development follows laws of economy and (capitalist) production and should be regarded in that way.

Until recently corridor development was one of the leading concepts in Dutch planning, though for a short period. As a preamble on the Fifth Nota Spatial Planning, (the leading strategic document on spatial planning in the Netherlands, now coming out) strategic documents as Corridors in Balance, and the Startnota were produced, in which a corridor-concept, complementary to existing cities, was propagated. In the resulting Fifth Nota this concept was abandoned and attention was aimed on the nodes in the network. This can be regarded as a mistake, since ignoring socio-spatial processes does not stop or solve them.

The methodological focus of the paper is on socio-spatial and spatial-temporal dialectics, using the triad spatiality-sociality-historicity, introduced by Edward Soja. This dialectic approach is aimed on transformative -creative- action, i.e. design, revealing and strengthening potentials such as sustainability, multiple space-use and public transport.

## The postmodern urban condition

The last decades can be characterised by the rising of several post-isms, such as; poststructuralism, postfordism and postindustrialism. These post-isms can be seen as a collection of interfering concepts in a new plane of immanence; post-modernism. This postmodernism as constituency of technological, social, economical, cultural, esthetical etc. changes also has far-reaching spatial and urban consequences.

According to Michael Dear (M. Dear, 2000) postmodernism can be seen as style, epoch and method. Postmodernism as style is often regarded as double coded. Charles Jenks writes about postmodern architecture that it should contain a code that is popular, traditional, slow changing, full of clichés, romantic nostalgia and family life and on the other hand a code that is connected with the fast changing society with new functions, materials, technologies, organisation of production, ideologies and fashions: dialectic and pluriform. Postmodernism as epoch consists of the transformation of modern-functionalist relations in more complex and pluriform relations. Frederic Jameson describes postmodernism as *a periodising concept whose function is to correlate the emergence of new formal features in culture with the emergence of a new type of social life and a new economic order*. (H. Foster, 1985). Jameson (F. Jameson, 1984) states that old organisation and perception systems are destroyed and replaced by a postmodern hyperspace. Postmodernism as method contains among others Derrida's deconstructivism and Deleuze's nomadic thinking. Hall Foster describes postmodernism as a *strategy of interference*; focussed on the deconstruction of modernism in order *to open its closed system ... to challenge its master narratives with the discourse of others*. (H. Foster, 1985)

The geographer David Harvey tries to find the connections between the multiplicity of post-isms by defining the postmodern plane of immanence as double coded, as a simultaneous orientation on *globalisation* and the *body* (D. Harvey, 2000), on *macro* en *micro*, on *deterritorialisation* and *reterritorialisation*, or on the *global* and the *local*. This dialectic between globalisation and the body connects post-isms mainly focussing on economy and geography, such as postfordism and postindustrialism, with post-isms that are more concerned with philosophy, arts, architecture etc. such as postmodernism in arts and poststructuralism. Especially for urban planning and design this dialectic between macro and micro is very important, because cities are both cities in a world-economy and the life-environment for individuals and groups. The simultaneous focus on the global and the local is also described by other postmodern geographers. Krishan Kumar states that the *[p]ostmodern society typically links the local and the global. Global developments - the internationalisation of the economy and of culture - reflect back on national societies, undermining national structures and promoting local ones*. (Krishan Kumar, 1995). Edward Soja describes in *Postmetropolis* (E.W. Soja, 2000) an approach that integrates the global and local perspective; *glocalisation*.

Soja recognises two schools in the studying of economic globalisation and the world-wide sprawl/dispersal of urban-industrial capitalism since the seventies. On the one hand there is an internalist school, based on economy, international relations, strategic studies and management-science. This school aims at the unravelling of internal processes of the capitalist economy as expressed in specific local contexts and places. On the other hand there is an externalist school based on a geopolitical economic perspective. This school focuses on the global and macro-economic forces that determine these internal processes and specific geographies. Both approaches individually don't lead to satisfying results. Soja recognises in the beginning of the nineties a corrosion of the polar thinking and describes the rise a recombinatoric alternative; a thinking based on a *both / and also*, instead of *one or the other*. In this atmosphere the term *glocalisation* arose: a telescopic mix of global and local vision, adapted to local conditions; a localisation of globalisation. (E.W. Soja, 2000).

By pulling the local into the global and the global into the local, glocalisation contests that globalisation and localisation are different or opposite processes. The rethinking of globalisation leads to the recognition that it is not just a process on global scale but is continually localised. Nation-state loses importance in this glocal world: *It is precisely this breaking down and reconstitution of spatial scales, from the most intimate spaces of the body, household, and home to the metropolitan region and the territorial nation-state, that is so deeply involved in the contemporary intensification of globalisation.* (E.W. Soja, 2000, p. 200). This glocalisation can, according to Soja, be seen as a point of departure for the reconception of not only the relations between global and local, but also the whole tissue of relations that define spatiality in present social life and especially the specific spatiality of urbanism.

A distinction can be made between postindustrialism and postfordism. Postindustrialism concentrates mainly on computerising of society; the information or knowledge society; the replacement of labour and production by knowledge, information and communication. Postfordism describes the new organisation of production, transport and companies in combination with an intensification and flexibilisation of capital, privatisation, the retreating government and a pluriform working-class in search for new forms of and basis for organisation. An important spatial feature of both -isms is the reconceptualisation of time and distance. Soja describes the postfordist regime of flexible accumulation as *a complex mix of both de-industrialisation (especially the decline of large-scale, vertically integrated, often assembly-line, mass production industries) and re-industrialisation (particularly the rise of small and middle-size firms flexibly specialising in craft-based and/or high technology facilitated production of diverse goods and services), this restructuring of the organisation of production and the labour process has also been associated with a repatterning of urbanisation and a new dynamic of geographically uneven development* (E.W. Soja, 1996).

