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City Modelling from a Sustainable Point of View

Abstract

The number of cities is rapidly growing throughout the world and the characteristics of city life are equally spreading. If it assumed that the biosphere is a single living entity, cities can be compared to the tumours in a cancerous body (LORENZ, K. 1973). They take material and energy from their surrounding areas and they charge them with the waste of their metabolism. The aim of this paper is to compare the evolution, the development and the operation of the urban area with a cancerous body. The result of this analysis will determine the main reason why the characteristic of city life can be deemed unsustainable.

Key words

Tumour-model; Sustainability; Urbanisation; Energy efficiency; Urban and rural spheres

1. Introduction

As a consequence of the growing number of urbanites and the destruction of nature caused by urbanisation, more and more attention is paid to the sustainability of cities. In the past decades, numerous studies have been published which examine the topic from a political, social or architectural point of view, or which focus on the use of energy and land resources.

The sustainability of cities—in terms of the growing number of urbanites and the urban population—is a fundamental question that is relevant for the sustainability of the whole society. According to some urban political ecologists, there is no such thing as an unsustainable city in general. Rather there are a series of urban and environmental processes that negatively affect some social groups while benefiting others (SWYNGEDOUW, E. – HEYNEN, N. C. 2003). On the contrary, our theory is that the sustainability of cities is controversial per se. To understand the authors' view, it is necessary to get over the barrier of the now dominant socio-economic perspective.

On a global scale, more than half of the *Earth's* population live in cities (CENTRAL INTELLIGENCE AGENCY, 2014), but these are only statistics. If the inhabitants who live in urban areas or in urban environment are added to this number, the rate is even higher. It can therefore be suggested that the majority of the world's population is urbanite or, in other words, lives in urban areas. The so-called developed world's urbanites live in urban environments outside of the cities. The lifestyle of citizens is more similar to the population of a city than to the traditional population of a village. For that reason, based on the sustainability of cities and on the urban lifestyle, it is possible to infer the sustainability of the majority of the modern civilised society. Thus, when asking whether the city is sustainable, we also inquire about the sustainability of the majority of modern society.

From the authors' point of view, the unsustainability of the present society relates to its level of urbanisation and civilisation. It is important to note that the concept "urbanisation" not only refers to the growth of the cities and their inhabitants but also the spread of the

urban lifestyle. (In this study the two idioms—urbanisation and civilisation—are taken to be synonyms. It is considered generally that the cradle of civilisation is the first urbanised society. Also the idiom “civilisation” originates from the Latin idiom “civis”, which means “urbanised citizen”.)

Nevertheless, it is important to mention that in the last decades and even before, several authors have drawn attention to the unsustainability of civilised society, but not expressly in terms of the urban lifestyle (SPENGLER, O. 1918; MEADOWS, D. H. *et al.* 1972; WACKERNAGEL, M. – REES, W. E. 1996). According to the authors of this paper, if the issues related to the unsustainability of the city are examined that can help to understand the reasons why civilised society can be deemed unsustainable. To comprehend the unsustainability of the present cities, a city model was created which highlights the city and its relation to the natural environment.

This city model—with a biological analogy—has an unorthodox approach to the role of the city. To comprehend the unsustainability of the city, it is necessary to get over the widespread conception of nature. According to this general idea, nature is a kind of resource mass which is meant to ensure the growth of civilised society and its economy as well as to receive the litter produced by society.

Creating city models is not a new-fangled endeavour in sciences dealing with settlements (settlement geography, settlement sociology, architecture, etc.). In geography, it can be suggested that the best known city models are the classical urban structure models (*Burgess; Park; Ullman*) which model the spatial structure of the inside urban areas based on social and economic aspects (BURGESS, E. W. 1924; HOYT, H. 1939; HARRIS, C. D. – ULLMAN, E. L. 1945).

The common characteristic of classic urban structure models is their examination of the inside structures of the city, principally from an economic and social point of view. In the case of classic urban structures, the question of a city’s sustainability does not arise. In contrast, the model examines the city and its network from a sustainability point of view. It describes the relation of the city and its surrounding

(natural) area instead of the description of the internal structure of the city. It is an important aspect since the aim is to examine the city's sustainability from an environmental perspective; the main point is not the interests of the social group inside the city, but the relationship of the city and its natural environment, and how the city is affected by this. Based on this relationship, conclusions can be drawn about the sustainability of the city and its network, but also about the sustainability of the urbanised (or civilised) society.

