The Use of the Unused Space

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Florian Wurfbaum,

September 2014

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THE USE OF THE UNUSED SPACE

Abstract

At one moment one person can only be present at one place. Starting from this observation I develop a hybrid building for complementing programmes, that distributes space in real-time, reacting to the presence of its users at different times. This implies flexibility of the building components in a system of spatial distribution.

Using design as a research tool, I carry out design experiments which are informed by rules and parameters corresponding to patterns of use. The design research is embedded in the current social and cultural context of the sharing economy where smart mobile technologies enable the distribution of goods. Here, the distributable good is the temporarily unused space in a building.

INTRODUCTORY REMARKS - MOTIVATION

The seeds of this research are contained in the project Zufall ('Jack of all Trays', 1997) where I first tested expandable architecture. Based on this project, I built a small prototype (inflatable structure) in 20041 - at Number 2 in the Hörwarthstraße in Munich. Later this building became the project Tridom Puzzle, by *WUDA, where I developed the double-helix principle in the Chambord-inspired stairs. This was my first built exploration of the concept of entanglement. A constant in the work of our practice is 'Verschränkte Plastik'. In English this can be translated as 'Entangled Eidicity'. This is the principle I followed when designing the Chambordstairs in Tridom Puzzle to entangle two apartments. Apartment means that we live apart from each other, however together in the same system. Through this spatial entanglement, a social relationship is translated into a tectonic form. This allows circulation space in each flat to be saved, meaning each neighbour profits from the other. In Tridom Puzzle the entanglement means a 'sharing' of infrastuctures, however keeping the division, the threshold between spatial entities - apartments. The geometry (double helix) allows the necessary separation of spaces with different ownerships. This has led me to further speculate on systems that while allowing a separation of spaces can still imply a sense of 'sharing'. More recently I have explored this in our practice in the project Entangled House - Complementing Building (Munich, 2014). Here the main element is a system of staircases which allows an entanglement of spaces.

These projects have allowed a deeper tectonic and sociological reflection on the topic of sharing and infrastructure. This has been a complement to developing the current research.

¹ with FAN – Friendly Architects from your Neighbourhood, a platform I co-founded with Ulli Bucher, Achim Kammerer and Frank Philipp.







Fig.1 Tridom, Extension of a residential building, Munich 2009





Fig.2 Entangled Eidicity, Installation, Förderpreis Exhibition, Munich 2013





Stairs house A Stairs house B

Fig.3 Entangled House, Complementing building, Munich 2014, Project As for my own opinion, I have said more than once, that I hold space to be something merely relative, as time is; that I hold it to be an order of coexistences, as time is an order of successions. For space denotes, in terms of possibility, an order of things which exist at the same time, considered as existing together; without enquiring into their manner of existing. And when many things are seen together, one perceives that order of things among themselves.¹

1 INTRODUCTION

- 1.1 OBSERVATION
- 1.2 INTENTION
- 1.3 RESEARCH QUESTION
- 1.4 EXPECTED OUTCOME
- 1.5 METHODOLOGY
- 1.6 TIMELINESS

¹Leibniz, Gottfried Wilhelm. A Collection of Papers, Which passed between the late Learned Mr. Leibnitz, and Dr Clarke, In the Years 1715 and 1716. London: Samuel Clarke, 1717. Print.

1.1 OBSERVATION

This research starts with two observations: at one moment one person can only be present in one place. And: many buildings serve a single programme only. Building programmes, often, use only a fraction of the time of the day and of the week. For instance many office buildings are only used on weekdays during working hours. At night and at weekends these office buildings are unused.

In order to understand the potential that underlies these observations, I would like to ask the reader to think about the situation and space where she or he is at this very moment. And then, to think about all the other spaces that are being held available for her/him and for her/his possessions at the same time. One can presume that the amount of individually held available space is more than the one where she/he is present at the moment: the space at home, in the office, university, the room in the parents' house, the holiday home, the car, all possibly unused.

1.2 INTENTION

I regard unused space as a valuable resource.

In this research project I intend to develop a building that can take advantage of this resource, negotiating supply and demand. Unused space could be used by programmes that complement existing programmes at other use times.

The aspired building deals with an overlap of different programmes within defined spatial boundaries, at different times. It benefits from synergetic effects by joining programmes with complementary time needs.

Together with the spatial proposal, a concept for the fourth dimension of the project – time - will be developed, in a reactive system of distribution of

space. There are tendencies in current society that demonstrate openness to alternative solutions to conventional services, mainly the currently booming sharing economy. These are enabled mainly by sophisticated distribution and operational systems, using smart mobile devices in an environment of ubiquitous computing and real-time geo-positioning.

I aim to use these technical possibilities to develop a real-time negotiation of space between multiple users and time-complementing activities in the same building.

The benefits of such ('two in one') buildings are an efficient use of land and a more intense use of their capacity. Infrastructure, means of access (including parking), the conditioned (heated or cooled) space are all used twice whereas in typical single-use buildings these components lie dormant for long periods of time.

The intended original contribution to knowledge is primarily in technical innovation: A system of distribution of space. There are social and political aspects of this project that will not be addressed in depth, since they are outside the scope of this study.

1.3 RESEARCH QUESTION

How can a distribution system of space between temporal complementary programmes within a building be designed and operated, reacting to presence and absence of multiple users?

Sub-questions

Are there architectural projects with similar aims, how are they categorised and how could they inform this research? **(Context: Architecture)** Are there similar projects, products, schemes of distribution of expendable goods and how are they operated? How could they inform this research? **(Context: Society, Culture and Technology)**

Who could be the users of a building with temporal complementing programmes? (Patterns of Use, User Identification, Control)

In a speculative approach (neglecting building material properties), which spatial 3-dimensional models can be explored in order to support the idea of a fast reacting flexible architecture that is capable of containing at least two spatially discrete programmes, with indirect proportionally oscillating degrees of utilisation, and of assigning spatial volume according to the degree of utilisation, benefiting from 3-dimensional expanding and shrinking properties? Would these models deliver advantages above conventional flexible architectural configurations? **(Elastic Architecture)**

Is it possible to complement an existing building programme in an existing site with a second programme that takes advantage of the unused space contained in temporal gaps? (Case Studies: Tracks and Curtain)

How can space within a building be negotiated space and timedynamically? (Case Studies: Tracks and Curtain)

1.4 EXPECTED OUTCOME

Design and evaluation of a spatial distribution system for complementing programmes that reacts to users' presence and absence, conveyed through text, diagrams, drawings, models, scripts and calculations.

1.5 METHODOLOGY

The methodology will be explained throughout the different chapters when specific methodologies were used at different moments.

First stage:

- Analysis of predecessors, identification of categories of flexibility, generation of a catalogue of characteristics of flexible architectures (Context: Architecture)
- Study of patterns of use in mono-occupational buildings (**Patterns** of Use, User Identification, Control)
- Study of the predictability of spatial use through surveys and interviews (Patterns of Use and User Identification, Control)
- Fieldwork study: Analysis of an administration building in Munich (Case Studies: Tracks and Curtain)

Second Stage:

- A series of studies of spatially elastic geometries (Elastic Architecture)
- Analysis of an existing building in the city of Munich (Case Studies: Tracks and Curtain)
- Architectural project through scripting and drawings (Case Studies: Tracks and Curtain)
- Two design proposals exploring different thresholds, and geometric configurations in an existing building in Munich into a dual use building (Case Studies: Tracks and Curtain)
- Development of two control mechanisms inherent in the two above approaches (Case Studies: Tracks and Curtain)

1.6 TIMELINESS

Smart mobile devices and ubiquitous computing, are key components of my research. These provide a new approach to control, not only top-down but also bottom-up and across different entities. The adjective 'smart' has been used over the last decades to describe objects, devices, systems, networks, embedded with technology, and containing a potential intelligence to react to other objects, devices, systems, networks. This is now timely in almost every field. The Smart City is one example of it, and it consists of the use of existing resources and their connections in an urban context. Also the 'internet of things', an emergent topic, relates to the exchange of data between things (non-human exchange between objects, devices, systems, networks) negotiating supply and demand like in the topic of smart energy management and Smart Grid.

What I am proposing could qualify as 'smart space management' in a dynamic real-time process.

- 2 CONTEXT: ARCHITECTURE
- 2.1 INTRODUCTION HISTORY
- 2.2 ADAPTION IN NOMADIC SOCIETIES
- 2.3 THREE CATEGORIES OF FLEXIBILITY BY ADRIAN FORTY
- 2.4 BIOLOGY AS REFERENCE: GROWING STRUCTURES / METABOLISM / ADAPTIVE SYSTEMS
- 2.5 NEGROPONTE SOFT AND CYCLIC, EVOLUTIONARY ARCHITECTURE, CYBERNETICS AND THE FIRST INTELLIGENT DIGITAL BUILDING
- 2.6 SELF-ORGANISING AND SELF-ASSEMBLING SYSTEMS
- 2.7 CONCLUSION

2.1 INTRODUCTION HISTORY

Adaptive, alterable, convertible, cyclic, elastic, evolutionary, flexible, interactive, reactive, mutating, responsive, reconfigurable, soft, versatile. All these are frequently used adjectives to describe spatial structures and architecture and their (per)mutation in time (short term) or over time (longer term).

This chapter will give an overview of the different categories of changeable spatial structures in architecture.

Throughout history, any given spatial structure has always undergone changes in terms of physical alteration or change of use. Flexible and adaptable architectural structures existed long before the twentieth century, when the term flexibility started to become an important modernist term¹. Because of the physical endurance of buildings - which were often built to last no less than forever² -, and out of practicability reasons, alterations are made to existing structures in order to fit them to changing demands (e.g. the Victorian House). This is done in order to avoid demolition and the erection of new buildings.

The motive behind flexible and adaptable architecture seems to be very simple and the same throughout history: archaic and basic functions, such as the provision of a roof and shelter are regarded as too profitable, too expensive and too precious to be replaced, even if the use of the actual spatial structure, the building changes.

For this motive societies and architects, as well as users, have developed designs and strategies to make the most effective use of given space. On the following pages I will introduce the most relevant categories of architecture spaces that change.

¹ Adrian Forty, *Words and Buildings : A Vocabulary of Modern Architecture* (London ; New York: Thames & Hudson, 2000), p. 142.

² For instance, the Italian official system to evaluate real estate is based on a mathematical formula which assumes that a property will indefinitely be able to generate a steady annual income.

The goal of this chapter is to provide a targeted literature review on the topic of flexibility.

2.2 ADAPTION IN NOMADIC SOCIETIES

To contextualize flexibility I start with ancient examples. Kronenburg states that architecture, right from the beginnings of the simple hut, the central Asian yurts and the tents of the North African Bedouin culture has always had an inherent component of flexibility³. Dwelling and dwellers form a unit that reacts to its habitat.

2.3 THREE CATEGORIES OF FLEXIBILITY BY ADRIAN FORTY

The Nomad's architectural behaviour could be placed into Adrian Forty's category of flexibility by technical means, as it is mainly enabled by the tent as a technical device.

In his book *Words and Buildings* Forty identifies three distinct strategies of flexibility in architecture: redundancy, flexibility by technical means and flexibility as a political strategy⁴ (as found in Henry Lefebvre's *The Production of Space* (1974)⁵).

The category of redundancy identifies spatial excess, often found in pre- or non-functionalist buildings, like 'baroque palaces, where rooms were not dedicated to specific uses'⁶ as a source of flexibility. Flexible buildings of this category are still being built today; they are luxurious structures beyond demand. (Large multi-purpose structures such as covered markets can belong to this category of flexibility by redundancy or can join the category

³ Robert Kronenburg, Flexible : Architecture That Responds to Change (London: Laurence King,

^{2007),} p. 11.

⁴ Forty, p. 143ff. ⁵ Forty, p. 148.

⁶ Forty, p. 144.

of political flexibility. This has to be seen case by case.) Following this argument, the smaller and more constraining a space is, the more difficult it is to be kept flexible. In the case of lack of redundancy, the technical category becomes important, also for permanent structures: Le Corbusier's Maison Loucheur⁷ or the Maison du Peuple by Beaudouin, Lods, Bodiansky and Prouve⁸ are examples where architecture followed the trend towards effective systems as politically enforced by the introduction of ideas like the 'Existenzminimum'. Here, physical changes to spatial configurations provide flexibility and multiple functionality.

Often flexibility by technical means is paired with what Forty calls flexibility as a political strategy. This is the case for instance at Cedric Price's Inter Action Centre. Price not only incorporated technical features like cranes and portakabins but also supported the flexibility of use. He labelled the project 'Amalgam'⁹, indicating the multiple use appropriation and also highlighting the importance of 'the delight of the unknown'¹⁰.

To describe the category flexibility of use or as political strategy Forty quotes Henry Lefebvre who sees it enabled 'through the user's realisation of the space's flexibility and multifunctionality'¹¹. A good example for this category is the Cathedral–Mosque of Córdoba, built in 600 by Christians and appropriated and re-appropriated both by Christians and Muslims. Here 'flexibility is not a property of a building but of spaces'¹².

I conclude that a multiplicity of spaces can qualify as flexible, and there are projects whose categorization is ambiguous, like the project No-Stop City, by Archizoom Associati in 1970.

⁷ Kenneth Frampton, 'The City of Dialectic', AD Architectural Design, 1969, 541-546 (p. 544).

⁸ Charlotte Ellis, 'Prouve's People Palace', AR Architectural Review, 1985, 40-47.

⁹ Cedric Price, 'Kentish Town West Amalgam, London', AR Architectural Review, 1973, 19.

¹⁰ Cedric Price, *Cedric Price : the Square Book*. (Chichester, West Sussex: Wiley-Academy, 2003), p. 54.

¹¹ Forty, p. 148.

¹² Forty, p. 148.

EVENING USE Cinema, Theatre, Convention

Section



<u>40</u> m

20

First floor plan



Isometric views



Fig.4 Maison du Peuple à Clichy, Paris, France, J. Prouvé et E. Beaudouin, M. Lods, V. Bodiansky, 1939: moveable parts are drawn in red I carried out an analysis of specific projects in order to extract the important points of the different degrees of flexibility. This was important, in a first phase, to inform the design research (see Appendix). Of these three categories I am interested in exploring flexibility by technical means to develop change in the tectonic properties of a building. In my research this flexibility should support an expansion and shrinkage of spaces, through the movement of thresholds.

2.4 BIOLOGY AS REFERENCE: GROWING STRUCTURES / METABOLISM / ADAPTIVE SYSTEMS

In 1931, Martin Wagner advocated the process of building as organic growth. His 'Growing House'¹³, embedded in a 'Growing Neighborhood' opposed the concept of 'Existenzminimum' and was situated in a rural or suburban context.

In 1960 the Metabolists' movement had a more urban approach, when they declared 'Metabolism – A proposal for a New Urbanism'. The biological metaphor was used to express their perception of society as a vivid process. They declared change as a result of human verdicts and proposed the design of space on the basis of metabolistic cycles, where only the parts of a building would be replaced or changed over a cycle, that are not of use any more¹⁴. In his Sky House (1958), Kiyonori Kikutake provided a structure for his own family dwelling with enough indetermination to easily adapt over the years to the process of the life of his family¹⁵. Kisho Kurokawa's Nagakin Capsule Tower (1972) consists primarily of an infrastructural tower where inhabitable and exchangeable cell-style capsules were plugged in. In his

¹³ Joaquin Medina Warmburg, 'Hausanbau - Wachstum Als Moderne Wohnutopie', ARCH+, Zeitschrift Für Architektur Und Städtebau, IBA Hamburg - Haus Der Zukunft, 198/199 (2010), 122-127 (p. 122).

¹⁴ Architektenkammer Nordrhein-Westfalen. and Manfred Speidel, *Japanische Architektur : Geschichte Und Gegenwart* (Düsseldorf ;Stuttgart: Akademie der Architektenkammer Nordrhein-Westfalen ;;G. Hatje, 1983), p. 96.

¹⁵ Architektenkammer Nordrhein-Westfalen. and Speidel, p. 94.



Fig.5 No-Stop City, Archizoom Associati, 1970

Capsule-declaration¹⁶ Kurokawa describes how architecture progressively takes over the character of equipment. The capsule substantiates the emancipation of a built structure from the plot.

I also intend to provide the possibility of change over time, in a more reduced time frame: real-time.

In Europe, SAR (Stichting Architecten Research) under the leadership of John Habraken developed a structural system that allowed for an anarchic image of growth and decay¹⁷. It was realized in 1969-77 by architect Lucien Kroll for the students' campus of the Saint-Lambrechts-Woluwe University close to Brussels. The structurally hierarchical system of support and infill allowed for a participatory approach, involving the inhabiting people in the design.

I also intend to use participation, but in terms of reacting to presence. If present or absent, the user triggers changes in the overall system.

¹⁶ Kisho Kurokawa, Metabolism in Architecture (London: Studio Vista, 1977), pp. 75-86.

¹⁷ Warmburg, 122-127 (p. 126).



Plan



each unit could be individually replaced allowing for a bottom up approach to the provided infrastructure

0 2 10 m 1 4 scale 1:200

2.5 NEGROPONTE SOFT AND CYCLIC, EVOLUTIONARY ARCHITECTURE, CYBERNETICS AND THE FIRST INTELLIGENT DIGITAL BUILDING

Like the Metabolists and the Structuralists (like Team X), Nicholas Negroponte also picks up the term *cyclic*, using it in his book *Soft Architecture Machines* to describe one characteristic of responsive architecture as 'continuous cycle of construction and deconstruction that architecture has to perform over its lifetime' and that should 'be included in the architecture's design'¹⁸. Moshe Safdie describes his fantasy:

[u]ltimately, I would like to design a magic housing machine... Conceive of a huge pipe behind which is a reservoir of magic plastic. A range of air-pressure nozzles around the opening controls this material as it is forced through the edges of the pipe. By varying the pressure at each nozzle one could theoretically extrude any conceivable shape, complex free forms, and mathematically nondefined forms. People could go and push the button to design their own dwelling (1970)¹⁹

Negroponte categorizes *cyclic* as an ever continuous building process. But his other category, *soft*, adds a new component to changing architecture: intelligence. He assigns the property of intelligence to material, giving material memory. Though he illustrates his texts with pneumatic architectures, he doesn't limit a material memory to these structures. Even hard components can contain *soft* information.

A few years later, this idea was about to be realized in an architectural project: Cedric Price's Generator (1976-79) is 'an architectural complex with no previous title and no predefined use, only with the desired end-effect of the creation of desirable conditions and opportunities' ²⁰. For the project for

¹⁸ Omar Khan, 'AD Protocell Architecture: An Architectural Chemistry', 2011, p. 51.

¹⁹ Nicholas Negroponte, *Soft Architecture Machines*. (Cambridge Mass.: The MIT Press, 1975), p. 150.

²⁰ Price, p. 93.

Generator - frames, linkages and infills



Menu 25: details of SW zone - ground level

Various wet serviced cubes



Fig.7 Generator, USA, C. Price with J. & J. Frazer, 1980: moveable parts are drawn in red

an American paper company Price proposed 'uncommitted or free space (...) as a continuing resource able to be fertilized by the introduction of built structuring which does not in itself and through its very form imply a particular use from the start' and its operational matrix to become a tool for the user rather than for the designer²¹. Price initially designed it as an analogue responsive project, but the set targets could only be achieved with the help of programmers John and Julia Frazer²², who 'equipped every component of the structure with a single chip microprocessor and therefore made it the 'first intelligent building' which controlled its own organization in response to use'²³ and had the ability to learn, driven by feedback, in an evolutionary process. In the Generator project (with Cedric Price), the authors mention that:

[t]he computer program was developed to suggest new arrangements of the site in response to newly defined needs. By embedding electronics in every component and making connections to the foundation pads, we effectively turned the site into a vast working model – a gigantic reconfigurable array processor, where the configuration of the processor was directly related to the configuration it was modelling.

They intended that the Generator would 'learn from the alterations it made to its own organization, and coach itself to make better suggestions'. And they state that

[u]ltimately, the building itself might be better able to determine its arrangement for the users' benefit than the users themselves. This principle is now employed in environmental control systems with a learning capability.²⁴

²¹ Price, p. 90.

²² Molly Wright Steenson, 'Cedric Price's Generator', *CRIT #69: The Journal of the AIAS*, 2010, 14-15 (p. 14).

²³ John Frazer, An Evolutionary Architecture (London: Architectural Association, 1995), p. 40.

²⁴ John Frazer, An Evolutionary Architecture (London: Architectural Association, 1995), p. 40-41.

The relevance of projects like the Generator is that they introduce the computer in the context of architecture at a whole new level, by aspiring to the learning ability of a design from its alterations and giving it the possibility to reconfigure itself according to these alterations.

2.6 SELF-ORGANISING AND SELF-ASSEMBLING SYSTEMS

Another project developed by the Frazers, this time with students of AA unit 11, in 1990, is the equally ambitiously named Universal Constructor: a three-dimensional array of individually intelligent and intercommunicating cubes, able to self-organize in an evolutionary way and to construct different spatial configurations on an informational level. Physically, though, the single units still had to be moved by a so-called interactor, who executed the constructor's commands.²⁵

Don Ingber at the Wyss Institute for Biologically Inspired Engineering (Harvard) works on blurring the boundary of living and non-living systems. Artists-architects like Philip Beesley and Omar Khan investigate the chemical properties of materials, like phase-changing materials, in order to generate responsive structures at an architectural/installation scale. These are functionally undetermined structures with an emphasis on physical experience.

2.7 CONCLUSION

In this chapter I have given an account of specific examples for the topic of flexibility. I have also informed the debate with the topics of participation and cybernetic principles that will go on to inform the design research.

²⁵ Frazer, pp. 44-49.

3 CONTEXT: SOCIETY, CULTURE AND TECHNOLOGY

- 3.1 INTRODUCTION
- 3.2 SHARING AND SMART MOBILE DEVICES
- 3.3 UBIQUITOUS COMPUTING / BUILDING AUTOMATION / CONTROL
- 3.4 OWNERSHIP
- 3.5 THRESHOLDS AND PERSONAL SPHERE
- 3.6 CONCLUSIONS

3.1 INTRODUCTION

The following chapter aims to embed this research project in the contemporary developments of society, technology, culture and the economy in the second decade of the 21st century.

One of the questions of this chapter is: are there similar projects, products, schemes of distribution of expendable goods other than architectural space and how are they operated? How can these findings inform the research at hand?

Through the example of car-sharing, it will be argued that ubiquitous computing has enabled the boom in contemporary forms of sharing: this is considered to be the most relevant example for the current research since there are specific goods used for different shifts which is what I explore in the design phase. I intend to create a system of sharing by option that aims to create a surplus for the users by distributing unused space. The attitude of people towards their possessions is important as it indicates that there is a new culture emerging which is not only based on the accumulation of objects. Furthermore, I analyse the topic of thresholds as separation of spaces and ownership.

3.2 SHARING AND SMART MOBILE DEVICES

Sharing is a term that covers many different kinds of actions. The word sharing describes the joint or alternating use of finite goods as well as the process of division and distribution.

Today, in the second decade of the 21st century, sharing is a popular term even used as a catchword to promote the act of collaborative consumption: file-sharing, car-sharing, home-sharing, bike-sharing, the sharing of music,
videos, playlists, photos, current location and recently 'dynamic ride sharing'¹, etc.

The term sharing is used for both rival and non-rival goods. Rival goods are those whose consumption by one consumer prevents simultaneous consumption by other consumers², for instance a power drill (durable) or an apple (non-durable). Goods that are non-rival are goods that can be consumed (enjoyed) simultaneously by an unlimited number of consumers, like, for instance, a television programme.

So car-sharing, bike-sharing, home-sharing are examples of joint or alternate use of rival goods, whereas the sharing of files, photos, playlists, videos describes the distribution of non-rival goods.

In her TED-talk, 'The Case for Collaborative Consumption', Rachel Botsman identifies 'collaborative lifestyles: (...) the sharing of resources of things like money, skills and time'³ as one of the three main categories of collaborative consumption. In 2011 TIME magazine put 'Today's smart choice: Don't own it, share it'⁴ onto the list of the 10 ideas that will change the world. In her book 'What's mine is yours'⁵, Botsman outlines the renaissance of collaborative behaviours like sharing and the trust mechanics inherent in these systems Factors which support these behaviours are, among others, digital technology and, as the cultural drivers of a new generation of users: 'Digital Natives, or Gen Y: they're growing up sharing – files, video games,

¹ Dynamic ride sharing describes a new means of transport in the city that allows instant hopon/ hop-off car-sharing in fluid traffic.

² David Leo Weimer, *Policy Analysis: Concepts and Practice*, 4th ed (Upper Saddle River, NJ: Pearson Prentice Hall, 2005).p.72

³ 'Rachel Botsman: 'The Case for Collaborative Consumption' | Talk Video | TED.com'<http://www.ted.com/talks/rachel_botsman_the_case_for_collaborative_consump tion/transcript> [accessed 22 May 2014]., (minute 9:49)

⁴ 'Today's Smart Choice: Don't Own. Share - 10 Ideas That Will Change the World' - TIME <http://content.time.com/time/specials/packages/article/0,28804,2059521_2059717_2059710 ,00.html> [accessed 22 May 2014].

⁵ Rachel Botsman and Roo Rogers, What's mine is yours: the rise of collaborative consumption (London: Collins, 2011).

knowledge. It's second nature to them. So we, the millennials (...) are like foot soldiers, moving us from a culture of 'me' to a culture of 'we' '⁶.

One example for the benefits of sharing in contemporary culture is the system of car-sharing. Looking deeper into the history of car-sharing in Germany, in 1997 15,000 users shared 1,000 cars (~15 users/car), in 2007 (year of introduction of the iPhone) 100,000 users shared 3,000 cars (~33 users/car). From 2011 (the first year that smartphone purchases outnumbered conventional phone purchases⁷), when 210,000 users shared 5,000 cars (~42 users/car) until 2014 when 750,000 users shared 14,000 cars (~53 users/car), the amount of participants in German car-sharing schemes grew by 350%. About 75% of that growth has been generated by users of so-called free-floating systems, where the cars to share have no fixed pick-up and drop-off location but can be left for the next user at any convenient location within the area of the scheme⁸.

Participants intending to use a car can locate these either on the internet or through smart mobile devices.

There is a relation between the implementation of smart mobile technologies and the boom of car-sharing, as consumers begin to see how technology, especially mobile technology, makes sharing between strangers easier and safer⁹. The original idea of car-sharing is the alternate use of rival goods (the car). But what makes car-sharing increasingly successful today is the new added component of sharing the non-rival goods of real-time updated information in the form of peer-to-peer sharing of sensory data.

⁶ 'Rachel Botsman: The Case for Collaborative Consumption | Talk Video | TED.com'. (minute 6:50)

⁷ 'Statistik: Absatz Der Smartphones so Hoch Wie Noch Nie - Technik, Trends & Web 2.0' http://xyonline.de/2012/05/statistik-absatz-der-smartphones-so-hoch-wie-noch-nie/ [accessed 26 May 2014].

⁸ 'Carsharing - Autos Nutzen Statt Besitzen' <http://www.vcd.org/carsharing.html> [accessed 26 May 2014].

⁹ 'Baby, You Can Drive My Car: How Car Sharing Teaches Us to Be Good Neighbors | Grist' <http://grist.org/business-technology/baby-you-can-drive-my-car-how-car-sharing-teachesus-to-be-good-neighbors/> [accessed 5 September 2014].

