

mulation model of long-term trends shows development trends and examples of a simulation for Ljubljana.

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Notes

- 1 The hypothesis of the new society is confirmed and discussed by numerous authors. Listed are a few books where the primary role in changing cities by tele-communication and information technology is stated: »The invisible city« (Batty, 1990), »The informational city« (Castells, 1989), »The weak metropolis« (Dematteis, 1988), »The wired city« (Dutton in dr., 1987), »The telety« (Fathy, 1991), »The city in the electronic age« (Harris, 1987), »The information city« (Hepworth, 1987), »The knowledge based city« (Knight, 1989), »The intelligent city« (Lalèrassè, 1992), »The virtual city« (Martin, 1978), »The electronic communities« (Poster, 1990), »The communities without boundaries« (Pool, 1980), »The electronic cottage« (Toffler, 1981), »City as electronic spaces« (Robins, Hepworth, 1988), »The overexposed city« (Virilio, 1987), »Flexicity« (Hillman, 1993), »The virtual community« (Rheingold, 1994), »The non-place urban realm« (Webber, 1964), »The teletopia« (Piorunski, 1991), »The cyberville« (Von Schiber, 1994).
- 2 After Graham, S., Marvin, S. (1997 [1996]) Telecommunications and the city: electronic spaces, urban spaces. London: Routledge.
- 3 The term implies »services and infrastructure, connecting the computer and digital media equipment with tele-communication ties«.
- 4 Graham, S., Marvin, S. (1997 [1996]) Telecommunications and the city: electronic spaces, urban spaces. London: Routledge.
- 5 Ibidem.
- 6 A person working from home using communication-information technology.
- 7 After Fryxell, David A. (2000) Telecommuting. In: Link-up, Medford, Vol.11, No.: 3
- 8 Boyd, John (1999) It beats commuting. In: Asian Business, Hong Kong, Nov 1999, Vol. 35, No. 11, pp.14–15.
- 9 Leksikon Cankarjeve založbe. (1988 [1973]), Ljubljana: Cankarjeva založba.
- 10 Ibidem.
- 11 After Svetilnik, Ivan (1996) Quality of life: final report on the research results in basic research, Ljubljana: Institute of social sciences
- 12 We have to point out, that the quality of spending ones leisure time is not importance, what is »well spent« leisure time cannot be imposed as a criterion, because it depends on subjective judgement.
- 13 Svetilnik, Ivan (1996) Quality of life: final report on the research results in basic research, Ljubljana: Institute of social sciences, pp. 12.
- 14 The discussion is limited to those functionally handicapped individuals, that are impeded in mobility because of congenital defects, disease, accidents or age.
- 15 Independent living can be understood as a paradigm, implying resistance to the medical model of invalidity. Thus a functionally impeded individual should independently decide, how and where to live.

¹⁶ Imrie, Rob (1996) Disability and the city: international perspective, Paul Chapman Publ., London.

¹⁷ Statistical Yearbook (1999) Vol. 38, Statistical office of the Republic of Slovenia 1999, Ljubljana, pp. 172–174.

Graphs

Graph 1: Speed of introducing internet in developed countries

(source: 4th NT conference, Portorož, 10.–12. May 2000, after *The Economist*)

Graph 2: Number of servers/internet users in Slovenia

(source: Statistical Yearbook 1999, Vol. 38, Statistical office of the Republic of Slovenia 1999, Ljubljana)

Graph 3: Households equipped with communication-information technology in Slovenia

(source: Statistical Yearbook 1999, Vol. 38, Statistical office of the Republic of Slovenia 1999, Ljubljana)

Pictures

Slika 1: Example of a simulation model of long-term trends in city development: description of the model

Slika 2: Simulation model of long-term trends in city development: example of a flight above the simulated conditions along the ring road in Ljubljana

(source: Municipality of Ljubljana, department of urbanism)

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Vesna PETREŠIN

Challenges to cities following the information revolution

»Nobody will ever need more than 640 Kbytes of RAM.«
(Bill Gates 1981)

»Windows 95 need at least 8 Mbytes of RAM.«
(Bill Gates 1996)¹

1. Introduction

The fact that the information age has reached Slovenia is obvious – at least from the moment when we were stunned by a slogan convincing us that there are two Worlds. Day-to-day use of modern technological inventions, coupled with the promotion and growing intensity of e-activities have of course left their mark on our society, which is growing more and more organised along abstracts systems of knowledge and information.

Surprisingly, as early as 1968 Burnham² predicted a transition into a culture less burdened with hard artefacts and static qualities. Contrary to the present, the new culture displays the exchange of matter/energy/information and is reorganising relations between people and their environment: »We

are in transition from a culture oriented towards objects into a culture oriented towards the system«.