2. Research methods

As it was mentioned above, the model presented in this paper represents the role of the city from an unusual approach, based on biological analogy. The main characteristic of the model is to set social and natural phenomenon against biological phenomenon. When the consequences of a given physical phenomenon are known, drawing conclusions becomes possible regarding the consequences of the examined social process.

The analogy which forms the basis of the model seems to be unorthodox; however it is not the first approach of this kind. Most studies dealing with cities interpret the city as a social phenomenon. In other words, their approaches are drawn from the social sciences. Nevertheless, it is important to mention that some social scientists—quite early—applied physiological parallels to represent social processes. For instance, *Karl Marx* and *Friedrich Engels* compared the material and energy consumption of society to the metabolism of an organism (MARX, K. 1861). Moreover, at the beginning, the expression 'metabolism' was the part of the social sciences terminology (POMÁZI, I. – SZABÓ, E. 2006.). Also, similar biological analogies can be found in *Dan Sperber's* epidemiology of representations theory (SPERBER, D. 2000), or in *Baudrillard's* studies (BAUDRILLARD, J. 1998). Among social sciences' studies, specifically the ones dealing with the city, a number of case studies can be found which represent the city or a part of it through a biological analogy.

The main relevance of using biological parallels is to compare and represent the characteristics, the processes and the result of such social and natural processes.

It is important to emphasize that in the case of this study the point is not only to make a social phenomenon more understandable, but to erase the strict boundaries between the disciplines. In this case, the aim of this paper is to bridge the often wide gap between the social and natural sciences.

3. The interpretation of the natural environment

In terms of the model, nature is a compact living system where the entities mean not only the living individuals, but also their symbiosis. According to this point of view, the *Biosphere*, but also the entire *Earth* is an entity. This approach can be found in the *Gaia hypothesis*, formulated by *James E. Lovelock* where the *Earth* is a self-regulating and complex system; in other words, a living being. *Lovelock* named this being after the stoic philosophers (LOVELOCK, J. E. 1979).

Through the model, the city and the role of the civilised urban society are examined based on this aspect. In this context, the main question is the following: what is the role of the city and the urban society in the *Biosphere's/Gaia's* perspective?

Lovelock even examines the role of the human being from *Gaia's* perspective. *Lovelock* views the human being as a parasite which despoils the resources of the *Earth*—the body of the host—contributing to the weakening of the whole *Biosphere*. The authors of this study disagree with this point of view since the parasites come from outside the host's body and the base of their being is the parasitism. In the authors' opinion the human being is not an 'external conqueror'. Also, the understanding that his main action is to despoil the nature is against the authors' point of view.

Looking back to the history of humankind, societies can be found which were able to cooperate with the natural environment. Through their everyday activities they not only did not destroy their natural environment, but via a high level cooperation they could enrich it. The

former ethnical group proceeding with floodplain agriculture in the *Carpathian Basin* is a relevant example. The group was a key factor in that biosphere and eventually without their action the whole valley would have been poorer. If humankind had not proceeded with floodplain agriculture, the natural environment—the flora and the fauna—would not have become so colourful (ANDRÁSFALVY, B. 2007; MOLNÁR, G. 2004; MOLNÁR, G. 2009).

As the operation of the human body cell is not self-serving, but serves the body, it can be suggested that the actions of individuals and of humankind serve nature. In the authors' opinion, the society is an organic part of the *Biosphere/Gaia* (it can be comprehended as a group of cells) or, even more, it is not only a part but the key actor. The man who enriches his natural environment is similar to a coral polyp. This tiny animal builds a habitat, which provides the most diverse biome in the world for the surrounding living environment. If the coral polip would not be in the system, only poorer biomes could develop in this part of the ocean. The collaboration of humankind with the natural environment is similar to the key point of the given biome.

In spite of *Lovelock's* view, the authors do not define humankind as a parasite. The present civilised urban society is rather an ill group of cells which lost its original role.

