FLEXIBILITY OF USE AND ADAPTABILITY OF BUILDINGS IN POLAND. ANCHOR POINTS IN TIME AND INFORMATION ON SUSTAINABILITY.

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Summary
This paper discusses market transactions and dissemination of knowledge. As it is recognized investors' strategies are related to location, type of land ownership and primary occupancies of buildings they plan to construct. This in turn results in different technologies – from high rise buildings characterised by high embedded energy to temporary Archigram-like structures for which the cost of disassembly is included [1]. This leads to observation, that what really matters in maintaining sustainability is the point in time where rights and obligations are passed from one owner to another. In this paper some new considerations on the subject are presented. Significant number of new office, commercial and residential buildings are offered as a “flexible floor area” to be later adapted for specific need. This strategy encounters serious obstacles, such as bureaucracy, the tenants changing requirements and their opposition to any changes in building or neighbourhood. It seems reasonable to make flexible designs but future performance must be controlled. To allow even greater design flexibility and adaptability that do contribute to long-term building environmental performance, information on how to manage the process is vital. This information should be provided before market transaction is completed.

One of the most important documents for Sustainable Development movement - “The Limits to Growth” [2] presented a simplistic computer simulation of our Planet's future. Nowadays we are perfectly aware, that we must act to save energy because it is scarce, but our concept of time underwent a rapid revolution along with the emergence of the internet. On the contrary, average life-span of buildings and pace at which urban structure is transformed remain more-less the same as in the past decades. In fast internet driven economy there is always a need to adapt to quick market changes. From market perspective, buildings are commodities and their suppliers are involved in market play of supply-demand. Therefore there is no point in convincing investors to erect buildings that can easily be adapted to different uses. They do it, because time-gap between investment decission and construction completion is usually long enough to force flexibility of design. The point is however, how to ensure that any adaptations are really sustainable.

1.1. Transactions and Sustainability
One of the most important goals of sustainable built environment initiatives is to facilitate negotiations of environmental cost of investments in such a manner that it is not imposed on general public or future generations. The desired effect is an inherent responsibility and consciousness of one's actions. We observe specific instance of the problem in separation of investment capital from the capital devoted for the maintenance and operation of a building. First solution to that problem is to provide possibly complete information to both the developer and the user, at least before any transaction between them takes place. The earlier any relevant information is available, the better. Ideally, stakeholders should have time to consult the project before any construction had started. But this is not the case in real world. In the real world the reasonable approach is not to decide to early if it would be possible to make more informed decission in the next stage of construction process.
1.1.1 Sustainability is for People.

There are some important reasons not to make unnecessary design decisions too early:

- during construction stage, which may last up to several years, market demand may change substantially, and it is economically sound (and sustainable) to optimize production possibility frontier by dynamic allocation of needed types of occupancy to supplied floor area.
- very often individual user is not fully satisfied with his own private space design even if it is finished by his detailed specification.
- new users tend to express themselves psychologically in act of making individual contribution to their new possession.
- companies have to adapt to the market as well and wish their new needs to be reflected immediately in design.
- both people and companies sometimes do not have a detailed concept in terms of design on what they need until they see the building.
- Underlying rationale for constructing “adapt-it-later” buildings is that the time gap between building design and completion is too long for market fluctuations of demand.

As far as the needs of the people are concerned, we are obliged to ask a question how those needs could be met. Having the necessary knowledge of sustainability we may try to answer some needs of an end-user. Unfortunately we cannot directly pass detailed information to the particular end-user before he becomes a developer’s client. The developer can be target instead. In our model, there are at least three parties in negotiation – a developer, a client and a project facilitator [3].

Usually it is not assumed, that sustainability is possible only if we know today what we will need tomorrow. Sustainability is a fair allocation of resources among generations. As for the building – a fair allocation of resources is possible only if the end-user is able to perform better in terms of sustainability.

1.1.2 Periods and Points in Time

For the purpose of research one needs to refer to the real world patterns. Environmental performance assessment methodology correctly assumes the life cycle of a building comprises several distinct stages:

- design
- production of materials
- transport of materials
- construction
- operation
- maintenance
- adaptations
- demolition
- recycling or disposal of materials.