Placeholder

Source:

© Statista 2014

Placeholder

Fig.8 Percentage of smartphone users for all mobile phone owners in Germany from January 2010 to August 2013 (top) Development of the car sharing industry in Germany 1997-2014 (bottom) Where am I? Where is the car? How much petrol is in the car? How long does it take me to walk there? This information - shared and distributed by ubiquitous computing - enables users to set off spontaneously without the hassle of booking in advance and without the obligation to return the car to the base location, resulting in personal benefit. As stated in the book 'Smart Cities': '[i]n San Francisco, Uber can summon a taxi with one click^{10'}. The book is from 2013. Uber is now a platform for every citizen, allowing a flexible system of spontaneous rides in different cities.

3.3 UBIQUITOUS COMPUTING / BUILDING AUTOMATION / CONTROL

In architecture, ubiquitous computing and smart personal devices play a significant role, introducing terms like Smart Building and Smart City which are commonly used in advertisement strategies.

The digital revolution didn't kill cities. In fact, cities everywhere are flourishing because new technologies make them even more valuable and effective as face-to-face gathering places¹¹.

The relationship to the spaces we inhabit in the western world is increasingly mediated by technology. New apps come on the market every day that allow the user to interact with their environment in new ways and either receive information on it or actually control it. At home apps are allowing inhabitants to control their environment, temperature, light, music, etc. Therefore there is a direct connection between ubiquitous computing and the environment the user is surrounded by, allowing a change in this environment through mobile devices.

¹⁰ Anthony M. Townsend, *Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia,* First edition (New York: W.W. Norton & Company, 2013), p. 232.

¹¹ Townsend, p. 7.

In *The Social Nexus*, Carlo Ratti and Anthony Townsend identify 'intelligence that is bubbling up from millions of newly cyber-connected residents¹².'

This possible new intelligence is facilitated by a technological milestone unrecognized by the majority of internet users: the IPv6 internet protocol¹³, providing a possible amount of $47x (10)^{27}$ internet addresses for each single human on planet earth as from 1 June 2014¹⁴.

A fraction of this amount of addresses will provide the foundations to what is called the Internet of Things (IoT). IPv6 allows the allocation of an internet identity to even the smallest everyday item via cheap miniature computers or sensors for data collection like the IC Tag System¹⁵.

They continue by saying that 'the internet of things, the new generation of internet-connected devices, isn't embodied in expensive household appliances (...). It's more likely to be a sensor that costs pennies, made by the millions, and distributed across the city'¹⁶.

Ratti and Townsend state that 'residents of wired cities can use their distributed intelligence to fashion new community activities, as well as a new kind of citizen activism'¹⁷.

It is also a fact that 'peer-to-peer sharing of sensory data can have a huge impact in helping to manage urban infrastructure'¹⁸.

However the new 'smart cities' need to be critically analysed. Every informatics system has the potential to be breached-in and hacked. Hacking, meaning exploring weaknesses in computer systems or networks and

¹² 'The Electric City: Urban Age Electric City Conference London 6-7 December 2012.', ed. by Burdett, Ricky and Rode, Philipp, eds. (2012) (The London School of Economics and Political Science, Alfred Herrhausen Society, London, UK), p. 15 http://eprints.lse.ac.uk/50378/>.

¹³ 'World IPv6 Launch' http://www.worldipv6launch.org/ [accessed 1 June 2014]. ¹⁴ 'World Population Clock: 7 Billion People (2014) - Worldometers'

<http://www.worldometers.info/world-population/>[accessed 1 June 2014].

¹⁵ Intelligent Environments: Methods, Algorithms and Applications, ed. by Dorothy Monekosso, Paolo Remagnino, and Yoshinori Kuno, Advanced Information and Knowledge Processing (London: Springer, 2009), p. 59.

¹⁷ Burdett, Ricky and Rode, Philipp, eds. (2012), p. 15.

¹⁸ Burdett, Ricky and Rode, Philipp, eds. (2012), p. 15.

potentially gaining access to sensitive private or confidential information that can be misused or forwarded. This allows me to conclude that the moment, information is mediated by technology and controlled by an informatics system or network, it is no longer 'private', since access to this information is possible by others: hackers, authorities (like the recent NSA surveillance disclosures by Edward Snowden), institutions and corporations. I believe that the discussion about the handling of private, sensitive and confidential information will occupy the next decade. In the present research, the informatics system could be a community-based, cooperative system of distribution.

3.4 OWNERSHIP

In 1993, Peter Menzel, a photo reporter, started a project consisting of photographing 30 families together with their belongings in 30 different countries¹⁹. He had the support of the UN and the World Bank in finding representative families. The families were photographed outside their homes next to their possessions. The resulting photos express the differences between cultures regarding material possessions. By looking at the photos one can conclude that the more westernized the families, the more items they possess. In 2001 Menzel visited 6 of the 30 families again in order to record eventual changes. For example, the family Natomo in Mali had increased from 11 to 15 people from 1993 to 2001, however their possessions barely changed. The Japanese family, on the other hand, from 1993 to 2001, increased the already large number of items they possessed.

This demonstrates that the relationship to possessions is cultural. If the cultural and economic context of individuals change, this relationship changes. Nowadays there are emergent behaviours that challenge the tendency towards more possessions proportionally to the economic

¹⁹ Peter Menzel, 'Die Materielle Welt der Familien – ein globales Portrait' in Arch+ 206/207, Politische Empirie, Globalisierung, Verstädterung, Wohnverhältnisse, July 2012, pp.98-103

development of a specific culture. In western countries, where consumerism has marked the twentieth century, awareness towards the excess of possessions starts to emerge. Movements like the '100 Thing Challenge', a grassroots movement where people aim to reduce their belongings to only 100 items²⁰, express the tendency towards less ownership. (The philosopher Diogenes was one of the first to advocate a life without possessions.)

In the film 'Fight Club'²¹, the character Tyler Durden states that 'the things you own end up owning you'. This quote is also mentioned by Rachel Botsman and Roo Rogers²² when describing the position of this character and the main theme of the film as being a critique of consumerism.

Another shift that contributes to the decreasing ownership of physical items is the transformation of former tangible goods into intangible goods, with the advent of digitalization²³.

This leads to a possible personalization of spaces through technology and interfaces and not through physical goods, i.e. playing one's favourite playlist from the mobile device.

These tendencies can play a role in defining one's personal space not only through the amount of items one owns, but also through the way people program their personal space. This opens up the way to speculate on different categories of thresholds to define what separates 'my space', where 'my possessions' are, from others. This is relevant to my research because I want to ensure that one person's own space and possessions are separated

²⁰ 'Get Rid of Clutter: 100 Thing Challenge Helps Shed Stuff - TIME'

<http://content.time.com/time/magazine/article/0,9171,1812048,00.html> [accessed 5 June
2014].

²¹ *Fight Club*, dir. by David Fincher (20th Century Fox, 1999)

²² Rachel Botsman, *What's Mine Is Yours the Rise of Collaboration Consumption* (New York: HarperCollins, 2010), p. 42.

²³ Nowadays, people can consume music, films, newspapers, magazines as intangible goods instead of in their physical form of records, CDs, DVDs, paper. It is possible to store the personal choices of intangible goods in mobile devices, like storing data in a hard drive.

from others' space and possessions. In this sense it is relevant to analyse what can separate these spaces.

3.5 THRESHOLDS AND PERSONAL SPHERE

In this text I will outline the importance of thresholds in defining spaces.

Thresholds are separations of space. These separations are relevant to my thesis since I will test different kinds of thresholds in order to divide programmes, e.g. by a firm wall or by soft textiles.

There is a multiplicity of thresholds present in the home since the Victorian concept of privacy and publicness²⁴.

The separation of spaces takes place in several ways and through different media. There are also psychological and cultural thresholds like, for instance, language barriers creating different spaces in a room. These are floating and negotiable. 'The personal sphere can be seen as a representation of the real need of physical space. The personal sphere can vary and adapt in size and form, from very big to almost touching the skin. Or it can expand to the limits of the physical space'²⁵.

The continuous mutations of the personal sphere and its reconfiguration in the case of the sharing of space are used as an input for the design. This leads me to the assumption that there is a needed space around the body which is necessary to differentiate your personal sphere from others. This space is variable: in some situations, like in an underground train, it is almost reduced to clothes and skin, therefore to the volume your body alone occupies. This expands if you are carrying a suitcase or any personal objects. In other situations, like at home, your personal sphere corresponds to the

²⁴ Georges Teyssot, 'Fenster, Zwischen Intimität und Extimität' in ARCH+ 191/192: Schwellenatlas, March 2009, pp.53-59 (translation by FW)

²⁵ Florian Wurfbaum, RCA Architecture Annual 2011, P. 154 (see Appendix)



Fig.9 Personal sphere, different enlargements in different spatial situations

walls that encapsulate your flat, or house. This is your personal sphere, the personal space which assumes different forms according to the specific social, cultural and emotional situation in which you find yourself at one moment. This has led me to the conclusion that at home or in your workspace there should be a guaranteed space when you are present. This is always yours and contains your personal objects and furniture, and your personal sphere can enlarge to the boundaries of the spatial entity you inhabit at that moment.

In regard to the topic of living together, Peter Sloterdijk uses the expression 'foam' to designate density and he states that 'who takes density seriously comes to praise the wall'²⁶ (meaning that those who advocate for density value the properties of the wall as a dividing element).

3.6 CONCLUSIONS

One of the goals of this chapter was to explore similar projects, products, schemes of distribution of expendable goods other than architectural space and how they operate. These findings inform the brief for the case studies.

Responding to the relationship between the research question and contemporary technology I conclude that new technologies can allow new real-time distribution systems.

After discussing the personal space and personal sphere, I concluded that at home or in your workspace there should be a guaranteed space when you are present. When one is absent, the home or the workspace is still a container of objects and furniture, therefore it was relevant to analyse the topic of possessions in contemporary society and emergent behaviours.

²⁶ Peter Sloterdijk, 'Architekten Machen Nicht Anderes Als In-Theorie.', ARCH+, Zeitschrift Für Architektur Und Städtebau, Architekturen Des Schaums, 169/170 (2004), 16-23 (p. 22)(translated by FW)

In order to preserve the ownership of space there need to be thresholds between different spaces with different programmes and owners. These separations are relevant to my thesis since I will test different kinds of thresholds in order to divide programmes.

4 PATTERNS OF USE, USER IDENTIFICATION, CONTROL

- 4.1 INTRODUCTION
- 4.2 PATTERNS OF USE AND USER IDENTIFICATION
- 4.3 CONTROL AND PARTICIPATION
- 4.4 CONCLUSION

4.1 INTRODUCTION

This chapter analyses patterns of use of conventional buildings, identifies possible users of the proposed building and approaches references and strategies of control for an architecture that changes.

4.2 PATTERNS OF USE AND USER IDENTIFICATION

The users of the envisioned architecture are to be identified from two different user groups constituting complementing patterns of use in time.

I collected patterns of use in different buildings in order to make a preselection of complementing programmes for the envisioned building. These activities take place at certain times of the day and week. Some activities in buildings occur in a 24/7 cycle, for instance hospitals or shift work factories. Inspired by the diagram of activity patterns Koolhaas developed for the Yokohama harbour urban design forum in 1992¹, I developed a series of diagrams to combine complementing activities (p. 53ff). I applied different methodologies to map these activities. These included a survey amongst dwellers (housing)², a telephone interview with a representative of the hotel lobby in Germany (hotel)³, informal interviews with teachers (kindergarten & school) and internet time-plans for the use of lecture halls in the department of Physics of the TU Munich⁴ (university); daily observations of an office building in Müllerstrasse, Munich and a desk utilisation chart in a finance department⁵ (office); an interview with a building manager (administration building)⁶, a conversation with an artist, observations of timetables of mass and a cinema (church+cinema). These diagrams reveal the following findings: some activities have 'step-style' diagrams indicating

¹ Rem Koolhaas and Office for Metropolitan Architecture., *Small, Medium, Large, Extra-Large: Office for Metropolitan Architecture, Rem Koolhaas, and Bruce Mau,* 2d ed. (New York N.Y.: Monacelli Press, 1998), p. 1221.

² For survey and questionnaire: see appendix

³ Tobias Warnecke, interviewed by the author, 2.June 2014 (see appendix)

⁴ 'Physik-Department Der TU München | Lehrangebot'

Thysix-Department Der 10 Munchen | Lennangebot

<http://www.ph.tum.de/studium/mh/plaene> [accessed 26 May 2014].
5 'Reducing Office Space through Flexible Working'

<http://www.flexibility.co.uk/flexwork/offices/office-shrinking.htm> [accessed 7 September 2014].

⁶ Hans-Jürgen Baumgart, interviewed by the author, 24.August 2011 (see appendix)

Placeholder

Fig.10 Yokohama Harbour Urban Design Forum, Rem Koolhaas, 1992: "assemblage of programs" representing 24 hours that these activities follow a rigid time plan, like school, cinema or church where the activities follow a predetermined schedule. 'Soft-style' diagrams indicate gradually changing degrees of activities like in the hotel and the residential building (housing).

I combined the diagrams with complementary activities and selected housing and offices for further investigation. These two programmes are regarded as most relevant of all possible combinations as they play a major role in the daily activities of western societies.

These two programmes also affect a high number of buildings. The hypothesis is, thus, to combine the two programmes - administration building and dwelling for one-person households.

Administration Building

In order to get reliable data I have carried out an exemplary pattern of use study at an administration building, built in 1999 in Munich, Germany, by interviewing the building manager⁷. The institution is the building division of the municipal administration of Munich, responsible for the erection, maintenance and demolition of all built structures (e.g. schools, theatres, town halls, public galleries, administration buildings, streets, tunnels, parks...) owned and/or run by the city of Munich. In the building in Munich's Friedenstraße 40 some 73,000 m² gross floor area (not including areas below ground) are used by some 1,500 officers and employees in some 1,200 office rooms. The work time scheme allows staff to start and finish whenever they want but they must guarantee their presence in the core five hours between 9:30am and 2:30pm. In theory, staff could start as early as 6am and finish as late as 6:30pm. However, according to the building manager, the vast majority of staff work between 7:30am and 4:30pm on weekdays. Before 7:30am and after 5:30pm and at weekends staff work only very sporadically, with no more than 5% in the building at any time. Some

⁷ Hans-Jürgen Baumgart, interviewed by the author, 24.August 2011 (see appendix)



Fig.11 Patterns of use taking place in buildings representing the seven days of a week



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f

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Work



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0h 6h 12h 18h 0h



0h 6h 12h 18h 0h

Patterns of use taking place in buildings representing the seven days of a week



Fig.13 Patterns of use taking place in buildings representing the seven days of a week

spaces in the building can be rented in the evening, for private events, e.g. the canteen, the big entrance hall, meeting rooms⁸.

The observation can be made that some $70,000 \text{ m}^2$ of floor area are unused for some 118 hours of a 168 hours week, which means it is unused more than 70% of the time.

By analysing the data I pose the question: who could be the dwellers to use the 70% of unused space of the administration building? Ideally, these people would have a predictable routine, e.g. leaving their home every day to go to work or to university.

Today there are tendencies in the UK and in the US towards alternative work schemes, like teleworking, that allow staff to work from home. This results in the phenomenon of people spending their work time at home. However, '[h]ome working doesn't suit all jobs or sectors'⁹.

So the appropriate dwellers could be people who do not have the ability to work as teleworkers, people in the production industry or city traders, who need to physically be at their work place.

Dwelling building

Apart from the professional occupation of the dweller, a second factor seems to be even more relevant: the amount of dwellers in a single dwelling. This is important as fewer dwellers assure more rigid patterns of use. A one-person household dwelling is unused when the one person leaves the dwelling. A household with more people is unused when all people have left the dwelling. Therefore a one-person household would provide a desired rigidity in its pattern of use.

⁸ Hans-Jürgen Baumgart, interviewed by the author, 24.August 2011 (see appendix)

^{9 &#}x27;BBC News - Home Working: Why Can't Everyone Telework?', 2011

<http://www.bbc.co.uk/news/magazine-11879241> [accessed 18 September 2011]. Further the article states '[t]here are some sectors of the UK economy where teleworking is impossible - retailers, manufacturers and City traders are among those where most people have to be at the workplace. In theory, call centres could allow staff to work from home. In practice, the cost of linking secure databases to thousands of houses stands as a considerable obstacle'.

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| 15 | Where is your hou Wo ist Ihre Wohnung / | use/flat? / Ihr Haus? | Postcor | de Lz | | City | | | | | | Coun | itry and | | | | |

| 16 | How many rooms of the following category does your Wie viele Zimmer der folgenden Kategorien hat ihre Wohnung / Ih | ase state) | Bedrooms schlafzimmer Livingrooms Wohnzimmer Kitchen or Ki Köche oder Wo Bathroom Badezimmer WC (separate Extra WC | tchen-Diner hnküche =) | | |
|---------------|---|--|---|--|--|-------------|
| | | andere Zimmer (bitte | nennen) | _ | | _ |
| 17 | How big is your flat / house? < 20 m ² | 30 - 40 m² 5 | 0 - 60 m² 📘 70 | 0 - 80 m² | 100 - 120 m ² | 4 |
| | Wie groß ist Ihre Wohnung / Ihr Haus? 20 - 30 m ² | 40 - 50 m ² | 0 - 70 m² 📘 80 | - 100 m² | > 120 m ² | |
| 18 | For how long have you been living in your current flat/ Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? | nouse? | Monate | , – 1 | fears ahre | |
| 19 | From now, for how long are you planning to keep stayi flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in threr jetzigen Wohnung / | ng in the Haus noch zu wohnen? | Months Monate | — } | 'ears ahre | |
| 20 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten In | nmobilie? | OWN Eigentümer/In | | ent /lieter/In | |
| 21 | Do you use any of these items? MP3 Player Benutzen Sie eines dieser Geräte? MP3 Spieler | Tablet PC (iPad) Tablett PC (z.B. iPad) | Smartphone Smartphone | Kindle or Kindle oder a | other eReade anderes E-Lesege | er 🚺 råt |
| 22 | In your opinion, how likely is it, that devices like the on collections of books, music, videos, photographies and like wahrscheinkink iste sihrer Menkumg nach, dal die zuwo genan oder Fotographie-Sammlungen in der Zukunft ersetzen? Not likely at all unlikely unsubsrcheidlich | es above and digital stor similar digitalizable obje nten Geräte (oder digitale Sp don't know ich weiß nicht | rage techniques will cts in the future? eichertechniken allgeme | replace perso sin) persönliche B ely | nal physical auch-, Musik-, Filr very likely wahrscheinlich | n- |
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| 24 | Are you on Facebook or any other social network? Sind sie auf Facebook oder in irrendeinem anderen sozialen Netzw | I don't kno erk? Ich wei | w what Facebook is | Yes | No Nein | |
| 25 | How many hours of your free time do you spend per w Wie viel Freizeit verbringen Sie im Internet? | eek on the internet? | | | lours/Week tunden / Woche | |
| 26 | Personal information: Gender? Persönliche Informationen: Geschlecht | | | female I | male männlich | |
| | Age? 20 - 30 📕 Alter | 30 - 40 🔲 | 40 - 50 📘 | 50 - 60 📋 | > 60 | |
| Thar Viele | ık you very much for your effort. To return this form, ple n Dank für ihre Bemühungen. Um diese Umfrage zurückzuschicken, v | ase chose one of the fol whien Sie bitte eine der folge | lowing options: anden Möglichkeiten | | | |
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| | c) Print Out Drucken Sie den Fragebogen aus | | and fax to: + und faxen ihn an: | 49 (0)89.95 47 | 4 526 | |
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Fig.14 Survey: Questionnaire In Munich, more than half of all households are one-person households. 40% of these are inhabited by dwellers in the age between 20 and 40 (in total about 200,000 households)¹¹.

These are regarded as a suitable complement for the administration offices. Finally I assume that young professionals or students could be some of these single-person dwellers between 20 and 40.

In order to find out about home use patterns of specific individuals, I created a survey. This was based on outlining the seven days of the week with their twenty-four hours. These were to be completed with the individual's record of seven consecutive days of their routine. I expected to extract specific patterns of use, based on the personal records each individual made of her/his presence and absence at home.

The sample size of the survey was 16. I handed out 40 questionnaires, predominantly to people who matched the demographic target profile (age between 20 and 40). Out of 40, 18 were returned, and of these, 16 were valid.

One third (about 37%) of the survey participants live in a single-person household. More than half of them (56%) were students. 62% were in the age between 20 and 40. The graphically analysed record of hours spent at home revealed a homogeneous picture of dwelling use. On weekdays, more than 80% of the participants had left their homes in the morning by 9:30am. From 9:30am to 6pm only a few (between 4% to 20%) were at home. From 6pm the remaining 80% gradually came home until 11pm. (see also graphic next page). The collected information matched my initial hypothesis allowing me to move into the next stage. The aim is to use the data from the survey and feed it into the patterns of use of the proposed design.

¹¹ '2014-03-24_Haushaltsprognose_Onlinepublikation.pdf', p. 6

<http://www.muenchen.de/rathaus/dms/Home/Stadtverwaltung/Referat-fuer-

Stadtplanung-und-Bauordnung/stadtentwicklung/grundlagen/2014-03-

²⁴_Haushaltsprognose_Onlinepublikation.pdf> [accessed 18 August 2014].



Fig.15 Survey: Participant's recorded presence at their house over one week

4.3 CONTROL AND PARTICIPATION

Wherever moveable or flexible structures, but also systems of flexible use without physically changing items are installed, the topic of control needs to be discussed: (Who controls the space? Who controls the system that controls the space? And who designs the system of control?)

In Beaudouin, Lods, Bodiansky and Prouvé's Maison du Peuple of 1939 at Clichy in Paris the building changed through the orders of an individual who was not necessarily the user of the building (top-down strategy).

Cedric Price's early projects promoting participatory ideologies still had a top-down aspect within them. His envisioned cranes and moveable portakabins were to be operated by people who were the translators of the people's commands.

Together with the emergence of computers in the 1950s and with the first cybernetarian thoughts, the controlling instance of flexible systems was converted from a top-down to a bottom-up approach.

John Frazer, in *An Evolutionary Architecture*¹², describes well an ambitious approach to control. Points 6 and 8 are particularly relevant to the current work, when he states that the model:

6. will derive order from its environment and be controlled by a symbiotic relationship with its inhabitants and that environment.

(...)

8. can anticipate the outcome of its actions and therefore can be said to have some intelligence. All the parts of the model cooperate and in that sense it can be considered as an organism, but it will only fully exist as such if it is a member of an evolving system of organisms interacting with each other as well as with the environment.

In relation to control, I intend to design a model of distribution of space, where each user has the choice of participating or not. This will be a system

¹² John Frazer, An Evolutionary Architecture (London: Architectural Association, 1995), p. 103.

of sensing and actuation operated according to the presence/absence of the users and further adjustable by the users' personal desires.

4.4 CONCLUSION

I used diagrams to visualize the time needs and spatial occupation of different activities in a typical week. A combination of analytical data and interviews provided data that was visualised in the diagrams. Diagramming allowed me to evaluate the possible compatibility of different activities and to select which activities to investigate further: dwellings and offices.

The assumption that the administration offices could be complemented with dwellings for people in the age range of 20-40 in one-person households appears plausible.

This conclusion was supported by the following sources: a survey and an interview.

The survey was made with the goal to gather specific data about patterns of use. The results of the survey are limited to the survey response (sample size 16) and to their behaviour in a specific week, since there would be moments of exception, also in these individuals' routines (for instance, when relatives or friends are visiting or when they are ill or on holiday). The size of the survey was sufficient to proceed to the next stage. The intention was not to generalize from the results but rather to obtain information to design from.

I also explored briefly the issue of control, since this will be important to create the desired system of spatial distribution in the case studies.

In the next chapters I will develop the system of distribution of space, first in a speculative approach (through geometrical and algorithmic exercises in the Chapter Elastic Architecture) and secondly in a site-specific approach applied to a specific building (Chapter Case Studies).

5 ELASTIC ARCHITECTURE

- 5.1 INTRODUCTION
- 5.2 ZUFALL
- 5.3 INTERWOVEN PATHS AND ORTHOGONAL INTERPENETRATION MODELS
- 5.4 INTERACTIVE ELASTIC MODEL
- 5.5 DIGITAL MODELLING
- 5.6 SIMULATION 1
- 5.7 SIMULATION 2
- 5.8 SIMULATION 3
- 5.9 CONFIGURATIONS AND TECTONIC APPROXIMATIONS
- 5.10 CONCLUSION

5.1 INTRODUCTION

My house is diaphanous, but it is not of glass. It is more of the nature of vapour. Its walls contract and expand as I desire. At times, I draw them close about me like protective armour...But at others, I let the walls of my house blossom out of their own space, which is infinitely extensible¹.

The walls of Spyridaki's house contract and expand. This is a poetic description and very elucidative of spatial desires translated into actual tectonic real-time changes.

The following studies, called Elastic Architecture can be described as a journey and intuitive process through geometrical experiments, exercises, phenomena and observations. These aim to answer the following questions:

In a speculative approach (neglecting building material properties), which spatial 3d-models could be designed in order to support the idea of a fast responsive architecture, benefiting from 3-dimensional expanding and shrinking properties, that is capable of :

- containing at least two spatially separated programmes with indirect proportionally oscillating degrees of utilisation?
- assigning spatial volume according to the degree of utilisation?

¹ Georges Spyridaki, *Mort Lucide*, (qtd. in Gaston Bachelard, *The Poetics of Space [La Poetique de L'espace, 1958], Trans Maria Jolas* (Boston: Beacon Press, 1994), p. 51.









Jack of all trays, fully utilised:

Sunday evening, as now everybody is at home, the inner pressure grows, the perforated skin changes its shape and the inner cells project onto the streespace through the perforated skin.





Jack of all Trays:

Ed and Stefi are at home. Their friends Peter and Jutta with their little daughter Fanny and Harry the dog just popped in for a coffee. As the neighbours are away, there is plenty of room so that Fanny can test her new bicycle. At the same time Felix, who's flat is currently downstairs, is having a guest from Portugal.

.

Conventional building: Most of the time the rooms within the building are not being used. During that time the rooms just work as containers for furniture and tv-sets.



Í

and a

These aims are to be achieved while guaranteeing a separating and physically substantiated threshold between the two programmes. Applying Forty's categories for flexibility, the envisioned spatial structure fits into the category *Flexibility by technical means*. Technically driven architecture normally applies one- or two-dimensional spatial changes. Exceptions are the so-called event architectures, promotional structures which are sometimes 3-dimensionally expanding structures, for example Rem Koolhaas' Prada Transformer or the spheres by Chuck Hoberman. Here I will investigate whether a 3-dimensionally mutating special configuraton is desirable for the defined purpose.

5.2 ZUFALL

The initial seed of this research project lies in a project that I developed in 1997. As the starting point of the design process I introduce the *Zufall* model.

