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Treading New Paths (Wohin des Wegs?)

Unconventional Questions and Ways of Thinking

Gerhard O. Braun

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**Treading New Paths (Wohin des Wegs?) - Unconventional
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"The World Without Us"¹ . Lessons Behind?

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Abstract:

In times of financial crashes, ecological catastrophes, or increasing social fragmentation the question arises whether these changes per se or in interdependencies are expressions of systemic, man made or natural functionalities or more likely those of random events which happen in irregular time, space and content manner. The scenario "The World Without Us" will make oneself conscious that the man made world is a very fragile system of systems consisting of very limited natural, financial, and organizational resources and cycles in space and time which demand continuous attention, cultivation and maintenance or restructuring to keep track with the speed of changing conditions, values and needs. One will realize that most of our systems are not designed in flexible or self-adjustable manner neither the built physical environment nor the conditioning behavior of mankind responsible for the functioning of the built environment. In times of continuous change we learn that in most situations functions don't meet the forms and vice versa. Once created systems follow more likely lifecycles and will only continue to exist with increasing mismatches and requirements in time, costs, and energy.

Keywords:

Liveable cities, systems (logic, change, governance, glocal participation), value systems and value change, maintenance, flexibility, exchange, mobility.

¹ The title is taken from the publication of A. Weisman, 2007.

INTRODUCTION: CETERUM CENSEO

The Roman statesman Cato the Elder is reported as having ended all his speeches with the expression "ceterum censeo charthaginem esse delendam" even if he had not been discussing about Carthage in his speech. In opposition to Cato, Publius Scipio Nasica recommended to exempt Carthage. In 150 before Christ, the Roman Senate finally agreed with Cato what resulted in the Third Punic War and Carthage's complete destruction.

Although the Romans were successful in the first two Punic Wars, as they vied for dominance with the seafaring Phoenician city-state of Carthage in North Africa (modern day Tunisia), they did suffer a number of humiliations and damaging reverses. This built into an attitude of seeking vengeance and total victory that was expressed with these phrases.

The attitude of total warfare toward Carthage resulted in the utter destruction of the city at the end of the Third Punic War. The city was ploughed over and surviving inhabitants murdered or sold into slavery. Historians dispute whether the urbanized fields were sown with layers of salt, but the very notion is indicative of the vengeance wrought.

Today, we can see the ruins as signs both of former political power and culture and of destructive mania of political superiority and superciliousness. The extent of destruction at that time came close to destructions of half of the world in our times. With this image in mind we are close to the scenario of Alan Weisman he painted in his book "the world without us". With his creative experiment he asks "what would happen if humans disappeared from earth?" What would happen to your home, for example - how long before water damage, the sun, of hungry critters start breaking it down? How long before the roof collapses? And what would happen to our cities, farms, and oceans? To the animals that

remain? Or the billion tons of plastic we'd leave behind?

In analogy to the Punic War, Alan Weisman states that war sometimes can be one of the best things for the environment. Is this the only solution we can think of? Especially in present times with an increase of extreme weather conditions and natural catastrophes we realize that even with "us" nature steadily recaptures our systematically created pieces of culture and infrastructure. But why it is important to think about a situation with a world without us? This question will lead us to think over a series of problems within our human made or seemingly dominated and controlled world which are focused on the limitation through lifecycles of all kind of investment and infrastructure, the continuous demand on additional investment and infrastructure for maintenance, renewal, and restructuring, on a complex network of interacting systems to avoid an irreversible closeness of our human hemisphere, and on the importance of developing new and adjusted forms and formats to guarantee controlled change. All our systems are constantly endangered even or just about in a world with us.

URBANIZATION

Trying first to state what humans have created over ten thousands of years. The urban culture can be dated back some thousand years before Christ. Unchanged to present days, the main advantage of cities is their ability to concentrate; to concentrate offer and demand, links and exchange, to concentrate power, roads, population, services, and care at certain locations in institutionalized or self-organized, real or virtual forms in all ecological, economical and social respect. There are many artifacts which reflect important cultural work of mankind. Many of these buildings are registered as cultural heritage. To dig the Pa-

nama required the labor of 6.000 men every day for seven years.

One of the major footprints humans have created in several thousands of years are cities and links between cities. As locations of political and economical power, protection, innovation and culture cities expanded, shrunk, restructured themselves or lost their importance and disappeared. Many artifacts have been constructed, but nature always recaptures pieces of culture even with us. Made by men there is almost nothing which survives or functions for long periods. Urbanization created some of the cultural artifacts which remain visible for some time, but much shorter than we agree to assume. Otherwise it would be beyond the self-understanding of our lifestyles and habits. The different types of urbanization contribute to that survival to different degrees - of course depending on the care of maintenance and re-investment. The physical urbanization denotes the expansion of urban housing and land use. The density gradually declines from the core towards periphery; the importance of the city measured by that type of urbanization can be merely assessed by the size of representative architecture and their fundamentals than by expansion of the periphery. The functional urbanization represents the degree of connectivity between cities and depending countryside. The system of industrial production diffuses based on new networks of transportation, communication and information. These networks of logistics possess a high resistance against change. Social urbanization creates urbanism with the diffusion of distinct life styles, urban norms and values into the cities' surroundings. Their degree of survival can be found in information, images or in leading development paths. The demographic urbanization summarizes both state and dynamic of population change by higher life-expectancies, birth surplus and migration gain. These parameters contribute to an increasing diversity in all fields of urbanization. As urbanization, finally, counts

the intensification of the urban system. Hierarchies between and networks of cities reflect that more and more people live in urban environments in less but large scale cities. These networks are mainly driven by the increasing fragmentation of production chains and new opportunities of connectivity based on changing qualities of production. Logistic infrastructure on the one side and flexible production sites on the other are directed and controlled by a few locations and their global players.

What are the consequences of these types of urbanization in present times and in general? In recent times, urbanization contributed to an overall concentration, differentiation, and specialization of offer and demand, labor, housing, service, communication and transportation. It initiated consequently increasing mobility, an increasing loss of families as social network, the diffusion of a secular value-system, with an increase of standard of living a changing consumption and leisure time behavior, new life-styles. Urbanization has facilitated that service industries exceeded production industries by occupation and GDP and that urban land use changes the urban structure in a way that functions became turned inside out and vice versa. With ongoing urbanization cities have gained new functions. In preindustrial times central functions for administration and service and during the industrial period functions of net product have been predominant, while in post-industrial time functions of control and governing are leading in the core-periphery structure of cities. Why it is important to know? The distribution of cities in terms of size and functions has not changed much but the intra- and interurban pattern and network of cities. With regard to our theme "the world without us" only locations, pattern and network seem to be important to recognize.

PRESERVATION

In any of the five types of urbanization, the visible structures left behind this general process are beside emissions or waste especially built infrastructure, mainly roads and buildings as functions and signs of systems of networks and exchange in all dimensions of individual and societal existence and survival as well as sustainability. In total, all people try - as good as they can - to create infrastructure with the intention that the effort they have made during their lives will be worth enough to preserve, which can be inherited and will last for some generations or eternity. Locations and cities represent, therefore, in all historical and present periods forms, signs, designs, locations, leftovers of historic situations and processes, which in general cannot or don't suite to the actual demand of the generations after in functional view. Even many churches and representative building have been destroyed and replaced by other constructions on their ground. Only ground plans of cities show a high persistence because of ownership rights and valuable infrastructure below surface. Most of these historic infrastructures are estimated in a way as if they could determine the value of the present and future expansions of urban functions and architecture; quite often they get entitled as cultural and are, therefore, protected against change. Can we live with so many protected artifacts? It is useful? What should be preserved and what can be given up? Are preserved artifacts valuable in the view of later generations or do they hinder later survival? Do we calculate these artifacts in a full cost accounting manner as to later generations?

Let me explain what is meant with this paradox situation. A story, written by Geoffrey York in *Globe and Mail*, reports the following situation: "When a foreigner tried to buy the two stone lions at the gate of her historic courtyard home, Ms. Zhou stoutly refused to sell. The lions belonged to China, she said. The local authorities, however, were uninterested

in history in their specific view of estimating the situation. A few weeks later, they sent a bulldozer to demolish Ms. Zhou's home and the stone lions were smashed into pieces." In addition, "all along their Beijing Street, traditional courtyard houses, which are 100 to 400 years old, are being torn down by wrecking crews, despite evidence of their historical importance". "Entire alleys of brick-wall tile-roofed homes, among the most beautiful and distinctive symbols of China's heritage, are being demolished to make room for new high-rises. By some estimates, Beijing had about 3600 traditional hutongs in the 1980s. Today, fewer than 2000 remain and the number is falling fast." "What is the heritage?" one demanded. They are only old and broken houses. There is an order from the government, and the residents must move." The director from the Beijing bureau of cultural relics insisted that most of the hutong residents are happy to abandon their houses, which are often overcrowded and lacking in basic water and sewage services". "It's inconvenient for ordinary people to live in them". The other side of the same medal but with the same result is expressed by another official statement: "People who can't afford the repairs will be replaced by those who can afford it". In other cases the government realizes the importance of history. In 1950's torn down, the Ming Dynasty wall is going to be rebuilt in some parts of the city. Or, in other parts of Beijing or Shanghai the same hutong houses became subject of gentrification. These situations we can find in all parts of the world.

VALUES AND VALUE SYSTEMS

What does is mean to us? Things/ objects have a value per se and a value given to them - quite often with a discrepancy between the owner's evaluation and the outside evaluation. The value per se gets obsolete after a certain time depending on its functions, demand, and habit as well as maintenance invested in it to extent

their functionality. In any case there will be a time where the difference between the value per se and the value given to a building or infrastructure both decline and converge to zero. In this case there should be no major debate about change. But what happens if the difference turns into a negative sign? Is there a distinction to make in case of a single object or assemble of objects? Who is responsible for taking over the costs of maintenance, preservation and keeping the functionality running? In case the owner is responsible who does compensate for the differential costs between the two types of values? How would cities look like in case of preservation of all of the historical buildings? In case of long lasting planning procedures has infrastructure already lost part of its functionality? Is there a value just by age or rarity? Who has the power and responsibility to decide about once given values? Is there a market for? Is there a logic behind in the decision making of the preservation of historical sites? How can a functional and formal mix between historical and present value systems make cities ready for global and local competition and cooperation?

In present times - and it can be assumed that it was similar in former times, maybe not to the same extent - infrastructure and especially buildings are planned and constructed for certain purposes and functions, which become economically obsolete over time, sometimes in more or less short terms. In China e.g., high-rise buildings will be torn down after a life cycle of 10 to 15 years. It is expected that after this time period a new functionality demands the bulldozing rather than preservation, conversion or rebuilding. Business cycles are changing so fast, technology behind is so sophisticated and investments are so short term oriented that the selected material used for the construction, design and quality stands already for an inbuilt expiry date which is in general irreversible. With shorter product- and productivity-cycles the economy has already found new forms of architecture, organization and financing. Near the Mexican Border south

of San Diego there is a large business park where almost everything ranging from production to distribution is based on short term leasing contracts. The reason for this investment is the based on the political instability of illegal or semi-legal cheap migrant workers from Mexico. The production sites themselves consist of "envelops" - as architects express it nowadays - which can be easily converted for changing functions or deconstructed for use at different locations. It is not only the flexibility of functional and financial use what makes this investment profitable but the de-coupling of ownership of built environment and production in the sequence of all productions-chain-links. In these cases the de-construction or demolition seems to be evident. In other cases where the life-cycle of infrastructure and built environment is less clear, decisions develop more complex.

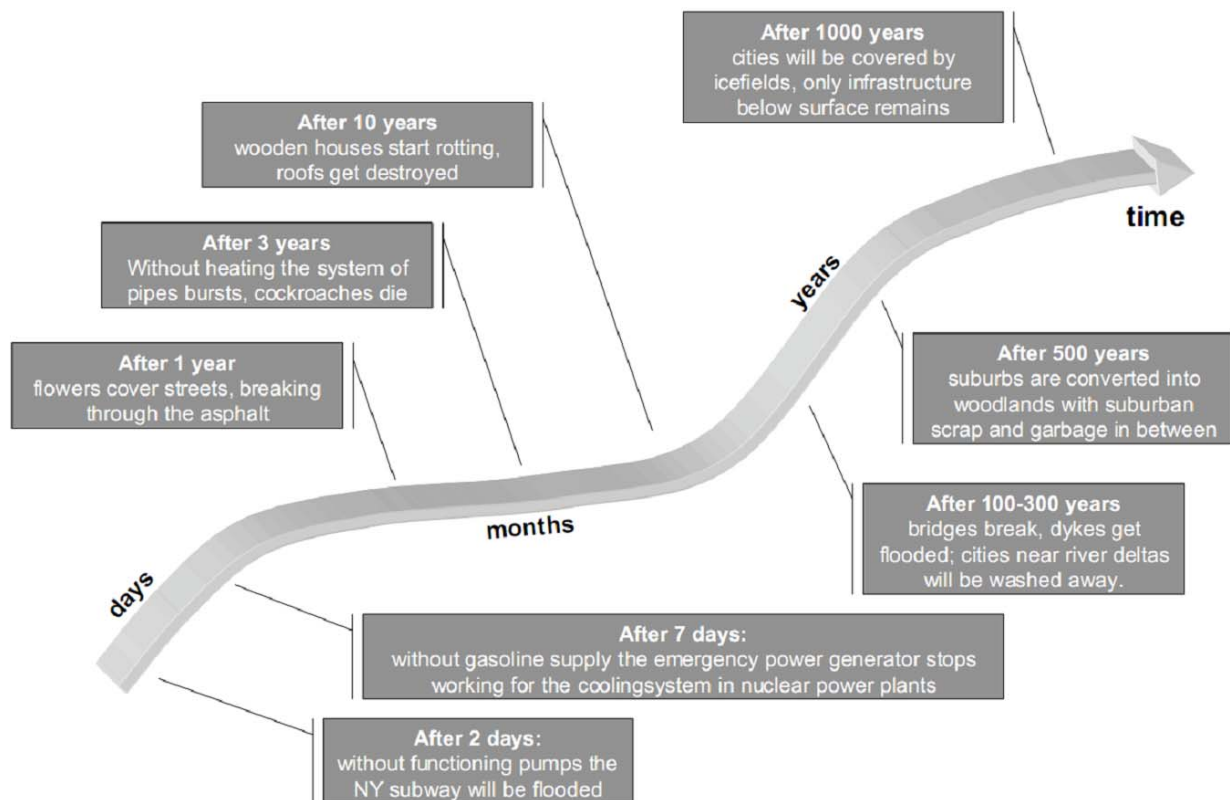
There is a human scale and logic in general, mainly adoptions and adjustments of other logics. High-rise buildings have been invented and built under the logic of the economy as a vertical market-street. The advantage of high-rise buildings is based on the short distances and easy access between floor spaces which is not needed for apartment use.