Dear defines post-fordism as *an increasingly flexible, disorganised regime of capitalist accumulation* (M. Dear, 2000, p. 74). To describe this flexible regime of accumulation Dear introduces the term *flexism*, which he describes as *a pattern of econo-cultural production and consumption characterised by near-instantaneous delivery and rapid redirectability of resource flows.* (M. Dear, 2000, p. 152) This fluency of flexism is caused by cheaper and faster systems of transport and communications, globalisation of markets and the flexibility-specialised, just-in-time orientated organisation of production. This results according to Dear in highly mobile flows of capital and goods, which are more manoeuvrable than the geographically-fixed labour markets, communities and nation-states that have to adapt to this condition.

*Post-modernity reverses or qualifies some of the typical spatial movements and arrangements of modernity. The concentration of populations in large cities is countered by a movement of de-concentration, de-centralisation and dispersal. Much of this is related to postfordist developments. It is also the result of the de-industrialisation of many regions of western societies - with much manufacturing being exported to non-western societies - and post-industrial re-industrialisation based on high-tech, research-based concerns which have preferred new locations in suburban and ex-urban areas, especially those near university cities* (K. Kumar, 1995, p. 122)

This simultaneous concentration/deconcentration and de-industrialisation/re-industrialisation can be regarded as features of what Deleuze calls de-territorialisation and re-territorialisation.. *The earth constantly carries out a movement of deterritorialisation on the spot, by which it goes beyond any territory: it is deterritorialised and reterritorialised.* (G. Deleuze, 1994, p.85) *It merges with the movement of those who leave their territory en masse...* (G. Deleuze, 1994, p.85). Cheshire and Hay distinguish several types of de- and reterritorialisation, which they regard as circular processes; urban concentration and deconcentration, de-industrialisation and re-industrialisation, and agrarian or rural intensification and extensification (Cheshire and Hay, 1989)

Deterritorialisation is inseparable from the territories that open themselves for this. Territory and earth are therefore two components with zones of indiscernability. New technologies and ensuing new organisations of production, lifestyles, needs etc bring about that both flows occur simultaneous, in both directions and with high speeds.

*City and state ... carry out a deterritorialisation because the former juxtaposes and compares agricultural territories by relating them to a higher arithmetical Unity, and the latter [the city] adapts the territory to a geometrical extensiveness that can be continued in commercial circuits.* (G. Deleuze, 1994, p.86) Because of technological developments and related changes in production, trade and thereby new balances of power, the international market has become dominant and force people and companies to be mobile. *The social field no longer refers to an external limit that restricts it from above, as in the empires, but to immanent internal limits that constantly shift by extending the system, and that reconstitute themselves through displacement.* (G. Deleuze, 1994, p.97). Deleuze states that [t]oday we can depict an enormous, so-called stateless, monetary mass that circulates through foreign exchange and across borders, eluding control by the States, forming a multinational ecumenical organisation, constituting a de facto supranational power untouched by governmental decisions (G. Deleuze, 1988, p.453).

De-territorialisation concerns the collapsing of fordist worlds of production and the related spatial segregation of labour, hegemony in politics and discourse of the modern nation-state, and established patterns of real-and-imagined cultural and spatial identity. Re-territorialisation can be described as the critical reaction on globalisation and postfordist restructuring, that generates new performances from individuals, collectives, networks, cities, regions, companies, cultures etc. in order to reconstruct their territorial behaviour, spatiality and lived space as means of resistance or adaptation.

An important feature of the postfordist and post-industrial regime of accumulation is the repression of space and conventional distance by time, made possible by new communication and transportation technologies. This repression of distance can be represented in tempographical maps. In these maps distances are not measured in kilometres but in time. An example of such a tempographical map is given here. This map shows Europe with Rotterdam as centre and distance represented as hours travelling by high-speed train.



\* □ Image 1: Speed in Europe, On European tracks, Netherlands Architecture Institute

Anderson distinguishes four logistical revolutions that define the European settlement-network in the cause of time. (A.E. Anderson, 1986). The first revolution is the mediaeval rise of long-distance trade, that opened the feudal system. The second is the improvement of organisation of trade, the transactional system, of the sixteenth and seventeenth century. The third is the industrial revolution, that completely renewed the systems of transportation and communication. The fourth is the twentieth century changes in technology and organisation of knowledge-processing. As features of the settlement-systems connected with these four revolutions Anderson mentions respectively the network of trade and craft towns, the formation of a sub-set of capitals and harbour-cities, the rise of industrial areas and cities, and as fourth the formation of C-areas; areas with competence, culture, communication and creativity, based on fast interaction by highway, train and airport.

The postmodern spatial organisation is characterised as multicentred, nodal, flexible and global. (E.W. Soja, 1996). Urban concepts that connect with this are described as network-city, urban networks or multipolar urban development. The corridor is part of the settlement-network of connected with the fourth logistical revolution Anderson mentions and with the features Soja associates with the postmodern spatial or urban organisation. According to Whebell, the corridor is *proposed to denote a linear pattern of major town joined by highly developed bundles of transport routes. Corridors comprise the primary historico-spatial system of innovation, diffusion the progress of which leads ... to differentials in the mix of material, organisational and philosophical innovation from place to place* (Whebell, 1969, p.4) Corridors are the lines between nodes of the network, characterised by interaction. At first the pattern still is composed as a string of beads but according to Whebell (Whebel, 1969, p.26) the corridors can develop as mainstreets of a loosely structured metropolis. Several types of corridors can be distinguished; the corridor as transportation axis, as economic development axis and as urbanisation axis (Corridors in Balans et al)

## Three methodological approaches

The developments ascribed to the postmodern urban condition in the previous paragraph appear not to be simple action-reaction systems but are complex mix of technological, historical, social, spatial, etc. phenomenon s. In order to work as urban designers in this postmodern urban condition it is important to analyse and understand how these phenomena intertwine and interact. For this purpose it is useful to look at some analytical and methodological systems of a related spatial science; the geography.