Zufall is a German word meaning chance, or coincidence. The project intends to illustrate unpredictability in a design process: a box made of flexible and transparent acrylic glass is being filled up with inflated air balloons. The degree of air charge can vary from lightly to strongly filled. The six surfaces constituting the box are connected at its eight corners; the edges of the surfaces are loose. The box represents a building envelope; the balloons represent single rooms within the building. The model illustrates a system of distribution of space. Two stages can be observed: firstly, the box is filled with balloons until the volume of the box is distributed amongst the balloons. In stage two, the box is being filled beyond the spatial limits of the box. It expands and mutates to a spherical shape in reaction to the increased spatial demand of the balloons. The volumes of the balloons now entirely fill up the envelope structure leaving almost no leftover space. The surfaces of the balloons squash against each other. Placeholder

Placeholder

Fig.17 P. Virilio & C. Parent, Le Potentialisme, 1966. Sketch. Topotonique, concept 1966. Drawing. The conclusions relevant for the geometrical exercises are:

- The filling condition of each single entity has an impact on the spatial distribution for every other participant in the system.
- The spatial equilibrium amongst all balloons changes with every change in every single balloon.

For the aspired building typology these qualities seem to be desirable, since redundant spatial volume can be distributed not only to a direct neighbour but to all participants in the system.

The balloon model does not distinguish between different kinds of programmes of the single spatial entities. Therefore the first step of the design process intends to find spatial arrangements that distinguish between at least two different programmes to use two different spatial entities.

5.3 INTERWOVEN PATHS AND ORTHOGONAL INTERPENETRATION MODELS

My first geometrical tests, in the current research, were driven by the idea of the maximisation of direct neighbourhood to a complementary programme. With this arrangement I expected to reduce the movements of thresholds and to keep the level of elasticity low for imagined materials. The paperstripe models represent an interwoven system of access paths. The rooms would settle along these paths. A similar geometrical configuration has already been proposed by Paul Virilio and Claude Parent for their topotoniques² (though in an urban scale). In the next step I attempted to span membranes between the paths. The expected interwoven duality has not been achieved. Foreign paths permeated the membranes.

Geometrical solutions for the industry where maximum temperature exchange is intended, like radiator structures (see ill. p. 76), inspired the

² Paul Virilio, Claude Parent and Bernd Wilczek, *Architecture principe: 1966 and 1996* ([Besançon]: Les Ed. de l'Imprimeur, 2000). *Architecture Principe 6: LA CITÉ MÉDIATE*, p. 10



Fig.18 Elastic Architecture Series: Interwoven paths II









Fig.19 Elastic Architecture Series: Interwoven paths II, process










Fig.21 Elastic Architecture Series: Orthogonal interpenetration II, process



Fig.22 Elastic Architecture Series: Interactive elastic model



а

b

¢

d













10 × Q 30



Fig.23 Elastic Architecture Series: Interactive elastic model: Mutation by actuation (nylon strings)

b





b

d

f

h













g

e

а

с

Fig.24 Elastic Architecture Series: Interactive elastic model, process

research as well. I managed to build a system of possibly infinitely interpenetrating spaces in a straight and orthogonal way. Philip Ball describes these as a bicontinuous structure of shapes that divides up the space into two interpenetrating regions³.

Toyo Ito's proposal for the Taichung Metropolitan Opera (see ill. p. 76) applies a similar geometrical configuration. The geometry can be put together by symmetrically arranging, folding and connecting stair-shaped stripes.

5.4 INTERACTIVE ELASTIC MODEL

In order to introduce time as the fourth dimension of flexible architecture I used this geometry for an interactive physical model. The material chosen is bi-elastic textile normally used for swimsuits. Each corner junction is set as an actuation point and can be manipulated individually by pulling nylon strings. I could observe that the system was complex to operate, and did not provide significant new information. However, it was playful and consequential and started to develop an aesthetics of elasticity.

5.5 DIGITAL MODELLING

To take the research to the next step, I started computer simulations of the intended geometrical configurations. Returning to the interwoven paths, I observed that they are arranged in parallel in a rectangular grid of double helix spirals with alternating spiral directions (clockwise and counter clockwise). The double helix system as an architectural element has already been introduced in a staircase in the French renaissance castle Chateau Chambord (1519-1547)⁴ (see ill. p. 77). Aiming for a generative geometrical

³ Philip Ball, *Nature's Patterns: A Tapestry in Three Parts* (Oxford; New York: Oxford University Press, 2011), p. 89.

⁴ Pierre Gascar, Chambord (C.J.Bucher, 1965), p. 30.

Placeholder

Placeholder

Placeholder

Fig.26Chateau Chambord, Chambord, France 1519-1547Top left:Ground floor planTop right:Ground floor plan in detailBottom left:Intersection of the stairBottom right:Staircase 1st floor, at the level of the armory



structure I used the algorithmic modelling tool Grasshopper, a plugin for the CAD program Rhinoceros 3D.

The interwoven paths paper model was rebuilt by placing cuboids along the spirals at every 1/4-rotation. The top and bottom surfaces of the cuboids constitute the direction-changing horizontal squares which are connected by the path. The usage of the top and the bottom of the cuboid creates a two-layered spiral, resulting in a double helix configuration. Hyperbolic parabolic surfaces are spanned between the inclining edges of the ramps. This is done in such a way that the horizontal mirrored (mirror axis is the axis of the initial spiral) ramps are always connected. The grasshopper script allows (amongst others) for dynamic values of:

- grid sizes values x and y
- height of one spiral turn
- cuboid sizes x, y and z

The resulting geometry is a bicontinuous structure.

By changing values for cuboid- and grid-sizes, the shape changes gradually from the rigid style of the orthogonal initial paper model to a very soft appearance. However, all results are bicontinuous structures that divide up the space into two interpenetrating regions.

I speculate that these two divided regions are used by the two programmes: dwelling and administration office (as identified in the earlier study). I assigned these to either side of the infinite surface. The office is on the side of the constituting cuboids, the dwelling on the other side.

Space is organised according to the degree of utilisation. This happens through the change of the size of the cuboids.





Fig.29 Elastic Architecture Series: Digital parametric model: Animation of reactive behaviour: Cuboids' growth and shrinkage





Fig.31 Elastic Architecture Series: Digital parametric model: Simulation #1





Fig.33 Elastic Architecture Series: Digital parametric model: Simulation #2 (running dog)

5.6 SIMULATION 1

As part of the simulation process, I changed the size of the cuboids according to an imagined oscillation of uses between the two. One region shrank while the other region grew. The changes resulted in an either very rigid, box-style appearance when offices were intensively used or a very soft style when the structure appeared like a continuously rotating soft landscape. This is the behaviour with rigidly synchronized patterns of use of all participants.

5.7 SIMULATION 2

Another simulation is based on the actuation by single actuators called *running dogs* (see ill. p. 84f). The *running dogs*, each represented by a black ball, increase, by appropriation, the size of the single cuboids. The spatial impact on the whole structure can be described as considerable, resulting in an almost dancing building, and with a strong impact on all (more than one) neighbouring units.

The simulation revealed the quandary of the 3-dimensionally expanding cuboids: shrinking cuboids should lead to growing spaces between them. This also let the entire structure grow. When cuboids shrank, their ceiling also shrank in size which then resulted in reducing the floor of the complementing programme (which was not intended).

5.8 SIMULATION 3

In the third simulation the cuboids were not space-defining anymore but split into bottom and ceiling with the complementary programmes assigned to them (see ill. p. 94f). Growth and shrinkage now only applied along the z-axis. The dwelling utilisation survey from an earlier chapter was used as data source, complemented with office-data. (The data-sourcing will be explained in depth in the Case Studies: Tracks and Curtain chapter). The



Fig.34 Elastic Architecture Series: Digital parametric model: Simulation #3, wireframe







Fig.35 Elastic Architecture Series: Digital parametric model: Simulation #3



Fig.36 Elastic Architecture Series: Digital parametric model: Simulation #3



compare straight settings (2x2 equal levels in a set of 4)





and bendy settings (4 different levels in a set of 4)









Fig.40 Elastic Architecture Series: Digital parametric model: Tectonic approximation #3, perspective and section





Fig.42 Elastic Architecture Series: Digital parametric model: Tectonic approximation #4







Fig.44 Elastic Architecture Project: Grasshopper script

















result of the simulation was strongly deformed spatial structures, seemingly not capable of being used as a functioning building.

5.9 CONFIGURATIONS AND TECTONIC APPROXIMATIONS

I carried out a number of further design experiments. These are based on the indentical grasshopper script. Configurations (see ill. p. 87) study spatial connections and relations whereas the tectonic approximations intend to bring the spatial speculations to an architectural scale.

5.10 CONCLUSION

The proposed structure resulted in two entangled landscapes. Envisioned as architecture, the two infinite surfaces could form a new and aesthetically appealing interpretation of an office and a living landscape in a hybrid building.

Incorporating the factor of time and therefore dynamic qualities to the proposed building structure resulted in the following observation: the threedimensionally changing spatial entity, if applied with strictly controlled patterns of use, leads to an aesthetically tempting spatial configuration oscillating between soft-bent- and box-style. Inspired by the balloon model, I aimed to distribute space across the building where spatial volume, when not needed, could be distributed in a three-dimensionally balanced system as many neighbours as possible. The proposed bicontinuous to interpenetrating structure did not provide convincing results. They lead to unexpectedly strong deformations of the space-dividing thresholds. The goal in this chapter was to reduce the level of speculation in a system of distribution of space and combine it with geometrical studies that can support such a system. This is followed by the application of the principles of distribution of space to a specific built context, which will be explored in the next chapter.

6 CASE STUDIES: TRACKS AND CURTAIN

- 6.1 INTRODUCTION
- 6.2 CONTEXT FOR BOTH PROJECTS: CITY & BUILDING
- 6.3 USER SELECTION AND IDENTIFICATION
- 6.4 STRUCTURE AND ITS OPERATIONAL/ DYNAMIC ELEMENTS
- 6.5 DESIGNING OPERATION
- 6.6 MANAGEMENT
- 6.7.1 TRACKS PROJECT DISTRIBUTION
- 6.7.2 TRACKS PROJECT SPATIAL ARRANGEMENT
- 6.7.3 TRACKS PROJECT OPERATION
- 6.7.4 TRACKS PROJECT PERFORMANCE SIMULATION METHODOLOGY
- 6.7.5 TRACKS PROJECT PERFORMANCE SIMULATION RESULTS
- 6.8 CASE STUDY: CURTAIN PROJECT
- 6.8.1 CURTAIN PROJECT SPATIAL ARRANGEMENT
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- 6.9 TRACKS AND CURTAIN PROJECTS: CONCLUSION
- 6.9.1 LINKS TO PREVIOUS CHAPTERS
- 6.9.2 PERFORMANCE QUANTITY OF SPACE
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- 6.9.4 OPERATIONAL QUALITIES SPATIAL ENTITIES
- 6.9.5 PATTERNS OF USE
- 6.9.6 ROLE OF USER
- 6.9.7 ROLE OF OWNERS / PROVIDERS
- 6.9.8 EVOLUTIONARY EVALUATION
- 6.9.9 SIMPLICITY
- 6.9.10 OTHER BENEFITS/ECONOMIC & ECOLOGICAL POTENTIAL
- 6.10 CHAPTER'S FINAL NOTE

6.1 INTRODUCTION

The previous chapter discussed speculations about possible spatial configurations, neglecting substantiation at an architectural scale.

The design research will now be applied to an architectural scale in a specific urban context. In the following chapter two case studies will be described and discussed:

The case studies aim to combine two programmes in a hybrid building. The programmes take place at different times of the day and on different days of the week. Dynamic elements in the building allow spatial entities to change the area they cover. Unused space can be distributed to spatial entities in use.

The main objectives addressed in this chapter are:

- Which suitable combination of relevant programmes can be applied?
- How could the operational control of the building be organized?
- Which spatial configurations could support the idea?
- Technically, which concepts could be applied for changing spatial configurations and for the movable elements?
- Can the aims listed above be accomplished in a real urban context by applying a plug-in process that fills up the temporarily expendable physical space of an existing building and programme with a secondary, complementary programme and still maintain the original programme?

Some of these questions have already been partially answered in previous chapters. In this chapter they will be examined to a deeper extent.

The envisioned case study (hybrid building) will be discussed in two very similar design proposals. Both are retrofitting proposals for the very same

floor of the same building. They will demonstrate the capabilities of the operational control system and of the architecture itself during 24 hours of a weekday. One building, one floor, one day! The working title of the two design proposals derives from the technical components that characterize them: *Tracks* and *Curtain*

The chosen combination of programmes is administration and dwelling. Both projects have identical contextual settings and conditions. They differ in the following categories:

- Distribution of space to different numbers of neighbours (from 2 to 20).
- Degree of self-sufficiency of the dwelling units and amount of infrastructural equipment.
- Work scheme (conventional/flex space¹ office).
- Dwelling scheme (conventional/partially serviced)

This leads to different operational and architectural proposals.

On the following pages, as a starting point, I look into the factual context of the city, the site and the technical condition of the building intended to be converted, as well as its current programme. Afterwards, the relevant two user groups for the intended building will be discussed followed by the two design approaches and their operation. These will be split into the topics of operation, functional requirements, technical descriptions and finally a conclusive discussion of both case studies.

¹ 'Flex Space - Wikipedia, the Free Encyclopedia' http://en.wikipedia.org/wiki/Flex_space [accessed 21 August 2014].

6.2 CONTEXT FOR BOTH PROJECTS: CITY & BUILDING

The selected urban setting is in the city of Munich. A study from 2011 predicts that due to economic success Munich's population will grow from 1.44 million inhabitants in 2011 to 1.58 in 2020². This development will generate further pressure for Munich's property market, which has been unable to fulfil the market's demands. In recent years this led to an unprecedented increase in housing and rental costs, e.g. from 2012 to 2013 the average rental price for one square metre of a 30m² apartment grew by 13.9%, from $15.78 \in /m^2$ to $17.98 \in /m^2$ ³.

Students and lower income citizens are amongst those who suffer the most from this development. At the same time Munich has one of Germany's highest rates of one-person households, more than every second household (>55%) is inhabited by only one person⁴.

The selected building for the intended additional and complementary programme currently accommodates the city of Munich's department for municipal buildings, parks and infrastructure. This department (Baureferat) is responsible for the erection and maintenance of schools, libraries, museums, roads, tunnels, canals, water management systems, public transport etc.

The Baureferat building is situated some five hundred metres from the train station and important traffic hub, Munich East (München Ostbahnhof). From there it takes some eight minutes by underground to the city centre of Munich.

² 'DemoBevProg2011bis2030.pdf', p. 6 <http://www.muenchen.de/rathaus/dms/Home/Stadtverwaltung/Referat-fuer-Stadtplanung-und-

Bauordnung/stadtentwicklung/grundlagen/DemoBevProg2011bis2030.pdf> [accessed 17 August 2014].

³ 'Mietspiegel München 2014: Was Mieten in München Kostet' <http://www.wohnungsboerse.net/mietspiegel-Muenchen/2091> [accessed 20 August 2014].

⁴ '2014-03-24_Haushaltsprognose_Onlinepublikation.pdf', p. 6 <http://www.muenchen.de/rathaus/dms/Home/Stadtverwaltung/Referat-fuer-Stadtplanung-und-Bauordnung/stadtentwicklung/grundlagen/2014-03-24_Haushaltsprognose_Onlinepublikation.pdf> [accessed 18 August 2014].






Fig.46 Top left: Baureferat, Munich, 1999: Current status: Section3D, current status Top right: Baureferat, Munich, 1999: Current status: Structural analysis Bottom: Baureferat, Munich, 1999: Current status: Urban-site plan

Technical description

The building was completed in the year 2000. It forms an almost quadratic courtyard, surrounded by four seven-storey wings and a 16-storey tower in the north corner. Structurally it consists of a reinforced concrete frame structure with the popular grid size of 4.6 metres and an overall depth of 19.6 metres. It has two outer areas (grid depth 5.8 metres) for offices and a central area of 6.8 metres depth for corridors, stairs, toilets and other infrastructural functions, like photocopier plants and kitchenettes.

The reason for choosing this building for the case studies lies in these combined facts:

a) The building's structure and arrangement is very typical and commonly used for offices and for administration buildings. It is a good example of the prototype of single-room offices and bigger open-plan offices arranged in a flexible system along both sides of a central access and infrastructure zone. There are hundreds or even thousands of buildings of this kind in Europe and around the world.



Fig. 47 Baureferat, Munich, 1999: Structure

- b) These buildings of concrete structure and light infill have a high inherent flexibility and can be changed with relatively little effort.
- c) The building's current use as a communal administration building guarantees a high level of predictability for the times it is in use.



Fig.48 Baureferat, Munich, 1999: Current status: Organisation analysis

















Fig.49 Baureferat, Munich, 1999: Current status: Exterior, current status

Current status of the building

As the interview with the building manager from the earlier chapter has indicated, office hours are from Monday to Friday roughly between 7:30am and 5:30pm with a daily regular working load of eight hours and a flexitime system. The entire building has about 1,200 office rooms for some 1,500 employees. During several visits to the building I could personally observe that an average office room of about 4.6 by 5.8 metres is used by an average of two employees.

For the following case studies I will concentrate on one wing (the southeast wing, internally called *Haus 2*) of the courtyard building and from this wing I have chosen one floor (3rd floor). This storey and its performance will be examined and observed during 24 hours. One building, one floor, one day!

6.3 USER SELECTION AND IDENTIFICATION

The proposed strategy for the two case studies is to complement the programme *administration* with the programme: *dwelling for one-person household*. As the studies of patterns of use from the earlier chapters indicate, these two programmes predominantly take place at different times of the day and week and therefore complement each other regarding time use.

Administration

Public administration patterns of use can be characterized as rigid. Due to strictly enforced employment rights with limited cases of people working beyond the daily arranged hours, the predictability of the pattern of use of an administration building is high and reliable. One might think that this rigidity is a unique phenomenon and is inherent in public administration. However, the real driving force behind strictly kept working hours is a strong workers' representation to enforce this. I experienced this when I worked for the electronic firm Siemens' architecture department as a trainee. I had a deadline approaching for an interior furniture design and stayed at the office until 10 p.m. The next day I did the same. On the third day a man from the staff association told me I was not allowed to stay at the office beyond 6 p.m.

In the administration building for the case study many rooms are unused during working hours. This is due to the fact that some staff do not work full-time but still have dedicated desk space. Meetings inside or outside of the building keep employees away from their desks as well. When walking through the building, I observed that it is not unusual for about half the office rooms to be empty.

Dwellings as one-person households

The complementary programme has been selected as the one-person household for two reasons:

- a) There is a huge demand for this kind of dwelling in the city of Munich
- b) The patterns of use of the one-person dwelling units are rigid. Either the sole inhabitant is in or he is out, unlike in multi-person households where there is the possibility of varying degrees of inhabitation over time.

The dwellers' survey from the earlier chapters provided a set of data of people and the hours when they are at home. This database will be used to test the intended structure.

6.4 STRUCTURE AND ITS OPERATIONAL/ DYNAMIC ELEMENTS

The intended architectural projects can be labelled in different ways: Kronenberg would probably call it *Architecture that responds to change*⁵, Leupen, Heijne and van Zwol might call it *Time-based Architecture*⁶, others *interactive architecture*.

The physical structures constituting flexible architecture projects, as well as the intended projects, are static and dynamic components. The Italian language logically and beautifully illustrates the difference in the architectural context: the word for real estate (like buildings and land) is *immobili*, which means immobile (static). The word for furniture is *mobile*, which means mobile (dynamic). The static elements are bound in 3 dimensions while the dynamic elements enable the functioning of the whole system as 4-dimensional architecture.

Dynamic elements can change their properties, which can mean the change of geometrical position (e.g. movement of a sliding wall) or the change of their physical properties (e.g. change of temperature of a radiator).

One could argue that a light bulb, operated by a person through the interface of an electrical switch, is a dynamic element (though not all buildings equipped with light bulbs can be regarded as flexible architectures).

While the operational system of a light bulb is relatively easy to define, the envisioned architecture project demands a more complex solution.

⁵ Robert Kronenburg, *Flexible : Architecture That Responds to Change* (London: Laurence King, 2007).

⁶ Bernard Leupen, Rene Heijne and Jasper van Zwol, *Time-Based Architecture* (Rotterdam: 010 Publishers, 2005).

6.5 DESIGNING OPERATION

The operational matrix, a term used by Cedric Price to describe 'a tool for the user rather than for the designer'⁷, is a relevant part of the system. Its design is of equal importance to the design of the structural and space defining components. Structure and operational intelligence go hand in hand, both need to be designed and cannot be separated from each other. (C. Price leaves space for unpredictability and for the delight of the unknown while this is not intended in this project).

The operational matrix consists of rules and algorithms to control⁸ the dynamic components. The aim is to define which building component moves where and when and is actuated by what.

In fact, the starting point for *Tracks* is the design of the operational system. Only later are the physical components defined.

The proposed concepts stipulate the distribution of office space when it is unused. Expendable space can be given to other occupants. The same applies to unused dwelling space. The active participants of the distribution process are:

- The users of the dwellings
- The users of the offices
- The dynamic architectural components

The aims for the design of the operational matrix are:

 The generation of a distribution system for unused space depending on presence/absence of participants.

⁷ Cedric Price, *Cedric Price*. ([London]: [Architectural Association], 1984), p. 89.

⁸Though Price states: 'space is ordered, not controlled' Price, p. 92.

- The provision of a bottom-up controlling mechanism for all participating users and freedom of choice.
- A balanced system of distribution of unused space to a defined group of recipients.

6.6 MANAGEMENT

The level of self-organisation is dependent on the superior hierarchy element (entities): who owns and operates the building and its control mechanisms? For the current case-studies, I envision the city of Munich being the operator, maintaining the administration programme but complementing it with the programme of affordable housing or with student accommodation, within a state-owned building.⁹

⁹ For more on possible management structures and forms of ownership for the proposed case studies see Appendix A.6.1

6.7 CASE STUDY: TRACKS PROJECT

Tracks is informed by the findings of the speculative approach. Like in the *Balloon* project, the aim is to spread the expendable space to as many participants as possible.

TRACKS PROJECT - PROGRAMME

The programme consists of the combination of administration offices for a large department of the public authority of the city of Munich and individual dwellings¹⁰.

Programme of the administration offices

The selected storey (3rd floor) in the selected wing (Haus 2) currently has 22 plus 16 = 34 office rooms providing 68 workspaces (2/room) and four meeting rooms. The office concept is traditional; it consists of personalized workspace where each employee has his own allocated desk and chair. The office rooms are arranged along the central corridors; means of access and facilities like photocopier plants, server rooms, archives, kitchenettes, toilets, cleaning rooms are arranged between the corridors, in the core zone. This programme, exactly as currently found, will be retained.

Fig. 50 Baureferat, Munich, 1999: Plan of Haus 2



The dwellings constitute the complementary programme to the administration offices, using the unused capacities of the administration building.

¹⁰ This programme should not be confused with a popular scheme in the UK: live-work units, a concept where self-employed professionals, small businesses or start-ups combine their office space with the place where they live in the same architectural unit

The programme of individual dwelling units consists of:

- Furnished studio flats, approximate size 25 m²;

- Fittings/equipment: bathroom with shower, small kitchen, dining area, sofa area, bed and study area, storage;

- Some services/amenities, like laundry services are provided outside the flats in a shared laundry room on the corridor. The already existing canteen for employees' lunch can provide additional evening dining services for the dwellers.

The amount of dwelling units will be determined by a reasonable fitting of these dwellings, maintaining a reasonable quantitative and qualitative standard (i.e. no luxury flats but also not social housing standard).

The user group spans from students to young professionals.

6.7.1 TRACKS PROJECT - DISTRIBUTION

In the first instance, any given space (v) is divided into a number of participants (n). This results in n spaces for n participants. These spaces will be called *guaranteed spaces*. Each participant has his guaranteed space assigned (when he/she is at home).

Example:

If $v = 100 \text{ m}^2$ and n= 10 this results in 10 guaranteed spaces of 10 m² each. This configuration will be called *basis configuration*.

(The guaranteed spaces will not necessarily be of equal size but for this example I'd like to keep it like that.)

The hypothesis is that any unused space is expendable and therefore could be distributed to other participants. If any participant leaves the building, and therefore also his guaranteed space, this participant is being given the opportunity to make part of his unused (and therefore expendable space) available to any number of other participants.

Taking the example from above:

If one participant (let's call him Frank), after he leaves the building, decides to make available half of his guaranteed space to all other participants, this leads to the following configuration:

Frank's space now only extends to 5 m², the other 5 m² is made available to the other participants. I call the amount of available space the *pool*. The 5 m² in the pool will now be split into nine equal parts and these will be made available to the other participants:

 5 m^2 divided by nine receiving participants gives each of them an additional space of 0.55 m² and makes their space grow to 10.55 m² each.

0.55 m² does not make a big difference, but if more participants leave the building and make their space available to others, the proportions change significantly.

If five participants are out of the building and all decide to allocate 5 m^2 each into the pool, then the remaining five participants can benefit from 5 more square metres each resulting in a growth by 50% (from 10 m² to 15 m²).

The distribution is calculated by this equation

$$L_o^n = L_a + \left(\left(\frac{L_t}{U_t} - L_a \right) \times P^n \right) + \frac{U_a \times \left(\frac{L_t}{U_t} - L_a \right)}{U_t - U_a} \times P^n$$

Fig. 51 Distribution Equation

| L = length | a = absent |
|---------------------------------------|-------------------|
| U = users | t = total |
| P = presence | d = distributable |
| | g = guaranteed |
| | r = resulting |
| Fig. 52 Distribution Parameters | o = occupied |
| i igi oli biotito attori i arantetero | |

The operational approach and the user experience and interaction for this model are as follows: Frank, when he has left the house, can either agree or disagree to make his space available. He does this by operating an application on his smart mobile device. On his way back, the same application (via GPS) registers his approximation and by the time he arrives at the building, the guaranteed size of his space is re-established.

When all participants are in, all participants get their guaranteed space (*basis configuration*).

6.7.2 TRACKS PROJECT - SPATIAL ARRANGEMENT

Haus 2 (equally Haus 1 and 3) will be divided into three zones. The central zone is the most public area providing access for the offices and for the dwellings¹¹. The central zone will also contain infrastructure and services for the office users as well as a laundry room for the dwellers. The outer zones will house the individual dwelling spaces as well as the office spaces for four employees.

The starting point for the spatial arrangement is:

- Equally sized spaces for all office rooms and for all studio flats, providing an area of 4.6 m by 5.4 m = 24.8 m² each. This 24.8 m² will be called the guaranteed size.

¹¹ This is also the condition of the building today. It can be freely accessed without any special permission.





Fig.53 Case Study Tracks: Top: Basis configuration Bottom: Spatial entities configurations according to the system of distribution of space





- The rooms are arranged linearly in a chain of single spatial entities, alternating in the office pattern – dwelling – office – dwelling and so on.

- The rooms are separated by movable partition elements, which are also inhabitable furniture with multiple functions. They move on a set of rails which run parallel to the façade and are arranged perpendicular to the rails.

- Both kinds of moving and inhabitable elements contain furniture and infrastructure parts for the two different spaces they separate. They are called *dry wall* and *wet wall*.

- Each space is confined by these two walls only. The distance between the two walls varies and defines the size of the spaces. The distance and therefore the size of the space is set by positioning the walls at defined positions. The positions are calculated by the operational system which I describe later. Unused spaces can become small (down to 12.4 m²) and used spaces can become large and gain in usable area.

- The dwelling side of the *wet wall* contains a small bathroom with shower, toilet and basin, a small kitchen with fridge, hob and sink and a dining area, seating up to four people.

- The dwelling side of the *dry wall* incorporates storage, a study area and a bed. An independent sofa platform is attached to it.

- The office sides of the *dry wall* and the *wet wall* each contain two conventional workspaces with a desk, a chair and some shelving.