WHAT DOES IT MEAN "THE WORLD WITHOUT US"?

Nature recaptures culture right after the first second (sources from A. Weisman, 2007; see fig. 1).

- 48 hours after the homo sapiens' disappearing, e.g. the New York's subway manholes are flooded. They are below sea level and without maintenance and operating the 753 pumps some 50 million liter of water per day flood the whole system. Streets on top of the subway will cave in and wild rivers will run through the former street pattern. Despite Central Park,

Fig. 1: The World Without Us



Source: A. Weisman, 2007; modified by Braun

New York may count as the most denaturalized urban area. Manhattan was once a hilly island until it was leveled out and 14 rivers covered to run underground. Wind from seaside and the reorganization of the environment keep subway engineers contending with it every day.

- After 7 days, the gasoline reserves are exhausted and the emergency power generators stop the cooling-system of nuclear power plants working. Maybe energy only comes from water power stations. The earth gets dark. But, what happens with the cities?
- After 1 year, flowers and vegetation breaking through the asphalt. Cities are now conquered by climbing plants and animals. Without heating in temperate and colder climates the pipes burst. Frost damage especially in spring time corrodes roads and

pipes with temperatures above and below zero degrees Celsius during day- and night alternations. In contrast to water steel shrinks in winter and expands in summer. In combination with salt water steel starts rusting and without coats no layers of oxidation protect steel bridges. Expansion joints get blocked by rust, sand, vegetation and seeds and affect physical breaking. Older bridges will survive for longer time while oversized in their construction, younger bridges are more exact computed and, therefore, demand more maintenance. Without "us" there will be no further garbage and without heating the cockroaches will die. Cultivated meadows turn into desert and woodlands replace it. Without air pollution vegetation can develop and diffuse unhindered. Sequences of pioneer- and dominant-vegetation will change the former landscape. Calcium washed out of concrete increases the ph-

value and contributes to the improvement of growth of plants. Corroding leaves on roads build an excellent fertile land for it. The drainage system on roads and elsewhere are blocked without maintenance and accelerate the flooding of tunnels and roads. Safes in banks will survive for longer time, but the money inside becomes mildewed. Art in museums also starts rotting without air-conditioning and humidifier.

- Houses start falling apart already after 10 years - wooden houses first followed by stone houses because of leaking roofs, rotting wood and bacteria starting chemical decomposition and decay.
- After 100 to 300 years bridges break, dykes get flooded; cities near river deltas will be washed away. Especially modern concrete buildings collapse earlier than massive buildings like castles, churches or temples. After some thousand years cities and their structures aren't easy to reconstruct. The last walls cave in, only in underground one will find relicts of former infrastructure like canals, fibreglass cables, or plastic pipes. They might allow conclusion to draw about the living and technical standards. The statue of liberty is sunken and covered with thick layers of shells preserving their form.
- Already after 500 years the present suburbs are converted into woodlands with suburban scrap and garbage in between. The building will not be able to resist for a long time; the concrete basements will be washed out and the rest decomposed easily. For northern woodlands Canadian ecologists estimated that already after 200 years the wounds made by roads, pipelines or railways are completely healed.
- Only nuclear power stations will survive for longer times because of their massive concrete covers. However, in a worst case scenario of melting reactors explosions will

burn vast areas and contaminate with radioactivity. Consequences for nature are small as Tschernobyl proofs. New ecosystems are going to establish themselves.

- After some 10.000 years almost all traces and signs of the homo sapience' existence disappeared. Only fossils and glass- and plastic fragments as relicts of our waste disposal will give some hints of our culture and technology.

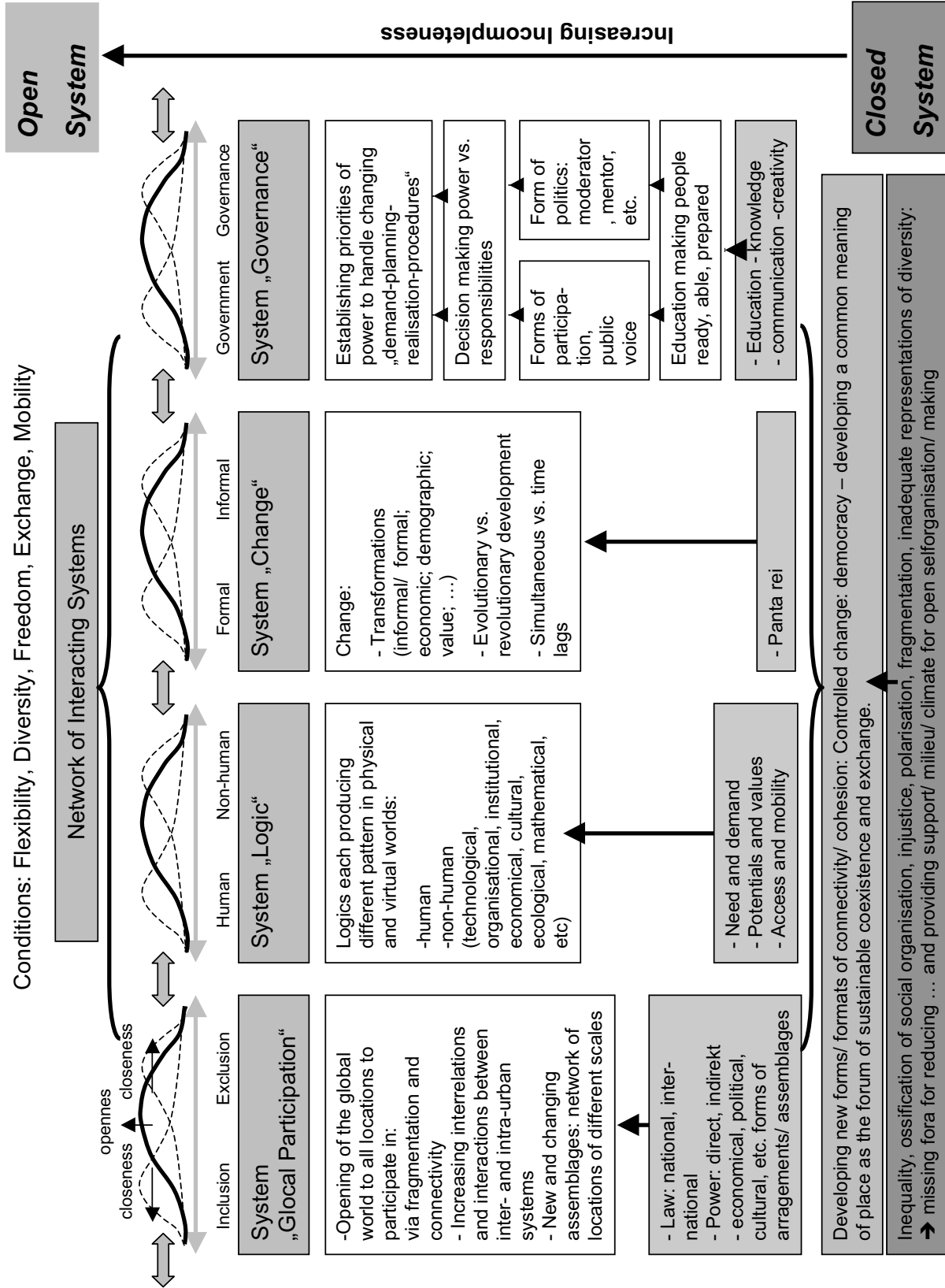
In any case with or without us, nature and other non-human systems bounce back. Compared to the time before "us" the resulting e.g. natural environment will be a different one with other botany and biology. Cities have been once built to exclude nature. The Greek and Roman cities were completely stone covered; it was the expression of being released from the burden of rural living conditions. It also expressed the urbanites' effort and superiority to distinguish themselves from non-urbanites. And today, we are trying hard to make cities green and worth living for a healthy environment - as it is perceived at present.

WHAT DOES IT MEAN FOR "THE WORLD WITH US"?

As said before, people try hard to organize a world which can be operated in an optimal form and use. In all their times they invented new technologies, forms of organization, power or culture to overcome shortages caused by non-sustainable developments. They also have developed compensations of shortages by creation of hegemonies, hierarchies, segregation, inequalities, injustice and by eliminating public fora to reduce resulting instabilities. At no time, people made major effort to reduce demand prior collapse. It is one of the human habits to wait until the system, people live in, reverses its conditions. Systems develop towards closeness. That

Fig. 2: Making Cities Ready as Liveable Cities - Allowing Change and Making

Conditions: Flexibility, Diversity, Freedom, Exchange, Mobility



Source: Braun 2009

means that people spend time and potentials in establishing massive, inflexible systems with the intention to preserve their power, superiority and influence. As expressions of these systems their leaders convert their understanding of logics of the world in built and institutional environments thus determining the development of the future in an inflexible manner. When considering that most of the human effort to control and dominate world in form of established physical and virtual structures disappears after short time, why do we concentrate our potential in doing non sustainable decisions. This inflexibility can be seen in two different ways. Human beings create their world in structures of high persistence. E.g. in times of water shortage people have to adjust, first, to the changing conditions by reducing their consumption behavior, and, secondly, in relation to the infrastructure to avoid an early corrosion of pipes and reservoirs. Or, many shopping facilities are at present designed just to follow the economic conditions of amortization in investments and are built in standardized cheap halls near access points of customers, and not anymore to meet the demand of service functions or the main functions of cities to concentrate.

From Weisman we have learned that with and without "us" our cultural and technological relicts will not last very long, that nature or non-human logics bounces back respectively are superior human logics at any time. Why do we invest so much money and effort in establishing inflexible, non-intelligent infrastructure which allow change and making? We have to be intellectually ready and practically prepared to change our minds and habits as the world changes:

That means to orient all our decisions towards an open system approach. Our effort should be making cities ready as liveable cities which will occur under the conditions of flexibility, diversity, freedom, exchange and mobility. The system itself works as a network of interacting partial systems. Some are listed in the model

shown here. These four systems represent each a scale between extremes; it can be assumed that the extreme parts of these scales tend to convert the system into a closed one while a more balanced situation allows openness. It also reflects the fragile structure of the system design.

- A first system ranging from inclusion to exclusion describes the "glocal" participation and means increasing interrelations and interactions between inter- and intra-urban systems. Exchange allows easy adaptations to changing conditions and forces continuously new and changing assemblages of networks of locations even linking different spatial scales. Economic, cultural, political arrangements depend on adjustments of law, law-systems or commonly agreed interpretations of law.
- A second system represents various "logics" which affect our daily life independent and interrelated in form of autonomous laws. They each reproduce different pattern in a physical and virtual world, we have to adjust too. As said before, high-rise buildings have been invented as economically optimal expressions in form of vertical market streets. High-rise apartments may be economically optimal but not necessarily in a human view. That means that most of our life is embedded in others than human logics and we all are permanently forced to adjust to. Often need regulates demand; potentials and values are not assessed in a complex view. We are trapped in our limited thinking and its artificial output while preferring and choosing others than human scales and dimensions.
- The third system contains the driving factor "change". Based on "panta rei" principles we consider different forms of change which can be evolutionary or revolutionary, spatially and in time simultaneous or occurring in steps. Many of these changes develop in cycles or transformations. By

contrast our thinking and decision making is based on linear development paths because of short term assessment rewards or linear thinking simplifications and complexity reductions.

- The fourth and here finally discussed system represents governance as a bottom up and top-down in balance form of democratic exchange between different actors who are all involved, affected and responsible for decision making of changing demand-planning-realisation procedures. Governance here means a common development of rules and acceptance of agreed rules of interaction and communication which help to understand the complexity of both the issue and content of planning as well as decision making procedures, to discover compromises in order to optimise an overall acceptance in the process of problem solving. High value education, knowledge, creativity and communication put people into the position to act ready, able and prepared.