Geographers use diverse analytical and methodological systems, often inspired by philosophers. This paragraph elaborates on three approaches used by postmodern geographers. The dialectical approach based on Marx and Engels, which is among others used by David Harvey. A more open dialectical triad, based on Lefebvre, which is used by Edward Soja. And the concepts that the French philosophers Deleuze and Guattari developed, which is used by Marcus Doel; a rhizomatic approach that tries to avoid the Hegelian dialectic and looks for multiplicity and singularity; for *otherness of other* instead of *otherness of the same*. *Whereas the former [the otherness of the same] belongs to the theoretical-practice, falling under its jurisdiction and influence, the latter [the otherness of the other] does not. More precisely, in the former difference and otherness are appropriated to the Same, whereas in the latter they are ex-appropriated* (M.A. Doel, 1994, p. 1042).

### Dialectics

The spatial dialectical approach assumes that composition and production of space in which different interests, ideals, phases of development etc. succeed each other, but always leave traces in the newer condition; they never disappear completely and don't change with the same speeds. What comes into being already existed, though in the form of a small seed (H Lefebvre, 1962, p. 36) Produced space is not seen as a thing, as an object but is seen as a process containing a multiplicity of constituent processes and relations that can be more or less contradictory.

*Dialectics restructures our thinking about reality by replacing the common sense notion of thing, as something that has a history and has external connection with other things, with notions of process, which contains its history and possible futures, and relation which contain as part of what it is its ties with other relations* (B. Ollman, 1992) Luke writes about this aspect of the dialectics that *[o]lder orders of space are certainly succeeded and displaced by newer ones but the older orders do not necessarily disappear* (T. Luke, 1996)

Harvey expresses that dialectical thinking emphasises the understanding of processes, flows, fluxes and relations over the analysis of elements, things, structures and organised systems. (Harvey, 1997, p. 49) Transformative behaviour - creativity- arises out of the

contradictions which attach both to the internalised heterogeneity of things and out of the more obvious heterogeneity present within systems.

Harvey clarifies his dialectics by distinguishing 5 features (Harvey, 1997, p.80-83). In his dialectical analytics: *Each moment is constituted as an internal relation of the others within the flow of social and material life*. These moments take place in a social or spatial process and thus errors arise when examination of one moment is held sufficient to understand the totality of the process.

Internal relations are shaped through an activity of translation from one moment to another. Each moment internalises heterogeneity largely by way of a variety of conflicting effects from all the other moments.

Reifications of free-flowing processes are always occurring to create actual permanences in the social and material world around us.

Discourses can never be pure, isolated or insulated from other moments in social life, however abstract and seemingly transcendent they become. The discursive moment is a form of power, it is a mode of formation of beliefs and desires, it is in itself an institution, a mode of social relating, a material practice, a fundamental moment of experience.

### ***Il y a toujours l'Autre - the triple dialectic***

At the heart of Lefebvre's thinking is the continual search for ways of breaking open the binary classifications that underpin our conceptual worlds. Lefebvre tries to do so by introducing a third term; *Il y a toujours l'Autre* - there's always another term.

Lefebvre distinguishes mental, social and physical space. He states that these dimensions of space should not be kept separated and builds a unitary theory of space. This unitary theory brings the physical space of nature, the mental space of logic and formal abstractions and the practico-sensory realm of social space together in a dialectical relation. Lefebvre introduces the concept of social space, the space of social life and the space of social and spatial practice in order to exceed the traditional duality between actual and mental space. Social space is a social product. Every society produces its own space, it is this production process that according to Lefebvre should be object of interest.

Lefebvre identifies a triad of perceived, conceived and lived space as the three moments of social space, which have dialectic relations to one another. The first moment is spatial practice that *refer to the material and physical flows, interactions, and movements that occur in and across space as fundamental features of economic production and social reproduction*" (Agnew and Corbridge, 1995, p. 7). The second moment is representations of space, which refers to the conceptualised space, the space of scientist, planners, urban designers, technocratic subdividers and social engineers. Representations of space *involve all of the concepts, naming practices, and geographical codes used to talk about and understand spatial practices.* (Agnew and Corbridge, 1995, p. 7). The third moment is that of representational space which refers to space as directly lived through its associated images and symbols, and hence the space of inhabitants and users. Lefebvre relates this third moment to resistance. His representational space is space of freedom and change

Soja states in *Postmodern Geographies* that science has more attention for time and history than for geography and space. Soja aims on rebalancing this. Soja expresses the dialectical relation between time and space and introduces, after Lefebvre a third term and constructs a triple dialectic of space, time and social being (Soja, 1989, p.12). *Just as space, time and matter delineate and encompass the essential qualities of the physical world, spatiality, temporality and social being can be seen as the abstract dimensions which together comprise all facets of human existence. ... [E]ach of these abstract existential dimensions comes to life as a social construct which shapes empirical reality and is simultaneously shaped by it*. (Soja, 1989 p.25)

In *Thirdspace* Soja distinguishes three types of space; firstspace, secondspace and thirdspace.

Firstspace (perceived space) is the materialised, social produced, empirical perceivable space. It relates to what Lefebvre describes as Spatial Practice. Secondspace (conceived space) is the urban space as an mental or ideative field, conceptualised in the imagination, as a reflexive thought or as symbolic representation. This relates to what Lefebvre calls representations of space. Thirdspace (lived space) is another way of thinking about the production of space, that contains first- and secondspace, but simultaneously focuses both the complex geographical and the spatial imagination; the lived space, a simultaneous real-and imagined, actual-and-virtual locus of individual and collective experiences and action. This third conception of space relates to Lefebvre's spaces of representation. Soja, like Lefebvre tries to escape a reductionist, binary interpretation of dialectics by introducing an-Other, a third possibility or moment. Soja calls this thirding as othering and regards this as the first and most important step towards an open dialectic based on a both and also instead of a this or that (Soja, 1996, p.60). This third term, and thirdspace as a concept, it not a dogma; Soja states that his critique is not meant to introduce a trinity, but to go further, to continue the production of knowledge.