Dry wall and *wet wall* perfectly fit into each other (like a 3d-puzzle). They can be positioned indenting very tightly, like in a lock and key system. In this tightly stacked position the width between the centre-lines of the walls can be reduced to 2.3 metres which is 50% of the width of the guaranteed space size.

Due to the walls' movement the individual rooms between them can change position. Therefore the wall separating the corridor consists of a row of doors assuring access to all rooms whatever their position and size. The operation of the doors can be controlled electronically with a pin system.

6.7.3 TRACKS PROJECT – OPERATION

The starting point is the standard distribution of the spaces amongst the participants. A dwelling space is allocated to one dweller and an office space is allocated to four employees. In this guaranteed space position the separation walls are all positioned exactly between the columns at a distance of 4.6 metres. Like this all rooms have the same size, be it dwelling or office. The size is 4.6 by 5.4 metres = 24.84 m^2 .

The system has the capability to distribute expendable space in unused rooms to other rooms, where users are present and can benefit from additional space above the guaranteed size.

The distribution system is operated on the basis of absence of the participants. Each space has an assigned value (P) that oscillates between zero and one. For the dwellings this value depends on the absence of the dweller and for the office rooms this value depends on the absence of all employees at any time.

The values will be generated depending on the geographical position of the participant(s). GPS (global positioning system) sensors inside standard smart mobile devices provide the information via mobile communication to the operating system.

The standard value is one (guaranteed space size). If a dweller or all employees of one office room is/are within a predefined geographical distance (actuation distance 1) of their space, this value is one. From that distance, with additional distance, the value gradually goes down to zero





Fig.54 Case Study Tracks: Top: Dwelling unit guaranteed size Bottom: Dwelling unit in absent mode





Fig.55 Case Study Tracks: Top: Office unit guaranteed size Bottom: Office unit in absent mode



Actuation start and end distance for provision of space -value 1= user present -value 0= user absent







until a certain second distance (actuation distance 2) from the building is reached. Beyond that distance the value stays at zero.

For the dwellers the two distances could be set to 500 metres and 1000 metres¹². For the employees a faster reacting system could be reasonable with lower values for the two actuation distances. Alternatively the system could be synchronized with the work time recording system.

This method enables spaces to be 'in position' when people approach them.

All rooms with any value between 0 and 0.99 belong to the group of space providers. The provided space is unused anyway. The spaces with value 1 are part of the group of receivers (assumed there is at least one provider). Dwellers or employees of the receiver spaces are the spatial beneficiaries.

The operation system permanently collects data from all the participants and a distribution algorithm computes the positions of each single separation wall.

An application for smart mobile devices ensures that all participants have control over their space. The dwellers and the employees can decide if they participate or not and at which distance their space is distributed to others. If a participant decides not to participate, his/her space maintains the guaranteed size (24.8 m²), though her/his space might change position. The application could be imagined as a simple programme where a few parameters could be set and where the performance of the building can be monitored for the avoidance of surprises (see illustrations).

 $^{^{\}rm 12}$ The value can be set to any distance preferred by the user



| TRACKS PERFORMANCE | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|----------------------------|--------------------------|---------------------------------------|---------------------------|-------------------------|------------|------------------------|---------------------------------------|---------------------------|-------------|-------------------------|------------|---------------------------------------|--------------------------|-------------------------|---|-------------------------|-------------|------------------------|--------------------------|-----------------------|--------------------|---------------------------|-----------------|
| Dwelling / Office | Anna | Office 1 | Bruno | Office 2 | Claudia | Office 3 | Daniel | Office 4 | Elisabeth | Office 5 | Frank | Meeting 1 | Gorta | Office 6 | Hermann | Office 7 | Irine | Office 8 | John | Office 9 | Katharina | | | |
| 2 | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1+occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1weec'd | 1=occ'd | 1+occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | | | |
| e . | | | | | | | | | | | | | | | | | | | | | | | | |
| 00:00 | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | | |
| 00:50 | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | | |
| 01:00 | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | | |
| 01:50 | 36,13 | | 30,13 | | 36,15 | | 30,13 | | 30,13 | | 36,13 | | 30,13 | | 30,13 | | 36,13 | | 36,13 | | 30,13 | | | |
| 0200 | 30,13 | | 30,13 | | 36,15 | | 30,13 | | 30,13 | | 36,13 | | 30,13 | | 30,13 | | 36,13 | | 36,13 | | 30,13 | | | |
| 02.50 | 30,13 | | 36,13 | | 36,13 | | 30,13 | | 36,13 | | 36,15 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | | |
| 03.00 | 36,13 | | 26.12 | | 36,13 | | 36,13 | | 26.12 | | 36.13 | | 36,13 | | 26.12 | | 36,13 | | 96.13 | | 26.12 | | | |
| 0400 | 36,13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | 3613 | | 3613 | | 3613 | | 3613 | | 36.13 | | 3613 | | | |
| 04:30 | 36,13 | | 36,13 | | 36.13 | | 36.13 | | 36,13 | | 36.13 | | 36,13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | | |
| 05:00 | 36.13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | 36.13 | | | |
| 05:30 | 36,13 | i i i | 36,13 | ă | 36,13 | - iii | 36,13 | i i i i i i i i i i i i i i i i i i i | 36,13 | ă | 36,13 | i i i | 36,13 | ē | 36,13 | - i i i i i i i i i i i i i i i i i i i | 36,13 | - iii | 36,13 | ĩ | 36,13 | | | |
| 06:00 | 36,13 | ē | 36,13 | ē | 36,13 | ē | 36,13 | ē | 36,13 | - ē | 36,13 | ē | 36,13 | ē | 36,13 | ē | 36,13 | ē | 36,13 | Ū. | 36,13 | | | |
| 06:30 | 31,05 | 31,05 | 31,05 | | 31,05 | | 31,05 🍘 | 31,05 | 31,05 | | 31,05 | | 31,05 | | 31,05 | | 36,13 🔘 | 31,05 🔘 | 36,13 | | 31,05 | | | |
| 07:00 | 31,05 | 31,05 🔘 | 31,05 | ۲ | 31,05 | | 31,05 🍘 | 31,05 🥘 | 31,05 | | 31,05 | | 31,05 | | 31,05 | | 36,13 🔘 | 31,05 🔘 | 36,13 | | 31,05 | | | |
| 07:30 | 32,48 | 32,48 | 32,48 🔘 | 32,48 | 32,48 | | 32,48 🍘 | 32,48 | | 32,48 | 32,48 | | | | | | 32,48 🔘 | 32,48 🔘 | 32,48 | | 32,48 | | | |
| 08:00 | 29,81 | 29,81 | 29,81 | 29,81 | 29,81 | 29,81 | 29,81 | 29,81 | | 29,81 | 29,81 🔘 | 29,81 | | 29,81 | | | 29,81 | 29,81 | 29,81 | | | | | |
| 08:30 | 34,15 | 34,15 | 34,15 | | 34,15 | 34,15 🔵 | 34,15 | 34,15 | | 34,15 | 34,15 | | | 34,15 | | | | 34,15 | 34,15 | | | | | |
| 09:00 | 32,48 | 32,48 | 32,48 | | 32,48 | 32,48 | | 32,48 | | 32,48 | 32,48 | 32,48 | | 32,48 | | 32,48 | | 32,48 | 32,48 | | | | | |
| 09:30 | | 36,13 | 36,13 | 36,13 | 36,13 | 36,13 | | | | 36,13 | 36,13 | 36,13 | | | | 36,13 | | 36,13 | 36,13 | | | | | |
| 10:00 | | 32,48 | 32,48 | 32,48 | 32,48 | 32,45 | | 32,48 | | 32,48 | 32,48 | 32,48 | | | | 32,48 | | 32,48 | 32,48 | 32,48 | | | | |
| 10:50 | | 32,40 | 32,40 | 32,48 | 32,48 | 32,45 | | 32,40 | | 32,45 | 32,45 | | | 32,40 | | 32,45 | | 34,45 | 32,45 | 32,48 | | | | |
| 11300 | | | 34,15 | 34,15 | 34,15 | 34,13 | | 54,15 | | 34,13 | 34,15 | | | 54,15 | | 34,15 | | 34,13 | 34,15 | 34,15 | | | | |
| 11:50 | | 55.00 | | 49,00 | | | | 416,00 | | 55 m . | 49,08 | | | 47,00 | | 49,00 | | | 49,05 | 49,00 | | | | |
| 12:00 | | 55,00 | | | | 55.90 | | | | 55,00 | 30,09 | | | | | 30,00 | | 55 90 | 55 90 0 | 55,00 | | | | |
| 12.00 | | 45.02 | | 15.00 | | 45.00 | | 45.02 | | 45.00 | | | | 15 00 | | | | 45.02 | 33,00 | 45.00 | | | | |
| 13:30 | | 38.50 | | 38 50 | 38 50 | 38.50 | | 38.50 | | 38.50 | | | | 38.50 | | 38.50 | | 38.50 | | 38.50 | | | | |
| 14:00 | | 41.40 | | 41.40 | 41.40 | 41.40 | | 41.40 | | 41.40 | | | | 41.40 | | 41.40 | | 41.40 | | | | | | |
| 14:30 | | 38.50 | - | | 38.50 | 38.50 | ă | 38.50 | ă | 38.50 | | 38.50 | | 38.50 | | 38.50 | ă | 38.50 | | 38.50 | | | | |
| 15:00 | | 38.50 | | 38.50 | 38.50 | 38.50 | ă | 38.50 | ă | 38.50 | - i | 38.50 | | 38.50 | | | ă | 38.50 | | 38.50 | | | | |
| 15:30 | | 38,50 | i i i i i i i i i i i i i i i i i i i | 38,50 | 38,50 | 38,50 | ă | 38,50 | | | ă | 38,50 | i i i i i i i i i i i i i i i i i i i | 38,50 | | 38,50 | - i | 38,50 | | 38,50 | | | | |
| 16:00 | | 38,50 | ē | 38,50 | 38,50 | 38,50 | ē | 38,50 | | | | | 38,50 | 38,50 | | 38,50 | - i | 38,50 | | 38,50 | | | | |
| 16:30 | 45,02 | | ē | 45,02 | 45,02 | | ē | 45,02 | | | | ē | 45,02 | 45,02 | | 45,02 | | | | 45,02 | | | | |
| 17:00 | 49,68 | | | 49,68 | 49,68 | | | 49,68 | | | | | 49,68 | | | 49,68 | | | | 49,68 | | | | |
| 17:30 | | | | 55,89 | 55,89 | | | 55,89 | | | | | 55,89 | | | 55,89 | | | | 55,89 | | | | |
| 18:00 | 55,89 | | | | 55,89 | | | 55,89 | | | 55,89 | | 55,89 | | | 55,89 | | | | | | | | |
| 18:30 | 49,68 | | 49,68 | | 49,68 | | | 49,68 | | | 49,68 | | 49,68 | | | 49,68 | | | | | | | | |
| 19:00 | 49,68 | | 49,68 | | 49,68 | | 49,68 | _ | | | 49,68 | | 49,68 | | | 49,68 | | | | | | | | |
| 19:30 | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | | | | | | | | | | |
| 20:00 | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | | | | | | | | | | |
| 20:50 | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | | | 41,40 | | | | 41,40 | | | |
| 2100 | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | | | 41,40 | | | | 41,40 | | | |
| 22.00 | 22.50 | | 19,00 | | 28.50 | | 22.00 | | 19, 50 | | 18.50 | | 22.50 | | 199.50 | | 28.50 | | | | 19,50 | | | |
| 22:30 | 38.50 | | 38.50 | | 38.50 | | 38.50 | | 38.50 | | 38.50 | | 38.50 | | 38.50 | | 38.50 | | | | 38.50 | | | |
| 23:00 | 38,50 | | 38.50 | | 38.50 | | 38,50 | | 38.50 | | 38.50 | | 38.50 | | 38.50 | | 38.50 | | | | 38,50 | | | |
| 23:30 | 38,50 | | 38,50 | i i i | 38,50 | | 38,50 | | 38,50 | i i i | 38,50 | | 38,50 | | 38,50 | | 38,50 | | | | 38,50 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | (2) 1.288,22 2 | 682,81 🖉 | 1.272,87 🖆 | 638,22 \$ | 1.713,25 😫 | 566,49 % | 1.055,47 8 | 874,89 2 | 909,35 😫 | 577,86 🖻 | 1.434,33 | 246,40 5 | 1.253,69 | 536,69 🖺 | 685,79 | 2 774,53 🛪 | 882,44 🚍 | 661,07 🔏 | 967,57 🖆 | 648,68 8 | 842,47 | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | average of hours | |
| hours of dwelling | 8 | 8 | | 8 | | 8 | | 8 | | 8 | | 5 | 8 | | | 8 | | 8 | | 8 | | /number of | of occupation of | |
| occupation | 16 | 1 | | ลี | | 31 | | 2 | | 18. | | 2 | 1 | 2 | 2 | 3 | | 3 | | = | | dwellings (11) | 14,68 dwellings | 161,50 |
| | | | | | | | | | | | | | | | | | | | | | | | average reopering | |
| average dwelling | | | | | | | | | | | | | | | | | | | | | | /number of | of occupied | |
| reomsize | 39,04 | | 37,44 | | 38,94 | | 37,70 | | 37,89 | | 38,77 | | 40,44 | | 36,09 | | 36,77 | | 37,21 | | 36,63 | dwellings (11) | 37,90 dwellings | 416,91 |
| | | | | | | | | | | | | | | | | | | | | | | /number of offices | merane of hours | |
| | | | | | | | | | | | | | | | | | | | | | | (10) | and all the second second | |
| | | | | | | | | | | | | | | | | | | | | | | | | |

24,84 m2 273,24 143,67 248,4 142,02

Fig.57 Case Study Tracks: Grasshopper script and founding mathematical expression

6.7.4 TRACKS PROJECT – PERFORMANCE SIMULATION METHODOLOGY

A simulation has been carried out in order to demonstrate and evaluate the performance of the proposed system.

The method to generate data in order to be able to evaluate the spatial behaviour and to quantify the additional space is a simulation of the mutation process observed over 24 hours of a weekday. The spatial distribution configuration is computed by a parametric computer script made with the computer program Grasshopper (Build 0.9.0075)¹³. Grasshopper is a plug-in for the cad-program Rhinoceros 3D (Version 5 SR5 (5.5.30912.16275, 09/12/2013)).

The extent of the simulation has been restricted to the areas of the buildings with dynamic properties, i.e. the zone where space becomes expendable and gets redistributed. The simulation is located on one floor of Haus 2, on the side of Trausnitzstraße (Trausnitz Road). The extent of the area with dynamic properties is 521.63 m² (21 fields at 4.6 metres = 96.6 metres in length and 5.4 metres in width).

The source for the necessary input parameters consists of 11 dwelling and 10 office room patterns of use over one day. The patterns were inserted into spreadsheets, one for dwellings and one for offices.

| Dweller | 00 | 0 0 | 30 | 100 | 12 | 30 2 | 00 | 2:30 | 31 | 00 3 | 150 | 4:00 | 430 | 51 | 00 5 | 30 6 | 00 I | 5:30 | 7:00 | 7:30 | 800 | 83 | 0 9.0 | 0 9 | 30 4 | | | | 211 | == | 122 | : : | | | | :::: | 22 | : : | e la | = | | *** | 222 | 222 | = | e la | | | 22 | | :::: | :::: | 222 | : | | | |
|-----------|----|-----|----|-----|----|------|----|------|----|------|-----|------|-----|----|------|------|------|------|------|------|-----|----|-------|-----|------|---|---|-----|-----|----|-----|-------|---|-----|---|------|----|-----|------|---|-----|-----|-----|-----|---|------|---|---|----|---|------|------|-----|---|---|---|---|
| Anna | | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 0 | 8 | 0 | | - 0 | | 3 | 8 | 0 | 1 | 0 | 1 | | 0 | 0 | 8 | - 1 | | 0 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| Bruno | | t. | 1 | | | t. | 1 | | | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | 9 | 8 | 0 | | 0 | | | 0 | 0 | 8 | 0 | | 0 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | |
| Claudia | | 1 | 1 | | | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | - 0 | |) | 0 | 0 | 1 | 1 | | 1 | 1 | 1 | 1 | -1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | |
| Daniel | | 1 | 1 | | | t. | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 8 | 0 | 8 | 0 | . 8 | - 0 | | 3 | 8 | 0 | . 8 | 0 | 1 | i. | 8 | 0 | 8 | 0 | 1 | 0 | | | 0 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | |
| Elisabeth | | t. | 1 | | | 1 | 1 | | | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | -1 | 0 | - 0 | | 0 | 0 | 0 | 0 | 0 | 0 | - 0 | |) | 0 | 0 | 0 | 0 | (| | 0 | 0 | 0 | 0 | 1 | (| | 1 | 0 | 0 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | |
| Frank | | 1 | 1 | | | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 8 | 0 | 1 | 0 | 1 | | 0 | 0 | 8 | 0 | 1 | 0 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | |
| Greta | | t. | 1 | | | t. | 1 | | | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | . 0 | 1 | | 0 | 0 | 0 | 0 | 0 | 0 | - 0 | | 9 | 0 | 0 | . 0 | 0 | | | 0 | 0 | 1 | - 1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | |
| Hermann | | 1 | 1 | | | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | - 1 | 0 | - 0 | | 0 | 0 | 0 | 0 | 0 | 0 | - 0 | |) | 0 | 0 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | 1 | (| | 1 | 0 | 0 | 0 | 0 | | 0 | | | 1 | 1 | 1 | |
| Irine | | 1 | 1 | | | t. | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 8 | 8 | 0 | 8 | 0 | 8 | - 0 | | 3 | 8 | 0 | . 8 | 0 | - 0 | | 8 | 0 | 8 | 0 | 1 | - 0 | | | 0 | 8 | 8 | 0 | 1 | 1 | 1 | | 1 | 1 | 1 | |
| John | | 1 | 1 | | | 1 | 1 | | | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 1 | (| | | 0 | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | 0 |
| Katharina | | 1 | 1 | | | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - 1 | | 0 | 8 | 0 | 8 | 0 | . 0 | - 0 | | 3 | 8 | 0 | 1 | 0 | 1 | | 0 | 0 | 8 | 0 | 1 | 0 | | | 0 | 0 | 8 | 0 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 111 | ۰, | - / | ~ | - | | | | - | | | | | | | - | | | | | | | - | | | | | • | • | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Fig. 58 Case Studies, Dwellers' Spreadsheet

The dwelling spreadsheet has been made by randomly transferring eleven data sets from the dwelling use survey presented in an earlier chapter. The names of the dwellers (like Anna, Bruno...) are invented and do not reflect

¹³ 'Grasshopper - Algorithmic Modeling for Rhino' http://www.grasshopper3d.com/ [accessed 24 August 2014].



Fig.59 Case Study Tracks: South east elevation at Trausnitzstraße: The elevation displays at each storey a different time of the simulated day: 5th floor = distribution at 6:00 h, 4th at 8:00 h, 3rd at 11:00h, 2nd at 14:00 h, 1st. at 18:00 h

| Amount of Recipients: 11 06:00 |
|--|
| Distribution Pool: 75.11 m ² Amount of Recipients: 15 08:00 |
| Distribution Pool: 112.37 m ² Amount of Recipients: 12 11:00 |
| Distribution Pool: 149.63 m ² Amount of Recipients: 9 14:00 |
| Distribution Pool: 186.89 m ² Amount of Recipienis: 6 18:00 |
| |

the names of the participants of the survey. The randomly chosen weekday is Monday.



The office spreadsheet has been generated on the basis of the information provided by the building manager of the existing building and of personal observations during several visits to the building.

The simulation has been captured with two different media, a diagram and an animated movie.

The diagram visualises the spatial performance of every single spatial entity and provides each room size's performance over the course of one day, captured every half hour. The rows represent the half hour steps and show where each room is at a specific time of the day, e.g. at 14:30. Blue areas are dwelling areas and green areas are office areas. The areas represented in the diagram reflect the real proportions of the areas.

6.7.5 TRACKS PROJECT - PERFORMANCE SIMULATION RESULTS

The diagram delivers the following information:

General observations for the simulated day:

- At no time are all spaces used.
- The smallest size of any used space is 29.81 m² resulting in a spatial difference of 4.97 m² over the guaranteed size of 24.84 m² (at 7:00hrs



Fig.61 Case Study Tracks: Record of the dynamic performance over 24 hours (48 times 30 minutes) and their spatial representation and performance of space dividing thresholds (right)

and at 8:00hrs). The resulting growth factor is 120%. At these times 15 out of 21 rooms are used.

- The biggest size of any used space is 55.89 m² resulting in a spatial difference of 31.05 m² over the guaranteed size of 24.84 m² (at 12:00hrs and at 18:00hrs). The resulting growth factor is 225%. At these times 6 out of 21 rooms are used.
- The moving wall with the biggest range is the wall between *office 6* and *dweller Greta*. The sum of the amplitudes of movement in both directions is 27.60 metres (10.04 m north and 17.56 m south).
- The moving wall with the biggest distance covered in 30 minutes of a used space is the wall between *office 8* and *dweller Irine*. It covers 12.08 metres and therefore moved with a speed of 6.7 mm per second.



Fig. 62 Case Studies Tracks, Fastest moving separation wall

Dwelling observations:

- During the average use time of the dwellings of 14.68 hours, the dwelling spaces had an average size of 37.82 m².





Fig.63 Case Study Tracks: Top:Dwelling unit Bottom: Office unit The used dwelling spaces provided a total of 416.91 m² dwelling space for the 11 dwellers. This is 152.58% of the guaranteed size of 273.24 m² and represents a gained area of 143.67 m².

Office observations:

- During the average use time of the offices of 7.90 hours, the office spaces had an average size of 39.04 m².
- The used office spaces provided a total of 390.42 m² office space to the 10 x 4 employees. This is 157.17% of the guaranteed size of 248.40m² and represents a gained area of 142.02 m.

The animated movie was made to give a visual impression of how the spaces physically change over the course of one day. The movie shows the Tracks project and the Curtain project (see next chapter). ¹⁴

A description of the technical components of the Tracks project can be found in the appendix.

 ¹⁴ To be viewed on the internet at this address: https://vimeo.com/105620841
The password is: f9Fqj8



Fig.64 Case Study Tracks: Technical components

6.8 CASE STUDY: CURTAIN PROJECT

The *Tracks* project starting point is the idea of a distribution concept where design follows distribution. The *Curtain* project starts with a spatial concept and then operational components are designed accordingly for it.

Inspired by an indeterminate empty space like in Archizoom's No Stop City (a combination of flexibility by redundancy and technical means) the existing administration office spaces are imagined as an open landscape with as few fixed entities as possible. Dynamic objects provide most functions: office desks and furniture and the dwelling's study compartment and living room/lounge areas can all move independently. The only static parts are the dweller's private sanitary installations with attached sleeping compartment. The separation of the spaces is performed by bending soft walls that move on predefined paths.

CURTAIN PROJECT - PROGRAMME

Programme of the administration offices:

In comparison to the rather conventional programme of the tracks project, the curtain programme can be called progressive or even experimental. The currently installed administration office programme will be retained with regard to the number of workspaces provided for the employees. The personally allocated workspace though will be replaced by a system of movable hot-desking.





The dwellings again constitute the complementary programme to the administration offices, filling the temporary gaps:

Programme of individual dwelling units:

- Serviced and furnished studio flats, approximate size 25 m².

- Fittings/equipment: minimal bathroom with shower, minimal kitchen closet with a small hotel fridge, a small sink and a microwave oven, suitable for warming up food; sleeping compartment, sofa and leisure zone; study/dining area, small storage area.

- The provided services are a dining restaurant for the inhabitants which uses the facilities of the canteen of the administration building, a laundry room and a shared communal kitchen on the corridor.

The number of dwelling units will be determined by a reasonable fitting of these dwellings, maintaining a reasonable quantitative and qualitative standard (i.e. no luxury flats but also not social housing standard).

The user group spans from students to young professionals. Culturally they belong to Gen Y, the digital natives (see glossary).

6.8.1 CURTAIN PROJECT - SPATIAL ARRANGEMENT

Dwellers' Islands in the Office Landscape

In unused condition, the dwellers' spatial entities are contracted. They form spatial islands, surrounded by office areas. Vice versa, when the offices (one spatial area suits four desks) are unused they configure a cluster and mutate into small islands of furniture containers and leave space for what could be understood as a dwelling landscape.

The absence is expressed by encapsulation and by a move to the less attractive area of the building, away from the facades; this movement allows access to the windows, to natural light and to ventilation for others. The only fixed entity is the dwellers' access to sanitation, to water supply and disposal. It also contains the sleeping compartment and serves as the anchor for the dynamic components of the dwelling.

A necessary parameter is the equal distribution of space amongst all participants with the assumption that they are all present at the same time. In this (theoretically possible but in fact rare) situation the spaces are divided identically as in the basis configuration of the tracks project, though this is achieved by different mechanical tools.

In the *basis configuration*, each *spatial entity* (dwelling or cluster of four administration employees) measures 24.66 m². This is also the guaranteed size of each *spatial entity*.

Dwellings

The dwellings - partially serviced (food and laundry) homes for students and for 'limited period living' - consist of three puzzle style pieces of furniture. One is fixed and contains, as core element for the most private functions, the bathroom cubicle and the sleeping compartment. This compartment also has a minimal kitchen with a hotel fridge, a small sink and a microwave oven. It serves for storing and warming up food but is not suitable for the preparation of meals. The other two elements are moving platforms with a space-defining back wall that functions as a space shield. One provides the living room lounge (with sofa, shelving, entertainment) and the other provides the study/sitting area (with table, benches and shelves) and each can rest in different positions along a predefined track in the floor.

The possible positions for the lounge element are L.1, L.2, and L.3.

The possible positions for the study element are S.1, S.2, and S.3.

In positions L.2 and S.2 (guaranteed space) the dweller has 24.66 m^2 available for use.





Fig.66 Case Study Curtain: Top: Basis configuration Bottom: Spatial configurations to varying presence of users






Positions L.3 and S.3 (using expendable space) can be taken either by both or just one of the dynamic pieces of furniture, depending on the direct neighbours on the respective side and whether they declare themselves as not present. In this position the dweller can use an additional 7.80 m² on each side, leading to a maximum dwelling size of 40.25 m².



Positions L.3 and S.2 (increased area on one side)



Fig. 69: Curtains Positions L.3 and S.3 (increased area on both sides)

Positions L.1 and S.1 is the position in the case that the dweller declares himself as not present (either by direct input or by an automated process actuated by a GPS tracker). Then the three pieces of furniture are stuck into each other like a puzzle and become a furniture-container island.



Offices

The office clusters (four workspaces) use what could be described as a zone rather than a space: the hot-desking (see glossary) concept provides all employees with dynamically movable desk devices on wheels. I call them DDD (Dynamic Desk Device). These DDDs are personalized only on the software not on the hardware level.



The technical description of the DDDs can be found in the appendix.

Four DDDs use an office zone of 24.66 m^2 in guaranteed space position (Positions D.2). The DDDs can be freely arranged within this zone.



If a declared absence of neighbouring dwellers means that more space along the windows is available, this can be used by the office employees by moving their DDDs into the free landscape.



DDD configuration along windows

Then the office space can be joined with the next neighbouring office unit (behind the dweller) to form a continuous office zone with floating DDDs.



If an office cluster zone is entirely unused (all four employees have declared themselves as not present) then the DDDs form a tight group (position D.1) which covers just 9m² of floor area.