We know only little about the interacting network of these at least four systems. In a balanced format - shown with the scales - they could guarantee a controlled change, i.e. based on democratic behaviour the developing of a common meaning of place as a forum for sustainable coexistence and exchange. From the Weisman-book we learned that without a continuous increase of the effectiveness of our systems and without a continuous maintenance the functionality of our systems - even the simplest one - start failing from the first second and nature re-conquers man made infrastructure. Maintenance is, therefore, one of the keywords in relation to sustainability. The more sophisticated and older infrastructure develops and the faster functionality changes, the increasingly more effort and money have to be spent for maintenance and functioning. What does it mean under the aspect of limited resources and the fact that resources are not efficiently

and effectively used in the view and complex understanding of human logics? We all know that e.g. production- and productivity cycles develop in shorter time budgets. The investment into new technologies, buildings, infrastructures are not designed to take into consideration the shortening of these cycles. That means that the energy or investment to be spent for an equal output have to be increased over time or it seems to be impossible to receive a higher output with less energy. In our linear way of thinking we are trained to let run high speed trains on old tracks because of the high basic investment in the track system. Not considered is the fact that even new tracks don't solve the problem of higher effectiveness in case of the invention of new, the older ones replacing technologies. Or we take on welders for life time positions not anticipating that not only welding robots will do similar jobs but the welding rod can be replaced by other material connections e.g. adhesives. And for sure, these adhesives will not be the final optimum in the sense of minimising energy for higher output or of a higher degree of sustainability in general.

What drives people to hold on to continuing or favourite behaviour and let processes keep going; it is the fear for changes and the insecurity inherited with changes. All changes are perceived as a seeming loss of former efforts, investment or rewards and a reassessing of the new situation which requires new efforts and investment under insecure conditions and rewards. More often, the threshold of investment into new technologies or changing structures is in general incomparably higher and the expected rewards smaller than in the development of old technologies at the end of their life cycles or the hold on to accustomed structures even if the profitability is decreasing (the amortisation period ended earlier). To understand the process of cyclical development means to interrelate initial and maintenance costs. Maintenance costs are never zero and grow exponentially in general and even faster the later the maintenance are initiated. These

marginal costs can be used instead as new initial investment while profiting at the same time from pioneer wins.

The speed of change, however, should be driven on human demand, scales and dimensions. Human life and its spatial artefacts like cities are founded on change. All its/ their components are subjects of non-linear, cyclical character and therefore of substituting structure. The fact that at present cities in advanced economies tend to shrink by population and grow in space, that core areas gain importance compared to their peripheries (suburban and exurban areas) doesn't mean that cities and core areas lose their main potential to concentrate. It rather means that cities have to change their internal structure (e.g. poly-centrality, transportation systems) and cores their functions. It is not the same city or core as before as to forms, land use pattern and functions; it is a new structure which adjusts more evenly to the changed demand. One of the remaining but most important questions is whether the changes lead to higher effectiveness towards sustainability. As long as the cycles are preferably based on non-human logics and incompatible interfaces between the above listed systems people will face difficulties to adjust to the changes and their speed of change. In a network of interacting systems will be enough time for a smooth adjustment as long as people are willing and prepared for change.

CETERUM CENSEO

A more flexible thinking and realization of thinking would help to balance sustainable development. Let's try making cities always ready for change and making, e.g. by recognising and reprocessing existing structures as stimuli for new functions and values or by providing right from the beginning flexible, intelligent infrastructure for changing demand and functions.

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What happens if nothing does happen?¹ Effects of Demographic Change

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Abstract:

The Deutsche Statistische Woche 2005 concentrated on the state and development of the demographic change. The result seemed to be very clear that the effects resulting from the structural change of birth- and death-rates as well as of migration pattern are clearly underestimated by politicians, planners, people, and markets and will not only affect but more likely change the present day organisation in all fields of daily life. Two examples are presented to highlight this restructuring.

Keywords:

Demographic change, projections, age structure, purchasing power, governability.

¹ The title is taken from the proceedings of the "Statistische Woche Braunschweig, 2005" Verband Deutscher Städtestatistiker, Deutsche Statistische Gesellschaft und Deutsche Gesellschaft für Demographie.

INTRODUCTION

For some time many people, politicians, scientists or practitioners are talking about the effects of demographic change and almost nothing happens. The globally affected development of demographic structure influences the ability of all societies - especially of advanced economies - to adjust, compete and innovate. On a European scale, demographic change is linked with aging societies, decreasing fertility rates, increasing in-migration flows, and decreasing potentials of workforce. These processes all underlay a long-term perspective which changes the creative power of European societies and restricts the economic, social and environmental conditions for further growth and development.

In the view of personnel policy the demographic change doesn't contribute to the reduction of unemployment but more over to the shortage of qualified employees, aging workforce, changing customer demand, and a re-orientation of employment strategies towards compensations through new investment, qualifications, organisations and technologies.

In the view of retail - as another example - new consumption pattern develop towards the growing demand of aging customers and shrinking demand of younger customers. The fact that older people behave differently in how to spend their money forces major changes in retail offers and the type and organisation of retailing. In absolute figures, the purchasing power of the age-group ">65 years" is ranked second after the age group "40-49", is in relative figures well above the national average and the younger generations measured in €/p.c..

In the view of communities this new situation is not clearly analysed because the complexity of interrelated processes doesn't allow assigning specific phenomena to the related processes. The chance to influence or to govern these processes is very limited as shown in later

stages. As an example, in Germany the algorithms to adjust the pension plan to the changing situations have been corrected from one to the next legislature period for more than 3 decades. It seems to be so as if the underlying complexity paralyses all activities in getting adjusted to these new conditions.

Siebert (in HAHLEN, J., 2005, 14) describes this situation with the following story:

A roofer slides from a high rise building. When he passed the fourth floor, somebody shouts to him: "How are you?" He replied "I am fine, as long as my situation continues".

HOW WELL IS REALITY SEEN AND ACCEPTED?

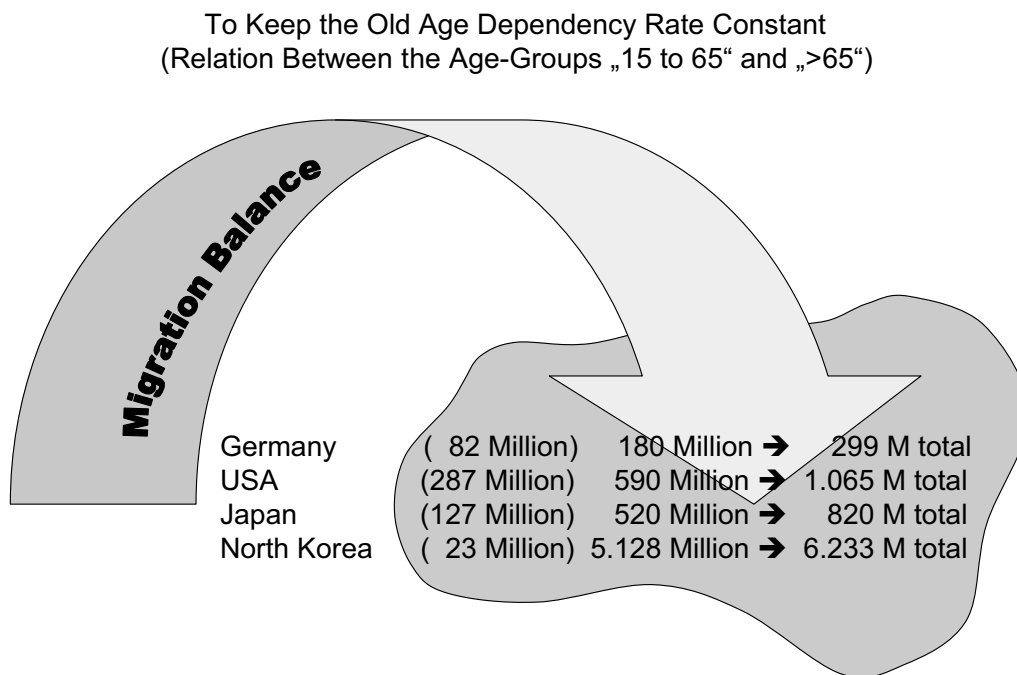
Do we really know what happens in this respect? Do we need or is there a chance for a reversal of the demographic change? The overall confusion in public discussion is mainly based on a series of interlinked mistakes as to the projections of the population development in terms of growth, age-structure (fertility rate, life expectancy), age-dependency rates, and migration-effects. As an example (all data are taken from Bomsdorf, 2005), for life expectancy at birth the figure is 81.2, respectively 76.4 years in the view of political statistics. In reality, all figures for females range from 82.8 to 94.9 for 75%, 50%, and 25% of all births. That means that 25% of all births survive some 13 years longer than officially expected. Or, for a constant population size, it is assumed a fertility rate of 2.1 children per woman of child-bearing age. Compensation by in-migration is not assumed because it is expected that the birth rate can be easily increased. In reality, the fertility rate in Germany is 1.3, much below the reproduction rate and too small for guaranteeing and safeguarding the presently existing social system. The current age-dependency rate is seen as 4:1 instead of 2:1 for the year 2005.

(The relation 4:1 expresses that 4 working people feed the pension plan and guarantee pensions while 1 pensioner receives money from the pension plan). Until 2030 this ratio changes officially to 2:1 while the real projections results in a 1:1 ratio (Bomsdorf, 2005). That means, that either the social burdens of the working people develop in an overwhelming manner and labour becomes ineffective or the pensions develop below welfare level. Long lasting low fertility rates contribute to the collapse of a traditional family-generation-system, whereby old people receive care from their children. In other words, pension needs a second financial track which creates burdens on income, savings and investment as well as on social security and workforce competitiveness.

One of the most visible problems is the financing of the social security system. For this system the dependency rate especially for old people is one of decisive characteristics. To keep the old-age-dependency-rate constant

e.g. for Germany with 82 million people, this goal could be reached until 2050, if 180 million people would in-migrate (net-in-migration) (see figure 1; source Bomsdorf, 2005). Under these conditions Germany would count 299 million people. The ratio between 82 and 299 million expresses the meanwhile developed skewness of the age-structure. For USA, Japan and North Korea the net-in-migration would develop to 590, 520 resp. 5.128 Million and result in population sizes of 1.065, 820 respectively 6.233 Million inhabitants (Bomsdorf, 2005). Of course, these figures don't seem realistic even if they express the present situation that the social system is weakened when only based on working people who serve the older ones. No doubt that this playing with numbers leads to the playing down and ignorance of processes which should be otherwise better perceptible in indices like change in quality of life. The tricky thing is that the demographic change has contributed so far to the growth of quality of life. This reminds us the story of the roofer.

Fig. 1: Necessary Migration-Surplus until 2050



Source: E. Bomsdorf, 2005

DEMOGRAPHIC CHANGE AND ITS IMPLICATIONS

We will go back to the facts and to the effects of demographic change in urban environments: Since the beginning of the 20th century the average age has increased in all societies; largely in a linear form; this linear form coincides with models of projections until the year 2050. Partly interrelated and partly counteracting with the linear growth of the average age is the development of the fertile rate which continuously declines. Both effects cannot be compensated by immigration. Migrants carry their own characteristics on demographic change. As to Bomsdorf, the demographic change results in the following stage:

- The fertility rate stagnates at a low level
- The younger generations reproduce themselves only to $2/3$
- The life expectancy increases
- Migration balance is positive but low
- The average age of population and the number of households increases
- Population size decreases.
- In total: the old-age-dependency rate gets worse. The main problem is not the decline in population but the change in the age structure both in relation to the changing employment situation. However, these changes affect regions in different ways. There are growing regions with moderate changes in the age-structure and shrinking regions with rapidly worsening changes in the age-structure. But it doesn't mean that younger regions - mainly fed by high net-migration - also reproduce a higher fertility rate.

A resulting question arises how to influence - if there is a chance - the components of

demographic change (fertility, life expectancy and migration) towards a regionally balanced population structure. Bomsdorf (2005) calculates effects of changes in the fertility rate and net-in-migration on the population size based on the status quo of the year 2005. Bomsdorf computes for the years 2020 until 2050 the resulting change in population size on changing fertility rates. In detail, an increase of 0.1 in the fertility rate would reproduce for 2050 an increase of 2.5 million people. However, this increase would compensate only $1/5$ th of the present overall loss in population. The fact that this relative gain comprises a long lasting time lag means that the chance to influence both the population size and the age structure is very limited and not suitable for an immediate effect on the age structure. Similar effects can be seen from the other calculation based on different rates in the annual net-in-migration. An increase of 3 million people would result from an annual net-migration of 50.000 people until the year 2050. However, just to compensate the present loss in population would afford an annual net-migration of 150.000 people. Considering the structure of migrants the resulting effects would only slightly influence the status quo. Both variables cross-classified show with the isoquant curves how fertility rates and net-migration can be substituted to keep population constant but not its age-structure.

Model variations of projections, done by Bomsdorf, make clear that the effects on the age-structure are almost impossible to achieve. Neither higher fertility rates can compensate a lack of migration nor is migration able to compensate lower fertility rates to finally result in a tenable age-pyramid even at a lower or higher population size. Only a theoretical calculation of an annual net-migration of 200.000 people, a continuous increase of the fertility rate to 1.7 in the year 2025, a pensionable age of 65 year without exemptions would reproduce for 2050 a similar old-age-dependency rate to 2004. However, these assumptions are not realistic to be put in action.

The implications of the demographic change are manifold; beside other dimensions they mainly result in an increase

- (1) in spatial disparities between loser and winner regions as to economic productivity, infrastructure and functions as central places,
- (2) in fragmentation and polarisation and loss of connectivity with effects on regional housing markets, purchasing and innovation power, qualifications, occupation, migration as well as
- (3) in a loss of governability because of growing debts and declining abilities to invest and maintain.