### **The creation of concepts**

The philosophy of Deleuze is very rich, multiple and complex. In this paper the focus will mainly be on one of the topics of his thoughts; the creation of concepts. The creation of concepts is an open and rhizomatic process that goes beyond the construction of a dialectical triad by introducing a third term as Lefebvre and Soja propose. The thinking of Deleuze and Guattari is spatial thinking par excellence. In *What is Philosophy* they state that *thinking takes place in the relationship of territory and the earth* (Deleuze, 1994, p.85) and that *thinking consists in stretching out a plane of immanence that absorbs the earth* (Deleuze, 1994, p.88). The concepts they propose such as planes of immanence, lines of flight, blocks of becoming, rhizomes etc. have a highly spatial connotation and Deleuze and Guattari state in *Thousand Plateaux* to be speaking always as geographers. Furthermore urban designers as well use concepts as means of analysing and designing.

Deleuze tries to avoid Hegelian dialectics. Instead of internal contradictions Deleuze distinguishes lines of flight. Deleuze's critique on dialectics is that *even if there are two terms, there is and AND between the two, which is neither one nor the other, nor the one which becomes the other, but which constitutes the multiplicity. This is why it is always possible to undo dualism's form from the inside, by tracing the line of flight which passes between the two terms or the two sets, the narrow stream which belongs neither to the one nor to the other, but draws both into a non-parallel evolution, into a heterochronous becoming. At least this does not belong to the dialectic.* (Deleuze and Parnet, 1987, 34-35). Notwithstanding this critique similarities with the (triple) dialectics used by Harvey and Soja can be recognised, such as thinking of processes instead of things and the relation between moments, events, concepts etc. that interact.

Deleuze discusses four central and intertwined characteristics of a concept.

First; concepts are connected with a problem or problems, without which they won't have meaning. A concept is according to Deleuze a philosophical reality that gets consistency when it resonates with the reality that it surrounds; it has to connect (Scheepers, 1996, p.87). Concepts are singularities that affect everyday life, normal, everyday flows of thoughts. Therefore they are, just as life itself in continuous movement, in continuous change to keep connected. A concept is a fragmentary whole in regard to one or more, ill understood or ill structured problem. According to Marcus Doel *[c]oncepts, ideas, frames of reference, and theoretical-practices are never created ex nihilo or given as ready-mades... They are fabricated and fashioned in particular contexts, from materials and practices that are already made available to us.* (Doel, 1999, p. 30)

Second; *... every concept relates back to other concepts, not only in its history but in its becoming or its present connections.* (Deleuze, 1994, p.19). So a concept has a history and a becoming. Every concept contains preceding and current other concepts, or components of

other concepts, partly corresponding with other problems and other fields. According to Marcus Doel becoming is a radicalisation of relations, of the spacing of relations, and of relationship space, wherein the conjunctive and takes all; the conjunctive and (is what) deconstructs (the borders, boundaries and limits that are erected and projected between things). A concept is defined by the unity it articulates among its constituent parts. These constituent parts, that what defines its consistency, is distinguishable and heterogeneous but also inseparable.

Third; *a concept requires not only a problem through which it recasts or replaces earlier concepts but a junction of problems where it combines with other coexisting concepts* (Deleuze, 1994, p.18). A concept stands never alone; it always has a relation with preceding concepts and a connection with existing concepts in the same plane. This relations and connections exist by a overlap in constituent components (which by themselves also can be regarded as concepts) an problems. The concepts take part is a co-creation; they answer to different, yet connected problems in the plane. A concept is defined by its connections to other concepts, as well in its own plane as in other planes. A concept is *an intensive trait, an intensive arrangement which must be taken as neither general nor particular but as a pure and simple singularity* (Deleuze, 1994, p.25). A concept is always composed of a multiplicity of inseparable components.

Fourth; a concept can be regarded as point of coincidention, condensation or accumulation of it own constituent parts. *The concept is a whole because it totalises its components, but it is a fragmentary whole.* (Deleuze, 1994, p.16) Concepts are centra of vibrations, in itself and in relation to other concepts. This is why concepts rather resonate with each-other than cohere or correspond.

Every concept has a irregular contour an is defined by the sum of its components. The constituent components are dynamic; they depend on factors inside and outside the concept and may win or lose importance by which its centre of gravity changes. This enables a concept to continue to make contact with the reality that surrounds it. This contact with reality comes into being because the concept is connected to problems, without which the concept would have no meaning.

The creation of concepts takes place on a plane of immanence, the planomenon. According to Deleuze concepts and plane are strictly correlative but should not be confused; the plane of immanence is neither a concept nor the concept of all concepts. *Concepts are like multiple waves, rising and falling, but the plane of immanence is the single wave that rolls them up and unrolls them* (Deleuze 1994, p. 35-36).

A concept is not a representation in a classical sense; it is a point in a plane, that is at once logical, political and aesthetic. (Tod May ed. by Boundeas, 1994, p. 35). The concept is by Deleuze not judged on truth or accuracy, but on the effects it creates inside and outside its plane.

How can these three approaches; the dialectics, the triple dialectic and interference of concepts be related to the postmodern urban system central in this paper; the corridor, and can these approaches clarify the movements that compose these corridors? Can these approaches or methods for analyses also function as design approaches? In order to begin to find an answer to these questions the next two paragraphs elaborate on first the theory of the corridor and the history and becoming of theoretical concepts of corridors or linear urbanisms and on the spatial practice by studying the M4 Corridor in the UK.

## **History and becoming in linear urban concepts.**

In recent Dutch spatial planning documents corridors are presented as both existing in unplanned form and as a new spatial concept as planned corridor development.

As described in the previous paragraph concepts have a becoming and a history. In order to comprehend a concept and the stakes at hold it is necessary to unravel this becoming and history.

Several concepts for linear urban development can be recognised such as the linear garden city, the

The linear garden city, the linear city as one building, the fordist linear city, the combinatory linear concept and the corridor. This paragraph focuses on the history and becoming of linear urban concepts.