The real, static, finite, but also inert space of objects is being replaced by a mobile, temporary, virtual world of information and communication. Exchange values within it are already dislodging utility, laptop computers are replacing offices, factories, workshops etc., while increasing service capabilities of the Internet are making certain branches of the transport industry seem obsolete.

We are obviously living in a time where science fiction is always one step ahead of present technological achievements. As put by Frampton (1997)³ about the era of new futurism and our position in it: *»speed and cybernetic accessibility are lying on a platter«.*

The aesthetics of the future is characterised by two processes, miniaturisation and privatisation. Enthusiasm for the architecture of mega-structures is waning, since they are burdened by difficult funding and maintenance costs, as well as poor programme and spatial adaptability. On the contrary, interest for new fields is growing, such as the micro-architecture of chips, design of computer icons and interfaces. Spaces of the future are becoming non-spaces (*a-topos*), since they are not defined by matter, but by the present exchange of information and data processing.

Apparently the industrial age was the last culture producing mega-structures, that are reaching the limits of their lifespan. Industrial ruins, the effects of entropy, today appear as massive buildings with specialised functions, whose scale and solid construction where the only factors enabling survival. Electric power plants, petroleum refineries and platforms, automobile factories and shopping malls will become monuments of the future.

2. The city as a form

Despite numerous pessimistic forecasts about the decline of urbanism, the city as a form has survived, although it had to undergo many transformations. For example, parallel to the global economy, central functions are being densely placed; in global cities the phenomenon is causing increasing spatial density in city centres. In the age of advanced tele-communication technology the hypothesis, that such agglomerations are unnecessary, cannot be fully proved. According to Saskia Sassen (1993)⁴, they enable the development of geographically dispersed employment on one hand, but also, because of fantastic communication possibilities, functions are being centralised.

The fact that in the USA, the information technology superpower, the trend of living in city centres is growing. To understand the reasons for this phenomenon in the age of the information revolution, we have to understand, how new technologies influenced employment and the process of industrial production itself. These direct effects of the information revolution will definitely intensely influence the future development of cities.

Capabilities of processing information and tele-communication have radically changed modes of production and services, as well as the organisation of business structures. We cannot neglect the void separating old, traditional technology

and new complex production, based on the assembly of smaller components. The latter are produced in small specialised production units, their character simultaneously conditioning higher accuracy, speed and costs, than in comprehensive manufacturing units known from the industrial age. These specialised companies can in fact be located anywhere – the only criteria governing their position is cost efficient accessibility for raw material, technical services and distribution systems. Connections between them that provide unhindered operation are facilitated by modern communication systems, tying individual partners and/or manufacturing units.

Accurate assembly and design of particular components in different sites are facilitated by electronic processes, because of the massive increase in capabilities and speed of transport between any given point on the planet. The most useful ones, according to Ruth Durack, a planner from USA (Durack, 2000)⁵ are: CAD/CAM (computer-aided design and manufacture), MVS (machine visioning systems) and VRS (virtual reality simulators). Physically separated activities directly prove the changes in production following the information revolution.

So called *just-in-time* production and delivery will have direct spatial effects, especially land use and site prerequisites. Presently these effects are quite weak, mainly because of missing links in the distribution network, prevailing property rights and the sluggish introduction of new technologies by certain industrial branches.

3. Mobility and technology

We wrote about changes in production: the most far-reaching spatial effect will probably be changes in working hours. However, we have to point out that the concept of working hours began its transformation parallel to the emergence of global economy. Businesses have spread geographically and extended working hours while new tele-communication and data processing technologies already enable the execution of various activities in smaller localised operative bases. Because of new technologies the office is becoming mobile, also implying the elimination of boundaries between work and home, public and private life.

New media and general restructuring of business activities are changing our professional engagements into an appendix of private life, quite different from the methods of craftsmen in the pre-industrial era. Workshops were then located in areas of similar activities (crafts) or services, tied to other life supporting necessities and activities. Today work is a structure, supporting various business and domestic affairs. It will be very interesting to witness how all these transformations generated by new technologies will affect the creation of a new lifestyle, internationally termed *techno-lifestyle*.

Technological trends and pertaining lifestyles are creating a demand for integrated life-employment environments. The result of such demand is a diverse mixture of service and leisure activities, invitingly positioned all along the routes one travels from work home and vice-versa. Thus mixed-use neighbourhoods are emerging, an idea promoted by urban planners in the recent past, but never materialised (built). High-tech capabilities are however not breaking up compact urban neighbourhoods, as one could expect from all possib-

le alienation and social disturbances brought about by the information society. On the contrary, they are generating greater density and integration. The effect is most obvious in the USA, for example the e-neighbourhoods Media Gulch in San Francisco or Rittenhouse Square in Philadelphia. Nevertheless, one doesn't have to fear the complete transformation of our towns aligning to the information revolution, after all, not many of them are responding fully to development possibilities offered by the mentioned data processing and communication technologies.