Chances to avoid an acceleration of this negative cumulative causation are based on governing incentives whose long term effects, however, aren't really clear. All demographic decisive variables are affected by economic transformation processes of very complex character. The improvement of all kind of technical, personal and institutional infrastructure is preconditioning for economic success but not guaranteeing it because of strong competitiveness between the large numbers of rival regions. This insight leads to the coupling need to let some regions shrink under governmental control to avoid the risk of a general population implosion. Almost all peripheral, structurally weak rural areas, old-industrialised regions not having been able yet to adjust, core areas of large cities and urban areas affected by social erosion and insufficient housing structure are affected most by these effects of demographic change.

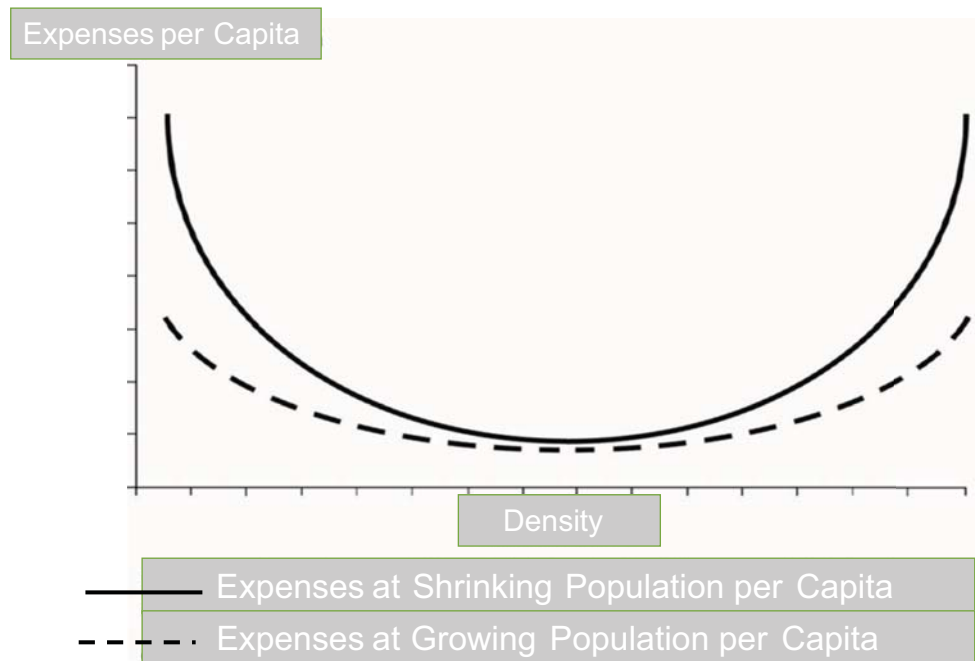
THE EXAMPLE OF ADJUSTMENT COSTS

One of the effects of the ignorance of the demographic change has been the decoupling of the spatial and the population respectively the occupation development. A diagram between 1961 and 2001 would present

that the latter curves (population and occupation) show almost no obvious deviations apart from in-migration of foreign workers in the 60ies, the recession in the 80ies, and the brain-drain in the 90ies from the New Länder followed by high numbers of unemployment (Einig, 2005). This development was intraregionally accompanied by the polarisation of population development through suburbanisation processes, large scale housing vacancies, and decrease in densities as well as interregionally by a concentration process at locations with successful economic transformation; both processes produced a continuous increase of land use consumption. The gap between spatial and population/occupation development continues to increase. Therefore, from 1993 onwards population density runs down from some 2000 inhabitants per skm to almost 1900 in the Western Länder while the density in the Eastern Länder declined to 1700. Projections to 2020 calculate for urbanised areas a 2.5 higher decrease in density than in counties while their increase in land consumption shows similar figures. It reflects in urban areas not only the effects of the demographic changes with population loss especially of family households, aging population and slight increases of younger small households at low fertility rates but also the transformation processes in the economy. Communities mainly have to fight with scale of effects of density in a double sense. To adjust all kind of technical infrastructure to shrinking demand reproduces higher costs than adjustment to growing demand. The expenses per capita at shrinking population are well above the one of increasing population represented each by a typical U-shaped line (fig. 2; source Einig, 2005). With shrinking population size and increasing demand on space the annual total costs for technical infrastructure will increase by 21%, the costs for social infrastructure by 1% compared to the status quo situation. Most cost-effective are the maintenance of the sewage and road system and the provision of fresh water at the technical infrastructure site, while at the social infrastructure site the

Fig. 2: Economy of Density - Cost-Hysteresis-Effects

adjustment of offer to shrinking demand is more costly than adjustment to increasing demand



Source: K. Einig, 2005

demand on social care skyrockets and the costs for maintenance of schools and kindergarten shrinks. With sustainable concepts the costs for technical infrastructure could be kept all below the status quo, what can be not achieved with the social costs because of the changing demographic structure (see also Braun, 2009; Weisman 2007).

A reduction in expenses for technical infrastructure can be attained with increasing population densities. Following the trend projections for the year 2020 these expenses would increase by some 20%; however, the rise of costs per capita decreases with high densities not mentioning the saving at sustainable concepts (source: Einig, 2005). On the social infrastructure site, the situation results in a strong increase of specific costs in low density regions while in high density regions the costs are far below average; both of these results occur independent of the fact the regions are growing or shrinking.

Shrinking capacity utilisation reacts cost-intensively which doesn't depend on growth or decline per se but on the changing age-structure and their specific development in demand.

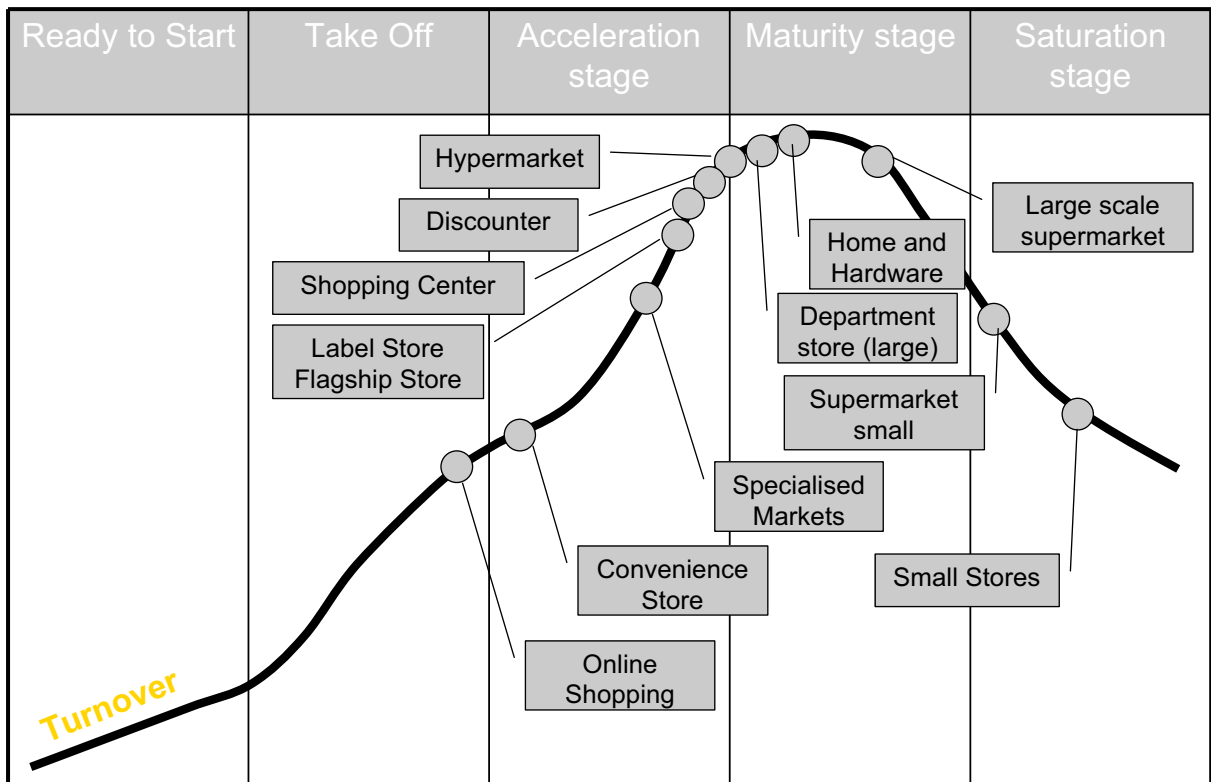
Based on the cost-effects of infrastructure as to Einig (2005), the scenarios "trend" and "sustainability" for the year 2020 will result in increasing financial burdens for the communities and their inhabitants. In the first case, even with a stable regional population development the intra-regional population development changes into a polarised one. Central places will be affected by a substantial loss of centrality because of shrinking purchasing power especially of those regions that loose their younger and middle aged customers by out-migration and low fertility rates. The older ones have to spend most of their money and savings for social care. Even in economical growing regions the changing purchasing power and demographic change

will result in increasing costs for sustainable back formations and adjustment to new demand. One positive effect will be the reduced rate in suburbanisation because of changing life styles. However, the locally varying decreasing density, the rising demand on personal space and space for transportation and economic activities will contribute to a dispers pattern in the adjustment capacities for streamlining the old structure into a new cost-effective one. Under sustainable concepts, the savings in costs will be rather moderate, the overall inter- and intraurban structure will change nevertheless. One of the key elements of sustainability will be to transform the offer-oriented structure into a demand-oriented one based on network-like systems. The process of demographic change can not be stopped, however, new pattern of reactions can be developed which would have been initiated anyway.

THE EXAMPLE OF PURCHASING POWER AND RETAIL

A second example reflects effects on the changing retail situation which is complex in another way (source: Radtke, 2005). Net-income of older people is significantly below the average. This trend will continue because the shrinking transfer payments of active employed people to the pensioners will reduce their available income. With aging population and reduced transfer payments the turnover of retail should shrink significantly. The conditions for retail are based on two facts, the high savings of middle aged people and the low savings of older people. The group with the highest purchasing power per capita is the age group from 40-50 years, followed by the group 50-60 years. People older than 60 have a purchasing power which is some 20% lower

Fig. 3: Retail Development Conditions



Source: Radtke, U., GfK, Prisma Institut, 2005

but the number of people in this group reproduces in absolute numbers a purchasing power which is second ranked after the financially mature group of the 40-50 year old people. Financially seen the weakest groups are in relative and absolute numbers the ones below 30 years (Radtke, 2005). Their high spending results quite often from grandparents' handed on money. Old age households are noted with a growing increase in consumption resulting in a 23% share of all age groups. Their changing life expectancy and life style make them more consumer- than savings-friendly.

Applied to the structure of offer in retail, it is assumed that large scale shopping centers and chain-stores are more able to adjust than small scale and single retailers. The changing age-structure will affect the pattern on goods demanded. While expenses for periodic demand will shrink and clothing stays stable, the major increase in expenses per capita will happen in the sector of hardware which comes close to the periodic demand.

This changing demand and expenses will lead to a re-classification of retail stores (fig. 3; source Radtke, 2005). When using the development path of turnover as an indicator for classification, the shape of the curve follows a classical life cycle with growth followed by decline. While online shopping is classified in the phase of take off as to market shares, discounter, hyper-markets, large scale shopping center, label stores, chain-stores are ranked in the stage of acceleration with the strongest increase in market shares. In the maturity stage home and hardware stores and mail-order businesses are classified having reached their maximum market share. On the loser-site are small single stores and small supermarkets.

What are the consequences for retail? The new target groups resulting from demographic change can be classified in three different life style characters where possession, existence and life play the main characteristics in the new consumption behaviour pattern (fig. 4; Radtke, 2005).

Fig. 4: Retail Consumption Pattern

20	40	60	80	100 Years
Young		Young Oldies		Old
Possession		Existence		Life
Pre-, early familiar Pre-, early occupational Searching for profil Open for innovations Ready for consumption		Late-, post-familiar Late-, post-occupational Satisfied Critical against innovations Quality- and service-oriented		Retirement Mature Resistant Service dependent
Healthy Beauty oriented		Physical burdens exist but don't affect daily life		Physical burdens determine daily life
Main target group of advertisement and consumption		Minor target group for advertisement and consumption		No target group yet
2004: 45.3 Million people 2020: 44.1		2004: 16.9 Million people 2020: 16.4		2004: 3.4 Million P. 2020: 5.7

Source: Radtke, U., GfK, Prisma Institut, 2005

- The profil of the young is mainly pre- or early familiar and occupational, still searching for a certain profil, open for innovations and ready for consumption. As young people at present feel and act, they are more "beauty and wellness" oriented. With these characteristics they are traditionally the main target group for advertisement and consumption. However, this group is shrinking and increasingly polarised in their consumption behaviour.
 - The young oldies' conditions are late- and post-familiar and occupational with a settled profil, ciritical against innovations and quality- and service oriented. After almost 40 years of work they are affected by physical burdens but they still behave as active, straight forward consumers who stay in the middle of their life. The advertisement business didn't adjust yet to the main purchasing power group so far. The old aged group doesn't count yet as target group for advertisement and presentation of new growing demand. Their characteristics are rather conservative but demand new fields of services and qualities.
 - The older people's shopping behaviour is different from the usual one derived from younger customers. Older people demand more space in the presentation of commodities, spend more time while shopping, they react less reactive on fashions and prefer quality labels in their specific segment of demand. In this segment one will find higher shares of healthcare, homeoriented, travelling oriented expenses. However, even in this group polarisation takes pace. Shrinking income splits the old age group with the loss of the qualitative middle income group. Growth in demand will be found in both the discount and the luxus segment; people chose between needs and wants. Old people hate to be classified as seniors when stigmatised with a retarding role in consumption and taking part in daily life.
- The present day reactions of retail don't follow in total these new conditions. The process to economise location, commodities and service efficiently counteracts the demanded effectivity of the new groups of demand. With the new life styles retail has to concentrate at the right locations in good accessibilities for walking, byking and riding a care, with sufficient parking, adjusted offers, and supplementing services in both core areas and suburban subcenters.
- In total, some of the effects of demographic change can be handled by adjusting to new demand. However, the costs for full compensation aren't as easy to carry. The change from shortages in the late stage of fordism for example in housing to capacity rentabilities and complete vacancies are subject of immediate actions, many communities are unable to deal with. Similar restructuring processes are necessary in all other sectors of urban organisation ranging from transportation, mobility, communication and economic substitutions, to public and private services and urban land use pattern. Not only innovative sustainable expansion but also back formations in all sectoral and spatial segments in smart networking may initiate new concepts and scenarios useful to rearrange urban environments economic and social in ones. The present trend in urban areas of increasing fragmentation and polarisation needs to be substituted by new forms of connectivities, to reduce specific costs of segregation, inflexible networks and abilities as well potentials for permanent adjustment and readiness to adjust.