Fig. 75 Curtains Project: DDDs form a tight group

So far in the case study *Curtain*, the privacy factor has only been solved by the dynamic furniture devices. These do not provide the expected quality of a separating threshold capable of managing issues of sound, privacy and security. This lack of sufficient threshold is solved by a flexible and movable soft wall system similar to a curtain (hence the name for the case study project).

(The technical qualities of the curtain are described in the appendix, here I describe the spatial distribution system.)

The curtain confines the distributed space. It can take different positions along a fixed, installed curtain rail segment. Each rail segment holds one curtain.



Fig.76 Case Study Curtain: Dwelling unit and its spatial performance a)unused; b) guaranteed space; c) profiting from absent neighbours







Fig.77 Case Study Curtain: Office unit and its spatial performance a)unused; b) guaranteed space; c) profiting from absent neighbours





Fig.78 Case Study Curtain: Plans of the two units Top: Dwelling unit Bottom: Office unit





Fig.79 Case Study Curtain: Dynamic desk device

One curtain is always allocated as a separation between two users, a dweller and a cluster of employees. This curtain can assume three predefined positions, C1, C2 and C3. These positions and a combination with other curtains cover all relevant spatial configurations.

6.8.2 CURTAIN PROJECT - DISTRIBUTION AND OPERATION

For the distribution and operation there are the following parameters:

- Dwellers: 0 or 1
- Offices: 0 or 1
- Curtain Position: C.1 or C.2 or C.3
- Lounge Position: L.1 or L.2 or L.3
- Study Position: S.1 or S.2 or S.3
- DDDs Position: D.1 or D.2 or D.3



Fig. 80 Different curtains position P1, P2, P3

The positions are computed according to the following matrix: 1 = used; 0 = no one present.

Curtains Operational Matrix

| Office | Dwelling | DDDs (D) | Lounge (L) + Study (S) | Curtain (C) |
|--------|----------|----------|---------------------------|-------------|
| value | value | position | position | position |
| 1* | 1* | D.2 | L.2 + S.2 | C.2 |
| 0 | 0 | D.1 | L.1 + S.1 | C.1 |
| 0 | 1 | D.1 | L.3+S.3/L.2+S.3/L.3+S.2** | C.3 |
| 1 | 0 | D.3** | L.2 + S.2 | C.1 |

* guaranteed space configuration ** towards the side(s) of the respectively abesent neighbour(s)

Fig. 81 Curtains position matrix

6.8.3 CURTAIN PROJECT - OPERATION

A curtain can take the positions C.1, C.2 and C.3; a DDD can take the positions D.1, D.2 and D.3; a Lounge-component can take the positions L.1, L.2 and L.3 and a Study-component can take the positions S.1, S.2 and S.3.

The starting point is the standard distribution of the spaces amongst the participants. A dwelling space is allocated to one dweller and an office space is allocated to four employees (office cluster). In this guaranteed space position all curtains take Position C.2. Like this, each room has 24.66m², be it dwelling or office.

The system distributes expendable space in unused rooms to the adjacent neighbour's rooms, where users are present.

Each room/space gets an assigned value that is either zero or one.

As in *Tracks*, the values are generated depending on the geographical position of the participant(s), measured by smartphones.

The standard value is one (user is present and has at least the guaranteed space size). If any user (dweller or all employees of one office room) is within actuation distance of their space, this value is one. Beyond that distance the value is zero (user not present). The distance could be set to 500 metres¹⁵.

With the application for smartphones all participants always have control over their space and can decide if they participate or not and at which distance their space is distributed to neighbours. If a participant decides not to participate, his/her space maintains the guaranteed size (24.66m²).

¹⁵ The value can be set to any distance preferred by the user

Curtains Operational Matrix

| Office | Dwelling | DDDs (D) | Lounge (L) + Study (S) | Curtain (C) |
|--------|----------|----------|-------------------------|-------------|
| value | value | position | position | position |
| 0 | 0 | D.1 | L.1 + S.1 | C.1 |
| 1* | 1* | D.2 | L.2 + S.2 | C.2 |
| 0 | 1 | D.1 | L.3+S.3/L.2+S.3/L.3+S.2 | C.3 |
| 1 | 0 | D.3** | L.2 + S.2 | C.1 |

* guaranteed space configuration ** towards the side(s) of the respectively abesent neighbour(s)

Curtain positions in one rail segment



Fig.82 Case Study Curtain: Top: Operational matrix Bottom: Positioning of the dynamic elements according to all possible combinations of two neighbouring spatial units





The operation of the space follows similar patterns to the track project but in two different processes:

- The floating dynamic elements (DDDs and the two dwelling platforms) move gradually with a predefined speed.
- The curtain changes position along the track and configures spatial connections and separations. The distribution does not happen gradually. Space is either allocated or not.

The changes follow a predefined order of successions, which is described in the appendix.



- Fig.84 Case Study Curtain: Varying spatial configurations according to the positioning of the curtains; a) unused; b) guaranteed size; c) gaining space from left neighbour; d) gaining space from left and right neighbour

6.8.4 CURTAIN PROJECT - PERFORMANCE SIMULATION RESULTS

The simulation framework is the same as described in chapter 6.4 with regard to method, observed areas, selected spreadsheets of use and simulation setup. However, a different computer script has been used to generate the simulation.

The simulation has been captured with two different media, a diagram and an animated movie.

The diagram visualises the spatial performance of every single spatial entity and provides room sizes' performance over the course of one day, captured every half hour. The rows represent the half-hour steps and show where each room is at a specific time of the day, e.g. at 14:30. Blue areas are dwelling areas and green areas are office areas. The areas represented in the diagram reflect the real proportions of the areas.

The diagram delivers the following information:

General observations for the simulated day:

- At no time are all spaces used.
- The smallest size of any used space is 24.66 m² which is also the guaranteed space size.
- The biggest size of any used space is 40.25 m² resulting in a spatial difference of 15.59 m² from the guaranteed size of 24.66 m². The resulting growth factor is 163%.

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Fig.85 Case Study Curtain: Record of the dynamic performance over 24 hours (48 times 30 minutes) and their spatial representation and performance of space dividing thresholds (right)



Fig.86 Case Study Curtain: One storey captured at different times of the day: Top to bottom: 6:00 h, 8:00 h, 11:00 h, 14:00 h, 18:00 h



Fig.87 Case Study: Curtain: Performance analysis and Grasshopper skript

Dwelling observations:

- During the average use time of the dwellings of 14.68 hours, the dwelling spaces had an average size of 38.20 m².
- The used dwelling spaces provided a total of 420.18 m² dwelling space to the 11 dwellers. This is 154.90% of the guaranteed size of 271.26 m² and represents a gained area of 149.92 m².

Office observations:

- During the average use time of the offices of 8.70 hours, the office spaces had an average size of 45.84 m².
- The used office spaces provided a total of 458.37 m² office space to the 11 x 4 employees. This is 185.88 % of the guaranteed size of 281.26 m² and represents a gained area of 187.11 m²

The animated movie was made to give a visual impression of how the spaces physically change over the course of one day. The movie shows the Tracks project from the previous chapter and the Curtain project¹⁶.

A description of the technical components of the Curtain project can be found in the appendix.

 $^{^{16}}$ To be viewed on the internet at this address: https://vimeo.com/105620841 The password is: ~f9Fqj8



Fig.88 Case Study Curtain: Technical componants of one curtain system

6.9 TRACKS AND CURTAIN PROJECTS: CONCLUSION

The main aims/objectives addressed in this chapter were:

- Could the combination of work and living result in space increase when users are present?
- How could the operational control of the building be organized?
- Which spatial configurations could support the idea?
- Technically, which concepts could be applied for changing spatial configurations and for the moveable elements?

In this conclusion I answer these questions by analysing, comparing and evaluating the results of both projects *Tracks* and *Curtain*. This evaluation is done through different criteria.

Both projects are based on the affirmation that 'one person can only be at one place at one time'. (This makes it irrelevant what happens when one is out of the house.)

The aims listed have been attempted in a real urban context by applying a plug-in process that filled up the temporarily expendable physical space of an existing building and programme with a secondary, complementing programme.

Baureferat in Munich with the programme administration building was defined as suitable building for the real context application of the concept. The plugin complementing programme was defined as dwellings for oneperson households for users in the age between 20 and 40.

6.9.1 LINKS TO PREVIOUS CHAPTERS

The design of the case studies is informed by the architectural references and by the social, cultural and technological context outlined in chapters 2 and 3.

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Fig.89 Case Studies Curtain (left) and Tracks (right): Comparision of the dynamic performance over 24 hours (48 times 30 minutes)



Fig.90 Case Studies Curtain (left) and Tracks (right): Comparision of the performance of space dividing thresholds

The most relevant links to mention are the relation to Cedric Price who, in his work, emphasizes the participation of the user in the configuration of the architectural elements, enhanced by the contribution of J. and J. Frazer, who gave intelligence to every single architectural component, communicating with each other. However, it is the concept of distribution and allocation and not the design of the physical components that I draw from. A similar setting is proposed here, though the movements of building components are actuated by the participants' geo-position, sensed by smart mobile devices. This setting would also allow for an evolutionary process to identify optimised settings which have not been carried out in the case-studies as it would have gone beyond the scope of this thesis.

Smart mobile devices were identified in chapter 3 as one of the catalysts for the sharing economy, which the case-studies projects can be assigned to. The rival good space gets distributed and this process is possible by the distribution of the non-rival good information, in a process similar to the one used by car-sharing systems.

The research conducted in chapter 4 not only provided testing data for the case-studies simulation, but also the graphical representations and diagramming triggered the indenting, interwoven and interpenetrating spatial arrangements. These were conducted in both the elastic architecture project and in the case-studies.

In Elastic Architecture I rehearsed a system of distribution of space. It led me to the conclusion that in order to implement reactive behaviour, it was necessary to program the structure, like a software. This was crucial information to develop the case-studies.

6.9.2 PERFORMANCE – QUANTITY OF SPACE

The main argument of the whole research is the potential space gain of the concept of complementing use. Responding to the first question of this chapter the results were unexpected in a positive way. In terms of performance of the quantity of space available to each spatial entity, both *Tracks* and *Curtain* delivered an increase of about 50% of space additional to the guaranteed space.

The argument for space is a constant in our society. In urban contexts flats and rooms are increasingly smaller proportional to the price paid. In the study 'The Case for Space: the size of England's new homes' conducted by the Royal Institute of British Architects in 2011, one of the main concerns of respondents was that 'rooms were too small' ¹⁷.

The two proposed spatial and operational concepts provide access to additional space. The overall performance figures of both projects are in a similar range (all above 50% of additional space). Although the *Tracks* system benefits from a bigger group of space providers (up to 20 at the same time) it still cannot beat *Curtain* (max. two providers at the same time). This is due to the fact that the collapsed spatial entities in Curtain (9.07sqm) are smaller than in Tracks (12.42sqm). Therefore the distributable space per spatial entity in Curtain is bigger by 3.35 sqm.

The observation that the more people simultaneously present in the building the less space each has, can be regarded as a potential limitation.

However, the starting point for the design of the distribution system of space was the basis configuration (see chapter 6.7.1) which is also the worst-case configuration. In the basis configuration all users (dwellers and employees) are simultaneously in the building. Then all spaces have the

¹⁷ 'CaseforSpace.pdf', p. 8

<http://www.architecture.com/Files/RIBAHoldings/PolicyAndInternationalRelations/Ho meWise/CaseforSpace.pdf> [accessed 1 September 2014].

guaranteed size, which is also the defined size potential tenants/buyers can acquire¹⁸.

Also, the user groups were identified in such a way that the simultaneous presence of all users is avoided as far as possible, as they use the building at different times of the day or of the week. There is the theoretically possible but unlikely event of all users being present (according to the data this would happen during daytime of a weekday). Then all users have their own assured guaranteed space.

With each user leaving the building, remaining users profit from the absence of other users as their spaces grow beyond the guaranteed size. The solutions tested also allow them to benefit from different spatial configurations and sizes of spaces built into the system of tracks and curtains.

For example in the case study tracks, dwellers could arrange between themselves to shrink certain dwelling units and to enlarge one of them to make space for common social activities, like parties or other events.

The proposed system of space distribution is based on the voluntary provision of unused space for other users. The possible gain of additional (provided/donated) space from others can be regarded as a motivation to also provide one's own unused space when one is not in the building.

Users have been suggested for their predisposition towards a sharing culture as well as their rather 'flexible' lifestyle. Their incentive to join this scheme is the desire for a larger space than the guaranteed size. In a press release by the Bundesinstitut für Bevölkerungsforschung (Federal Institute for Population Research) dated September 2013 it is stated that the living space per capita in Germany grew from an average 39m² in 1998 to 45m² in

¹⁸ For more on scenarios of ownership details please see Appendix A.6.1 - Management Structures and Forms of Ownership for the proposed Case Studies

2013 due to increased demand for larger areas and due to the increasing amount of one- and two-person households¹⁹.

The project should be understood as a response to such societal trends. Again, the emphasis of the research is rather on the technical and structural transformation that housing or office complexes should undertake to maximise the use of physical space.

6.9.3 ARCHITECTURAL QUALITY OF SPACE - INTERIOR

Curtain's spatial concept follows the principle of growing and shrinking personal spheres represented in islands of unused and collapsed spatial entities. For the offices this means that the more dwellers are away the more the office rooms mutate into an office landscape. Vice versa, direct dwelling neighbours have the choice to combine their rooms into a big continuous space with a collapsed office inside; or to stay individually apart. The dwelling has different levels of protected privacy. The bed compartment corresponds to the highest degree of privacy, like a cocoon. Study and lounge are more public, i.e. less protected. This is an onion skin principle where different shells enclose the inside.

Tracks advocates a 'praise of the wall'²⁰ and of insulation. The dividing elements are walls, thus assuring a high level of privacy and division between the different spatial entities and programmes. The indented arrangement even emphasizes this. The direct neighbour is regularly out of the building and his furniture container works like a buffer to the next neighbour of the same programme. This is regarded as a quality.

^{19 &#}x27;2013_07_pro_kopf_wohnflaeche.pdf' <http://www.bib-

demografie.de/SharedDocs/Publikationen/DE/Download/Grafik_des_Monats/2013_07_pr o_kopf_wohnflaeche.pdf?__blob=publicationFile&v=3> [accessed 10 May 2015].

²⁰ Peter Sloterdijk, 'Architekten machen nicht anderes als In-Theorie.', ARCH+, Zeitschrift für Architektur und Städtebau, Architekturen des Schaums, 169/170 (2004), 16–23 (p. 22).

The two approaches have profoundly different spatial configurations and also promote different lifestyles: *Tracks* is a system of individual living and working in one's own room, the curtain proposal offers possibilities to merge smaller rooms into bigger and continuous spatial entities.

6.9.4 OPERATIONAL QUALITIES SPATIAL ENTITIES

The bottom-up approach of both systems changes the role from the 'applicant for space' to the role of 'donator of space'. The guaranteed space principle makes every participant a winner of space. This is regarded as an important factor. The proposed system of giving can be characterized as a system of solidarity.

However, what, if you are at home and your flat shrinks? This event occurs only to participants who previously benefited from additional 'donated' space. It's not a must, it's an option. I envision that in more complex simulations (outside the scope of this research) user-routines that minimise disruption will evolve.

6.9.5 PATTERNS OF USE

During the night and presumably at weekends, when the offices are unused, the system operates steadily. During working hours there are many changes in the spatial configuration. This could be regarded as distracting. This could be solved by the participants of the system who could keep their room size constant during transition phases, if desired. Dwellers can also reduce their dwelling in the evenings before work days to their guaranteed size in order to avoid surprise in the mornings.

6.9.6 ROLE OF USER

Referring to the role of the user in configuring the system, there is always the option to say no to change. If dwellers of office employees do not wish for its space to change, they do not need to donate space, however they would also not be allowed to profit in an envisioned 'reward' system. In terms of control there is a mix. Is the control top-down or bottom-up and where ends the power of the end user? To call the user the designer would be wrong. However its presence triggers the operational system. So it is user-reactive, but the possible design positions are predetermined by the specific set of circumstances.

6.9.7 ROLE OF OWNERS / PROVIDERS

The operation of the proposed building includes the handling and processing of sensitive and private information. To keep all participants' private data protected, a solution could be devised through the development of a code of conduct. These important issues of privacy and trust would need to be addressed in depth in any further work.²¹

6.9.8 EVOLUTIONARY EVALUATION

Both systems are fully behaviour driven and real-time adaptive. However, the proposed distribution system is still in an early stage. If more simulations and user-based experiments were carried out, the software component of the projects could even get an evolutionary character and benefit from algorithms used for modern smart grids (see glossary) however that was not the aim for this specific research.

²¹ Please see Appendix A.6.1 – Management Structures and Forms of Ownership for the proposed Case Studies

In *Curtain* there is a strong dependency of the immediate neighbours, since the participants can only benefit from their two physically adjacent neighbours. Also there is no soft transition. Either an entity is on or off, meaning in each of the predefined positions. In *Curtain* there is a bigger personal dependency on the decisions of the donating neighbour.

The research reveals for both systems that the dwellers are profiting more than the administration officers. They profit from reliable and strict office hours. Vice versa the routines of the dwellers could change every day.

6.9.9 SIMPLICITY

An advantage of the two systems is their **simplicity**. They reveal the potential that they could be implanted into any standard office building, using existing technologies. All changes of spatial configurations are based on linear movements of the components. Atmospheric diversity is created by little physical interventions revealing a variety of spatial configurations.

6.9.10 OTHER BENEFITS/ECONOMIC & ECOLOGICAL POTENTIAL

One can conclude potential economical savings. From an **investment point of view**, the proposed building with all its mechanical components is more expensive in the initial investment but in the long-term contains several benefits: There are savings in building infrastructure, in its erection, in its maintenance and in running costs. Several services can be shared in a 24hour-use cycle that in a 12-hour system would need to be double. Also there is the benefit of not needing to cover another piece of land since the considered site is an existing building.

In terms of **ecological advantages** like heat-saving, in both projects the envelope is used twice as much as in the current status of the building. This

induces a saving in the volume of heated air. For this project this factor is only a side benefit.

6.10 CHAPTER'S FINAL NOTE

What was most striking and surprising was the performance of the proposed projects in terms of increase of space when the user is present. The conclusion was that at all times of the simulation the individual spatial entities were bigger than the guaranteed space. In the evenings there is a big gain for dwellers. The simulation did not include weekends since the simultaneity of the two programmes would be reduced. One can induce that the results in favour of the dwellers would even be more convincing at weekends resulting in an even higher space gain for the dwellers.

An additional conclusion is that despite their different approaches of distribution, there was a similar performance in both projects.

7 CONCLUSION

- 7.1 CONCLUSIONS INITIAL NOTE
- 7.2 CONCLUSION CHAPTER CONTEXT ARCHITECTURE
- 7.3 CONCLUSION CHAPTER CONTEXT CULTURE SOCIETY
- 7.4 CONCLUSION CHAPTER PATTERNS OF USE , USER IDENTIFICATION, CONTROL
- 7.5 CONCLUSION ELASTIC ARCHITECTURE
- 7.6 CONCLUSION CASE STUDIES TRACKS AND CURTAIN
- 7.7 OVERALL CONCLUSIONS
- 7.8 CRITICAL STATEMENTS
- 7.9 FURTHER RESEARCH AND DEVELOPMENTS

7.1 CONCLUSIONS INITIAL NOTE

I will give an account of what I concluded in each chapter followed by an overall conclusion of the whole thesis and an outlook to the future.

7.2 CONCLUSION CHAPTER CONTEXT ARCHITECTURE

In this chapter I have given an account of specific examples on the topics of flexibility and adaptability. I concluded that my work falls into Adrian Forty's categorisation 'flexibility by technical means'. I also explored briefly the topics of participation and evolutionary cybernetic principles. In the sense of participation I concluded that my work is informed by participation by presence. The introduction of the computer in architectural evolutionary projects was relevant since it was an emblematic example of the roots of interactive architecture. All of this constituted a targeted literature review that informed the design research and helped to categorise it in the first phase.

7.3 CONCLUSION CHAPTER CONTEXT CULTURE SOCIETY

In this chapter I explored how current technology supports a form of sharing and distribution of space. Responding to the relationship between the research question and contemporary technology I concluded that, through the generalisation of smart mobile devices and software applications for these (apps), there is a direct connection between ubiquitous computing and new forms of sharing, and therefore that new technologies allow new realtime distribution systems.

I outlined what sharing in the context of my research means, which is making space available according to presence, allowing a redistribution of unused space. I concluded that at home or in the workspace there should be a guaranteed space for the user when she or he is present.
It was relevant to analyze the topic of possessions in contemporary society, since the home or the workspace is a container of possessions (objects and furniture) even when one is absent. I concluded that there are emergent behaviours that challenge the tendency towards more possessions.

I realised that there is a multiplicity of thresholds, in the sense of separations of space, that could be used in order to divide programmes and activities and to preserve the ownership of a specific space, which was an important point to be tested in the design.

7.4 CONCLUSION CHAPTER PATTERNS OF USE , USER IDENTIFICATION, CONTROL

In this chapter, supported data extracted from surveys and interviews, I identified users and activities of my intended building. The users are dwellers in one-person households in the age group of 20-40 and the complementing programme to dwelling is administration offices.

7.5 CONCLUSION ELASTIC ARCHITECTURE

In the Elastic Architecture Chapter I developed a model of distribution of space, through geometrical and algorithmic exercises. The proposed structure resulted in two entangled landscapes, potentially an office and a living landscape in a hybrid building. I incorporated the factor of time and transformed it into a three-dimensionally changing spatial entity, with controlled patterns of use. As a result, I concluded that the selected method of distributing space amongst mutually impacting spatial entities, (according to their mutually oscillating degrees of use) arranged in the selected bicontinuous structure, leads to strong deformations of the space-dividing thresholds.

7.6 CONCLUSION CASE STUDIES TRACKS AND CURTAIN

In the Chapter Case Studies I developed two models of distribution of space in a site-specific approach, applied to a specific building. The performance of the proposed projects, in terms of increase of space when the user is present, was high and therefore achieved the aims and goals of this research. The conclusion was that at all times of the simulation the individual spatial entities were bigger than the guaranteed space. Despite their different approaches of distribution, there was a similar performance in both projects.

7.7 OVERALL CONCLUSIONS

I recognised that there is a potential in the unused space of buildings in an urban context. I first raised awareness of this dormant resource and secondly created access to it. I developed strategies of how the unused space could be used in new forms of real-time distribution between complementary patterns of use, enabled by current technologies. In the case studies' simulations this resulted in an effective space gain for both complementary programmes upon presence of users.

7.8 CRITICAL STATEMENTS

It is important to emphasize that the intended original contribution to knowledge of this research must be primarily read in terms of technical innovation. In the proposed system of distribution of space some social, political and cultural aspects were mentioned but not addressed in depth because they are outside the scope of this research.

For instance, the change of size in real-time and its effects on the users, on the domestic space and on the working environment could be the object of further investigation, evaluating the level of readiness of the target user groups for the proposed system. The use of software to manage the system has also been presumed to be fully reliable. The thesis acknowledged the possible risk of hacking information systems or illegally collecting sensitive data from users but limited the scope of investigation to the spatial and technical issues and opportunities arising from utilising computers to manage the proposal. Also, the psychological aspects of living in a building fully controlled by machines are understood but not made part of the investigation.

Finally, some aspects related to the practicability of the system suggested that this could be further investigated. This would mean rendering the system technically mature and solving potential problems at a prototypical scale.

Similarly, the potential savings gained in adopting this system (in infrastructure erection, maintenance, energy consumption) could prove to be not as advantageous if the cost of operating and maintaining such a structure outweighed the savings.

7.9 FURTHER RESEARCH AND DEVELOPMENTS

Buildings like this can allow a dynamic negotiation and new forms of sharing of space. These can be developed into economical models where factors like utility bills, rent, etc. can be part of a credit system of give and take. With this, new negotiation systems can emerge in the context of the internet of things and non-human exchanges. Also energetic factors can be optimized according to supply and demand.

Through the double-use of buildings, there are side benefits of different orders: ecological, economic, social, cultural that can be developed into further research. Smart energy management and topics like the Smart Grid topic could be embedded in a further development of the current research. One further hypothesis is whether systems like this could solve the housing problem present in cities like Munich, where there is a lack of affordable space in the inner-city.

The system of distribution of space I developed is a reaction to presence or absence of a user. The relationship of the enlarging/shrinking space with the body of the user is considered of interest for a further research, however it was not the goal of the present work. Here I only considered more general observations of the personal sphere.

One aspect that could be further investigated is the topic of DIY (do it yourself): I explored it at an intitial phase of the research (see essay in appendix). DIY could happen at a 'hardware' level, people catering for their own desires in the design of the actual spatial entities and thresholds (in terms of choice of materials, building their own collapsible furniture, etc). However a more important level of DIY would be at a 'software' level. The system could evolve into an open-source community-based and community-led approach. Here each user could design a plug-in to the basic software of distribution of space, and set up her/his routine and exceptions.

This kind of DIY would allow even more spontaneous personal desires for space to be assured. This would also give an evolutionary status to the design. Feedback from the different individual plug-ins (users) would constantly re-inform the structure, which would learn from this feedback, and could in real-time be reconfigured according to personal wishes and needs. This is also the dream of Spyridaki, whose walls respond to his desires, and can either be like a 'protective armour' or can 'blossom out of their own space'¹.

¹ Georges Spyridaki, Mort Lucide, (qtd. in Gaston Bachelard, The Poetics of Space [La Poetique de L'espace, 1958], Trans Maria Jolas (Boston: Beacon Press, 1994), p. 51.

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Glossary

Activity

Action by the user of a room/building taking place inside a building.

Adaptive architecture

the adaption of the architecture to its user's demands, in a feedback loop system.

Basis Configuration

is the start configuration of both case studies Tracks and Curtain for the case that all spatial entities are in use at the same time. This configuration also defines the guaranteed size of each spatial entity.

Building envelope

the physical separators between the conditioned and unconditioned environment of a building.

Collapsible

Ability of one or more objects to be folded or pushed together or into a smaller space.

Conditioned space

The part of the building that contains air with different properties (e.g. heated, cooled, humidified, filtered, etc.) than the air of the environment outside of the building; e.g. for the comfort of the building users or to keep goods at defined temperature.

Digital Natives

Also known as Generation Y. Persons which were born or brought up during the age of digital technology, who are close to computers, the internet and other new technologies.

DIY

Abbreviation of Do It Yourself. A self-performed act of home- improvement or similar craftsman activities performed by amateurs

Duality:

Opposition between two concepts or two aspects of one thing.

Elasticity

describes in physical terms the ability of materials to be deformed and to return afterwards to their original shape.

Existenzminimum

an entitlement to a basic minimum standard of living

Flexible

Architectures with

Flexibility

In his book Words and Buildings Adrian Forty identifies three distinct strategies of flexibility in architecture: flexibility by redundancy, flexibility by technical means and flexibility as a political strategy.

Flexitime

Work scheme where employees are expected to be present at the work place in defined core times of the day. The remaining work hours can be set by the employee.

Flex space

System for office spaces where employees do not have a personally assigned desk space. Employee chose any free desk, connect to the computer network and work there for the day.

Generation Y:

>> Digital Natives

Hybrid Building (p. 7 - Abstract)

A building that combines more than one programme; a typical example is a shopping mall and a cinema and a hotel and dwellings all in the same building.