Since 1960's corridor development appears in spatial studies. The history of linear development, though goes further back in history. Linear urbanisation can be divided in two interfering and inseparable components: as spatial concept and as socio-economic concept.

At the end of the nineteenth century thoughts rise about linear organisation of housing, working and recreation, both for new cities and for the expansion and linking of existing ones. The main assumptions at the basis of these ideas where; efficiency (of production and transportation), hygiene (air and space), accessibility of services, recreation and work and the combination of urban and rural advantages. Next to these assumptions, also the affection with technology, speed and industry played an important role. (Collins, 1968)

Though even before these (early) modern plans for linear urbanisation where introduced, there has been a history of more or less linear urban systems. One of the earliest known examples is the Cypriot settlement Khirokitia, dating from the sixth century BC. These premodern linear settlements where often formed due to geographical or geological circumstances such as a river, a slab of fertile soil or a range of hills. As is shown in the cases of Athens and the Roman Via Aemilia and Via Romagna linear urban systems could also have a military purpose. These Roman strings of beads still function as an important linear urban system, contributing strongly to the North-Italian economy.

In the Middle Ages the Hanseatic cities formed an important economic multipolar network.

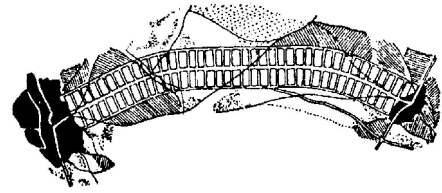
George Collins stated that linear urbanisation is a natural process: *since immemorial times man has, under certain conditions, settled in lineal towns and puts that today this tendency has taken on a new and frightening dimension as the tentacular radii of adjacent cities interlace with each other and produces the wide and uncontrolled strips of built up area that are considered to be the major crisis of our era. These natural settlement patterns testify of tremendous forces that could presumably be harnessed into rational lines of growth in the interests of a more wholesome environment* (Collins, 1968, p.3).

### **The linear garden city**

The first real design for a linear city is probably made by Arturo Soria Y Mata, who around 1880 designed his *Ciudad Lineal*; a linear garden-city, connecting existing Spanish urban centres, trying to diffuse the difference between urban and rural areas. The plan consists of a central railroad with on both sides gridded slabs for housing and working. The concept was created as means of housing for the working class and making them mobile by the railroad. Another focus was class reconciliation, by mixing working-class with bourgeois families and the propagation of home-ownership. Soria y Mata proposes to incorporate villages around Madrid in his Ciudad Lineal, in order to connect them and to bring the country to the city and the city to the country. This has been an ideal during the whole modern movement, and also has influence on the postmodern movement: *Peripheral urbanisation in the eyes of the builders and the dwellers is to be functionally as little countryside as possible and as much city as possible, ... aesthetically as little city as possible and as much countryside as possible*, Hoffman-Axthelm (1991).

Soria stated about his plan that every point of the linear city a new community could arise as the branch on a tree. In this fashion a linear-urban network could arise. A small part of the

plan was actually realised. The concept received a lot of attention in many publications and has been an important source of inspiration for later designs of linear cities. The concept of the Ciudad Lineal was further developed by designers like Gonzales de Castillo en George Beloit Levy. The linear garden-city concept has been leading concept of the linear city movement till halfway the nineteen-twenties.

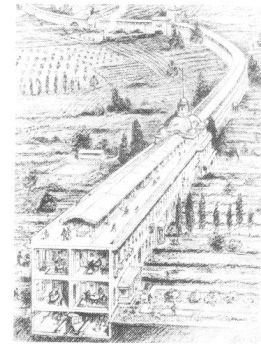


\* □ Image 2: Ciudad Lineal, by Arturo Soria y Mata, 1882

### The singular linear concept

Besides the linear garden city there is another concept that originates from of the eighteenth century; the singular plan, the linear city as one building. An early example is the Roadtown concept of Edgar Chambles from 1910. Chambles proposes a stretched dwelling-building with a monorail system in the basement, a promenade on the roof an public spaces and shops at regular intervals. The concept was created as means of facilitation of the colonisation of America s rural area.

The singular linear concept was used by designers till the nineteen-seventies. The singular idea of the concept remained but the concept was also connected to other 'problems' than colonisation of the rural area. New Babylon, by the Dutch artist Constant Nieuwenhuis also served this purpose, among others. Other singular linear concepts, often designed as 'megastructures' where connected to problems as the mass housing and the need for flexibility.

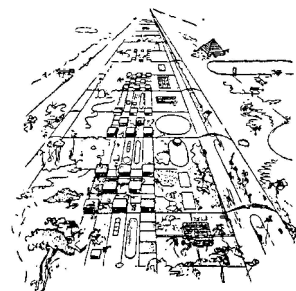


\* □ Image 3: Roadtown, Edgar Chambles, 1910

### The fordist linear city

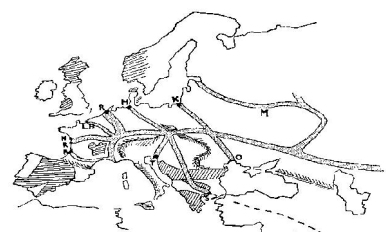
At the end of the 1920's other linear concepts are developed such as the assembly-line-city, the ladder and precursors of the network city, that borrowed a lot of components form the gardencity concept. These concepts are based on the situation of parallel zones along one single line. The form arose as the urban expression of the fordist means of production. From this concept mainly the designs for

Tractors toi (Miliutin) and Magnitogorsk (Leonidov/OSA) are familiar. El Lissitzky writes about these designs: *No other place on earth provides a better opportunity for its [the linear city] realization than the USSR , where industrial combines are sprouting in the desolate steppe like spring mushrooms, evolving their own particular form apparently well suited to embrace a wide range of functional requirements, such as the organisation of industry according to assembly-line methods, and the settlement of large masses of people at a short distance from work .* (El Lissitzky; 1970)



\* □ Image 4: Magnitogorsk, by J.L. Leonidov, 1929

Just as the design from Soria Y Mata, the designs from Miliutin en Leonidov have had great influence on their successors, such as Soetewey and Le Corbusier. At the end thirties Le Corbusier makes a plan for a fordist linear city along (partly existing) infrastructure to form corridors through Europe. Striking about this corridor-plan is its linearity, it is not a real network. Le Corbusier described thee types of human

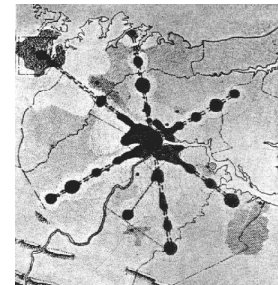


settlement in this design; centralised farms, (existing) centric cities for cultural and political life, and the linear industrial city connecting the urban centres.