WHAT CAN BE DONE?

First is monitoring the development paths at all spatial scales and contents.

Second are concepts of adjustment under sustainable streamlining.

Third is to start acting before the maturity stage is reached and reactions are determined or out of control.

Forth is to adjust to the conditions of full cost accounting and the improvement of economies of scope.

Fifth could be the development of inter-generational networking in all fields of daily life - in housing, care, communication and services.

Sixth is related to the intensification of education, research and development which guarantees best the potential for future adjustment in global and local perspective.

Seventh could be the initialising of not only a specific milieu concept but more important of an intelligent - or smart - city concept which answers the following question in the right format:

What is a city without inhabitants and what are inhabitants without a city?

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The Process of Integration in Theory and Methodology

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Abstract:

The article focuses on new methods to measure social integration. Similar to electronic shackles the method allows monitoring individual spatial activities. This monitoring is simultaneously combined with an electronic diary to get additional information on the kind of activities and mobility. With these instruments in action it is possible to adjust to Werlen's demand on theorising activities in space like spatial and social integration.

Keywords:

Activity space, social integration, time-space exact monitoring, theory.

INTRODUCTION AND RESEARCH QUESTIONS

Since 1989, in Germany and in specific in Berlin there are still ongoing discussions for different economic, social and political reasons what the timeframe of the unification process could be. These discussions are driven by the dissatisfaction about the ongoing transfer-payments and the special taxation for the East-solidarity. In 2000 some 10 years after unification, Scheiner in his research still stated the wall in heads and minds of the Berliners.

In his study three dimensions have been hypothesised:

- the relationship between East and West based on three sub-hypotheses (the one of socialisation, transformation and mentalities),
- the socio-spatial consciousness characterised by dimensions like sense of affiliation and East-West stereotypes as well as
- the cultural characteristics like lifestyles

and consumer behaviour as well as values and norms.

These dimensions were hypothesised to describe the social contacts between East and West which turn out in either specific pattern of migration behaviour or those of different activity spaces (Scheiner, & ff). Questions derived from this concept can be asked as following (Scheiner, 27):

- Based on the analysis of activity spaces and spatial perception, are there specific strategies of dissociations and separations others than to be explained by distances?
- In case of homogeneities in time-space constraints in East and West, are there typical forms of activity spaces related to certain social groups? Can be especially found pioneers of integration or defenders of separations?
- Can overtures on one side and tendencies of dissociation on the other side be related to specific biographic experiences?

The analysis, shown here, preferably concentrates on the interdependencies of the first two questions: the form and size of the

activity spaces of high school students on both sides of the former Berlin Wall will be related to the type of schools, their related serving area and the social background of their students.

THEORETICAL BACKGROUND

To answer these hypothesised relationships, first it has to be stated that integration defines a process with stages different in design and time lasting. It can be assumed that an event like the opening of the wall provides for many and specific people a boost of new activities, changes in individual behaviour depending on the new opportunities and attractions offered by the new accessible part of the city. The higher the individually perceived backlog demand and disparities are the more likely it can be expected that distance as regulating barrier doesn't play an important role in the beginning of this process; it is a more physical perception and adaptation of space and its new opportunities. This is shown in the upper part of the model (fig. 1). In later stages people will realise that the new opportunities on the other part of the city will lose their attractions over time while the same opportunities will diffuse

Fig. 1: Theory and Hypotheses (1)

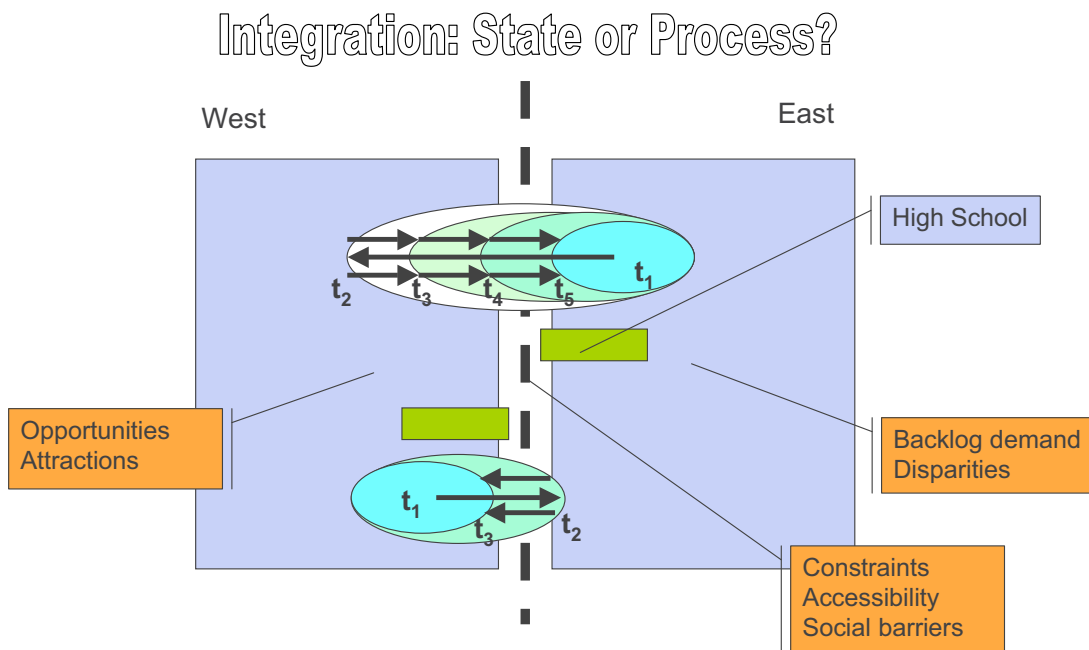
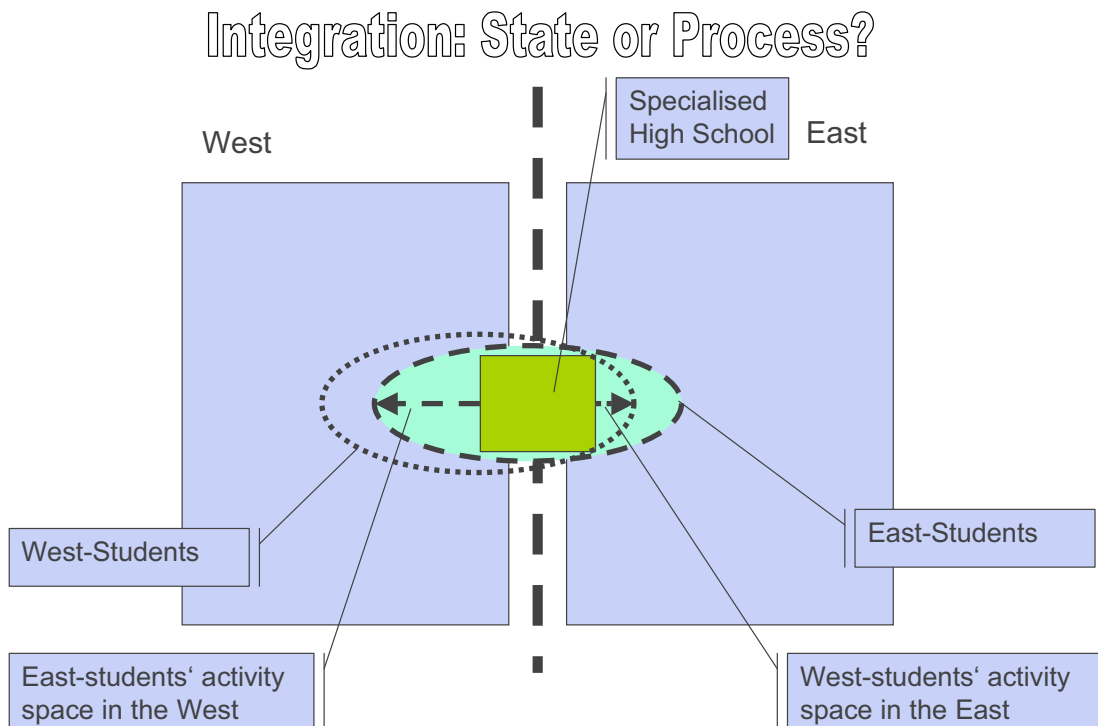


Fig. 2: Theory and Hypotheses (2)



the own part of the city and the individual disparities and backlog demand has been balanced as far as possible. In consequence the individual constraints will restrict the shape and size of spatial activities of daily routines. In the way like the capability, coupling, and authority constraints will limit the activity spaces, accessibility and social barriers will also shape the conditions which may limit individual behaviour.

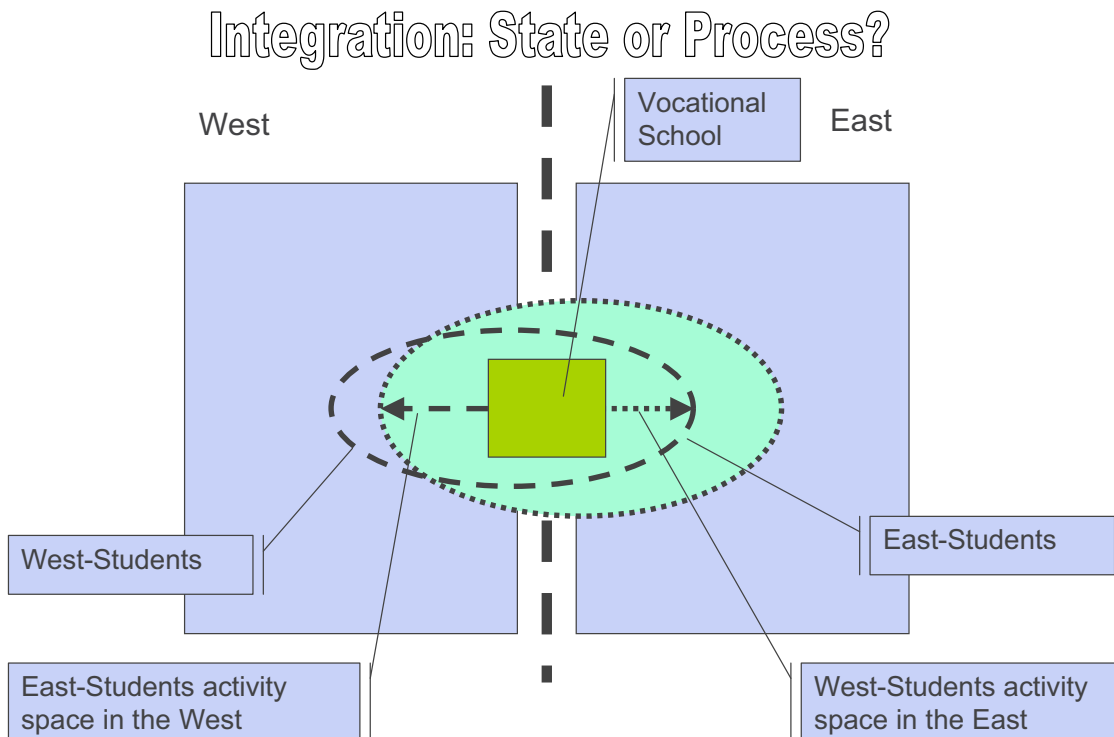
In case the opportunities and attractions on the other side of the city are below the own standards, the need to transgress the own activity spaces is limited and preferably driven by curiosity (see the lower part of the model in fig. 1). The distances to extend the activity space and the time budget for visits are very limited, and superficial impressions are sometimes enough to confirm what has already been known by prejudices or series information. Therefore, the incentives to make use of new spaces are limited.

Variations to this overall pattern can be expected in case the different attractions have

the character of singularities (fig. 2). The pressure on individuals to adjust to this specialisation makes people more ready to overcome social and cognitive walls. If schools besides families and social environments are seen as locations and institutions of socialisation especially to improve the process of integration, then those schools should be promoted whose serving area is able to cover wide areas under integration. However, their capacities to function as such vary with the educational and quality level as well as their offers in specialisation. Related to these levels are social components which restrict the function in specific ways. Vocational schools, comprehensive and all day schools, and high performance and specialised schools represent each different social groups with different capacities and needs of overcoming walls in minds and heads (fig. 3).