4. The Tumour-model

In his essay called '*Civilized Man's Eight Deadly Sins*' Konrad Lorenz writes the following related to the modern society: "*If we compare the old center of any European town with its modern periphery, or compare this periphery, this cultural horror, eating its way into the surrounding countryside, with the still unspoiled villages, and then compare a histological picture of any normal body tissue with that of a malignant tumour, we find astonishing analogies. (...) The similarities between the two processes are obvious. In both cases, the still sound parts contain highly differentiated and mutually complementary structures that owe their symmetry to information gathered in the course of a long evolution; whereas, in the tumour, or in modern technology, only very few ex-*

tremely simple structures dominate the picture. The histological picture of the completely uniform, structurally poor tumour tissue has a frightening resemblance to an aerial view off a modern suburb with its monotonous houses designed by architects without much art, without much thought, and in the haste of competition.” (LORENZ, K. 1973).

To complement the above quoted text with the authors’ point of view, it is not only the modern suburban cities, but the present cities which resemble a tumour in general—in terms of their physiognomy and operation.

Other authors also discovered this similarity. For instance in his work called *‘The city in History: Its Origins, its Transformations, and its Prospects’*, Lewis Mumford suggests a likeness between modern cities and a tumour (MUMFORD, L. 1961).

The similarity of a city to tumours is to be seen on aerial photographs of cities (as Konrad Lorenz wrote [LORENZ, K. 1973]), or on satellite images (and it also can be seen if a thermographic picture of a city is compared with a thermographic picture of a tumour). In addition to the similar physiognomy, resembling operations can also be observed. From the authors’ point of view, the present cities in the *Biosphere*—and actually in the entity of *“Gaia”*—operate as the full-blown tumour of a biological individual. The aim of this paper is to present the model of the city through this analogy in details, and to conclude from this the sustainability of the city. According to this similarity, the city model is called the *“Tumour-model”*.

The *Tumour-model* is basically a city model similar to the classical urban structure model that demonstrates the primal operation of a city, and its spatial connections. The model substantially differs from the earlier classical urban structure in three ways:

- While the classical urban structure models mainly focus on the internal relations in a city, in the *Tumour-model*, the emphasis is on the city and its environment (but it also examines the internal relations).
- The classical urban structure models examine the city through its socio-economic aspects, while the examination of *Tumour-*

model is based on ecological, energetic, and sustainability concerns. (Of course these contain the social and economic aspects as well.)

- The *Tumour-model* is based on a biological analogy.

4.1. The main conclusions of the model

I. The structure of a modern city is similar to a tumour. The above mentioned simplified framework characterises both phenomena which differ from the healthy parts—in case of the tumour, it differs from the healthy tissue; in case of the city, it differs from the territory untouched by the urban lifestyle (*Figure 1*).

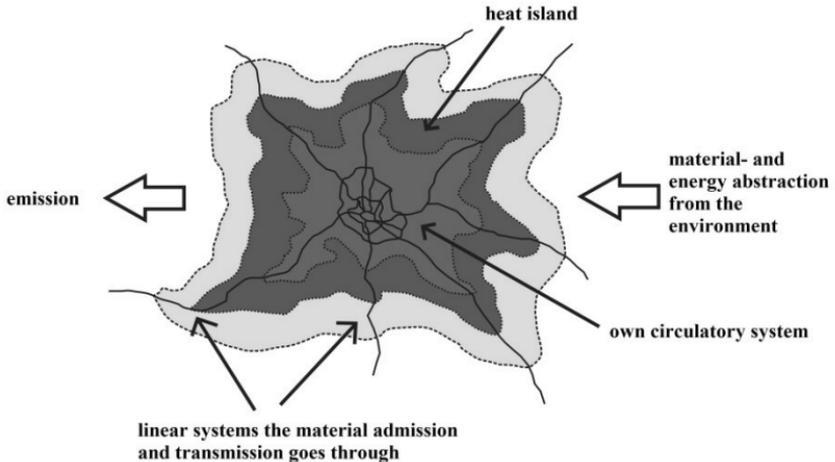


Figure 1 - The Tumour-model

Source: edited by LEIDINGER, D. – HARMAT, Á. (2014)

II. Beyond the visual similarities, there are also operational parallels:

- a) Proliferation: The city, like the tumour, is the result of a kind of proliferation. The number of cancer cells grows continuously by the getting over the cell death and the continuous

fission (WEINBERG, R. A. 2006). As a result, the tumour spreads out increasingly, cutting the still healthy tissues out. The recent modern cities have emerged as the results of the same process—more and more urban areas were grown outside the town centre, extending the whole urban area. As a matter of fact, this process is the annexation of the rural areas by the urban areas.