\* □ *Image 5: European Road-cities, Le Corbusier, 1942*

### **Combinatory linear plans Combinatory linear plans**

A main critique on the linear plans has been that they could not fit the social activities, housing patterns and concentrated arousal associated with cities. Attempts to resolve these critiques resulted in combinations of linear and other urban concepts. Complex examples of combined linear plans are the designs from O.F. Schweizer and Ludwig Hilberheimer. Albert Pope describes Hilberheimers designs as *Ladders* (Pope, 1996), referring to their morphology. These concepts contain many components from the assembly-line-city such as linear zoning and a main infrastructural work next to the industrial core. Difference is the broad sprawl of the housing zones, and the highly detailed drawings. Assembly-line-cities were mostly represented as schemes or rough sketches. In 1969 Whebell refers to Hilberheimers designs when he develops his theory on corridor development.



\* □ *Image 6: Washington DC, Radial corridor plan for the year 2000, 1961.*

Another concept for linear plans are the radial satellites, as a continuation of the concept of the city with radial extensions. In this concept the expanding city creates or incorporates satellites outside its surface and connects them with urbanised transportation axis. A connection can be made with the concept of Soria Y Mata. An example of this concept is the 'Design for the year 2000' for Washington DC (1961). The lack of connections between the different satellites makes it a centralised and hierarchic urban system instead of a polycentric (regional) network.

### **Corridors**

Halfway the nineteen-sixties in America and Europe development axis and connection axis are regularly mentioned in discussions on urban structure. These axis or corridors mainly get attention from geographers. During the years also planners and policy makers give attention to corridors. In 1965 John Friedmann and William Alonso mention the development axis as a way to lead expansion of urban concentrations towards peripheral areas. Friedman and Alonso define development axes as *elongated corridors along principal transport routes linking two or more metropolitan regions. Their prospects for development may be said to be roughly proportional to the size of the centres they link and inversely proportional to some function of the distance separating them.* (Friedman and Alonso, 1965)

Another early study on corridors has been done by C.F.J. Whebell. He introduces the corridor as *very persistent historically, and [...] one of the mayor urban systems in the New World* (Whebell, 1969). Whebell defines a corridor as *a linear system of urban places together with the linking surface transportation media*. He mainly describes the forming of unplanned corridors as part of a corridor centred economic landscape developing in time. Contradictory to this Whebell describes Hilberheimers linear designs, which are clearly planned, as examples of modern corridors.

Whebell describes an econo-spatial dialectic; a location or settlement can not be explained without considering commerce and production, and vice versa. Settlements that were founded in more fertile and more accessible locations than others were from the beginning ahead of the others and could develop as centres for trade. Therefore they could maintain a position of technological and financial superiority and make investments to improve their position such as roads, railways and highways.

Whebell distinguishes between continental/subcontinental corridors, regional and local corridors. In the Dutch discussion on corridors halfway the nineties, a comparable tripartite distinction is made. Just as the corridor as a system competes with the surrounding area, there also is competition within corridors themselves. Competition on scale-advantages, transport costs and agglomerations mainly takes place inside the corridor. In this struggle, some centres of the corridor develop at cost of other centres that develop slower due to time-space aspects inside corridor systems. Whebell describes the growth of corridors and urban networks as a continuing process of some centres being economically in the lead due to their geographical starting position and maintaining that lead by making investments in accessibility. According to Whebell's model, after first settlement, the most accessible routes between centres come to development, by which the centres along the crossings undergo the most economic growth. From then on infrastructure extends and improves by which the activity in the nodes grows further more. When after this period rail-transport got introduced, rail-connections were made between the important centres. These railroads, often in combination with rivers make it possible that industries arise in the centres along the railroad. In this phase the corridors are forming themselves. The next phase, motorised transport is featured by flows of goods and people by car. Though cars are more flexible than trains, the centres that already were connected by rail appear to have gained such an economical lead compared to the periphery that most economic traffic and industrial production continues to take place over there. Car-traffic seems to follow mostly the corridors that have been developed by railroads. In the last phase, metropolitanism, this effect gets consolidated by making highways between the important centres. These highways only link a few centres directly and simulate commerce between these centres, increasing their economic lead even more.

Four important elements of Whebell's corridor theory are: quality and configuration of the land, direction and distance, settlement behaviour and diffusion of knowledge, and historical time. In Whebell's theory the spatial fix is an important one; capital in his model is not flexible; investments are for long periods and tie companies to a location. Under present postfordist organisation of production and transportation this spatial fix is of less importance. Companies have become more mobile, and the share of finance-capital and commercial services has increased. Companies are now looking for locations where knowledge, accessibility, image and labour-surplus concentrate. Planned corridors can facilitate this and may thereby introduce a new certain level of spatial fix. Therefore it is essential to study the processes and features of spontaneous corridor-development, because accessibility alone is not enough. The elements from Whebell's corridor-theory might be modified into: image and configuration of the region, position and time, settlement behaviour and concentration of knowledge, and ephemeral time.