Internet of Things

New generation of internet- connected devices. The connection is established by cheap embedded micro sensors which are able to send and receive data.

Pattern of use

Time recording of the use of spaces

Persona

Fictional character used for scenarios

Pool

The sum of all distributable space

Programme (of a Building)

The purpose, for which a building is used, e.g. as a residential building, as commercial building, as office, administration, etc. (Cp. Rem Koolhaas¹)

Sensing and Actuation

Continuous cycle of collecting data and reacting according to the data. This leads to a change in the system and the cycle begins again.

Sharing Economy

¹ Rem Koolhaas and Office for Metropolitan Architecture., *Small, Medium, Large, Extra-Large: Office for Metropolitan Architecture, Rem Koolhaas, and Bruce Mau,* 2d ed. (New York N.Y.: Monacelli Press, 1998), p. 1221.

An economic model based on sharing underutilized assets from spaces to skills to 'stuff' for monetary or non-monetary benefits.

Smart Grid:

an electricity network based on digital technology that is used to supply electricity to consumers via two-way digital communication. Many government institutions around the world have been encouraging the use of smart grids for their potential to control and deal with global warming, emergency resilience and energy independence scenarios.

Threshold

Thresholds are separations of space that take place in several ways and through different media. Mostly these are walls and physical space-dividers, but nowadays many thresholds are created and mediated through technology. There are also cultural thresholds like, for instance, language barriers which can create spaces between people in a room. They often have a physiological or psychological effect on persons.

Type of Building:

Defines the purpose of a building, e.g. it is a commercial, a residential, an educational, etc...building.

Unused space

interior space that is temporarily not used by any person but that is being held available for potential use. Unused space still works as container for goods and furniture.

Used space

interior space that is currently used by at least one present user

User of a Room or Building

Person or group of persons allocated for use of a certain room/building.

Ubiquitous Computing:

'Ubiquitous computing names the third wave in computing, just now beginning. First were mainframes, each shared by lots of people. Now we are in the personal computing era, person and machine staring uneasily at each other across the desktop. Next comes ubiquitous computing, or the age of calm technology, when technology recedes into the background of our lives' (Mark Weiser)

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| Buildings | Large Scale Models/ Advertisement Structures

Paperprojects Texts

| Architectural reference Projects



| | 1 |
|--|---|
| Placeholder | Flexibility by Redundancy #1 |
| | |
| | No-Stop City Discorsi per immagini (Discourse through images) Archizoom Associati (Andrea Branzi) |
| | 1970 |
| Forty Flexibility by Redundancy Forty Flexibility by Redundancy Flexibility by Technical Means Flexibility by Technical Means Flexibility as a Political Strategy Flexibility as a Political Strategy MOTIVE Flexibility as a Political Strategy sociological Flexibility as a Political Strategy spatial quality Flexibility as a Political Strategy cultural Commercial advertorial legal Flexibility as a Political Strategy SPATIAL PROFITEUR Flexibility as a Political Strategy geople Strategy | Subtitled RESIDENTIAL PARKINGS - CLIMATIC UNIVERSAL SYSTEM the project proposes a structure of seemingly infinite layers that serve all purposes, supermarkets, housing, business, working, production. The main intention of the project is not the achievement of flexibility. Flexibility is rather a side- effect of the vast production of space. No-Stop City, projected as a Discorso d' immagini rather than as literal architecture comes up with a political message rather than literal floor layouts, sections and models. |
| CONTEXT urban | Plans |
| rural COMBINATIONS OF USE amount plenty programmes and their spatial use of floor area residential n.a. in percentage of the whole building work n.a entertainm. n.a. | Placeholder |
| A sum many more n.a sum many more n.a sum n.a sum sum can exceed 100% if occupations take place at different times PATTERNS OF USE (TIME-RELATED) strict (sharp steps) soft (curvy hills) | |
| CONTROL - PARTICIPATION top-down bottom-up evolutionary (learning) | |
| built paperproject of the second seco | |
| SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) | |
| CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) | |
| CHANCE change of roomsize movement of compartments implant number of user(groups) affected plenty | |
| EXPANSION / SHRINKAGE DIRECTION horizontal vertical | |
| other (e.g. rotating) TECHNICAL CHANGE THROUGH | - |
| kinetical / mechanical chemical / biological thermal | Residential |
| informational | Leisure |
| sec / min / h / d / weeks / month / years immediate | <u>Commercial</u> Social |

FURTHER CATEGORIES

overall size [m] relevance of daylight relevance of freshair lighting depth (estimation)

212

Religion

Moving elements

Traffic

500

none

none undefined

| Placeholder Placeholder Placeholder Pase-cemplary Placeholder | Section, exemplary | |
|--|--------------------|-------------|
| Planes exemplary | | Dlasshalder |
| Placeholder | | riacenoider |
| Placeholder | | |
| Plane, exemplary Placeholder | | |
| Parse, exemplary | | |
| Pares | | |
| Placeholder | | |
| Plane exemplary | | |
| Plane, exemplary | | |
| Plans, exemplary | | |
| Plans, exemplary | | |
| Placeholder | | |
| Plans, esemplari | | |
| Plans, exemplary | | |
| Placeholder | | |
| Pans, exemplary | | |
| Plans, exemplary | | |
| Pans, exemplary | | |
| Plane, exemplary | | |
| Plans, exemplary | | |
| Plans, exemplary | | |
| Placeholder | Plans, exemplary | |
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Flexibility by Technical Means #1

Maison du Peuple à Clichy Paris, France J. Prouvé & E.Beaudouin, M.Lods, V. Bodiansky 1939

"The schedule required the building of a Maison du Peuple, the great hall of which could accommodate 1,500 to 2,000 people - so that it would be possible to show films (500 seats) in part of the great hall - and to make available a number of offices for the use of local societies, trades unions, etc. The solution adopted was made possible by the fact that the two main components, the Market and the Maison du Peuple, never operated at the same time. The whole area of the ground floor was left free. On the first floor, the central part consisted of an operable floor, the eight components of which could be moved towards the stage and stored on it. The cinema and the promenades and foyer bar could be separated by a sliding partition of articulated panels that folded away behind the stage. Finally, the glazed roof which lit the hall was fully openable"

Techniques et Architecture (1955) (qtd. In Peter Sulzer, Jean Prouvé and Erika Sulzer-Kleinemeier, Jean Prouvé, Oevre complete, Volume 2: 1934 - 1944. (Basel [u.a.];Berlin: Birkhäuser [u.a.], 2000), p. 187.)

View from the Convention's room



| Leisure | | |
|------------|--|--|
| Commercial | | |
| Social | | |
| Religion | | |
| Traffic | | |

relevance of daylight

relevance of freshair

lighting depth (estimation)

high

high

20m (roof)

DAY TIME USE Market EVENING USE Cinema, Theatre, Convention

| Section | |
|-------------------|-------------|
| Placeholder | Placeholder |
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| | |
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| Einst flage aller | |
| First noor plan | |
| Placeholder | Placeholder |
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| | |

Isometric views

Placeholder



•

| CONTEXT | |
|--|-----------------|
| urban | • |
| rural | |
| COMBINATIONS OF USE | |
| amount | 2 |
| programmes and their spatial use of floor area | residential 50% |
| in percentage of the whole building | business 50% |
| | / 0% |
| | / 0% |
| | / 0% |
| sum | 100% |
| sum can exceed 100% if occupations take place at different times | |
| PATTERNS OF USE (TIME-RELATED) | |
| strict (sharp steps) | |
| soft (curvy hills) | • |
| | |
| CONTROL - PARTICIPATION | |
| hottom up | - |
| avalutionary (learning) | • |
| evolutionary (leanning) | |
| PROJECT STATUS | |
| huilt | |
| naperproject | |
| paperproject | |
| SPATIAL DISTRIBUTION | |
| internal <> internal | |
| internal <> external | |
| space invasive (e.g. Shigeru Ban) | |
| space invasive (c.g. ongera ban) | |
| CHANGING ENTITY | |
| support / structure (Habraken) | |
| infill / furniture (Habraken) | |
| infrastructure / media | |
| armour / bodyextension (Kurokawa) | • |
| uniou / bou/exclusion (nuronuvu) | |
| CHANGE | |
| change of roomsize | • |
| movement of compartments | |
| implant | |
| number of user(groups) affected | 2 |
| | |
| EXPANSION / SHRINKAGE DIRECTION | |
| horizontal | |
| vertical | |
| other (e.g.rotating) | replace unit • |
| | |
| TECHNICAL CHANGE THROUGH | |
| kinetical / mechanical | • |
| chemical / biological | |
| thermal | |
| informational | • |
| | |
| RESPONSE SPEED | |
| sec / min / h / d / weeks / month / years | 1 day |
| | |
| FURTHER CATEGORIES | |

Flexibility by Technical Means #2

Nagakin Capsule Tower Tokyo, Japan K. Kurokawa 1971

'The Nagakin Capsule tower is probably the most important work of the Japanese Metabolist group - a clear demonstration of their ideas that architecture should not be thought of as fixed or static, but should have the potential to grow or change over time. This notion is expressed here by Kurokawa through his use of capsules manufactured using non-traditional construction methods. The building can be thought of in two parts. One element is the fixed structural towers that contain the lifts, stairs and services and are constructed of steel and concrete. The second element, the habitable parts, is the individual pods: manufactured from lightweight steel in a factory and brought to site to be attached to the superstructure, they are more like pieces of equipment than dwellings. Intended for single people, many apartments were bought for use as pieds-à-terre by businessmen. At street level there is an entrance lobby nd multi-purpose hall, and access to the two towers via stairs and lifts. The first floor houses some commercial office space to cater for the large number of business ccupants. As the capsules spiral around the towers, the ntrances to the apartments are situated at each landing; the two towers are only connected to each other at the th floor level, via a bridge. Inside, the capsules are fully ed out with furniture and equipment. A bathroom unit located in one corner of the space next to the entrance, d the bed space fits across the opposite end. The rest of the wall space is fitted with different kinds of storage units and optional fittings such as a freezer or audioual equipment, calculators and a desk. All the capsules are the same size, 2.5 x 4 metres in plan and 2.5 metres high, with some variation in layout depending on the location of the entrance. They are equipped with air nditioning as standard and daylighting comes from the arge, 1.3-metre dameter windows in the end elevation." ry French, Key Urban Housing of the Twentieth Century : Plans, Sections, and Elevations (New York: W.W. Norton, 2008), p. 142.

| ell | | | |
|-----|-------------|-------------|--|
| | | Placeholder | |
| | | | |
| | | | |
| | Residential | | |
| | Leisure | | |
| | Commercial | | |
|) | Social | | |
| | Religion | | |

overall size [m] relevance of daylight

relevance of freshair

lighting depth (estimation)

Traffic

Moving elements

24 x 14 x 40

high

high

5m
Elevation

View from the city



Placeholder

| FLEXIBILITY CATEGORIES (as defined by) | | | |
|--|-------------------------------------|---|--|
| Forty | Flexibility by Redundancy | | |
| | Flexibility by Technical Means | • | |
| | Flexibility as a Political Strategy | • | |
| | | | |

| economical | |
|---|---|
| sociological | • |
| sociological | - |
| spatial quality | • |
| spatially economical | |
| entertainment | |
| cultural | • |
| commercial advertorial | |
| legal | |
| | |
| SPATIAL PROFILEUR | |
| people | • |
| storage | |
| CONTEXT | |
| Urban | |
| uibait | |
| Turai | • |
| COMBINIATIONS OF USE | |
| amount | 1 |
| programmes and their enatial use of floor area | offices 100% |
| in percentage of the whole building | / 0% |
| in percentage of the whole building | / 0% |
| · · · · · · · · · · · · · · · · · · · | / 0% |
| | / 0% |
| sum | 100% |
| sum can exceed 100% if occupations take place at different times | |
| PATTERNS OF USE (TIME-RELATED) | |
| strict (sharp steps) | • |
| soft (curvy hills) | • |
| | |
| CONTROL - PARTICIPATION | |
| top-down | |
| bottom-up | • |
| evolutionary (learning) | • |
| | |
| PROJECT STATUS | |
| built | |
| paperproject | • |
| | |
| SPATIAL DISTRIBUTION | |
| internal <> internal | |
| | • |
| internal <> external | • |
| internal <> external space invasive (e.g. Shigeru Ban) | • |
| internal <> external space invasive (e.g. Shigeru Ban) | • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY | • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) | • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) | • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media | • • • • • |
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| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE | • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize | • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments | • • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant | • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected | • • • • • • • • |
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| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) | • • • • • • • • • • • • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) EECHNICAL CHANGE THROUGH | • • • • • • • • • • • • • • • • • • • |
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| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological | • • • • • • • • • • • • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal | • • • • • • • • • • • • • • • • • • • |
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| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational | |
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| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years | • • • • • • • • • • • • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years | • • • • • • • • • • • • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infil / furniture (Habraken) infirastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years FURTHER CATEGORIES rowardl cize [m] | • • • • • • • • • • • • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years FURTHER CATEGORIES overall size [m] relavagee a cf daylight | • • • • • • • • • • • • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years FURTHER CATEGORIES overall size [m] relevance of forebair | • • • • • • • • • • • • • • • • • • • |
| internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years FURTHER CATEGORIES overall size [m] relevance of daylight relevance of freshair lidohing denth (estimation) | • • • • • • • • • • • • • • • • • • • |

Flexibility by Technical Means #3

Generator USA C. Price with J. & J. Frazer 1980

Especially interesting when looking at the aspect of control. This project, widely celebrated as the first intelligent building, reacts to the demands of the users with a cybernetarian feedback approach and represents an example of evolutionary architecture 'Instantaneous architectural response to a particular problem is too slow. Architecture must concern itself continually with the socially beneficial distortion of the environment. Like medicine must move from the curative to the preventive. Architecture should have little to do with problem solving - rather it should create desirable conditins and opportunities hitherto thought impossible. With this intention the client asked me to investigate whether architecture could help in providing such conditions for the individual and group from both inside and outside the company. The subsequent feasibility study proving positive, the Generator was born - an architectural complex with no previous title and no predefined use, only a desired end-effect. Sited in Florida, the Generator's services and structures respond to the users' wishes with help from both cranage and computer.' Cedric Price, Cedric Price. ([London]: [Architectural Association], 1984), p. 92.

| Placeholder | | |
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| | | |
| | | |
| | Residential | |
| | Leisure | |
| | Commercial | |
| | Social | |

Religion Traffic

Moving elements

Placeholder

Menu 25: details of SW zone - ground level

Placeholder

Various wet serviced cubes







| Placeholder | |
|--|-----------------------------|
| | |
| FLEXIBILITY CATEGORIES (as defined by) | |
| Forty Flexibility by Redundancy Elevibility by Technical Means | |
| Flexibility as a Political Strategy | |
| | |
| MOTIVE | |
| economical sociological | • |
| spatial quality | • |
| spatially economical | • |
| cultural | |
| commercial advertorial | |
| лс <u>х</u> ан | |
| SPATIAL PROFITEUR | |
| storage | • |
| CONTEXT | |
| urban | |
| rural | • |
| COMBINATIONS OF USE | |
| amount programmes and their spatial use of floor area | residential 100% |
| in percentage of the whole building | / 0% |
| | / 0% |
| | / 0% |
| sum can exceed 100% if occupations take place at different times | 100 /0 |
| PATTERNS OF USE (TIME-RELATED) strict (sharp steps) | |
| soft (curvy hills) | • |
| CONTROL - PARTICIPATION | |
| top-down hattere are | |
| evolutionary (learning) | • |
| DDOIECT STATUS | |
| built | • |
| paperproject | |
| SPATIAL DISTRIBUTION | |
| internal <> internal | • |
| space invasive (e.g. Shigeru Ban) | • |
| CHANGING ENTITY | |
| support / structure (Habraken) | |
| intill / furniture (Habraken) infrastructure / media | • |
| armour / bodyextension (Kurokawa) | • |
| CHANGE | |
| change of roomsize | |
| implant | • |
| number of user(groups) affected | 4 |
| EXPANSION / SHRINKAGE DIRECTION | |
| horizontal | • |
| other (e.g.rotating) | • |
| TECHNICAL CHANGE THROUGH | |
| chemical / biological | • |
| thermal | |
| | |
| RESPONSE SPEED | |
| see / mm / n / u / weeks / monut / years | 5 min |
| | 5 min |
| FURTHER CATEGORIES | 5 min |
| FURTHER CATEGORIES overall size [m] relevance of daylight | 5 min 20 x 7 x 5 high |

Flexibility by Technical Means #4

Naked House Kawagoe, Japan Shigeru Ban 2000

Three generations share a single common space in which private areas consist of four mobile bedrooms. 'The open-plan and neutral space of the shed can be organised and transformed as needed by moving the bedrooms, they even can be drawn out to the garden through the large window on the western facade.'¹ This is an example of flexibility by technical means. However for this flexibility to take place some measures are necessary, like the existence of a common fixed wardrobe for the whole family, and the fixity of the wet areas. The movement is limited to the areas without infrastructure.

1'STORIES OF HOUSES: The Naked House in Kawagoe, by Shigeru Ban' <http://storiesofhouses.blogspot.de/2005/10/naked-house-in-kawagoe-by-shigeru-ban.html> [accessed 24 February 2014].

Isometric View

| Placeholder | | | | |
|-------------|--|--|--|--|
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| Residential | |
|-----------------|--|
| Leisure | |
| Commercial | |
| Social | |
| Religion | |
| Traffic | |
| Moving elements | |

DIAGRAM OF VARIABLE ROOM LAYOUTS AND CIRCULATION

Section



Placeholder

FLEXIBILITY CATEGORIES (as defined by..)

Flexibility by Redundancy

Flexibility by Technical Means Flexibility as a Political Strategy

Forty

MOTIVE

economical

sociological spatial quality

entertainment cultural commercial advertorial

legal

spatially economical

SPATIAL PROFITEUR

Flexibility by Technical Means #5

Schröder House Utrecht, The Netherlands Gerrit Rietveld 1924

The Schröder House was commissioned to Rietveld to be almost a house without walls. This is achieved on the first floor, where an open space is only divided by sliding and

rotating partitions. There are multiple configurations possible. In its most partitioned configuration it consists of three bedrooms, one bathroom and one sitting-room. This is a truly flexible space by technical means.

Placeholder

Isonometric view

•

| people | | • |
|--|-------------|-------|
| storage | | |
| | | |
| CONTEXT | | |
| urban | | • |
| rural | | |
| | | |
| COMBINATIONS OF USE | | |
| amount | | >5 |
| programmes and their spatial use of floor area | dining | n.a. |
| in percentage of the whole building | boy | n.a. |
| | girl | n.a. |
| | circulation | n.a. |
| | bathroom | n.a. |
| sum can exceed 100% if occupations take place at different times | | n.a. |
| PATTERNS OF USE (TIME-RELATED) | | |
| etrict (sharm stope) | | |
| soft (curvy hills) | | |
| sort (curvy mis) | | |
| CONTROL - PARTICIPATION | | |
| top-down | | |
| bottom-up | | |
| evolutionary (learning) | | |
| evolutional y (tearing) | | |
| PROJECT STATUS | | |
| built | | • |
| paperproject | | - |
| pupelproject | | |
| SPATIAL DISTRIBUTION | | |
| internal <> internal | | |
| internal <> external | | |
| space invasive (e.g. Shigeru Ban) | | - |
| | | |
| CHANGING ENTITY | | |
| support / structure (Habraken) | | |
| infill / furniture (Habraken) | | • |
| infrastructure / media | | • |
| armour / bodvextension (Kurokawa) | | |
| | | |
| CHANGE | | |
| change of roomsize | | • |
| movement of compartments | | • |
| implant | | |
| number of user(groups) affected | | 4 |
| | | |
| EXPANSION / SHRINKAGE DIRECTION | | |
| horizontal | | • |
| vertical | | • |
| other (e.g.rotating) | | • |
| | | |
| TECHNICAL CHANGE THROUGH | | |
| kinetical / mechanical | | |
| chemical / biological | | - |
| thermal | | |
| informational | | |
| | | |
| RESPONSE SPEED | | |
| sec / min / h / d / weeks / month / years | 5 mi | nutee |
| ce i man, n i u j weeks j month j years | 5 111 | nutes |
| FURTHER CATEGORIES | | |
| overall size [m] | 1 | 0x8x6 |
| relevance of davlight | 1 | high |
| relevance of freebair | | high |

Residential Commercial Social Religion Traffic Moving elements

lighting depth (estimation)

6 m

Section A - A'



Ground floor plan



First floor plan





0

L

Placeholder

| FLEXIBILITY CATEGORIES (as defined by) | | | |
|--|---------------------------------------|--|--|
| Forty | Flexibility by Redundancy | | |
| | Flexibility by Technical Means | | |
| | Flexibility as a Political Strategy | | |
| | · · · · · · · · · · · · · · · · · · · | | |

| MOTIVE | |
|---|---|
| economical | |
| socialogical | |
| sociological | |
| spatial quality | • |
| spatially economical | • |
| entertainment | |
| aultumal | |
| | |
| commercial advertorial | |
| legal | |
| | |
| CRATIAL PROFITEUR | |
| SPATIAL PROFILEUR | |
| people | • |
| storage | • |
| | |
| CONTEXT | |
| CONTEXT | |
| urban | • |
| rural | |
| | |
| COMPINATIONS OF LIST | |
| COMBINATIONS OF USE | |
| amount | plenty |
| programmes and their spatial use of floor area | dining n.a. |
| in percentage of the whole building | hedroom na |
| in percentage of the whole building | bathroom r |
| | Daunoom n.a. |
| | kitchen n.a. |
| | etc. n.a. |
| sum | n.a. |
| sum can exceed 100% if occupations take place at different times | |
| PATTERNS OF USE (TIME PELATED) | |
| FAITERNS OF USE (IIWIE-KELATED) | |
| strict (sharp steps) | • |
| soft (curvy hills) | |
| | |
| | |
| CONTROL - PARTICIPATION | |
| top-down | |
| bottom-up | • |
| ovolutionary (loarning) | |
| evolutionary (learning) | |
| | |
| PROJECT STATUS | |
| built | |
| Cuit | • |
| | |
| paperproject | |
| paperproject | |
| paperproject SPATIAL DISTRIBUTION | |
| paperproject SPATIAL DISTRIBUTION internal <> internal | |
| paperproject SPATIAL DISTRIBUTION internal <-> internal internal <-> optional | ٩ |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <-> external space invasive (e.g., Shigeru Ban) CHANGING ENTITY | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infial / furniture (Habraken) infial / furniture / media | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infirastructure / media remour / hodpagtogica (Kurokaua) | • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) | • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> external internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) | • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infilarstructure / media armour / bodyextension (Kurokawa) CHANGE | • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infial / furniture (Habraken) infialructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize. | • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g., Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize magnement of compartments | • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infirastructure / media armour / bodyextension (Kurokawa) CHANCE change of roomsize movement of compartments | • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant | • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected | • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infirastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected | • • • • • • • • • • • • • • • |
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| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g., Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal | • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical | • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infirastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g. rotating) | • • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) | • • • • • • • • • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) | • • • • • • • • • • |
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| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical | • • • • • • • • • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infill / furniture (Habraken) infirastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) FECHNICAL CHANGE THROUGH Kinetical / mechanical | • • • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g., Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological | • • • • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <-> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal | • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g., Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational | • • • • • • • • • • • |
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| paperproject SPATIAL DISTRIBUTION internal <> internal internal <-> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years | • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g., Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years | • • • • • • • • • • • • • |
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| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g., Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years FURTHER CATEGORIES overall size [m] | • • • • • • • • • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g. Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / biological thermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years FURTHER CATEGORIES overall size [m] relevance of daylight | • • • • • • • • • • • • • • • • • • • |
| paperproject SPATIAL DISTRIBUTION internal <> internal internal <> external space invasive (e.g., Shigeru Ban) CHANGING ENTITY support / structure (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION/SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chermal informational RESPONSE SPEED sec / min / h / d / weeks / month / years FURTHER CATEGORIES overall size [m] relevance of daylight relevance of freshair | • • • • • • • • • • • • • • • • • • • |

Flexibility by Technical Means #6

Hong Kong Micro Apartment Hong Kong, China Gary Chang 2006

Architect Gary Chang's apartment is located in downtown Hong Kong, and represents a remarkable example of interior refurbishment. With only 32 sqm, Chang studied the different distribution possibilities to optimize his space. Chang has been living in this apartment since he was 14 years old. After his parents moved out, he tried a series of modifications.

http://www.detail.de/research/forschung-entwicklung/vertikale-nischen-miniwohnungen-in-megacities-von-gary-chan g-021703.html http://www.archivenue.com/gary-changs-24-rooms-in-a-32sqm-apartment/

Space modification through time

R.

| Placeholder | 1976 |
|-------------|------|
| Tacenoider | 14 |
| | 1 |
| | |
| | 1987 |
| | 24 |
| | 11 |
| | |
| | 1989 |
| | 26 |
| | 13 |
| | |
| | 1998 |
| | 35 |
| | 22 |
| | |
| | 2006 |
| | 43 |
| | 30 |

Residential

| Leisure | | |
|-----------------|--|--|
| Commercial | | |
| Social | | |
| Religion | | |
| Traffic | | |
| Moving elements | | |

| Placeholder | | | | |
|----------------|---|---------------|---------------|--|
| bedtime | bedtime - with enclosed room | guest bedroom | guest bedroom | |
| Placeholder | | | | |
| walk-in closet | enclosed bathroom with toilet shower & wardrobe | home spa | 2 bedrooms | |
| Placeholder | | | | |
| labyrinth | tv game | 3 rooms | yoga | |
| Pla | aceholder | Placeho | lder | |

Collective activities

| | Place | eholder | |
|---------|-----------------|------------------------------|--|
| dining | enclosed dining | maximum kitchen | laundry |
| | Plac | eholder | |
| library | study | study-oblique mode | study with onternet projected on screen |
| | Plac | eholder | |
| hammock | cinema | video game with 8 spectators | cocktail party (max. 20) |

FLEXIBILITY CATEGORIES (as defined by..) Forty Flexibility by Redundancy Flexibility by Technical Means Flexibility as a Political Strateg MOTIVE economical sociological spatial quality spatially economical entertainment cultural • commercial advertorial legal SPATIAL PROFITEUR people storage CONTEXT urban rural COMBINATIONS OF USE amount programmes and their spatial use of floor area mosque 50% in percentage of the whole building church 50% 0% 0% 0% sum 100% PATTERNS OF USE (TIME-RELATED) strict (sharp steps) soft (curvy hills) **CONTROL - PARTICIPATION** top-down bottom-up evolutionary (learning) PROJECT STATUS built paperproject SPATIAL DISTRIBUTION > interna internal <--> external space invasive (CHANGING ENTITY support / structure (Habraken) infill / furniture (Habraken) infrastructure / media armour / bodyextension (Kurokawa) CHANGE change of roomsize movement of compartments implant number of user(groups) affected EXPANSION / SHRINKAGE DIRECTION horizontal vertical other (e.g.rotating) TECHNICAL CHANGE THROUGH kinetical / mechanical chemical / biological thermal informational RESPONSE SPEED ec / min / h / d / weeks / month / y FURTHER CATEGORIES overall size [m]

Placeholder

Flexibility as Political Strategy #1

Mezquita Catedral Cordoba, Spain Anonymous 987 (1st'completion')

The name Mesquita-Catedral (Mosque-Cathedral) denotes already the process that the building went through centuries changing from a mosque into a catholic church. There is a dispute that lasts until today where Muslims would like to be able to pray in this building. This has even led to a physical fight between Muslim visitors and guards in 2010. The wish for flexibility becomes a motive of conflict. The building has changed due to the religious transformation it went through, from one religion to another. Its flexibility was dictated by political decisions.