- b) Material and energy abstraction from the environment: the tumour—in order to keep up the continuous growing (cell division)—despoils the nutrient through the vascular and lymphatic system. Therefore it weakens the whole body since it also exploits the life force from the further tissues of the body. Modern cities function through the same process in which the vascular and lymphatic systems are replaced by linear supply systems (for example: road and railway network, electricity network, pipeline network, etc.). In order to maintain the sustenance and the growth of the urban urbanites' consumption, nature is exploited at an increasing speed. It results in the enhancing dysfunction of the natural systems. It is important to note that the extraction of “resources” also occurs at the social level as the cities “exploit” the remaining population of the rural areas. This process leads to the degradation of this territory both in social and economic terms.
- c) Polluting and toxic emissions in the natural environment: The city and the tumour poison the environment because of its metabolism and, at the same time, it exploits the resources. In the tumour it arises from the metabolism of the tumour cells, in the cities from the urban consumers' metabolism (the output of this phenomena is the environmental pollution). *Table 1* represents the metabolism of an urban society.

Table 1 – An example for the metabolism of an urban society: a daily mass balance of an average European city with one million inhabitants in the 1990s.

Source: VIDA, G. (2001)

Consumption:	Emission:
Fossil fuel: 11,500 tons	Carbon-dioxide: 25,000 tons
Water: 320,000 tons	Sewage: 300,000 tons
Food: 2,000 tons	Solid waste: 1,600 tons

d) In both cases—in a city and in a tumour—a heat island emerges. Moreover, the structure of this heat island has a high level of similarity. The background of this is the spatially concentrated and intensified energy consumption compared to the consumption of its environment (in the tumours in order to maintain the continuous fission, in the cities, for the sake of maintaining or rather increasing the consumption (*Figure 2*).

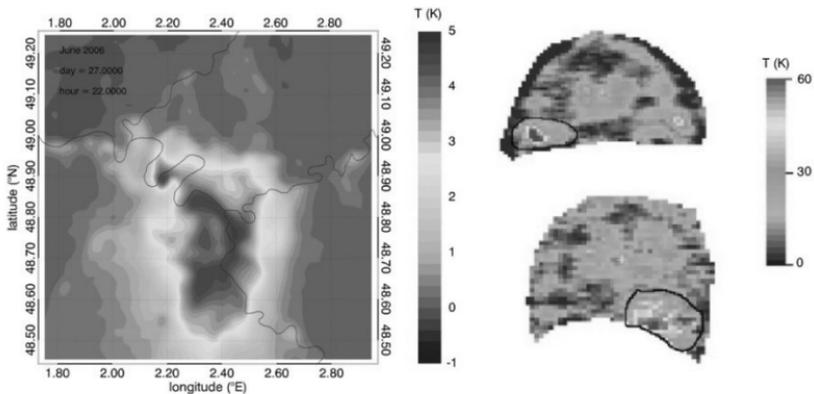


Figure 2 – Thermal image of a city and a tumour

Source: (left) VITO Urban Climate Lab (n.a.); (right) UMC Utrecht (n.a.)

e) Similarities in the evolution: at an initial stage, the tumour metabolises through diffusion which is not an efficient

method since the tumour cells unload the excreta uneasily, and it is also more difficult to get access to the nutrient. The accumulating excreta poisons the cells, therefore the death rate grows among the tumour cells. Thus, they fission vainly, the tumour does not grow (some nodule can be in that so-called “sleeping” phase for decades) (BALÁZS, A. 1984). This initial condition refers to that phase of urban development when solidification takes place inside the town walls due to the lack of any infrastructure (the concentration of the sewage and solid waste on the streets). During this phase, the population is decimated by epidemics while the population density of the city grows slowly within newly built walls inside.