We can conclude that the process of integration can be hypothesised as a complex model of useful and effective, norm and value driven as well as mentally balanced activities to overcome prejudices or conflicting views.

Fig. 3: Theory and Hypotheses (3)



This process can end without visible integration in space. However, these processes are not necessarily dependent on the effects of direct interactions with subjects (persons, institutions, information, values or areas), but in case of schools there are real (locational) and virtual (educational) influences which reproduce via activities new cognitive pattern which can overcome physical walls in a perceptive manner. Therefore, it should be not expected that the result of integration ends in a homogenous space but in spaces which are of multiple use. It is not the classification of subjects in space what characterises space but their mobility and common use of space (Werlen). That is one side of the integration. It can not be assumed, that integration has happened - integration is never finished, it is an ongoing process - when traditional barriers, borders or limits are surmounted, but when via common use of space additional areas of identification develop. These areas should be an active space for social, political or cultural affiliation and belonging ship with or without direct contacts. Statistically spoken it is a space with a high internal variance. Political

integration could be seen as one goal on integration but a socio-economic integration is not simultaneously meant. This situation is given in the situation of Berlin where the inner-Berlin wall followed not only the traditional pattern of districts, but where the districts have developed over the time different social pattern.

METHODS AND EMPIRICAL EVIDENCE

In the empirical case, this mobility and use of space will be expressed by the analysis of activity spaces. To do this, the analysis is based on the operationalisation of two major concepts, the time-space use and the spatial behaviour concept. Both are supplemented by qualitative interviews, to calibrate the conditions of the empirical studies. The time use of all participants - students from different types of high schools or vocational schools - has been recorded by an electronic diary, while the spatial behaviour was monitored by

GPS tracking (fig. 4). The PDA and GPS data logger were carried all days long for one week to record all positions in space applied at a four second interval. PDA provided all kind of activities, categories of activities and modes of transportation. The main technological goal was to synchronise both devices.

As sample students from high schools were chosen to represent a group of inhabitants who were already born or grew up in the already politically unified city of Berlin and who were assumed to be mobile, active and unbiased except for their family socialisation, education environment and social belongings. The samples have been taken from different schools in Berlin East and West. Except for socioeconomic (household compositions, social status and ethnic affiliations) dependencies no other factors may influence the size and shape of the activity spaces when comparing the East and West samples.

The investigation reproduced some 300 valid

datasets from students of 11 schools. Altogether some 28.000 activities were reported for totally 2.030 days. As on average, 96 activities per student or some 14 activities per day could be counted. GPS-tracking resulted in 3.2 Mio points or some 10.600 GPS points per participant.

The schools were selected by a scheme to represent socio-economic variations, the spatial distribution of infrastructure and East-West stereotypes (fig. 5). For this analysis we have selected the only 7 schools in Berlin, three in western, four in the Eastern part of the city. Basic statistics show the origins of the students of either East or West schools (fig. 6).

This map shows with triangles the students home address painted in the same colour as the different schools, represented by a pentagon. The coloured circles indicate the spatial spread of the out of home activities. The coloured lines frame the maximum serving areas of the respective schools.

Fig. 4: Methods and Technology

PDA



- The base module is a Personal Digital Assistant (PDA)
- Every participant is equipped with a PDA

Electronic diary

- Ex ante interview (socio-demography, housing situation, basic mobility features)
- Electronic time use diary

Tracking with GPS technology



- The GPS-Datalogger will be carried during the entire field period
- Tracking frequency and logic can be changed due to survey needs
- A one week field period is applicable at a four seconds interval

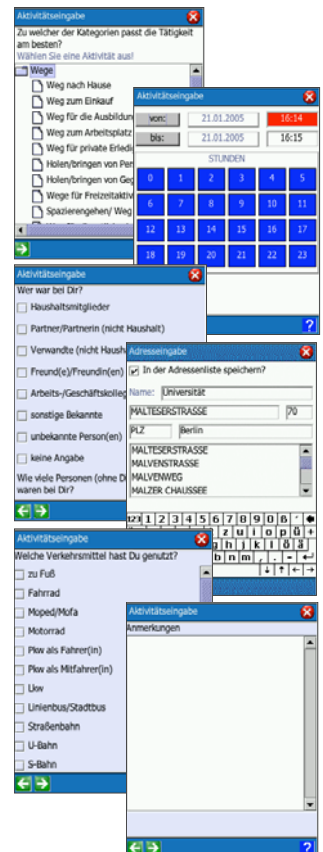


Fig. 5: Conditions of the Sample

Subsample of seven schools

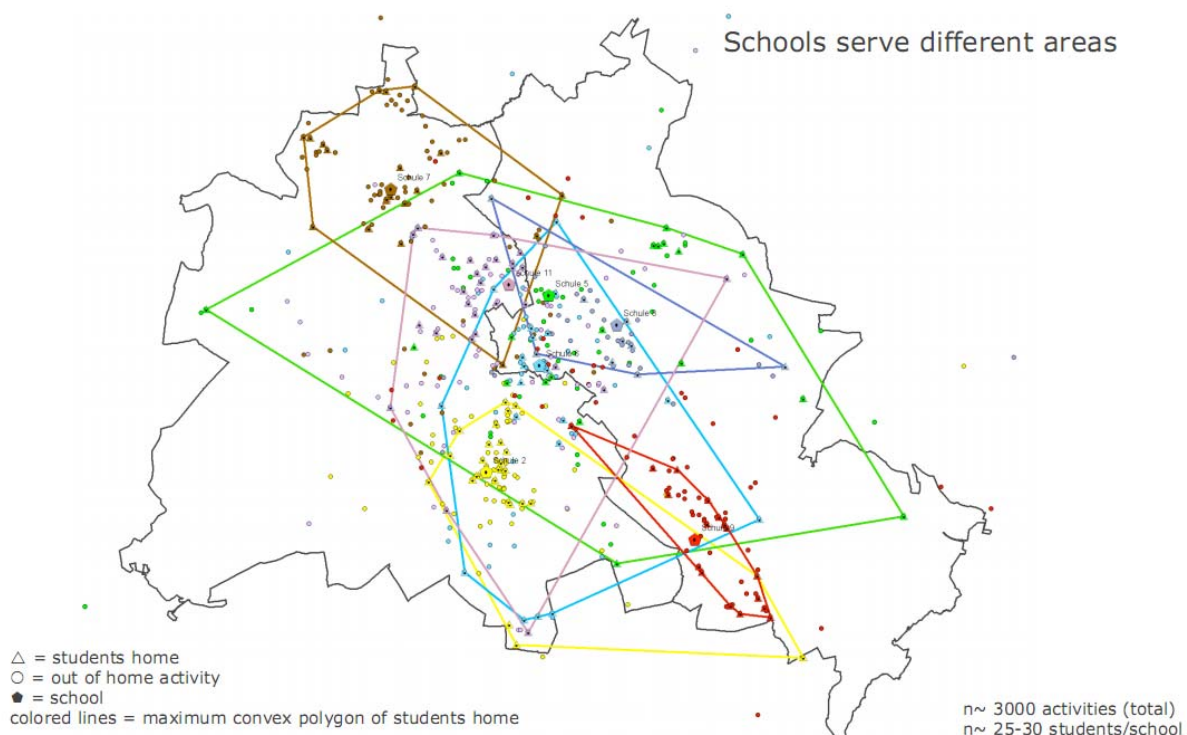
- Two East Berlin schools (5/6) have a large share of western students
- Both have a special profile (Berufsschule/Russian language)
- The other schools recruit their students from „their“ part of Berlin

		Origin of students per school		
		East-Berlin	West-Berlin	Out of Berlin
East-Berlin schools	sch_005	16	9	0
	sch_006	12	11	2
	sch_008	15	0	0
	sch_009	21	1	1
West-Berlin schools	sch_002	1	29	2
	sch_007	3	19	0
	sch_011	3	25	1

At a first glance, one will realise that these serving areas vary fundamentally not only between East and West schools but also in terms of their specialisation. When first ignoring schools 5 and 6, which are a vocational school respectively a all day and

comprehensive school and which recruit their students for almost equal parts from both sides of the city, we will find out that the serving area of the western schools are larger than the ones of the eastern schools.

Fig. 6: Activity Spaces and Serving Areas



- In more details (fig. 7), the serving area of high school 2 with only one eastern student in the sample covers the entire SE of the western part of the city. Missing public transportation facilities prevent an extension to the East. That is also the reason why the activity space of the students spreads to the western core and shows almost no contacts to eastern neighbored districts. The high school serves a middle class neighbourhood which is separated from eastern districts by a lower class district.
- School 7 is a highly specialised one with special programs for highly talented students with individualised tracks (fig. 8). The serving area covers the northern part of Berlin West. The students' activities concentrate around school and homes, but spread also far into the two centres of Berlin in East and West. The school serves the upper class population demand of Reinickendorf. The socially lower levelled neighbored district to the East Pankow is not aimed at this type of school.
- School 11 is also a local school located in the West but close to the former wall (fig. 9). It is a small school with some educational profiles and serves low income population. The serving area stretches far to the East and the S. There might be some random singularities. However, the activity space is similar in size and shape. The contact with students from East might spread the activities so far to the East and the West.
- Typical local schools in the East are schools 8 and 9 (fig. 10 and 11). Both have a very small serving area. The student's activities concentrate around school and homes. The major difference between both schools is shown in the students' activities spread over the city in general and towards West. School 8 serves lower and middle class population with high densities and less favourable infrastructure. Its activity spread is narrow to school and homes, but also covers some trips to western areas with similar social structures. There is no western student in the sample. School 9 is located in a higher middle class area. The students' activities

Fig. 7: Empirical Findings (1)

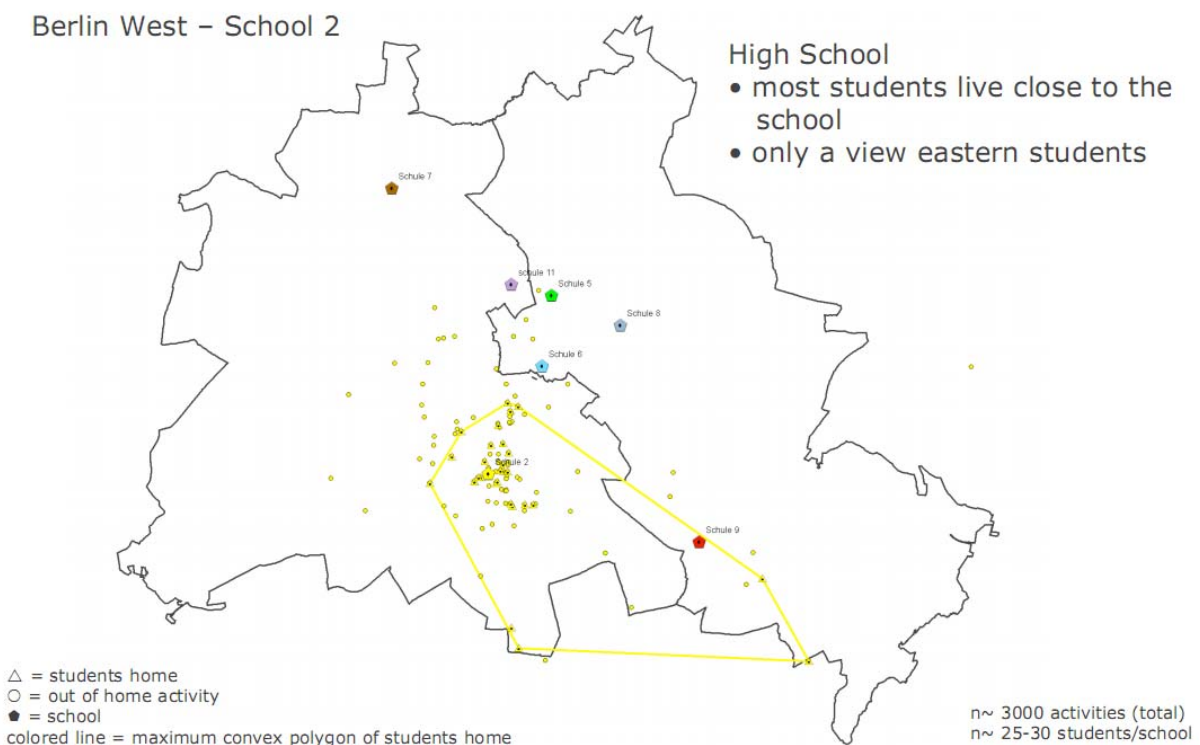


Fig. 8: Empirical Findings (2)