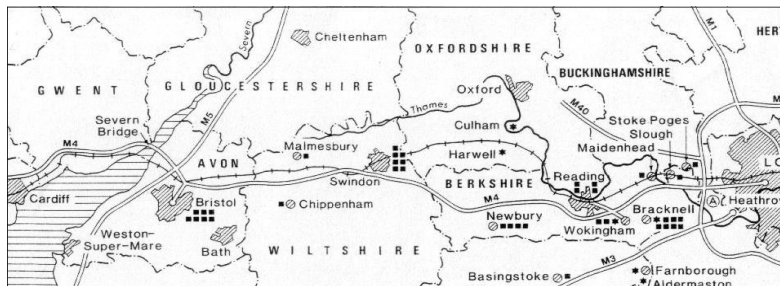
## **Spatial Practice: the M4 corridor**

In the previous paragraph some concepts of linear urbanism were presented, with a short description of their history and becoming. As shown there has been a long history of concept-development in linear types of urbanism, belonging to diverse economic models.

This paragraph elaborates on the spatial practice of one specific corridor the M4 corridor in the UK. This corridor has a complex history and becoming and can be regarded as a composition of interfering technological, political, economical, local etc. concepts. The M4 Corridor, running from London to Bristol and further westward, is more than just a transportation-axis. It also is a urbanisation-axis and economic-development axis even before the M4 was actually constructed. The M4 became the British icon or image of the transition from traditional industries towards a postfordist orientated production-system (mainly concerning (defence-related) microelectronics) and post-industrial knowledge and service economy. The M4 Corridor formed the first core of the British high technology

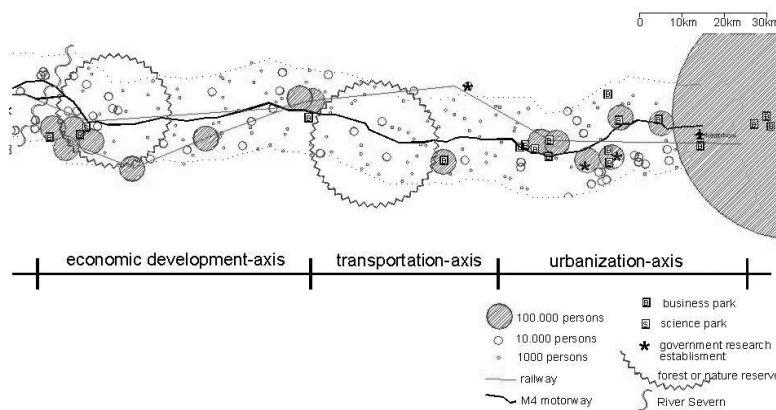
industry. Despite its modesty in job-creation this corridor has a long history of innovative momentum, and is therefore an interesting case. The corridor, now known as the M4 Corridor mainly developed both from London to Bristol as vice versa.

The M4 is an example of a unplanned corridor, unplanned in the way that there was no conscious general concept at the base of its development. It rather was a cumulation of different not consciously in coherence created concepts.



According to Castells and Hall the origin and continuous growth of the Western Sector, as the corridor is also called, is not due to conventional planning though a conscious volition in a wider context is recognisable (Castells and Hall, 1994).

\* □ Image 7: The M4 corridor. Source: *microcircuits of capital*, 1988.



\* □ Image 8: M4 Corridor Case study, H.A. Sap

### The London perspective

Given the changes in technology and means of production in the last 120 year London had to adapt to changing circumstances by developing new industrial traditions out of older ones; from precision engineering to electrical engineering to electronics. Hereby its internal economic geography changed dramatically; from an extension of the artisanal quarters in the inner city in the 1880's into a decentralised industrial corridor at the end of the twentieth century (Castells and Hall, 1994, p.145). The origin of the westward corridor development is according to Castells and Hall to be found in the small artisanal workshops, specialised in scientific instrument and precision machinery, situated in the artisanal quarters near the centre of London. In these quarters arose at the end of the nineteenth century the beginning of the British electronics industry. At the end of the nineteenth century companies started to move from the centre to the west of London in search for space, technical educated workers and cheap labour.

Between the wars the electronics industry grew rapidly. Scale and number of companies grew fast and this resulted in a further expansion to the west. The green belt around London, part of the pre-war regional plan, forced companies in search for space to settle outside this

belt in the adjacent shires. Castells and Hall (1994, p.149) point out that this westward movement and expansion of electronic companies is not enough to explain the development of the corridor; also in towards the north this development took place. Another critical factor where the Government (mainly Defence) Research Establishments, which were already located west of London before WWII but expanded during and after the war. The most important parts of the military apparatus always had been located west of London because of strategic reasons. With the growth of the defence-industry and -research tight relations with the electronics companies were developed and more companies were attracted. Besides this also a lot of commercial offshoots came forth out of the governmental civil and military research and production centres.

During the seventies the concentration of skilled labour and subcontracting services west of London and location near Heathrow started to attract investments in R&D, management and marketing by multinational companies seeking a European base, which contributed even more to the development of the corridor. The construction of the M4 motorway between 60 and 71 and the construction of the fast Intercity 125 train that connected Reading and Swindon to London contributed much to the development of the corridor. These infrastructural work though were not part of a conscious strategy to concentrate growth but were mainly meant to meet the already existing demand for mobility in the corridor.

According to Hall and Castells (1994, p.152) the main decisions that contributed to the development of the corridor were; the location of governmental (defence) research west of London and the tight local planning controls that resulted in the creation of several medium sized urban centres with a high quality of life; high quality communications and a green surrounding. Decisions have been made in separated institutions and parts without the notion of their cumulative effects. Hall concludes in *Western Sunrise* (1987) therefore that *if public policy is supposedly based on co-ordinated conscious decisions coupled with lively awareness of the consequences of the decisions made, the fact that the area has developed in the way that it has, with the speed that it has, is almost entirely accidental.*

### **The Bristol perspective**

Eventhough the corridor development west of London was not planned that consciously, the construction of the fast train connections and the M4 motorway played an important role in the further development of the corridor. The development along this corridor was not just a movement from London Westwards. On the western side of the corridor Bristol has played an important role in the development of the corridor as well. Here also the defence industry has played an important part.