To overstep the initial phase, the tumour copies the nearby tissues, developing an internal circulation system. By doing so, it is more efficient to serve the metabolism: disposing the excreta is more efficient and getting access to the nutrient is easier. Afterwards, the tumours start growing rapidly (BALÁZS, A. 1984). In the city, the rapid growth starts when the walls are demolished and a more efficient infrastructure is built up (avenues, sewage network).

This period is the same as the boomtowns phenomena in the modern urbanism (BERG, L. VAN DEN *et al.* 1982; ENYEDI, GY. 2011). Its beginning is connected to the Industrial Revolution, when the growth of the urban population was inexperiencably high in *Western Europe*, mainly as a consequence of the rural population’s movement to the urban areas. In other parts of the *Earth* this development took place in other time periods (there are places where it is still processing). Usually, within this development, not only do the already existing cities grow fast, but also new cities are born from scratch. Continuing this thread, the following development is the period of relative deconcentration (suburbanisation) which results the ongoing growth of the city body. In case of the sub-

urbanisation of the population or the industry or the service sector, the occupied land is earlier unbuilt land which was untouched by the urban areas before. In the case of the model, these two periods of the city growth are regarded as the initial, sudden growth of the tumour centre after the “sleeping” period.

- f) Metastasis: The cells of the malignant tumours infiltrate the surrounding tissues and get access to any other—often further located—part of the body via the vascular and lymphatic systems and form metastasis. In the history of urbanisation the same phenomena can be found: the population flowing out of the urban area generates new cities and urbanised areas on the undestroyed territory by the urban lifestyle, often far away from the city. A good example of these is the firstly established American cities, which were founded by *Europeans*. As *Wolf Schneider* wrote: “*The city, as the humankind ‘7000-years-old creation’ firstly developed slowly, by degrees, then in a rapid movement*” (SCHNEIDER, W. 1963). Thus, untouched territories were occupied again and again, and the main part of society became urbanised. It not only means that new cities were established but also that urbanisation of the rural land (desurbanisation).

Throughout the history of urbanisation, civilisation establishes new cities connecting all the continents. However, the peak point of the metastasis is not that phase, but when the cities reach the occupied rural areas. At that time the rural societies undergo a fundamental change. As a result, the formerly rural settlements started to exist like cities. Thus they started to have the same symptom as a tumour. As the result of this process the rural population started to get increasingly separated from the natural environment, losing more and more information about it. Meanwhile, the operation of these settlements started to get increasingly similar to cities.

Nowadays, in the so-called “developed” part of the world, the inhabitants of the rural area depend on the same supply system as the urban population. As *Wolf Schneider* wrote in the 1960s: “*Our Earth started to get to be urbanised rural area, moreover, it maybe will change to be one urbanised–rural area*” (SCHNEIDER, W. 1963). It also means that the rural population use resources which from further territories similarly to how the urban population does. (Similar to the tumours which distract the resources; for example: nutrient, energy, from the further tissues of the body.) In the “developed” countries, without the big supply system the “rural” population would become dysfunctional, just like the urban population. Having an urban lifestyle, the urban society started to get increasingly disconnected from its natural environment, leading to a loss of knowledge about nature.

- III. Similar reasons: The main cause of the evolution of the two phenomena—city and tumour—is the lack of information (LORENZ, K. 1973). As the cell which makes up the tumour loses the genetic information, which would make it a useful part of the organism, the urban society lose that knowledge which can qualify it to be the organic part of its natural environment. The estrangement from the natural environment leads to that condition when the new urban generations—like growing cells in the tumour—are born with this lack of information already. In the case of the city, the main character of the estrangement is the town wall. Although, in the past the walls could have more functions, in our case the main role is to set up a barrier between the urban inhabitants and nature. The town wall was an intense border and new rules began to prevail inside compared to the outside. Later in history, the town walls were mainly demolished, however, the wall infiltrated into the consciousness of the civilised society which defines the latter’s relationship with its natural environment up to this day. This led to the present situ-

ation in which even outside the cities the urban perception—different from the healthy process of the natural environment—is more and more dominant.

- IV. Similar consequences: As the still healthy part of the body decays through the growth of the tumour tissue, the natural areas, and, therefore, the whole *Biosphere* and also *Gaia* decay by the growing of the urbanised areas.