Berlin West – School 7

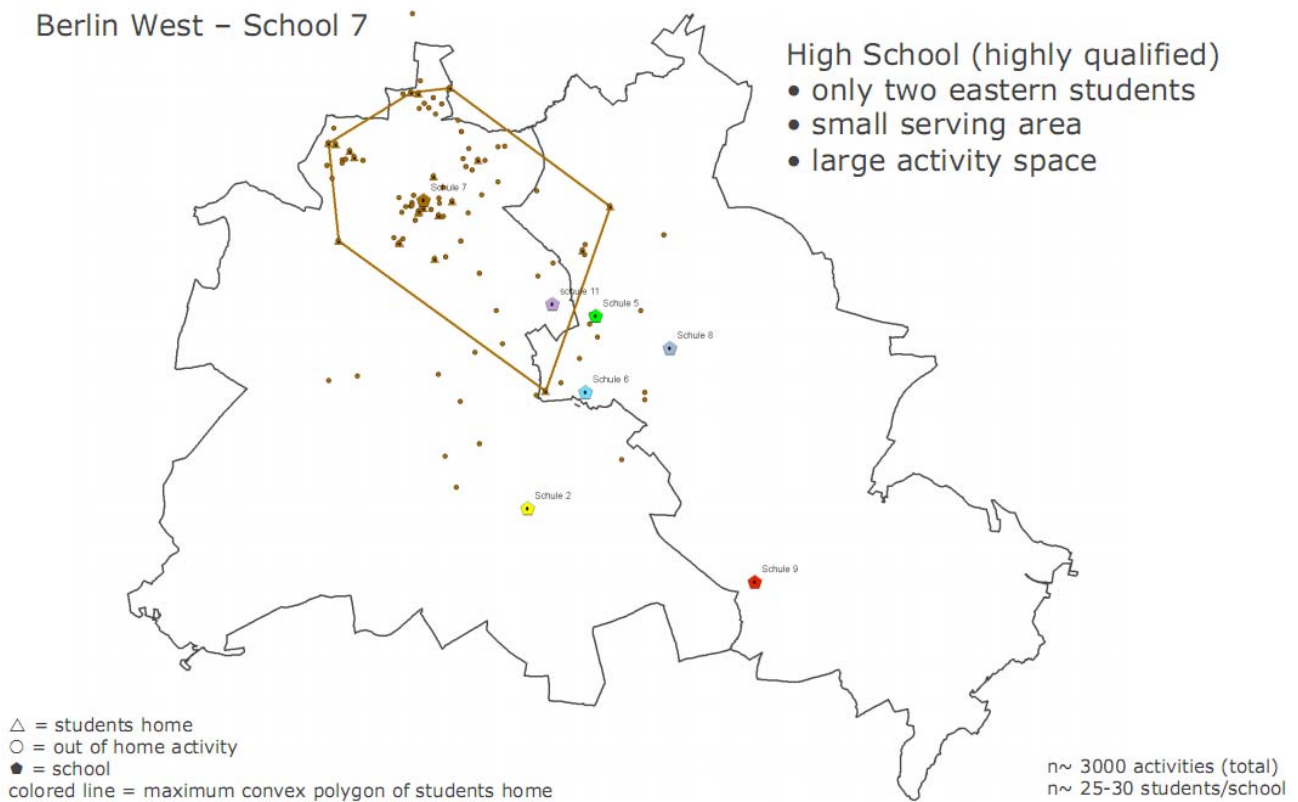


Fig. 9: Empirical Findings (3)

Berlin West – School 11

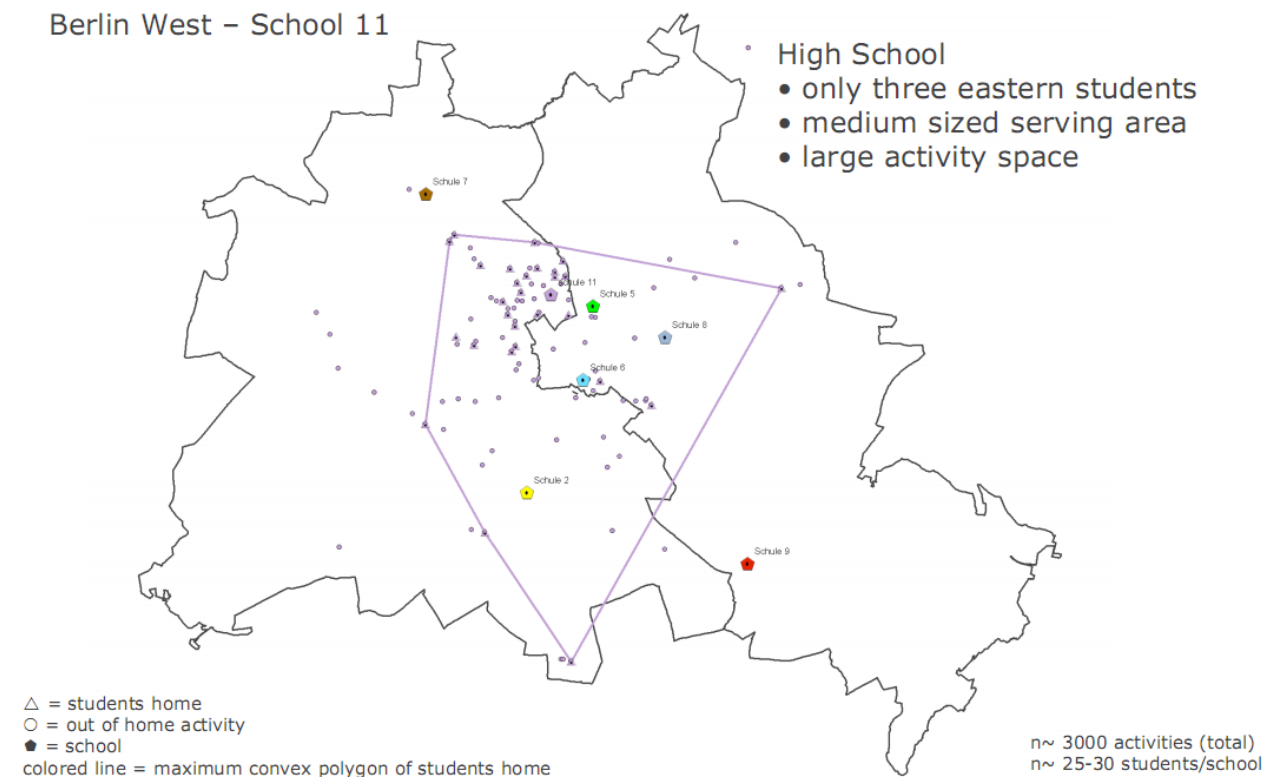


Fig. 10: Empirical Findings (4)

Berlin East – School 8

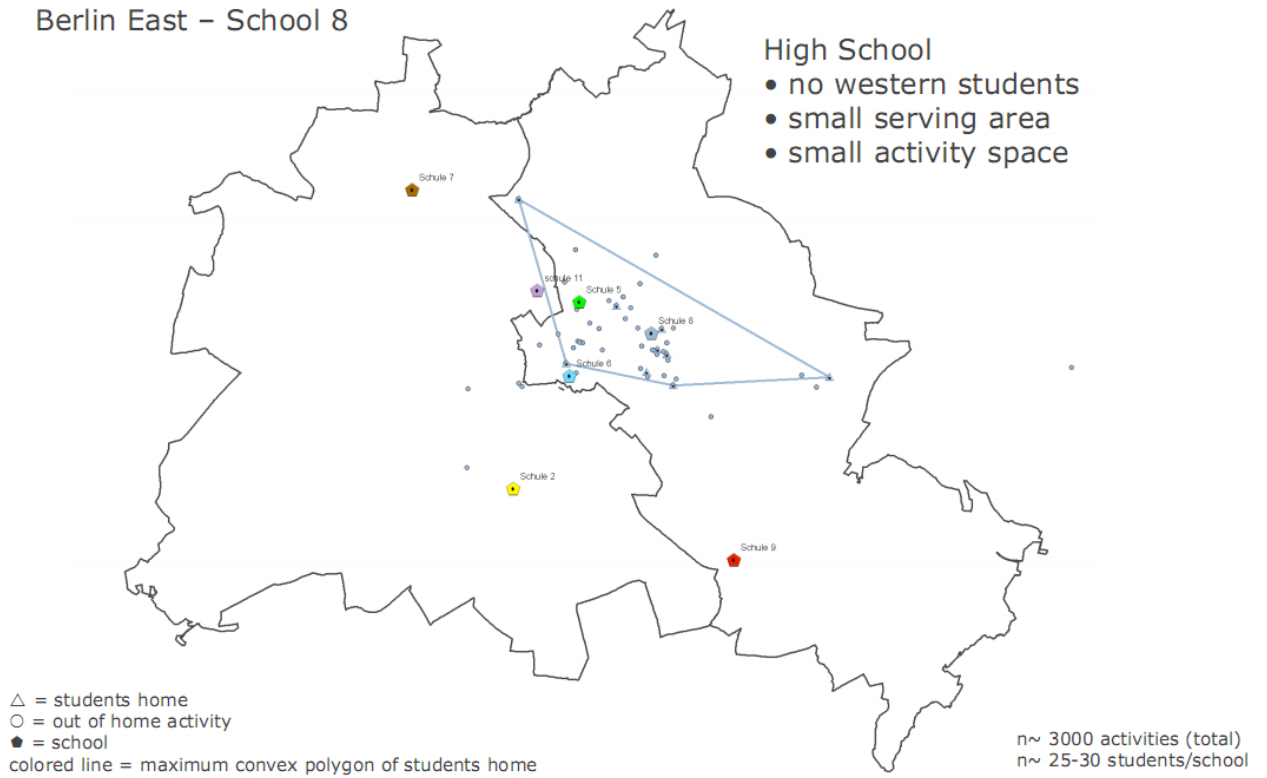


Fig. 11: Empirical Findings (5)

Berlin East – School 9

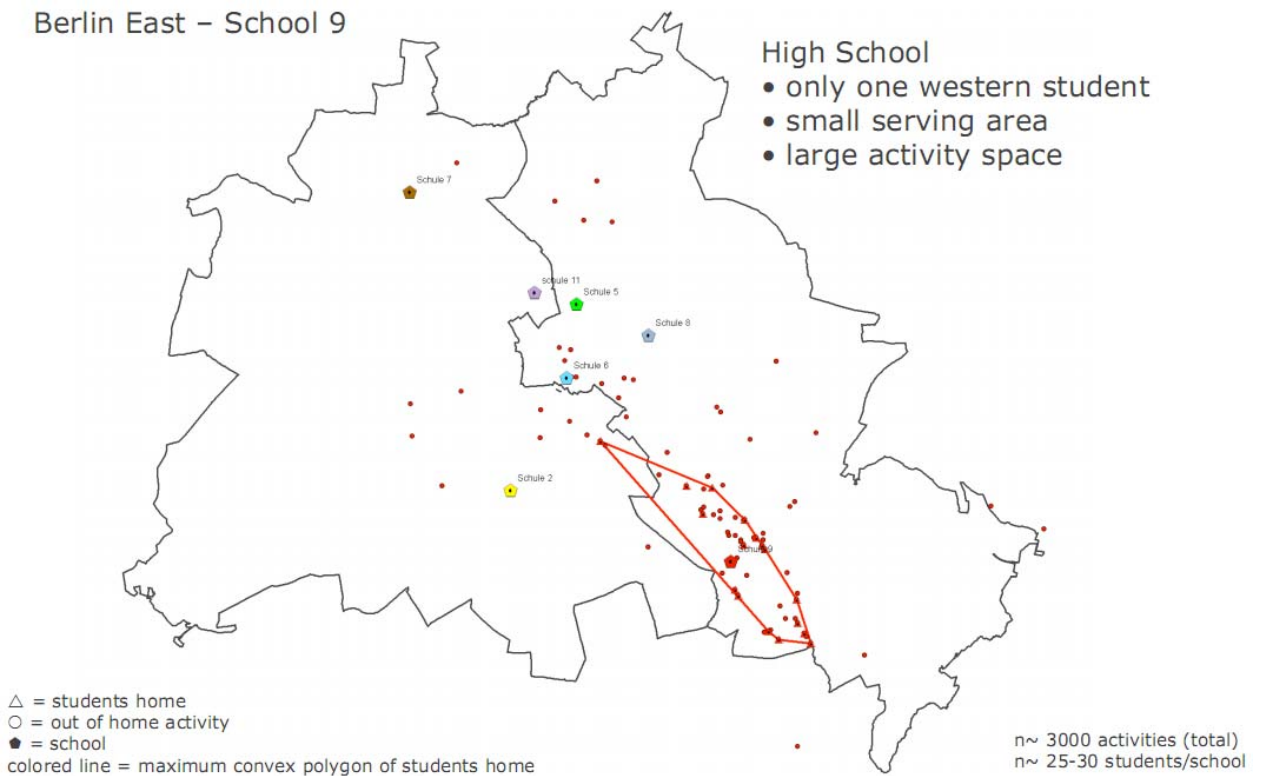


Fig. 12: Empirical Findings (6)