Internal View

| Placeho | older |
|---------|-------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| Residential | | |
|-----------------|--|--|
| Leisure | | |
| Commercial | | |
| Social | | |
| Religion | | |
| Traffic | | |
| Moving elements | | |

relevance of daylight

relevance of freshair

lighting depth (estimation)

none

average

undefined

PRIMITIVE CONSTRUCTION



| | | | | T | | | | | | | | | | | | | | | | |
|----------------------|---|----|-------|----------|-----|---|---|----|----|---|---|---|---|---|----------|---|---|---|---|-----|
| H | • | - | | Ħ | | l | | Į | l | Į | I | | l | ļ | | l | ļ | l | | |
| | | | | | • • | ۰ | ۰ | ۰ | ۰ | ۰ | ۰ | ۰ | 0 | | • | ۰ | ۰ | ۰ | ۰ | |
| H | | | | | • | ٥ | ٥ | ۰ | ٥ | ۰ | ٥ | ۰ | ۰ | | • | ۰ | ۰ | ۰ | ۰ | |
| H | | | | i a | • | ٥ | ٥ | 0 | ٥ | ۰ | 0 | ٥ | ٥ | | • | 0 | ۰ | 0 | ۰ | |
| H | | | | H · | • | ٥ | ۰ | ۰ | ٥ | μ | W | Ч | 0 | | • | ٥ | ۰ | ۰ | 0 | |
| H | | | | | • • | ٥ | ۰ | ۰ | 0 | | ٥ | | 0 | | • | 0 | ۰ | 0 | ۰ | |
| H | | 1 | | | | | | | | | ٥ | | ۰ | | • | 0 | ۰ | 0 | ۰ | |
| H | | 1 | | н | • • | ٠ | • | ٠ | ٠ | L | ٥ | | ۰ | | • | ۰ | ۰ | ۰ | ۰ | 님님 |
| $\left - \right $ | | 1 | | н | • • | • | • | • | ٠ | L | 0 | Π | 0 | | • | ٥ | ۰ | ٥ | ٥ | 닌건 |
| H | | • | | н | • • | • | • | • | ٠ | L | ٥ | | ۰ | | • | ٥ | ٥ | ٥ | ۰ | K) |
| H | | | | н | • • | • | • | • | ٠ | L | ۰ | | 0 | | | | ۰ | ۰ | ۰ | |
| | | 1 | | н | • • | • | • | • | ٠ | L | 0 | | 0 | | | ╣ | ۰ | ٥ | ٥ | |
| h | | | | н | • • | • | • | ٠ | • | L | ٥ | | ۰ | | | | ۰ | 0 | ٥ | |
| H | | ٦. | | н | • • | • | • | • | • | L | ۰ | | 0 | | • | ٥ | ۰ | ۰ | ۰ | |
| $\left\ - \right\ $ | | 1 | | н | • • | • | • | • | • | | ٥ | ۰ | ۰ | | • | ۰ | ۰ | ۰ | ۰ | HH |
| H | | 4 | | н | • • | • | • | • | • | | ٥ | ۰ | ٥ | | • | ٥ | ٥ | ٥ | ۰ | HH |
| \mathbb{H} | | | | н | | 1 | 1 | T. | T. | | T | Π | 1 | | | 1 | ſ | T | 1 | HH |
| | | _ | - | - | - | ÷ | | ÷ | | | _ | ╩ | 1 | ł | <u> </u> | | Ļ | - | 1 | |

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|----------|-----|----|------|-------------|---|----|----|----|---|---|---|------------------|----|---|---|---|---|---|---|-------------------------------------|
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| | | | ⊨ | \$ o | ۰ | ۰ | ٥ | ۰ | ۰ | ۰ | ۰ | ۰ | 0 | | ۰ | ۰ | ۰ | ۰ | ۰ | |
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SECOND EXTENSION - THIRD EXENSION 961 - 987



Placeholder

FLEXIBILITY CATEGORIES (as defined by..)

Flexibility by Redundancy

Flexibility by Technical Means

Flexibility as a Political Strateg

•

•

Forty

MOTIVE

economical

sociological spatial quality

entertainment

cultural

legal

people

storage

urban

rural

CONTEXT

spatially economical

commercial advertorial

SPATIAL PROFITEUR

COMBINATIONS OF USE

Kowloon Walled City Hong-Kong (Britsh enclave) Anonymous 1898 - 1993 (demolished)

The Kowloon Walled City in Hong-Kong consisted of a city block that contained over 300 high-rise buildings, all interconnected, that hosted circa 33,000 people. Due to a complex history between British and Chinese authorities, the Kowloon Walled City became a place where there was little government enforcement from both sides. From the 1950s Triad groups were powerful here, making it a crime haven, and only in the 1970s this issue started to be tackled. However throughout decades, most of the inhabitants of the city lead normal lives just like other Hong-Kong inhabitants.

'Conventional boundaries defining typologies were blurred as unstable programmes changed both their spatial and functional characteristics. A cafeteria would transform into a mah-jong parlour at certain hours, while a plastic toy factory doubled as an illegal drugs den.' 1There was also a mix of programmes both in plan and in section. The structure presents, on the one hand, flexibility through appropriation - different uses of the same space according to different users and times of the day. There was a bottom-up approach to infrastructure since individual wills of use dictated the necessary infrastructure to arrive to spaces a posteriori (health and safety regulations were not taken into account). This approach is oppositional to the conventional approach to infrastructure in a building where infrastructure is planned in the first place and spaces are served by it. In Kowloon Walled City, infrastructure was something flexible that would follow immediate changing necessities. Winy Maas and others, FARMAX: Excursions on Density (Rotterdam: 010 Publishers, 2006), p. 156.

West Side Street (with Overhead Pipes), 1990

| amount | p | lenty |
|--|-------------|--------|
| programmes and their spatial use of floor area | residential | n.a. |
| in percentage of the whole building | work | n.a. |
| 1 | entertainm. | n.a. |
| , | supermkt. | n.a. |
| 1 | many more | n.a. |
| sum | | n.a. |
| sum can exceed 100% if occupations take place at different times | | |
| PATTERNS OF USE (TIME-RELATED) | | |
| strict (sharp steps) | | • |
| soft (curvy hills) | | • |
| | | |
| CONTROL - PARTICIPATION | | |
| top-down | | |
| bottom-up | | • |
| evolutionary (learning) | | |
| | | |
| PROJECT STATUS | | |
| built | | • |
| paperproject | | |
| paperproject | | |
| SPATIAL DISTRIBUTION | | |
| internal C Ninternal | | |
| internal <> internal | | |
| Internal <> external | | • |
| space invasive (e.g. Snigeru ban) | | • |
| | | |
| CHANGING ENTITY | | |
| support / structure (Habraken) | | • |
| infill / furniture (Habraken) | | • |
| infrastructure / media | | • |
| armour / bodyextension (Kurokawa) | | |
| | | |
| CHANGE | | |
| change of roomsize | | • |
| movement of compartments | | |
| implant | | • |
| number of user(groups) affected | p | lenty |
| | | |
| EXPANSION / SHRINKAGE DIRECTION | | |
| horizontal | | • |
| vertical | | • |
| other (e.g. rotating) | | |
| (| | |
| TECHNICAL CHANGE THROUGH | | |
| linetical / mochanical | | |
| chemical / hielogical | | - |
| the second secon | | |
| thermal | | |
| informational | | • |
| | | |
| RESPONSE SPEED | | |
| sec / min / h / d / weeks / month / years | 10s to 20 | years |
| | | |
| FURTHER CATEGORIES | | |
| overall size [m] | 200 x 100 |) x 30 |
| relevance of daylight | | none |
| relevance of freshair | | none |
| lighting depth (estimation) | unde | fined |

Placeholder

| Residential | |
|-------------|--|
| Mixed | |

Commercial

Social Religion

Moving elements

Vertical discontinuity of programs produce both horizontal and vertical social intercourse



City's extension phases



APPENDIX A.2 – INTERVIEWS (RE. CH. 4)

- A.2.1 INTERVIEW WITH MR BAUMGART
- A.2.2 INTERVIEW WITH MR WARNECKE

| Interview 1 | Personal Interview |
|--------------|--|
| Interviewer: | Florian Wurfbaum |
| Interviewee: | Mr Hans-Jürgen Baumgart, |
| | Leiter Hausservice Ost (Head of facility services East) |
| | Baureferat der Stadt München (Department for municipal buildings, city of Munich) |
| Location: | Baureferat der Stadt München, Zimmer 0130 (Room 0130) Friedenstraße 40 81671 München |
| Time: | 24. August 2011, 8:30am |

Informal Interview Summary

At the beginning I again explained the motive of the interview to Mr Baumgart (patterns of use for different building typologies).

I asked Mr Baumgart, if he could give me information about the patterns of use of the administration building in Friedenstraße 40, about the attendance time of the staff and when they are in the building.

Mr Baumgart explained that staff in Munich's department for buildings and infrastructure (Baureferat) work flexible hours, meaning that they can plan their working days freely, as long as they are there in the core hours between 9:30am and 2:30pm. Early staff could start at 6am in the morning and late staff could stay until 6:30pm or 7pm.

I asked Mr Baumgart, if he could estimate how many staff come early and how many work late. Mr Baumgart said, not many come very early or stay very late. The majority works from 7:30am to around 4:30pm, Fridays shorter, until around 2pm to 3pm (early afternoon).

I asked Mr Baumgart if it doesn't occur that staff stay longer in the office in the evenings.

He said that very rarely single members of staff would stay in the building longer in the evening, e.g. until 9pm and even more rarely someone is in at weekends.

I asked if Mr Baumgart could estimate the amount of staff being in the building outside the time when the majority is in.

He said that he estimates that before 7:30am and after 5:30pm very few staff are in the building, probably no more than 5%.

I asked about the top management, if their work schedule differs from the normal staff, but Mr Baumgart couldn't answer this question.

I asked if there are people other than administration staff that stay in the building.

He said there is the security service, that is present from 6am until 10pm. Sometimes single rooms, e.g. meeting/seminar rooms, the canteen or the large entrance hall are being rented out to external users for special events, seminars or similar occasions, but without a strict schedule.

I also asked about the underground parking, he said it is in use at the same time as the opening and working hours of the Baureferat.

I asked Mr Baumgart about the operation time of the heating system of the entire building but he said he doesn't have access to those records.

Interview 2 Telephone Interview

Between:Florian Wurfbaum (caller)and:Mr Tobias Warnecke, Referent (Consultant)
Hotelverband Deutschland (IHA)
(German hotel association/ national trade association for the hotel industry)
Am Weidendamm 1A
10117 Berlin

Time: 2. June 2014, 11:30am

Informal InterviewSummary

I introduced myself and explained to Mr Warnecke that I am collecting occupation patterns for different kinds of buildings and that I would like to ask him some questions about hotels and their occupation. He agreed to have a short conversation with me.

I told Mr Warnecke that I was looking for information about business hotels and their occupancy during the course of one week. Mr Warneke told me that in their institution they don't have any study specially about that, but that business hotels are in general more busy on weekdays. All weekdays have a similar range of occupation and Tuesday is likely to be the strongest day. Weekends are not so busy unless the hotel is located in a touristically attractive major city, when weekend guests come. He told me that business hotels in attractive cities have a good booking quota, where Tuesday is likely the strongest night and Sunday being the weakest night. I asked Mr Warneke about the duration of stays at business hotels, he said that business guests during the week predominantly stay for one night only. Mr Warnecke told me he would send me their study on the hotel market in Germany. I received the study and found confirming indications.¹

¹ Tobias Warnecke and Markus Luthe, 'Hotelmarkt Deutschland 2014' (IHA-Service GmbH, 2014), p. 92.

APPENDIX A.3 – SURVEY (RE. CH. 4)

- A.3.1 SURVEY QUESTIONNAIRE
- A.3.2 SURVEY QUESTIONNAIRES FILLED-OUT
- A.3.3 SURVEY QUESTIONNAIRES TIME RECORDING SPREADSHEET
- A.3.4 SURVEY OTHER EVALUATIONS

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | Do you live in a one - person household? | Yes | No | |
|---|--|-----|------|--|
| | Leben Sie in einem Ein- Personen Haushalt? | Ja | Nein | |

2 Please provide a record of the hours you spend at your household/home in seven consecutive days (tick the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>. Tick/untick boxes for times when you are at your house, leave boxes plain for times you spend out of house (in excel change colour). Some boxes are pre-ticked to common userpatterns, please remove / add according to your personal records.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die Sie zu Hause verbringen (kreuzen Sie die jeweiligen Zeitabschnitte an). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen <u>zusammenhängenden Zeitraum</u> dokumentieren. Die Tagespläne sind entsprechend einem häufigen Nutzungsmuster vor- ausgefüllt, bitte entfernen / fügen Sie Kreuzchen entsprechend Ihrem persönlichen Tagesverlauf zu.

| Time | until 0:30 | 1:00 1:30 | 2:00 | 2:30 | 3:00 | 4:00 | 4:30 | 5:00 | 5:30 | 6:00 | 6:30 7:00 | 7:30 | 8:00 | 8:30 | 9:00 | 9:30 | 10:00 | 11:00 | 11:30 | 12:00 | 12:30 | 13:00 | 13:30 | 14:00 | 15:00 | 15:30 | 16:00 | 16:30 | 17:00 | 18:00 18:00 | 18:30 | 19:00 | 19:30 | 20:00 | 20:30 | 21:UU 21:30 | 22:00 | 22:30 | 23:00 | 23:30 0:00 |
|---------------------------|---------------------|--------------|------|------|------|------|------|------|------|------|--------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|----------------|-------|-------|-------|----------------|
| Day Tag select days | from 0:00 | 0:30 1:00 | 1:30 | 2:00 | 2:30 | 3:30 | 4:00 | 4:30 | 5:00 | 5:30 | 6:00 6:30 | 7:00 | 7:30 | 8:00 | 8:30 | 00:6 | 9:30 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:00 | 13:30 | 14:00 | 15:00 | 15:30 | 16:00 | 16:30 | 17:30 | 18:00 | 18:30 | 19:00 | 19:30 | 20:00 | 21:00 | 21:30 | 22:00 | 22:30 | 23:00 23:30 |
| Tage wählen | | П | | | | 1 | 1 | T | | | | T | | | | | | 1 | 1 | L | | | | | | r | | | | 1 | t | L | | | | | T | Ľ | | |
| | | | | | | I | 1 | T | | | | I | | | | | | | | | | | | | | | | | | | | L | | | | | I | | | |
| | | | | | | I | 1 | T | | | | T | | | | | | | 1 | | | | | | | | | | | | | Г | | | | | I | | | |
| | | | | | | I | 1 | T | | | | L | | | | | | | 1 | | | | | | | | | | | | | Г | | | | | I | | | |
| | | | | | | I | 1 | T | | | | L | L | | | | | | I | | | | | | | | | | | | | L | | | | | I | | | |
| | | | | | | I | 1 | T | | | | L | L | | | | | | I | | | | | | | | | | | | | L | | | | | I | | | |
| | | | | | | 1 | | Т | | | | L | | | | | | | I | | | | | | | | | | | | | L | | | | | | | | |

3 Would you estimate the week you recorded above as a typical and representative week? Yes No Denken Sie, daß die oben aufgezeichnete Woche eine typische und repräsentative Woche ist? Ja Nein

If Yes: Please continue with question 4. Wenn ja: weiter mit Frage 4

If No:

Sonntag

Wenn Nein

a) Please state why the week above was not typical, e.g. holiday, extratime at work, illness...

a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit....)

- b) Please provide out of your memory another schedule of your times spent at home which describes a typical and representative week
- b) Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche.

| Time | until 1:000 0:300 0:300 1:0000 1:00000 1:0000 1:0000 1:0000 1:00000 1:00000 1:00000 1:00000 1:00000 1:00000 1:0000000 1:00000000 |
|------------|---|
| Day Tag | <pre>from from from from from from from from</pre> |
| · | tick/untick boxes for times when you are at your house, leave boxes plain for times you spend out of house (in excel change colour). |
| | bitte kreuzen Sie die Zeiten an, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer. |
| Monday | |
| Montag | |
| Tuesday | |
| Dienstag | |
| Wednesday | |
| Mittwoch | |
| Thursday | |
| Donnerstag | |
| Friday | |
| Freitag | |
| Saturday | |
| Samstag | |
| Sunday | |

4 Do you have regular visitors, like partners or family, that frequently stay at your home? Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der wiederholt bei Ihnen zu Hause weilt?

| Yes | No | |
|-----|------|--|
| Ja | Nein | |

If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5 If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

5 Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt.

| | Time Uhrzeit until 0:30 | 1:00 1:30 | 2:00 2:30 | 3:00 | 4:00 4:30 | 5:30 | 6:30 7:00 | 7:30 8:00 | 8:30 9:00 | 9:30 | 10:00 10:30 | 11:00 11:30 | 12:00 | 13:00 | 13:30 14:00 | 14:30 | 15:30 | 16:00 | 17:00 | 17:30 18:00 | 18:30 | 19:00 | 19:30 20:00 | 20:30 | 21:30 | 22:00 27:30 | 23:00 | 0:00 |
|----|--|-------------------|-------------------|--------------------|---------------------------------|----------------------------------|------------------|------------------|-------------------------|---------------|----------------------------|------------------|---------------|----------------|------------------|---------------|---------------|------------------|-------|----------------|---------------|----------|----------------|-----------|---------------|----------------|-----------------|----------------|
| | Day E000 | 0:30 | 1:30 2:00 | 2:30 3:00 | 3:30 4:00 | 5:00 | 6:30 6:30 | 7:30 7:30 | 8:30 8:30 | 00:6 | 9:30 10:00 | 10:30 11:00 | 11:30 | 12:30 | 13:00 13:30 | 14:00 | 15:00 | 15:30 | 16:30 | 17:20 | 18:00 | 18:30 | 19:00 19:30 | 20:00 | 21:00 | 21:30 | 22:30 | 23:30 23:30 |
| | Tag ti | ick/untic | ck boxe | s for tir | nes whe | n you a | re at yo | ur hous | e, leav | /e bo: | xes pla | ain for | times | you si | pend o | ut of | hous | e (in e | excel | chan | ge co | lour |). | | | | | |
| | bi | itte kreu | uzen Si | e die Ze | eiten an, | die Sie | zu Hau | ise verb | ringen | n, lass | en Sie | die ül | origen | Kästo | hen le | er. | - | - | | - | - | | | | - | | - | - |
| | Montag | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Tuesday Dienstag | | | | | | - | - | | | | | - | | | | | Н | | | | | | | | | | |
| | Wednesday Mittwoch | т | Ц | | | Π | U | Π | | | | | П | | | | | | P | | | | | | | | | |
| | Thursday | IC | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Friday | TT | | | | | T | T | | | | | П | | | | т | Π | Т | | т | | | | Т | | | |
| | Freitag Saturdav | | - | | | - | - | - | - | | | | н | | | | - | - | - | - | - | | | - | - | | - | |
| | Samstag | | | | | - | - | - | - | | | | | | | | | | | - | | | | | | | | |
| | Sonntag | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Employment stat Erwerbsstatus | tus | | | empl angeste | oyed | | | self | f-er ständ | nplo | yed | | ur | nemp ne Ans | oloy tellu | ed | | | stu Stuc | ıder dent/ | nt In | | | | in t in Ai | rain Isbildu | ing |
| | | | | C | retire Rentne | ed r | | | oth ande | eres, | plea ^{bitte a} | se st ngebe | ate n | | | | | | | | | | | | | | | |
| 7 | Do you work Arbeiten Sie | | | | full - ⁻ Vollzeit | time | ? | | par _{Teilz} | t-t eit | ime | ? | | W | ithou ne fixe | It c | ear eitsze | ly de | efin | ed t | ime | efra | meî |) | | | | |
| 8 | Do you work at h Arbeiten Sie (wenn a | າome, auch ກາ | , ever ur gele | n if it egentl | 's just ich) vor | occa: zu Ha | siona iuse? | lly? | | | | | | | | | | | | | | | Yes Ja | | | ſ | No Iein | |
| 9 | If Yes, how many | / hour | rs on | these | e days | on a | verag | ge? | | | ſ | Ло | | Tu | | W | e | | Th | | 1 | Fr | | S | a | | Su | |
| | Wenn Ja, wie viele S | tunder | n an di | iesen ⁻ | Tagen d | urchs | chnittl | ich? | | | | Мо | | Di | | Ν | /li | | Do | | | Fr | | S | a | | So | |
| 10 | Do you regularly Verbringen Sie auf G | stay o Jeschäf | overr ftsreis | night en ode | away er ähnli | from chem | hom regeln | e for näßig M | busi Iächt | nes: e au | strip ßerha | s or : Ib Ihi | simil er W | lar ? 'ohnu | ing? | | | | | | | | Yes Ja | | | r | No Iein | |
| 11 | lf yes, how many Wenn Ja, wie viele N | / days Jächte | per i pro M | mont Ionat (| :h on a durchsc | ivera hnittli | ge? ch? | | | | | | | | | | | | | | | | | Da Tag | ys / e / N | Mo /lona | nth t | |
| 12 | How many days (Wie viele Urlaubstag | of hol ge nehr | liday men S | do yo ie pro | ou tak Jahr? | e per | year | ? | | | | | | | | | | | | | | | | Da Tag | ys e | | | |
| 13 | Out of these holy Von diesen Urlaubst | ydays agen, v | , how wie vie | / mar ele Tag | ny day ge und I | s anc Nächte | l nigh e verb | ts do ringen | you Sie ni | spe icht : | end a zu Ha | way use (z | fror .B. a | n yo uf Re | our h ise in | om Ho | e? tel o | .ä) ⁻ | ? | | | | | Da Tag | ys e | | | |
| 14 | If you are <u>not</u> livi Wenn Sie <u>nicht</u> in eir | ing in nem Ei | a on n-Pers | e per sonen- | son ho Hausha | ouseł I <mark>lt leb</mark> e | nold, en, wie | how i e viele | nany Perso | y pe onen | ersor insge | ns liv esamt | e in Iebe | youi n in I | r flat hrer \ | / h Noh | OUS nung | e? g / Ih | rem | Hau | s | | | Pe Per | rsor sone | nS en | | |
| 15 | Where is your ho Wo ist Ihre Wohnun | ouse/f g / Ihr | flat? Haus? |) | Postc | ode PLZ | | | | Ci | ty Drt | | | | | | | | C | Cour I | ntry Land | | | | | | | |

| 16 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC other rooms: (please state) andere Zimmer (bitte nennen) |
|---------------|--|
| 17 | How big is your flat / bouse? $< 20 \text{ m}^2$ $30 - 40 \text{ m}^2$ $50 - 60 \text{ m}^2$ $70 - 80 \text{ m}^2$ $100 - 120 \text{ m}^2$ |
| 17 | Wie groß ist lhre Wohnung / lhr Haus? 20 20 m^2 40 10 m^2 40 10 m^2 40 10 m^2 40 100 m^2 40 100 m^2 40 100 m^2 40 100 m^2 |
| | |
| 18 | For how long have you been living in your current flat/house? Months Years Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Monate Jahre |
| 19 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Vears Jahre Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| 20 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? |
| 21 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 22 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? |
| | Not likely at all unlikely unwahrscheinlich unwahrscheinl |
| 23 | Do you store any data in the cloud? I don't know what the cloud is Yes No Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud ist Ja Nein |
| 24 | Are you on Facebook or any other social network? I don't know what Facebook is Yes No Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja Nein |
| 25 | How many hours of your <u>free time</u> do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Stunden / Woche |
| 26 | Personal information: Gender? female male Persönliche Informationen: Geschlecht weiblich männlich |
| | Age? 20 - 30 30 - 40 40 - 50 50 - 60 > 60 Alter |
| Thar Viele | k you very much for your effort. To return this form, please chose one of the following options: Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten |

| a) | Safe as pdf document under a different name and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurfbaum@network.rca.ac.uk |
|----|---|------------------------------------|
| b) | automated return, klick here: Automatische Antwort, hier klicken: | |

c) Print out Drucken Sie den Fragebogen aus and fax to: +49 (0)89.95 474 526 und faxen ihn an: Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? Wie viele Personen insgesamt leben in Ihrem Haushalt? 1 (Ich) 2 3 4 5 falls mehr: Personen |
|---|--|
| 2 | Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u> . |
| | Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die Sie zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren. |
| | Time Time Treit 11:30 10:30 10:3 |
| | Image: http://www.image: http://wwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwww |
| | Date (dd/mm) Datum (tt/mm) |
| | 9 2.14 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX |
| | NOTZI XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX |
| | |
| | |
| | |
| | |
| | |
| | If Yes: Please continue with question 4. Wenn ja: weiter mit Frage 4 If No: a) Please state why the week above was not typical, e.g. holiday, extratime at work, illness Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit) |
| | |
| | b) Please provide out of your memory another schedule of your times spent at home which describes a typical and representative week b) Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche. |
| | Time Training the second secon |
| | Aed Action 112:00 112:0 |
| | Tag tick/untick boxes for times when you are at your house, leave boxes plain for times you spend out of house (in excel change colour). |
| | bitte kreuzen Sie die Zeiten an, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer. |
| | |
| | Tuesday Dienstag |
| | Wednesday Mittwoch |
| | |
| | |
| | |
| | |
| | JUINER |