Something, not clearly included in such classification is that developers of new buildings have their own approach to sustainability. They often provide only basic structure and main technical systems to be further developed by end-users. Developers' liabilities are defined by construction and planning legal regulations that are compatible with general free market basic rule of the freedom of transactions.

From the point of view of environmental performance assessment methodology the consequent process which, if explicitly defined, is the key to success of sustainability. On the other hand there are some market transactions to be dealt during life cycle of the building which are able to distort desired process. What integrates the life cycle of building into sustainable investment is information. The study of recent developments in Warsaw, Poland, provides strong argument that market transaction is crucial point in time for sustainability, because it could provide powerful motivation for stakeholders to include LCA into their strategies. Transaction terms examine investment strategies far more than pure propaganda or education.
2. Inverse strategy towards sustainability of buildings – lesson from Warsaw, Poland.

The history of land development related legislation in Warsaw has been marked by irresolvable legal disputes that caused, due to uncertainty of property rights, freezing of considerable land area for investment. On the other hand urban zoning by-laws were practically reduced to non-significant in the process of obtaining planning permissions.

A study has been done to assess spatial distribution of the most intense developments in the years 1995-2002 [4]. It revealed that in the lack of strict zoning laws, the pattern of investment shows the extensive consumption of any value public space up to the point of its disappearance. High-rise buildings especially, consume public realm at an uncontrolled pace. On the other hand there exists in the centre of Warsaw a vast area of land that is underdeveloped from a classical market perspective. This area is the one in which normal investments are proclaimed to be frozen by aforementioned property rights uncertainty. The most interesting observation is that they are far from being “frozen”. A certain type of high user-intense temporal commercial investment takes place there. Architectural idea of temporal city dates back to Archigram Group. There, in Warsaw paradoxically, uncertainty about property rights caused the creation of constructions that perfectly encompass the sustainability ideas: the use of better technologies and calculations of the operational cost for the life cycle “from cradle to grave”.

One can observe therefore two different types of investment strategy: the first one based on solid property rights and the other one on ownership uncertainty. Having in mind practically irrelevant significance of urban planning those two types of market-driven approaches can be matched.

The main question is how do property rights shape urban environment?

Do the proper ownership relations help to make development sustainable? It is believed that property relations are important [5]. Two different measures to land value in the city can be applied – private discount rate and social discount rate. What exceptional is observed in land development in Warsaw, is that some private construction enterprise strategies are based on social discount rate because investors use the land without a legally sound, clear and permanent private ownership basis.

2.1. Information and Transactions.

Information is an asset in market transactions. In Warsaw differences in forms of land development is observed and can be expressed as a relation to simple information on how investor can sell his construction-related rights and obligations to another one. It is evident, that investors who are granted temporary land tenancy are not interested in erecting long-lasting monofunctional, difficult to adapt structures, because they cannot pass social obligation to adapt public realm to the future needs to general public, and therefore they are unable to make money on long-lasting effect of transformation of public space into service area for their investment. On the other hand, high rise buildings that make more intense and economically more viable use of public space do this by extreme use of market momentum disregarding adaptability that is getting more and more important in the face of rapid civilization changes. Post-industrial land development is a problem. What we will do with post-office high rise developments?

2.1.1 Private and public space – market-driven difference of discount rates.

It is recognized that there is a difference between public and private discount rates which depend on redistribution of responsibility for the final cost of undertaking [5]. The city as a whole is a public asset as a concentration of individual efforts that create new quality to be used and developed recursively. One of the free market assumptions is that proper ownership rights are vital for the proper use of resources. On the other hand, according to the concept of sustainability, the value of the stock of different types of capital should not decrease.

Evaluation of changes of value of different capital types – the city as a public good, attractiveness of the city for high educated labour force, attractiveness of the city for investment capital, range of human activities supported in public realm, adequacy of housing stock to meet the needs and adequacy of road networks and other land consuming utilities - requires significant efforts.