Of course issues arise on how to use the possibilities of new technologies to their maximum capacity, the advantages of electronic employment and to stimulate new *techno-* lifestyles as an answer to the recent decay of inner city neighbourhoods.

4. Challenges to architecture and urbanism

The more we maintain harsh border lines between functional categories, the greater is the segregation of business and housing activities, thus also the possibilities for combining and rearranging these activities by using new technological capabilities are diminished. For this reason certain municipalities are trying to create mixed living-work environments (*mixed-use zones*); practical problems arise because of the present (and influential) bureaucratic apparatus. It is time therefore for global changes.

With the emergence of new technologies and their influence on our lifestyles, the architectural profession has been put before new challenges, especially for the design of more flexible building types, allowing functional and cost efficient adaptations to unpredictable future needs (the expression used in the computer businesses is *customising*). Probably it is not by coincidence, that the most successful urban neighbourhoods are developing in vacated industrial zones, where the existing building typology offers itself for reuse and new definition. The palette of possibilities is enormous, one can choose between various combinations of functions and business-housing activities. The open layout of a *loft* – formerly a warehouse or hangar – as a unique interior challenges the phenomena of dispersed urban spaces. In a *loft* one can organise a home, office, atelier, workshop, salon, gallery, or combine all of them. We can state that it is the most efficient unit in new electronic neighbourhoods, since it accommodates all the needs of a multipurpose, flexible space. This is the quality that should be expressed in refurbishment, but also in new architecture, something to look forward to and promote even in Slovenia.

Following the information revolution urbanism is being given new tasks: the development of a high quality public domain has become the imperative of our time, because it can enable the blossoming of public – social life and public spaces can become extensions of ones private domain. This challenge is even more pronounced in electronic neighbourhoods where public and private activities are integrated in work-living environments. The design approach to successful public places in such neighbourhoods should be multidisciplinary, whereby architecture, planning, engineering, landscape architecture and information technology should surmount prevailing paradigms and propose design solutions supported by new technological achievements.

To achieve the best yield it is necessary to adapt development potentials to operational needs of the electronic environment, the most important precondition being tele-communication infrastructure in existing buildings. This can be achieved with the installation of adequate optic cables or the establishment of networks throughout the building, tied to a central super-server. In the latter case, computer services become extremely convenient. One should also consider occasional needs or demands, that can be catered to with divided access to work-stations on one or more sites in the same neighbourhood, where small companies, services or researchers working from home can plug-in occasionally. Thus they could use video conferencing systems, connect to the ISDN or obtain access to VR-simulators, MVS and other equipment. Access to specialised information networks and a well maintained global communication networks could become the relevant factor for choosing ones home in a particular neighbourhood or city. Today the key factors affecting individuals in choosing urban spaces and functions are, besides other features, electronic and tele-communication infrastructure, both establishing the *virtual capacity of the city*.

We have already become accustomed to the existence of cyber-space generated by the media, alongside the physical city. This space of electronic information in the city – contrary to our usual dualistic forecasts – is inseparably tied and intertwined with the built-up and natural environment. The created hyper-surfaces contain phenomenological or perceptual experiences of space-time information (*Petrešin, 2000*)⁶. The consequences of digital urbanism processes in cities equipped with electronic infrastructure are changes in their structure: traditional functions of transport, economic, political and cultural crossroads are supplemented with visualised transport and services, but also information networks. The cyber-city is functionally equal to the real urban space, but it doesn't fully relate to its formal aspect, as much as it does to the urban matrix of the new information society. The latter is the real motor for complex social and economic processes, layered onto physical/spatial and cultural conditions.

The new approach to designing digital-physical environments in cities is creating an information loop that can at a certain point become the trajectory for growth of transport routes. Upon the physical level lie layers of infrastructure, transport networks, programmes or built architecture, electronic communications and simulated development. *Digital urbanism* is respectful to hybrid structures that create *continuous landscapes* (Walliser, 1998)⁷. This natural-topological structure is the ideal basis for transformation and flexible relations connect its particular (diversely varied) parts.

Serious involvement in the raised issues could enhance the quest for direction leading to compact, integrated urban development, supported by new information technologies. The revolution in electronics has conditioned possibilities for urban rehabilitation, while our challenge is its further development and use.