5. What led to the spread of the malfunction?

In a healthy body, cancer cells form every day. However, a healthy body (with a healthy immune system) is able to destroy them and keeps them under control. This is also noticeable on a higher organisational level, as on the level of the present society. Although there are deviant individuals—who ignore the existence of the natural law—a properly operating society system is able to filter them and also marginalise them from itself. However, in case of an inaccurate social system—in an effect of a social constraint – the “immune reaction” of the society can be turned off or can be blocked purposely which leads to the spread of the deviant behaviour patterns. The estrangement from the natural environment could occur in this way. This estrangement is the same as the information-losing process of the tumour cells. Through this process its operation becomes self-serving: the aim is not the reservation and enrichment of the surrounding natural environment—or in some religions: the continuation of the *Genesis*—but only the implementation of the short-term self-serving. In long term, this kind of operation not only results in the destruction of the environment, but of the whole living space—the higher individual living, the *Gaia*. In fact, it leads to the destruction of the society.

The greatest problem in line with the civilised society's loss of information could be that the individuals born into an urban environment are surrounded by faulty models—differing from or denying the healthy operation of the natural environment, just like the reproduction of tumour cells. In most cases, in an urban society's point of view

the environment which denies that living nature is the “natural”. As *Spengler* wrote, “the philosophers of different cultures are living in cities, which mean they don’t even know how bizarre a city is” (SPENGLER, O. 1918). Consequently the urban environment predestinates the thinking and worldview of the individual. While the environmental education can help to reach great improvements in this matter, the urban population cannot gain empirical knowledge about the natural environment and the ways of cooperating with it. In the authors’ opinion, ultimately this kind of “environmental determinism” results in the ecological blindness of the current civilised society.

6. The wall and the loss of information

From its beginning, one of the most important characteristics of the city has been the wall. Physically the wall had been surrounding cities even until the 19th century. The city wall had one more important role beyond the defensive function: it drew a border between in and out, the urban population and its natural environment. Even in cities without walls, like the ancient *Cnossos* or *Ekhet-Athon* had their borders clearly marked off (SCHNEIDER, W. 1963). On one hand the wall symbolises the relation of urban population with the natural environment, but on the other hand it means a sort of “geographical determinism” for the subsequent urban generations.

The man born inside the city wall has limited chance to receive knowledge about the natural environment compared to those who are born into an organic community, which life-style and education fits to their natural environment. From the model’s viewpoint the urban society’s growth is comparable to the fission of tumour cells. The new-born generations—like the tumour cells—lack the information about the outside environment. While the tumour cell loses information genetically, the urban society’s loss of information is determined by social circumstances (lifestyle, environment, social establishment, worldview, etc.). This loss of information results in a “deviant” habit compared to the operation of natural environment. From *Biosphere’s* viewpoint the operation of the urban man can be considered just as

self-serving as the operation of cancer cells from the healthy cells' or the entire organism's viewpoint.

The role of the walls has been re-evaluated during the 19th century. In the case of most cities, the city walls were demolished so they disappeared by physical means, but throughout the millenniums the wall has infiltrated the conscience of civilised man. And this wall is much more difficult to demolish than the physical one. It not only separates the city from its outside territories but it divides civilised man from natural environment.

Demolishing the walls was not meant to "return to nature", but to contribute to the faster expansion of the city and urban life, the limitless expansion of the world inside the wall. So in some sense the walls are still standing, only they infiltrated the conscious of civilised society.

7. Chance to the solution – quit from the condition of the loss of information

The *Tumour-model* represents the environmental exploitation of the urban society and the society living according to an urban lifestyle and points out its unsustainability. The aim of this paper has been to make a "diagnosis": The *Tumour-model* points out that as a tumour destroys the host body through continuous cell proliferation and formation of metastasises, the present process system of the civilised urban mankind is heading to the devastation of its basis of being, the *Biosphere*.