There is an important question to be asked in order to provide the solution: do we have complete decision making tools to express the different types of capital value in common measure like money value? It is a common practice to estimate money-value of land based on the NPV. Then construction commensurate with the value of the land is developed.

From the investor's point of view, the most important is the proper location placed within the
city’s spatial focus of range of externalities, as it makes his investment in the city culture.

In Warsaw it is clear that it is the set of externalities that shapes an investor’s strategy. Private investment adds some value to the public realm and the overall economy. In the city two types of surplus for the public can be distinguished. One is connected with an economic activity, the other one with impact on the urban system. One of the free market assumptions is that economically effective market equilibrium is achieved not by the public interest in overall effectiveness of economy, but by the dynamic negotiation of particular profits. Then what about dynamics in the city structure? There are some interesting observations on this subject in Warsaw.

2.2. One City – Two Business Cycle Patterns.

There is a conflict between traditional use of space and new developments. Tradition of direct producer-to-consumer sale markets in Poland never yielded in the course of recent history. In fact it was supported by a socialist government in some areas such as e.g.: fresh fruit and vegetables – goods of short validation period – to be free private enterprises. Conforming to this tradition, especially in the early days of transition from a centrally planned to a market economy, the citizens of Warsaw widely supported emergence of low investment – intense activities such as little kiosks or tents in central places of the city, lots of them located near main public intersections.

In the course of time new global ideas found their way into consciousness of local governing bodies. Street markets suddenly were considered to collide with the image of the city and were promptly combated by use of legal acts and regulations. Nevertheless, considerable pressure exercised by the public managed to save some areas from being cleared from street markets and at the present time it is clear how the pattern of land use fits the array of market and political forces.

Town planning factors may be considered to be practically absent in Warsaw [1]. One can then focus on the centre of the city to reveal some interesting interrelations of public realm, social and private discount rates and sustainability of construction activities. In the strict centre of Warsaw two different types of development have taken place. One located on the west side of Emilii Plater Street is based on sound land property rights and the other one, comprising northern side of Jerozolimskie Avenue and Defilad Square, reveals NPV of location into which the social discount rate is calculated. As it is understood, difference between social and private discount rates is a measure between NPV of free market private enterprise and public enterprise. If market-driven behaviour of private investor is to be applied to land development, it must have been the difference in land property rights that caused the divergence in land use. The difference is clearly coincident with investors having or not having the land in their exclusive possession.

The subsequent hypothesis is:

1. Land ownership is more important in the city than any business activity in terms of a profit expectancy
2. It is economically sound from the point of view of an individual investor to develop a short-term enterprise based on short-term land tenancy even if the cost of demolition is to be included.
3. There is a difference in the land use depending on the period of tenancy. Some businesses such as retail are more adaptable to quick changes, while hotels or offices tend to be located in stable environments even if the offices are usually quite adaptable to other uses.

2.2.1 Basic Survey of the Subject.

After a few years of a direct retail market in some of the most traffic-intense places in Warsaw such as Konstytucji and Defilad squares and underground passageways characterized by benches, umbrellas or kiosks, retailers got organized in the form of local retailers' associations to face the threat of liquidation of their businesses by the municipality. Subsequently new architectural forms emerged. The most interesting and controversial became part of the contemporary image of the city - Illustration 1.
Basic characteristic of this structures is their temporary character due to unregulated ownership. Another interesting observation is that the process is not only marked by rooting and development of traditional direct retail into more structured form. Illustration 2 depicts that attractiveness of localization is much the same for both local and international companies despite tenancy problems or limitations in architectural form. It is documented that the Marks & Spencer store was built on the basis of "construction site facility" building permission issued for huge neighbouring development.

Observed development contradicts widely propagated argument, that foreign investment capital avoids unfavorable planning restrictions of development intensity.

On the other hand equally valuable land exists on the opposite to Defilad Square (western side of Palace of Culture - a high rise soc-real style building in the background of Illustrations 1 and 2. It can be observed here that both pace and intensity of development is of considerable larger scale (Illustration 3). In fact, it is the most intensively developed land in whole country. One can see there a difference not only in an intensity but -more important- in primary function of buildings and their relation to public realm. It was mentioned above in the article that what makes the difference is land tenancy and not planning regulations. Therefore the evidence of ownership’s related investment strategies and subsequently, with the investors’ ownership rights granted, the consequences for the overall development of the city can be observed.