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Notes:

1. Gates, B, 198; Gates B, 1996
2. Burnham, J. (1968) *Beyond Modern Sculpture*, Braziller, New York: »We are now in transition from an object-oriented to a system-oriented culture.«
3. Frampton, K (1997) *Intimations of Durability*, Harvard Design Magazine/jesen, str. 23–28: »Speed and cybernetic disposability are advanced as the order of the day.«
4. Sassen, S (1993) *Analytic Borderlands: Economy and Culture in the Global City*, Columbia Documents of Architecture and Theory (D), I. 3, New York.
5. Durack, R (2000) *Techno Trends: Urban Design Implications of the electronic Age*. V: Benson, J. F., Roe, M. H. (ur), 2000, *Urban Lifestyles: Spaces, Places, People*, Balkema, Rotterdam.
6. Petrešin, V. (2000) *Cybercity: a New Urban Matrix of the Information Society*. V: Benson, J. F., Roe, M. H. (ur) (2000) *Urban Lifestyles: Spaces, Places, People*, Balkema, Rotterdam.
7. Walliser, T. (1998) *Bridge City*. V: Reiser, J., Umemoto, N.: Tokyo Bay Experiment, 65, Columbia GSAPP, New York.

Pictures:

Petrešin, V., Robert, L-P. (2000) Cybercity: a New Urban Matrix of the Information Society.

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Mojca ŠAŠEK-DIVJAK

New forms of dwelling – sustainable urban communities

1. Introduction

New types of settlements have been built world wide, offered as answers to the urban crisis of large cities and representing experiments of new settlement lifestyles closely knit with the open spaces with many features of sustainability. Although these settlements differ and are being built in different parts of the World, they do have many features in common and can be coined eco-settlements. Their development is based on good transport connections influenced by the development of information and communication technology. Receiving information and possible electronic links with distant places allow the establishment of numerous activities in suburbs and the countryside, that were formerly predominantly located in cities (commerce, administration, production etc.). In sustainable agrarian communities, nature-friendly types of agriculture are gaining in favour.

Small settlements similar in size to villages are known, but they can also be bigger and composed of several smaller units. Often they are pilot examples of new settlement types, often financially supported, at least in the early stages, by particular countries and various foundations.

2. Characteristics of eco-settlements

There is no general definition of eco-settlements. However the so coined communities do have certain common features:

- **human scale** and emphasis on **social community ties**,
- **participation of members** in settlement management and improvements, a kind of self-government,
- tendencies for replacing **social values**: the classical capitalist value system where economic gain and high income of the individual and constant growth of efficiency are the main indicator of success, is being replaced by other values, above all stressing the quality of life,
- **comprehensive** settlement design with maximum level of independence,
- human activities are **sustainable**, i.e. with minimal effects on natural processes while simultaneously supporting healthy human development,
- **social and economic stability** of the settlement, that can successfully develop even in the future.

The **human scale** of the settlement implies a community composed of such units where all the inhabitants are familiar with each other and where everybody feels ones influence on the communities development. Experience shows that the upper limit of such a unit is 500 inhabitants. If the group is larger it can become over bureaucratic or decompose into several separate parts. The noted size applies to very stable living conditions. Under conditions of typical for a dynamic post-industrial society, where employment and residential circumstances can easily change, the size is even smaller, even less than 100 people. In the Danish communities they established that 30 households and 75 people is the upper limit, still providing a sense of a compact unit. They also showed that in order to provide variety and full experience, the lower limit also has to be set, i.e. at least 15 households or 40 people. Therefore the units have to be suitably dimensioned, ensuring familiarity, and not too small, thus providing a plurality of population groups and their activities. An adequately dimensioned group also ensures safety (security) in the settlement (Context Institute 1994).

Comprehensively designed settlements are those, where all the main functions of life (living, work, shopping, social life, and leisure) are manifested in balanced ratios and intertwined. Contrary to such orientation, in most settlements of the industrial society, these functions are separated into housing, production (industry), commerce, recreation, transport etc. The size of most exceeds the human scale. The concept of eco-settlements replaces their large scale with specialisation and integrated functions, so that eco-settlements can become an understandable micro-cosmos of the whole community.

The latter doesn't imply the possibility of an eco-settlement to function self-sufficiently or isolated from the neighbouring communities, as can be explained on the example of employment. Within an eco-settlement there should be a certain number quantity of employment possibilities for its inhabitants, but daily migration to work (within or outside the settlement) cannot be avoided completely. Certain services and other activities cannot be placed in all the communities, e.g. hospitals, universities, cultural institutions, airports etc. Certain institutions however can be positioned in adjacent settlements, as is the case in the Mondrogon co-operation (Great Britain). With suitable organisation of