However, beyond the presentation of the model, it is also needed to mention shortly the chance of "healing". According to the authors, as a cancer body can recover, the *Biosphere* has the chance to recuperate. The authors see two ways of recovering:

- In the first case the urban lifestyle will be a common characteristic of the society's significant part, therefore the condition of the loss of information will still exist. The consequences of this condition are the further irresponsible destruction of nature. It leads to the ceasing of the basic "*Biosphere-service*" and to the drastic decline of the human population. This case can bring the opportunity for the *Biosphere*

to recover in long term, if the civilised society does not destroy it completely. In such a situation, the remaining human population is forced to follow the natural pattern. However, their opportunities are much more limited than in the case of former societies which collaborated with nature, in terms of resources and knowledge. Such a collaborating society is the above mentioned former ethnical group proceeding with floodplain agriculture in the *Carpathian Basin*. A lot of examples can be mentioned for such a collapse on the local scale which happened before the globalised human population emerged (DIAMOND, J. 2005). Nevertheless, it is important to note that the urbanised society became a global phenomenon and its operation impacts the entire *Earth*. Therefore, the continuation of the malfunction might lead to a global-scale collapse instead of some local-scale one (MEADOWS, D. H. *et al.* 1972). Holding onto this analogy, it is possible that the Biosphere will collapse before the society does so. In this case, undoubtedly the society will collapse as well, but with the whole *Biosphere*.

- In the second case the civilised urban humankind tries to create conditions that help them to leave the condition of the loss of information. This means that the pattern of cooperation with the natural environment have to be found. If a request emerges for a change of lifestyle by the large part of the society (as the more and more limited access to resources and the extremity of the nature will force it), these patterns could result rapid changes in the whole society's relation to its natural environment. (Directly before the collapse or in the critical condition after the collapse, the society will not have any time for any healing experiment. By that time already formed and operative patterns will be needed.)

This recognition gave rise to the sustainable—or eco-city movements, which aim to minimise the emissions and the

material and energy consumption in cities, conducted to reduce the negative environmental impact of the cities. Its three pillars—energy and material; water and biodiversity, and the urban planning and transport —include several actions which can reduce the ecological footprint of a city (LEHMANN, S. 2010). In some cases (like in the transportation or in the transit sector), cities are more sustainable than the rural areas, however, the reason is the above mentioned urbanisation of the rural areas. Although many cities can boast serious results in reducing the carbon footprint, but in the authors' opinion today's modern big cities—despite the impressive "greening"—the metabolism is on such a high level that in long term city cannot be considered sustainable. Whether any significant "greening" projects are in a city, the main cause which leads to the unsustainability of the urban lifestyle is the lack of information.

It can happen that the power supply of a city based on 100% renewable energy, or in a city which is interspersed with huge green parks, or which has a transportation system which is environmentally friendly, and so on, the urbanite people cannot quit the condition of the lack of information. Therefore in the case of the new generations there is a continuous risk that the urban society will behave like a cancerous tissue.

It is important to note that there are also good historical examples related to the avoidance of the collapse (*Tikopia, Tonga*). Their common characteristic is that their community was able to recognise their destructiveness and self-destructiveness and made the right changes in their relation to their natural environment (DIAMOND, J. 2005). Connected to this, the eco-village rather can be a pattern than the sustainable city. They can be a good example for the urban population to follow. If the conception of nature they have can spread, then

the sustainability of the whole society can be realised in a de-urbanisation movement.

The modern, civilised urban society's condition of "the loss of information" comes from its urban environment and the related lifestyle. The urban lifestyle leads to the ignorance of the knowledge which is needed to be in harmony with nature.

Another problem could be the long-time feedback of the natural environment. The consequence of the pollution which is connected to the human activity cannot be experienced in one life. Moreover, the urbanite people do not really know what can be considered as a natural environment since they became estranged from their natural environment. Furthermore, the energy and material flows of the modern globalised society spread all over the *Earth*, which makes them and their effects more complicated to overview. According to estimates the material flow of the modern civilisation is greater than the material flow of the geological processes (POMÁZI, I. – SZABÓ, E. 2006). At the present time the collapse of the big supply system would disable the "urban" area of the "developed" countries and the cities equally.

To leave the condition of the loss of information a global paradigmatic change is needed. To foster this understanding, operative pattern—which is in cooperation with the natural environment—is needed. The operative pattern—in everyday life—means to set up and support communities which operate sustainably and enrich the natural environment; independent from the big supply systems. And last but not least, it offers the opportunity of a happy and, therefore, attractive life for the outside world. The detailed analysis of this is the aim of a next study.

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