To pass ownership rights and obligations in extent from one to another is the main purpose of ideal market transaction. If such a transaction is possible, investment is almost perfectly sustainable provided that one cannot neglect any hidden cost. Then, transaction is in the centre of interest for sustainable development. The key is to provide complete, relevant information to stakeholders before transaction is done.
2.3. Ultimate Capital for Capital City.

Before further exploration of the subject, there is a question of evaluation to be asked. There is an argument widely shared also within the Sustainable Development, that proper value for money should be sought in every investment. It is hard to discuss it if there is no clear evidence how the money value of investment serves the “total benefit”. The Coase theorem [6] states that for the efficient allocation of capital, it does not matter how entitlements and liabilities are allocated once they are defined. The theorem concerns also existing money value. What is sought in SD is more than existing practice in evaluation, as the concept implements an evaluation model in which long term gain is compared with short term based calculation of NPV. It is proposed that sustainability is first of all an act involving time and sequencing.

The closer look at those factors in Warsaw identifies two different approaches to the concept of money value. One is based on the effectiveness of a free market allocation which requires fast and unrestricted flow of capital. The second one can be based on sustainability of urban structures. The question is what does money value represent? The common misconception about money is that one can buy money with money. It is possible as particular, but false if aggregated. That means we should seek money value not in money value of money, but in money value of urban realization.

How do you evaluate urban development or building's flexibility of use then? Traditional approach deriving from European culture is based on a culture-business feedback. Nowadays, traditional culture is rather forgone and overtaken by “social consciousness”. That means, any information to shape behaviour is public and not individual good [7]. Without further reference one can estimate the money value of investment by consequences of putting land on the free market on the west side of city core:

- Public realm diminishes below the required technical capacity (e.g. traffic between public road networks and underground parkings)
- Intensity of development is driven by current market value of land regardless of impact of development on overall city performance.

Value of land depends on externalities and one of them is the quality of the public realm which, as a public good, is excluded from the free market mechanism of the supply-demand. The public realm is best used by the most demanding investor but dependent on the rule of diminishing benefits from the public realm including its road infrastructure, amenities and capacity of technical systems. So the market value of land diminishes with intensity of adjacent developments, because the supply-demand principle cannot be applied to the public realm.

To make this point clear one can examine the following example of traffic of vehicles:

an individual investor has at his disposal a capital, within which he can make a decision of splitting it into usable area and parking area in an economically sound fashion. In each case the public good is consumed by the fact of traffic generation on a public road. As the investor isn't obligated to pay the cost of the road, he is free to “consume” the city's road network, while the cost is imposed on the city's road network users (and including, in a way, also the investor as a...
The diminishing benefits are best illustrated by the traffic itself. If the public road is overused, the velocity of any vehicle on that road decreases up to the point in which phenomena like traffic jams occur. The same principle applies to some other loadings imposed on the public realm by individuals. The same principle applies to flexible design when particular users interests are in conflict one with another.


When performance of the city or commercial building is considered, several different approaches are at one's disposal to determine problems of harmonious, optimal development. Indicators do matter, provided that one can interpret their background – SD issues ought to be addressed within the particular frame of problems, which may depend on ecological, political, economical, cultural, spatial, historical and other conditions. Without the proper set of benchmarks the aggregated SD indicators may veil mechanisms of city development. It is possible that the aggregated data looks promising, while the underlying process shows another direction. There is no practical use of measures which are not aligned with basic forces shaping the city. Therefore, one needs to find direct translation of basic process into the bigger picture. In other words – SD researchers and practitioners must have a clear image of how the process of urban development could induce the sustainable development. It seems more important if one faces a transition from centrally planned economy into the free market. The process of dismantling of the central planning system had severe negative impact on urban planning, which didn't manage to present itself as a tool for democracy enforcement in Poland, but quite on the contrary, is considered by carefully shaped public opinion as a barrier in “democratic” (that means individual) rights to act on one’s free will. depicts the problem in more precise terms.