Berlin East – School 5

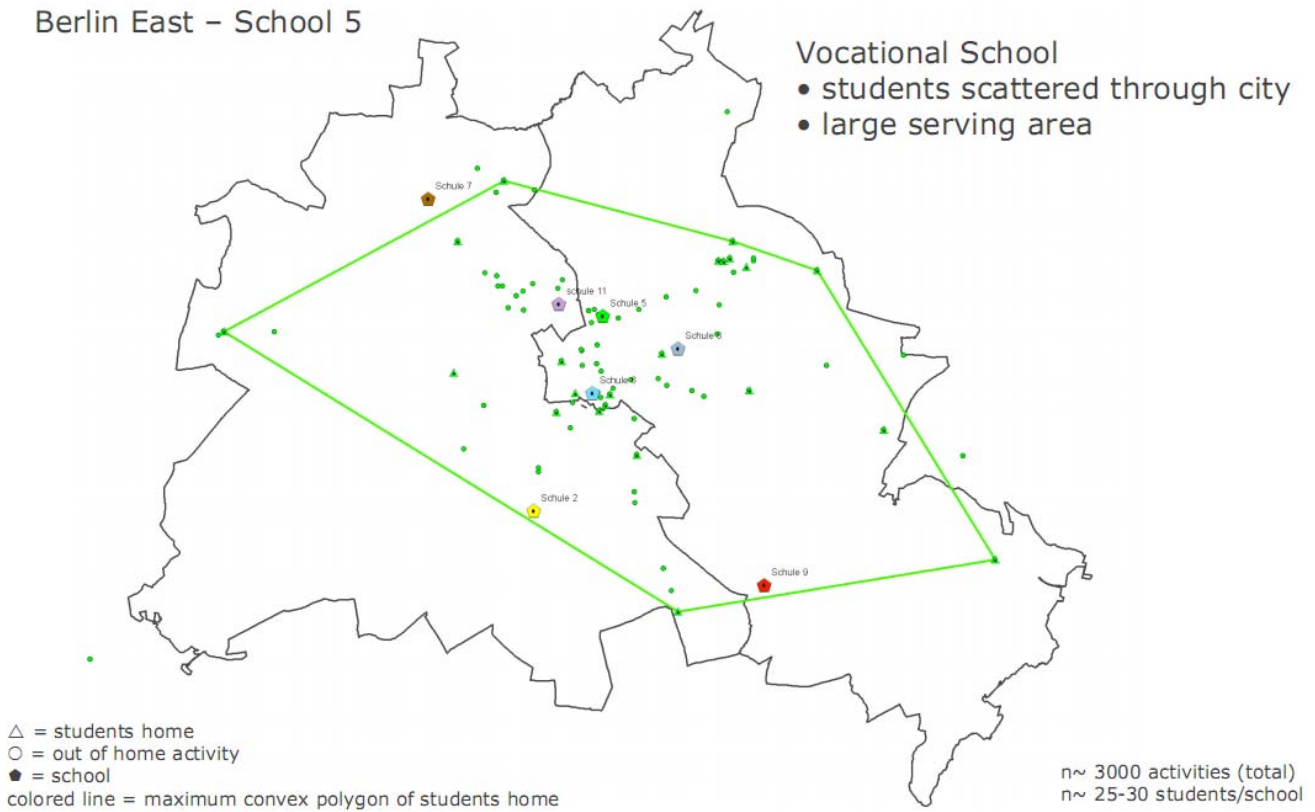
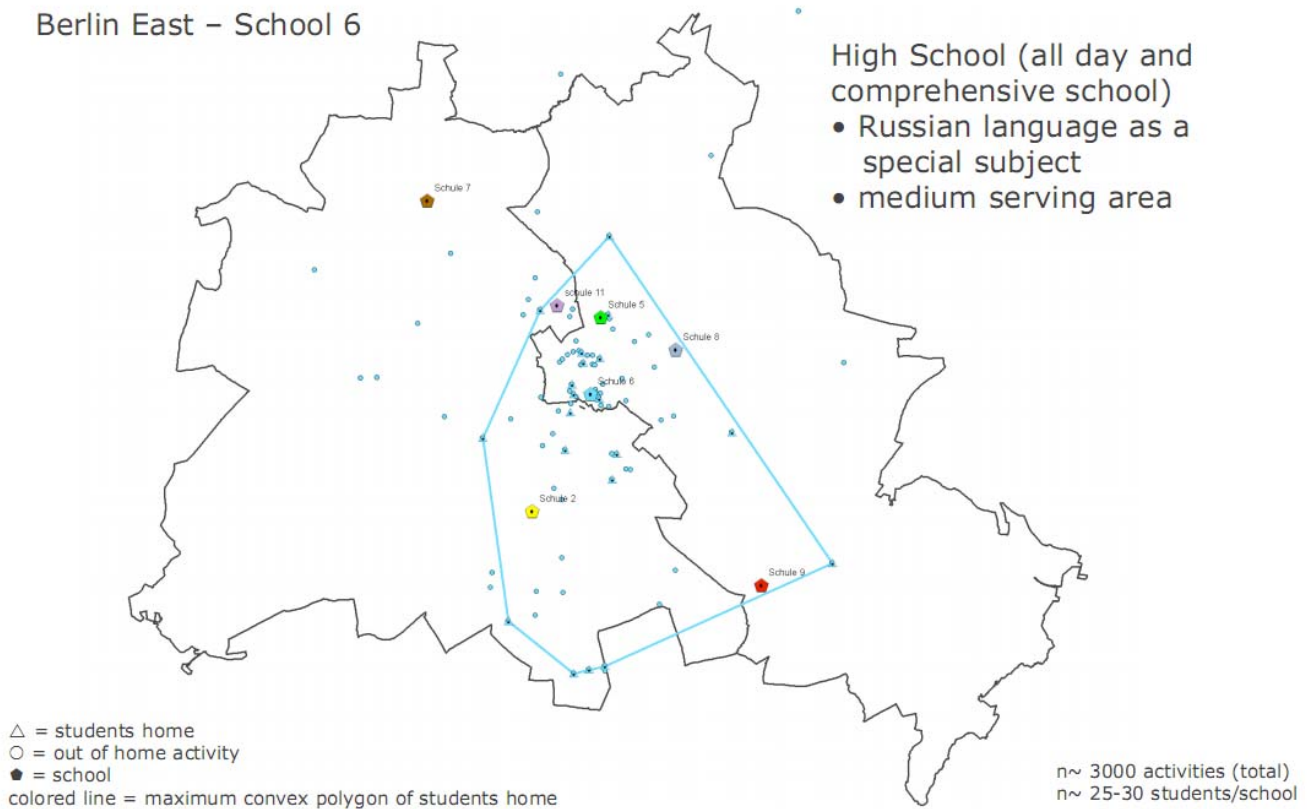


Fig. 13: Empirical Findings (7)

Berlin East – School 6



follow the public transportation system far to the north and west.

activity space reaches far beyond it preferable to the West.

These five local schools represent the basic type of the integration process. Studies on individual activity spaces would confirm the models and the assumption of the stepwise re-concentration of the activity spaces.

We can conclude, that all schools' serving and activity areas reflect the typically expected size and shape as hypothesised. In addition, the higher schools are specialised the more likely they deviate from this pattern.

- The two remaining schools 5 and 6 deviate in their serving areas and the activity spaces from these local schools shown before. Both schools recruit their students to almost equal parts from East and West (fig. 12 and 13). School 5 is a highly specialised vocational school which also qualifies for colleges. The school's serving area covers most of Berlin except high income areas both in East and West. The same results is true for the activity spaces with major concentrations - far from their homes - in the two centres, in Wedding and Neukölln in the West.
- School 6 finally has a profile as an all day and comprehensive school with a special language program. These parameters recruit students from lower and middle income groups and those with special migratory background (Eastern European). The serving area is large; however, the

The two remaining figures (fig. 14 and 15) confirm these results. The first one represents activities cross classified by schools from both East and West as well as "out of home activities" on both sides of the city. The five "local" schools indicate strong concentrations in their related home areas either in the East or the West. The activity-contacts of Western students to the outside (Eastern Berlin and Land of Brandenburg) are slightly higher than the ones of the Eastern students. That could express that eastern student feel safer in their hemisphere or are less mobile in many respects or are of lower social background. The two specialised schools with students from both parts of Berlin reflect similar proportions in both the activities in either sides of the city and in their spatial origins. To answer the question of mixed areas of origin and activities because of expected common school socialisations we still need detailed analyses on micro scale.

Fig. 14: Empirical Findings (8)

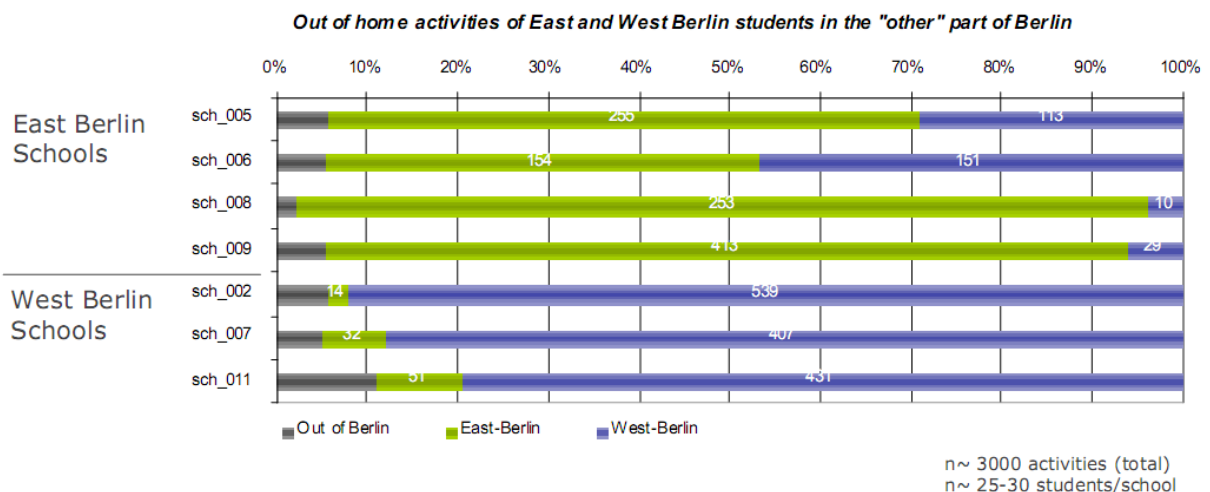
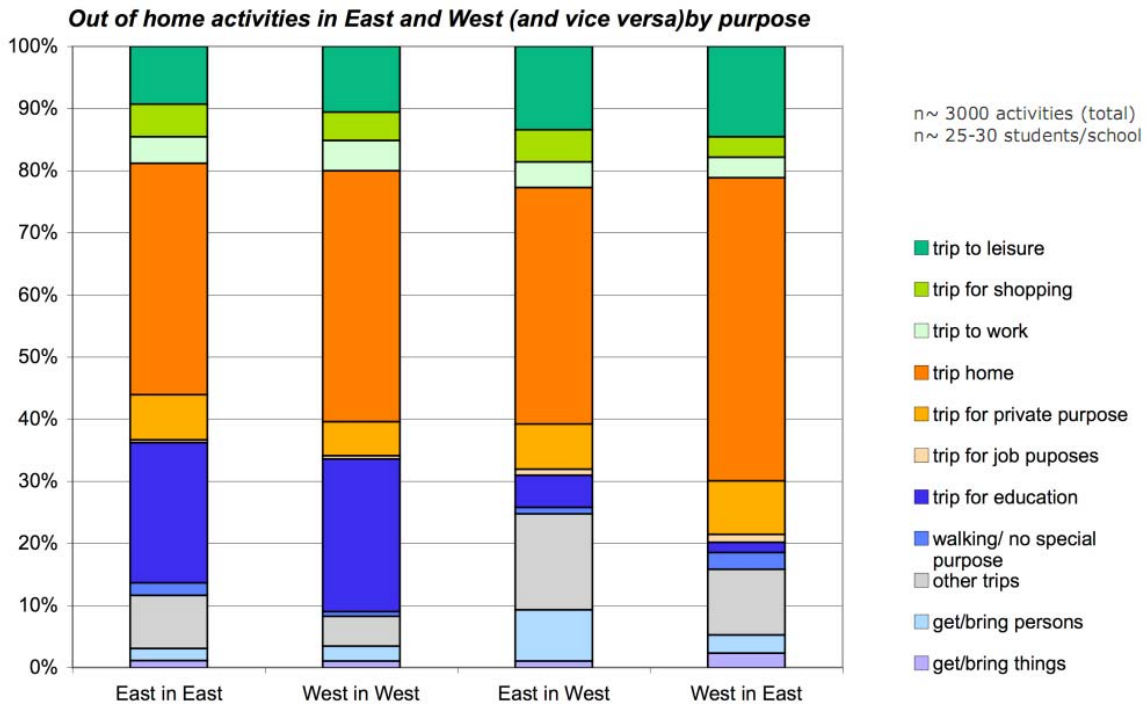


Fig. 15: Empirical Findings (9)



When we compare the "out of home activities" in East and West and vice versa by purpose of the activities the major difference between the four columns and especially in the mixed columns is in the purpose "trip home". Students from the East have more multi-purpose trips in the West than students from the West who go to the East just for single purposes. This reflects less spatial experience of western students in the East and less attractions in the East to go there. The complementary case can be expected for Eastern students with more experience and attractions in the West.

CONCLUSION

In summarizing the empirical results on macro scale, what do they mean regarding integration? Integration is not a state but a process and, therefore, we have to consider different stages in that time-space process. Eighteen years after the political unification it can be expected that students without direct experience of the divided city but embedded by their socialisation environments have made

some steps ahead in the process of integration. We have theoretically confirmed that mobility is a unique parameter to test the stages in the integration process. It seems that this process has reached a stage in which the two cores of Berlin are commonly accepted somewhat depending on the student's individual social status. Other parts of the city remain unequally perceived and used in different ways. Students from the eastern part have wider spatial experience and feel better integrated in the West than vice versa. The fact that the integration processes not only follows a clearly defined straight path but also sustains setbacks makes it difficult to describe the stages in more detail. This includes detailed analyses on micro scale which can be done on the given data. The proof of integration shows a different face: it can not be expected that the activity spaces of East and West students (people) coincide; activities are not preferably bound with specific spaces, because the aims and reasons for spatial activities are increasingly defined by a high freedom of choice, but the common use of space reflects an idea of how far space is commonly perceived and, therefore, integration has developed.

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