In the 18th century Bristol was a mercantile city that was part of the European-African-American trade-triangle. Bristol was a harbour for the trade of tobacco, cacao, sugar etc. Bristol misses the first wave of industrial revolution between 1790-1840, the textile industry and loses some of its position as important city.

Between 1840-1890 the second wave of industrial revolution spreads; the heavy industry. This time Bristol catches up with; shipbuilding and the transformation of the tradition industry (tobacco and cacao) Round 1880 a transition of competitive capitalism towards monopoly capitalism is notable. Between 1890-1939 new industrial sectors arise made possible by technological developments (such as electricity and new means of transportation) on the one hand and the arising of a mass market on the other hand. The changes in production went hand in hand with a geographical transition towards the Midlands and the South-East. Bristol profited of this transition because of its location. At the beginning of the twentieth century aeroplane industry is located in Bristol, such as the Bristol Aeroplane Company. The rearmament campaign that started in 1935 caused many investments in this Bristol aeroplane industry. (Boddy et al, 1987)

After WWII the UK faces a long-term economic boom and stability; the long boom. During this period a new type of global capitalism arises and the transnational conglomerates are going to play a dominant role in the new international division of labour. Bristol again was well located to profit from this economic growth. At the end of the nineteen-sixties Bristol was considered a boom town. On the one hand because of its great variety in industries; tobacco, shoes, paper, aeroplanes, cars etc.) and on the other hand because of the rise of the service sector

Infrastructural works such as the Severn Bridge and the connection with the M4 and M5 motorways were expected to raise economic growth even more.

But in the seventies growth stagnates and economic instability rises. During the seventies de-industrialisation and the rise of a service orientated economy become apparent. The number of jobs in traditional production labour declined and the number of jobs in service labour raised.

The number of jobs in big (>500 j.) and medium sized (201-500 j.) factories declined and the number of jobs in more flexible small (<50 j.) factories mainly orientated on high technology raised, though this rise could not compensate the job loss of the bigger factories. The authors of the 1987 Sunbelt City research conclude that *the electronics industry is at the heart of the M4 corridor image and national hopes of high-tech-based economic revival.* (Boddy et al, 1987, p.89) In other cities along the M4 corridor the same developments took place, like in Swindon where considerable diversification in the manufacturing sector also took place in the nineteen-seventies with an expansion in light industry, pharmaceuticals and high technology industries.

Just as in the western part of the corridor, also in the eastern part of the corridor there is a strong relationship between the electronic industry and the military research and production units. ... *the prospects are for relatively stable employment, underpinned in particular by the continued success and further development of guided weapons, electronics systems and related activity, and the leading edge of high technology in the locality and indeed in the M4 corridor as a whole.* (Boddy et al, 1987, p.89) Both locational factors and image proved important pull factors for the development of Bristol.

The 1987 research states that Bristol combines a good connection with London, a local labour force and the central location in an area with recreational and other values (Boddy et al, 1987, p.125).

*In terms of its ability to attract these elite groups ... Bristol is only one corner of a wide zone, stretching roughly from Cambridge to Southampton and including the other M4 towns, which has been described as the British Sunbelt.* (D. Massey, 1984)

Besides the presence of the aeroplane industry and a good qualified labour force also the availability of proper settlement space (both for companies as for elite labour groups) and the good connections with other cities along the corridor, played an important role in the attracting of electronic industries.

*The city's specific advantages at the micro-level are the combination of major sites on the northern fringe, adjacent to the M4/M5 interchange and the fast rail link from the out-of-town Bristol Parkway Station.* (Boddy et al, 1987, p.96).

Bristol possesses a strategic position in the most important road and rail networks, with fast connections with Wales, the Southwest, the Midlands and London. The British Rail High Speed Train that was introduced at the end of the seventies made it possible to travel to London within an hour. This resulted in elite-labour traffic between London and Bristol and a relative consolidation of other labour forces which attracted larger companies.

Other regions in the UK have been stimulated in the nineteen-seventies and -eighties by the government. For Bristol on the other hand a policy was chosen that would slow down its economic growth and direct economic growth to other regions. Though, just as in the shown in the London perspective where public policy was not aimed at the development of the corridor the investments in infrastructure (Severn Bridge, high speed train, M4 and M5) and

the investments in defence industry (mainly aeroplanes) and -research resulted in a further development and economic growth.

The development of this corridor was not an act of creating one concept M4 Corridor . The development of this corridor is a clear example of the interference of a multiplicity of concepts and a historic process. These concepts are among others the location of - and investment in of military production and research, local planning regulations, the creation of images by the M4 towns and the construction of infrastructural works. These concepts that can be distinguished but are so interwoven that they can not be separated . The history of this corridor is characterised by the sequence of changes in technology bringing forth changes in organisation of production and new and faster ways of communication and transportation.

By focussing on the history and becoming of concepts and the dialectical relation between theory and practice distinct features of both theoretical concepts and designs as well of the spatial practice of the M4 corridor were discovered. The M4 Corridor seems to confirm the theory about the multiplicity of concepts. Both spatial practice as spatial theory/design a history and becoming can be recognised. Other lines of flight than mentioned in this paper can be found, which is ground for further research on history and becoming of both actual cases and on the development of theoretical and designed proposals. Already similarities between the theoretical concepts/designs and the more spontaneous spatial practice can be mentioned. Examples are housing in green, accessibility and mobility, concentration along infrastructure and the origination and expansion form urban centres. Differences between theory and practice seems to be the extend of planning. The development of the M4 Corridor shows similarities with Whebell's corridor-theory. The designs of linear plans and corridors are often blueprint designs that focus on the corridor or linear city as a thing instead of a process . The spatial practice of the M4 shows that even when not consciously meant to do so governmental decisions such as developing infrastructure and locating (defence) research and production also can contribute to the development of a corridor. Another difference is the focus on image , this focus played an important role in the development of the M4 corridor and the different towns that are part of this corridor. In the linear concepts and designs that have been studied in this research so far do not focus on the image of the individual nodes or beads these linear systems.

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