It is not impossible that the overall progress of the city would be struck by a local shock to the sensitive area like the city centre. No matter what is the capacity of the city infrastructure to internalize strong impacts, the careful watch should be present in the name of SD rule, i.e.: “to not compromise the needs of future generations”. Traditionally it was an ultimate issue in urban planning to make the city survive. Nowadays, since the idea of globalization is clearly more important in shaping cities than the idea of fortress, one should ask the universal question again: “how to make the city survive?”. SD factors pose another question: “how to make the city perform better?” It is important to set the right order of questions:

1. If one considers the city as an environment for people to live and takes for granted that it is our common asset then one preserves it and takes care for its longevity. This corresponds to the rule of the survival of a city.

2.4.1 If one considers a city as a medium to achieve some goals – economical, personal, political, ecological etc. - one cares for its performance.

In conclusion we could say that one can split urban issues into two complementary processes:

1. How do citizens build a city
2. How do citizens use a city

The simple market economy models consider that it is the proper use of resources that create common good. Scarcity rent is applied to improve capital allocation. It is far from the interest of transitional economies of the former socialist block to follow directly the evolved market economies. There is a chance to correct some processes to avoid certain imperfections of the free market capital allocation, especially in the face of real confusion about what an economic model for the country should be.

Scarcity rent is a subject of regulation. There is a direct correlation between the type of development and property rights to use the land. In Warsaw one can observe the extremes with the dynamic nature of capital allocation clearly revealed. The data visualised in boxes are the subject to ongoing study not to be treated as complete. The whole picture can be observed from the direct field survey. Despite the fact that regulation of property rights is unintended, it is in force due to aforementioned historical reasons. And it does work!

Another powerfull approach to

One can observe how powerful the law can be and therefore consider the property rights regulation as a tool to achieve proper development scale. Usually effective contribution of
investment for common good is resolved with the help of zoning plans which state the local spatial policy. It is resolved with a set of obligations imposed on investor known as “modus of exercising property rights”.

Nevertheless, due to a rule of private property and a Roman legal maxim “superficies solo cedit” [ anything on my land is my own] (the Polish legal system is based on the Roman Law), common good is in a conflict with private one. As it could be seen at Warsaw’s example, the limitation of tenancy period can be quite effective way of regulating the pace of development regardless of any complex negotiations between the private land user and the public. There is no place and time here to discuss the issue in extent, but it is proposed to consider more use of time as a planning tool in urban policies.

Due to the fact that time plays primary role in the flow of capital, an old saying - “time is money” - perfectly applies here. Why one should allow the scarcity rent and discount rate to be so imperfectly tied together there? There is no way of effective performance of the city because:

1. Proper time-scale for money to grow is internet time.

3.4.1 Proper time-scale for city to grow is at least a technical lifespan of a single construction.

One can consider subversive way of achieving Sustainable development: “Do not impose the indicators of performance on investor. Just cut the time of his responsibility down to a time span of his activity”

This is the proposition to be further explored. The author of the article realize practical obstacles in introducing the idea, but there is still a chance to prove that it may be worth, since it is derived from the real situation in Warsaw, both exploring and perhaps using in democracies where political awareness is more mature.

This proposition is one of many. Canadian Integrated Design Process demonstration program provided strong argument that proper use of information in early design stage brings better than initially expected results: “However, after the first six projects were designed and two of them had been completed, it was found that that incremental capital costs were less than expected, partly due to the fact that designers used less sophisticated and expensive technologies than anticipated. Despite this, the projects reached the required performance targets. The designers all agreed that application of the design process required by the C-2000 program was the main reason why high levels of performance could still be reached. It also appeared that most of the benefit of intervention was achieved during the early stages of the design process.” [3]

Success of IDP may be attributed partly to novelty of experience, but optimization of design process ought to be seen from the point of view of an architect involved. It seems that the more one is convinced of impossibility of postponing responsibility of one’s actions the more responsible they are. There are some anchor points in time such as market transactions that may be used to examine and exercise the application of Sustainable Development concept.

References
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