| 4 | Do you have r Haben Sie regeln | egular visitor näßig Besuch (z.8 | s, like partners or far B. Partner, Familie), de | mily, that fre r regelmäßig be | quently stay :i Ihnen zu Haus | at your home? e ist und/oder üb | ernachtet? | Yes Ja | X | No Nein | |
|----|-------------------------------------|-------------------------------------|---|--|--|--|---|----------------------------------|-------------------------|-------------------------|------------|
| | | lf yes: Pleas Wenn ja: weit | se continue with que ter mit Frage 5 | stion 5. | lf w | no: Please go Yenn Nein: weiter | to question 6. mit Frage 6 | | | | |
| 5 | Please provid Bitte erstellen Si | e out of your e aus Ihrem Ged | memory a typical scl ächtnis eine Aufzeichnur | hedule of the ng der Zeit, die I | e time your vi hr Gast in einer | isitor spends a typischen Woche | t your flat/hou bei Ihnen zu Ha | use use verbringt. | | | |
| | Time | 0:30 1:00 2:00 2:30 | 3:00 3:30 4:00 5:00 5:00 6:00 6:30 | 7:30 8:00 8:00 9:00 9:00 | 10:00 10:30 11:00 11:30 12:00 | 12:30 13:00 13:30 14:00 14:30 15:00 | 15:30 16:00 16:30 17:30 17:30 | 18:30 19:00 19:30 20:00 | 20:30 21:00 21:30 | 22:30 23:00 | 0:00 |
| | Day | 0:30 1:30 2:00 | 2:30 3:00 4:30 5:30 5:30 6:00 | 7:30 7:30 8:30 8:30 | 9:30 9:30 10:00 11:00 11:30 | 12:00 12:30 13:00 13:30 14:00 14:30 | 15:00 15:30 16:30 16:30 17:30 | 18:00 18:30 19:00 19:30 | 20:30 20:30 21:00 | 21:30 22:00 22:30 | 23:30 |
| | Monday | mark boxes for t bitte markieren | times when you are at your h Sie die Zeiten, die Sie zu Hau | ouse, leave boxes use verbringen, la: | plain for times you ssen Sie die übrige | spend out of house. n Kästchen leer, | | KK KK | | | - XX |
| | Montag Tuesday | AXXXX | संस्थानसंस्रेत्रस्रे | **** | | ANAMA | | | XXX | XXX | XX |
| | Wednesday | XXXXX | HYXH HYXX | XXXXXX | NAX XXX | XXXXXX | | (XXXV | | | |
| | Thursday | DEXAX | | XXXXX | XXXXX | IXXXIXX | XXXXXXX | 5 | XX | XXX | XX |
| | Friday | XXXXX | KICKIXXXXXX | XNXMX | ANKIN L | TIXXXXP | | XXXXXX | | | |
| | Saturday | XXXXX | XXXXXXXXX | X X X X X | | | | NAXX | X | | |
| | Sunday | | I KANANYA | XXXXXX | a X X X X X | | | | | | |
| 6 | Employment Erwerbsstatus | status | employed | self- | employed ^{ndig} | unemploye | ed stud | ident ient/in | | in train In Ausbild | ing ung |
| | | | Rentner | andere | r, please state s, bitte angeben | e | | | - | | |
| 7 | Do you work Arbeiten Sie | | full - time? Vollzeit | part _{Teilzeit} | - time? | without cle | early defined t Itszeiten | imeframe? | | | |
| 8 | Do you work Arbeiten Sie (w | at home, eve ann auch nur gel | n if it's just occasion ege <mark>ntlich) von</mark> zu Hause? | ally? | | | | Yes | | No Nein | X |
| 9 | If Yes, how m Wenn Ja, wie vi | any hours on ele Stunden an d | these days on avera liesen Tagen durchschnit | age? ttlich? | Mo | Tu We Di W | e Th Ii Do | Fr Fr | Sa Sa | Su So | |
| 10 | Do you regul Verbringen Sie | arly stay over auf Geschäftsrei | night away from hor sen oder ähnlichem rege | me for busine Imäßig Nächte | esstrips or sin außerhalb Ihrer | nilar ? Wohnung? | | Yes Ja | | No Nein | X |
| 11 | lf yes, how n Wenn Ja, wie vi | any nights pe ele Nächte pro N | er month do you spe Monat verbringen Sie dur | nd on averag | ge outside yo usserhalb Ihrer V | ur flat? Wohnung? | | | Days / Tage / I | Month Monat | |
| 12 | Roughly, hov Wie viele Urlau | v many days o bstage nehmen i | of holiday do you tak Sie ungefähr pro Jahr? | ke per year? | | _ | | 45 | Days Tage | | |
| 13 | Out of these Von diesen Urla | holydays, how aubstagen, wie v | w many days and nig iele Tage und Nächte ver | ghts do you s rbringen Sie nic | pend away fr ht zu Hause (z.B | om your home auf Reise im Hot | e? tel o.ä)? | 25 | Days Tage | | |
| 14 | Where is you Wo ist Ihre Wo | ur house/flat? hnung / Ihr Haus | Postcode S | 803 | City 100 | nchen | Cou | ntry Co | utsi | hle. | e Ol |

| 1 | C |
|---|---|
| 1 | - |
| | |

| 15 | How many rooms of the following category does your flat/house have? Nie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC other rooms: (please state) andere Zimmer (bitte nennen) | |
|--------------|--|----------------|
| 16 | How big is the flat / house you live in? < 20 m² 🔲 30 - 40 m² 🧻 50 - 60 m² 🔲 70 - 80 m² 🧾 100 - 120 n |) ² |
| 10 | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² 1 40 - 50 m ² 1 60 - 70 m ² 1 80 - 100 m ² 2 > 120 n | 1 ² |
| 17 | For how long have you been living in your current flat/house? Months Years Jahre | |
| 18 | From now, for how long are you planning to keep staying in the International Internati | |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? | |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eRead Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lese | ier jerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Fooder Fotographie-Sammlungen in der Zukunft ersetzen? Not likely at all unlikely lice unverberscheinlich ich weiß nicht weiß nicht weiß nicht verscheinlich | ilm- / 🔲 |
| | Uberhaupt nicht wahrscheinlich unwahrscheinlich in ein weis neue | |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes I Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud ist Ja Nei | 1 |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes I An Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja Nei | |
| 24 | How many hours of your free time do you spend per week on the internet? Hours/Week Stunden / Woo Stunden / Woo | ne |
| 25 | Personal information: Gender? female main Personliche Informationen: Geschlecht männlich | e 🚺 |
| | Age? 20-30 🔲 30-40 🔲 40-50 🔲 50-60 🔝 >6 Alter | |
| Tha Viele | k you very much for your effort. To return this form, please chose one of the following options: Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten a) Safe as pdf document and send to florian.wurfbaum@network.rca.ac.uk Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | |

and fax to: +49 (0)89.95 474 526 und faxen ihn an:

Thank you very much for your support — Vielen Dank für Ihre Unterstützung

b)

Print out Drucken Sie den Fragebogen aus

Wohngebäude- Nutzungs- Umfrage Dwelling Utilisation Survey -

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | 1 How many persons all together live in your house Wie viele Personen insgesamt leben in Ihrem Haushalt? | nold? 🚺1 (Me) 1 (Ich) | 2 3 2 3 | 4 5 4 5 | if more: falls mehr: | Persons Personen |
|---|--|--|--|--|--|---|
| 2 | 2 Please provide a record of the hours <u>you</u> spend at at home, leave others empty). You can start with | your household/ho any day of the week | ome in seven o c, please just r | consecutive da make sure you | ys (mark the fi record <u>seven (</u> | ields when you are consecutive days. |
| | Bitte erstellen Sie für sieben aufeinander folgende Tage eine Sie können mit einem beliebigen Tag beginnen, es ist aber w | Aufzeichnung der Zeit, ichtig, daß Sie einen zus | die <u>Sie</u> zu Hause ammenhängend | verbringen (mark len Zeitraum dokt | ieren Sie die jew mentieren. | eiligen Zeitabschnitte). |
| | ime unitii 11300 11000 100000 1000000 | 8:30 9:30 9:30 0:30 0:30 | 12:00 12:00 13:00 13:30 | 14:30 15:00 15:30 16:00 16:30 16:30 | 17:30 18:00 19:00 19:30 19:30 20:00 | 20130 21100 21130 22130 22230 22300 23300 23300 23300 23300 |
| | 11:00 10 | 7:30 8:00 8:30 9:00 9:30 10:30 10:30 10:00 10:30 | 11:30 12:00 12:30 13:00 13:30 | 14:00 14:30 15:30 15:30 16:30 16:30 | 17:00 17:30 18:30 18:30 19:00 19:30 | 20:00 20:30 21:00 21:30 22:30 22:30 22:30 22:30 22:30 23:30 |
| | Date (dd/mm) | | | | | |
| | Datum (tt/mm) | | | | | |
| | 91 | | | | XXXXXXX | XXXXXXXXX |
| | NO.2. NO.2 NO.2 NO.2 NO.2 NO.2 NO.2 NO.2 | (XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | | | | XXXXXXXX |
| | | | ***** | XXXXX | | |
| | | | | | | XXXXXXXXX |
| | | | | | | XXXXXXXXXX |
| 3 | 3 Would you estimate the week you recorded abov Denken Sie, daß die oben aufgezeichnete Woche eine typisc | e as a typical and re he und repräsentative V | epresentative Noche ist? | week? | Yes Ja | i 🔣 No 🛄 Nein |
| | If Yes: Please continue with qu Wenn ja: weiter mit Frage 4 | estion 4. | | | | |
| | If No: a) Please state why Wenn Nein a) Bitte geben Sie an, v | the week above wa varum die aufgezeichne | as not typical, te Woche untypi | e.g. holiday, e sch ist (z.B. wg. U | xtratime at wo rlaub, Überstund | ork, illness en, Krankheit) |
| | | | | | | in the second |
| | b) Please provide o | ut of your memory | another sched | dule of your tir | nes spent at h | ome |
| | b) Bitte erstellen Sie au in einer typischen un | is Ihrem Gedächtnis eine nd repräsentativen Woo | e Aufzeichnung I he. | hrer zu Hause ver | brachten Zeit | |
| | Time Trime Until 0:300 0 | 2200 2500 2500 2500 2500 2500 2500 2500 | 11:30 12:30 13:00 13:30 13:30 13:30 | 14:30 15:00 15:30 16:00 16:00 16:30 | 17:30 18:00 18:30 19:00 19:30 20:00 | 20:30 21:00 21:30 22:30 22:30 23:30 23:30 23:30 23:30 23:30 23:30 |
| | Part Part Part Part Part Part Part Part | 7:30 7:30 8:30 8:30 9:30 9:30 9:30 10:30 | 11:00 11:30 12:30 12:30 13:00 | 14:00 14:30 15:00 15:30 16:30 | 17:00 17:30 18:00 18:30 19:30 | 20:00 20:30 21:30 21:30 21:30 22:30 22:30 22:30 23:30 23:30 |
| | Tag tick/untick boxes for times when you are at you | house, leave boxes plain fo | r times you spend o | out of house (in excel | change colour). | |
| | bitte kreuzen Sie die Zeiten an, die Sie zu Hauss Monday | verbringen, lassen Sie die l | übrigen Kastchen le | | | |
| | Montag Tuesday | | | | | |
| | Dienstag Wednesday | | | | | |
| | Mittwoch Thursday | | | | | |
| | Donnerstag Friday | | | | | |
| | Freitag Saturday | | | | | |
| | Samstag Sunday | | | | | |

Sunday Sonntag

| 4 | Do you have Haben Sie regel | regular visitors, like partners or family, tha näßig Besuch (z.B. Partner, Familie), der regelmä | at frequently stay at your home? Yes L No X ißig bei Ihnen zu Hause ist und/oder übernachtet? Ja Nein |
|----|------------------------------------|--|---|
| | | If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5 | If no: Please go to question 6. Wenn Nein: weiter mit Frage 6 |
| 5 | Please provic Bitte erstellen S | e out of your memory a typical schedule o e aus Ihrem Gedächtnis eine Aufzeichnung der Zei | of the time your visitor spends at your flat/house t, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. |
| | Time | 1:0000 1:0000 1:000 1:00000 1:0000 1:0000 1:00000 1:00000 1:00000 1:00000 1:00000 1:00000 1:00000 1:000000 1:00000000 | 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 9:300 11:300 <th< td=""></th<> |
| | Day | 7:00 0:00 0:00 0:00 0:10 0:10 0:10 0:10 | 222000 22000 22000 22000 22000 22000 22000 22000 22000 22000000 |
| | 106 | mark boxes for times when you are at your house, leave bitte markieren Sie die Zeiten, die Sie zu Hause verbrin | boxes plain for times you spend out of house. gen, lassen Sie die übrigen Kästchen leer. |
| | Monday Montag | | |
| | Tuesday Dienstag | | |
| | Wednesday Mittwoch | | |
| | Donnerstag | | |
| | Freitag | | |
| | Samstag Sunday Sonntag | | |
| 6 | Employment Erwerbsstatus | status employed angestellt | self- employed unemployed student in training |
| | | Rentner D | other, please state and |
| 7 | Do you work Arbeiten Sie | full - time? | part - time? Without clearly defined timeframe? |
| 8 | Do you work Arbeiten Sie (w | at home, even if it's just occasionally? enn auch nur gelegentlich) von zu Hause? | Yes 🔀 No Ja |
| 9 | If Yes, how n Wenn Ja, wie v | any hours on these days on average? ele Stunden an diesen Tagen durchschnittlich? | Mo Tu We Th Fr Sa Su Mo Mo Di Mi Do Fr Sa So |
| 10 | Do you regu Verbringen Sie | arly stay overnight away from home for b auf Geschäftsreisen oder ähnlichem regelmäßig Nä | usinesstrips or similar ? Yes I No ichte außerhalb Ihrer Wohnung? Ja Nein |
| 11 | lf yes, how n Wenn Ja, wie v | aany nights per month do you spend on a ele Nächte pro Monat verbringen Sie durchschnitt | verage outside your flat? Days / Month lich ausserhalb Ihrer Wohnung? Tage / Monat |
| 12 | Roughly, how Wie viele Urlau | v many days of holiday do you take per ye bstage nehmen Sie ungefähr pro Jahr? | ear? Days Tage |
| 13 | Out of these Von diesen Url | holydays, how many days and nights do y ubstagen, wie viele Tage und Nächte verbringen S | you spend away from your home? Days lie nicht zu Hause (z.B. auf Reise im Hotel o.ä)? Tage |
| 14 | Where is you | rr house/flat? Postcode | City Zwingenberg Country Dearfichland Ort Land |

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC |
|--------------|--|
| - | andere Zimmer (bitte nennen) |
| 16 | How big is the flat / house you live in? $< 20 \text{ m}^2$ $30 - 40 \text{ m}^2$ $50 - 60 \text{ m}^2$ $70 - 80 \text{ m}^2$ $100 - 120 \text{ m}^2$ Größe ihrer Wohnung /ihres Hauses? $20 - 30 \text{ m}^2$ $40 - 50 \text{ m}^2$ $60 - 70 \text{ m}^2$ $80 - 100 \text{ m}^2$ $> 120 \text{ m}^2$ |
| 17 | For how long have you been living in your current flat/house? Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer Jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? own Eigentümer/In Kieter/In |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? |
| | Not likely at all 🕅 unlikely 🔲 don't know 🗐 likely 🔲 very likely 🔲 very likely 🚺 |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes I No X Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud ist Ja Nein |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes X No I Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? Ich welß nicht was Facebook ist Ja Nein |
| 24 | How many hours of your free time do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Hours/Week |
| 25 | Personal information: Gender? female mainlich mannlich |
| | Age? 20 - 30 🔟 30 - 40 📃 40 - 50 🔲 50 - 60 🔲 > 60 👿 |
| Tha Viele | ink you very much for your effort. To return this form, please chose one of the following options: en Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten |

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurft | oaum@network.rca.ac.uk | |
|----|--|--------------------------------|-----------------------------|--|
| b) | Print out Drucken Sie den Fragebogen aus | and fax to: und faxen ihn a | +49 (0)89.95 474 526 an: | |

Thank you very much for your support --- Vielen Dank für Ihre Unterstützung

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| How many persons all together live in your household? 1 (Me) 2 3 4 5 if more: | |
|---|---|
| Wie viele Personen insgesamt leben in Ihrem Haushalt? 1 (Ich) 2 3 4 5 falls mehr: | Persons Personen |
| the fill have been been been been been to seven consecutive days (mark the fi | elds when you are |
| at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven c</u> | consecutive days. |
| Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die Sie zu Hause verbringen (markieren Sie die jewe | eiligen Zeitabschnitte). |
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| | 100 |
| Denken Sie, daß die oben aufgezeichnete worne eine typische und repräsentative worde later If Yes: Please continue with question 4. Wenn ia: weiter mit Frage 4 | |
| If No. a) Please state why the week above was not typical, e.g. holiday, extratime at wo | |
| | ork, illness |
| Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunde | en, Krankheit) |
| Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunde | ork, illness en, Krankheit) Duruld |
| Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunde 2. 2055 Untypleure Sign Fry - 1000 - 19 b) Please provide out of your memory another schedule of your times spent at ho | bluff |
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| Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstundi D Job 5 Uur ypluur Sign Fm - rund ~ M b) Please provide out of your memory another schedule of your times spent at he which describes a typical and representative week b) Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche. um und men typischen und repräsentativen Woche. Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche. um und men typischen und repräsentativen Woche. Bitte erstellen Sie aus Ihrem Gedächtnis eine Rufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche. um und Rei R R R R R R R R R R R R R R R R R R | ork, illness en, Krankheit) b b b b b b b b b b b b b b b b b b b |
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| Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, überstundi Dieste provide out of your memory another schedule of your times spent at he which describes a typical and representative week b) Please provide out of your memory another schedule of your times spent at he which describes a typical and representative week b) Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche. utage 000000000000000000000000000000000000 | ork, illness en, Krankheit) b b b b b b b b b b b b b b b b b b b |
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| 4 | Do you h Haben Sie i | ave r egelm | egu iäßij | lan g Bi | r vi esu | isit | tor (z. | rs, .B. | lik Par | e p tne | oar er, f | tne an | ers | | r fa | am er i | ily | , t | ha nãí | t fi Big | rec bei | qui | ent | tly n zi | sta u Ha | ay | at e is | yo t u | ur nd/ | ho | me | ? ber | na | chte | et? | | | | | Y | es | | | | | Nei | in | E |
|---|------------------------------------|------------------|--------------|--------------|-------------|-------------|------------|--------------|------------|--------------|--------------|--------------|--------------|-------|-------------|------------|--------------|-------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|------------|---------|-------------|--------------|------------|-------|-------------|-------------|-----------|-------|-------|-------|--|-------|-------|-----------------------|-------|--|-------|-------|
| | | | lf w | ye | es: n ja | Pli a: v | ea vei | se | co | nti t Fi | inu | e s | wit | th | qu | es | tio | n | 5. | | | | | | | lf w | nc en | r: F | lea | w | go | rm | it F | rag | stic e 6 | on | 6. | | | | | | | | | | | |
| 5 | Please pr Bitte erstel | ovide Ien Sie | e ou au | ut d s Ih | of | yo m (| ur | m däc | en | 101 lîs e | Y a | A | /pi | ica | | che | ed de | ulerz | e o leit, | ft , di | he e Ił | ti | me Gas | e y | oui 1 eii | r vi ner | typ | or | spe her | en W | ds i och | at v ie b | /ou eil | ur f | flat | t/h zu ł | ou Iau | ise | ver | bri | ngt | | | | | | | |
| | Time | hrzeit | 0:30 | 1:00 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:00 | 4:30 | 5:00 | 5:30 | 6:00 | 6:30 | 7:00 | 7:30 | 8:00 | 8:30 | 9:00 | 9:30 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:00 | 13:30 | 14:00 | 16:00 | 15-30 | 16:00 | 16:30 | 17:00 | 17:30 | 18:00 | 18:30 | 19:00 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 22:50 | 23:00 | 0:00 |
| | Day | from | 00:0 | 0:30 | 1:00 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:00 | 4:30 | 5:00 | 5:30 | 6:00 | 6:30 | 7:00 | 7:30 | 8:00 | 8:30 | 00:6 | 9:30 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:00 | 13:30 | 14:30 | 15:00 | 15:30 | 16:00 | 16:30 | 17:00 | 17:30 | 18:00 | 18:30 | 19:00 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 22200 | 22:30 | 23:30 |
| | Tag | / | m | ark tte | box | (es rkie | for | tim n Sie | es v | vhe e Ze | n yo | u a I, di | re a e Si | it yo | uri u Ha | hou | ise, e ve | lea | ive t | en, | es p lass | olair sen | n foi Sie | r tir dle | nes übr | you | spe n Ki | end istc | out | of h | ous | e. | | | | | | | | | | | | | | | | |
| | Monday | | Г | T | Г | Г | Т | T | T | Г | T | | C | Г | Г | Г | Г | L | T | L | L | T | T | T | T | | Г | | | | | Т | I | I | Т | T | Т | L | L | × | E | | | | | | | J |
| | Montag | | - | | | | | | - | | - | | - | - | 2 | - | - | - | - | - | ÷ | - | ÷ | - | - | - | ÷ | | | - | | - | - | - | - | ÷ | - | ŕ | - | | - | N | | | | | | T |
| | Tuesday Dienstag | | - | Ľ | | | 1 | - | 1 | Ľ | | | | | | | | Ľ | | t | | t | | t | | Ľ | | | | | | 2 | t | 2 | t | 2 | t | 1 | t | | C | x | | | | F | | Ţ |
| | Wednesda | y | C | L | L | Г | Ļ | L | L | L | L | | L | L | L | L | Ļ | L | L | L | L | | 1 | Ļ | - | ŀ | Ļ | - | - | - | | - | + | - | ł | - | | ÷ | ł | + | H | ۲ | ۲ | - | - | | | t |
| | Mittwoch Thursday Donnerstag | | C | Г | T | 1 | T | T | I | L | L | 8 | L | L | C | L | Ľ | I | Ľ | L | I | I | T | T | Ţ | L | L | | | | 1 | 1 | T | ļ | I | Ţ | I | Ļ | E | | E | × | | | | | | Ţ |
| | Friday | | | Г | L | E | T | L | T | L | Ļ | L | C | L | L | L | Ļ | L | L | L | L | L | Ļ | I | Ļ | 1 | Ļ | | - | - | | 4 | - | - | | - | ÷ | - | F | 4 | H | - | - | - | - | - | - | - |
| | E PARTERIA I | | | | | | | | | | | | | | | | 1 | - | | | | | - | - | - | - | - | - | - | - | - | | - | - | 100 | - | - | - | - | 1000 | And in case of the local division of the loc | 1000 | - | and the second second | - | And in case of the local division of the loc | - | - |

| | Samstag Sunday Sonntag | | | | | | |
|----|--|---|--|---|-----------------------------|--------------------|------------------------------|
| 6 | Employment status Erwerbsstatus | employed angestellt | self- employed | unemployed | student/In | | in training In Ausbildung |
| | | retired Rentner | other, please stat anderes, bitte angeben | te | | | |
| 7 | Do you work Arbeiten Sie | full - time? Vollzeit | part - time? | without clear | rly defined timefr eiten | ame? | |
| 8 | Do you work at home, e Arbeiten Sie (wenn auch nur | ven if it's just occasion; gelegentlich) von zu Hause? | ally? | | | Yes 🔲 Ja | No X |
| 9 | If Yes, how many hours Wenn Ja, wie viele Stunden a | on these days on avera n diesen Tagen durchschnit | nge? Mo tlich? Mo | Tu We Di Mi | Th F Do F | r Sa Sa | Su Su So |
| 10 | Do you regularly stay ov Verbringen Sie auf Geschäfts | ernight away from hon reisen oder ähnlichem regel | ne for businesstrips or si mäßig Nächte außerhalb Ihre | milar ? r Wohnung? | | Yes 🔲 Ja | No 🔽 |
| 11 | lf yes, how many nights Wenn Ja, wie viele Nächte pr | per month do you spei o Monat verbringen Sie dur | nd on average outside yo chschnittlich ausserhalb Ihrer | our flat? Wohnung? | | Days / Tage / N | Month Ionat |
| 12 | Roughly, how many day Wie viele Urlaubstage nehme | s of holiday do you tak an Sie ungefähr pro Jahr? | e per year? | | E | Days Tage | 30Tug |
| 13 | Out of these holydays, h Von diesen Urlaubstagen, wi | 10w many days and nig e viele Tage und Nächte ver | hts do you spend away f bringen Sie nicht zu Hause (z.1 | rom your home? B. auf Reise im Hotel o | o.ä)? | Days Tage | |
| 14 | Where is your house/fla Wo ist Ihre Wohnung / Ihr Ha | it? Postcode | City | | Country Land | | |
| | | | | hot im | possibilit | y | |

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| | How many rooms of the follo Wie viele Zimmer der folgenden Ka | wing category does you tegorien hat Ihre Wohnung / | other rooms: | (please state) | Bedrooms Schlafzimme Livingroon Wohnzimme Kitchen or Küche oder Bathroom Badezimmer WC (separ Extra WC | r ns r Kitchen-Diner Wohnküche rate) | |
|--|--|--|---|---|--|--|-------------|
| 1 C | Use his is the flat / house us | 100 m^2 | 30 - 40 m ² | 50 - 60 m ² | 70 - 80 m² | 100 - 120 m ² | X |
| 10 | Größe ihrer Wohnung /ihres Hause | 20 - 30 m ² | 40 - 50 m ² | 60 - 70 m ² | 80 - 100 m² | > 120 m² | |
| 17 | For how long have you been Wie lange leben Sie schon in Ihrer j | living in your current fla etzigen Wohnung / Haus? | at/house? | Months Monate | NT | Years Jahre | |
| 18 | From now, for how long are flat/house you currently live Ab heute, für wie lange haben Sie v | you planning to keep sta in? vor, in Ihrer jetzigen Wohnun | aying in the ng / Haus noch zu wohnen? | Months Monate | 2 🏴 | Years Jahre | |
| 19 | Do you own or do you rent t Sind Sie Eigentümer/In oder Miete | he place you live in? r/in der von Ihnen bewohnte | en Immobilie? | own Eigentüme | r/In | rent Mieter/In | |
| 20 | Do you use any of these item Benutzen Sie eines dieser Geräte? | MP3 Playe MP3 Spiele | Tablet PC (iPa ar Tablett PC (z.B. iP | ad) 🛛 Smartpho ad) Smartpho | ne Kindle od | e or other eReade ler anderes E-Lesege | r |
| | collections of books, music, v Wie wahrscheinlich ist es Ihrer Me oder Fotographie-Sammlungen in o | videos, photographies a inung nach, daß die zuvor ge der Zukunft ersetzen? | nd similar digitalizable nannten Geräte (oder digita | objects in the futur le Speichertechniken al | e? Igemein) persönlici | he Buch-, Musik-, Filr | n- |
| | Not likely at a Überhaupt nicht wahrscheinlic | II 🔲 unlikel h unwahrscheinlig | ly 🔲 don't kni ch ich weiß n | ow 🛄 icht wahrs | likely X | very likely sehr wahrscheinlich | |
| 22 | Not likely at a Überhaupt nicht wahrscheinlic Do you store any data in the Speichern Sie Daten in der Cloud? | II unlikel h unwahrscheinlic cloud? | ly D don't kni ch ich weiß n I don' | ow wahrs icht wahrs t know what the clo ch welß nicht was die Clo | likely X s cheinlich y oud is Ye oud ist | very likely sehr wahrscheinlich es No Ja Nein | D R |
| 22 | Not likely at a Überhaupt nicht wahrscheinlic Do you store any data in the Speichern Sie Daten in der Cloud? Are you on Facebook or any Sind sie auf Facebook oder in irger | II unlikel h unwahrscheinlic cloud? other social network? ndeinem anderen sozialen Ne | ly on't kni ch ich weiß n I don' Ic I don' etzwerk? ic | ow wahrs icht wahrs t know what the clo th welß nicht was die Clo t know what Facebo th weiß nicht was Facebo | likely Kely cheinlich Ye oud is Ye ook is Ye ook is Ye | very likely sehr wahrscheinlich es No Ja No Ja No Nein | |
| 222 | Not likely at a Überhaupt nicht wahrscheinlic Do you store any data in the Speichern Sie Daten in der Cloud? Are you on Facebook or any Sind sie auf Facebook oder in irger How many hours of your <u>fre</u> Wie viel Freizeit verbringen Sie im | II unlikel h unwahrscheinlic cloud? other social network? ndeinem anderen sozialen Ne e time do you spend pe Internet? | ly on't know ich weiß n I don't ich ich weiß n I don't ich ich ich ich ich ich ich ich | ow wahrs icht wahrs t know what the clo th welß nicht was die Clo t know what Facebo th welß nicht was Facebo t? | likely cheinlich oud is ye bod is ye bok is ye | very likely sehr wahrscheinlich es No Ja No Ja No Nein Hours/Week Stunden / Woche | |
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| 222 23 24 25 | Not likely at a Überhaupt nicht wahrscheinlic Do you store any data in the Speichern Sie Daten in der Cloud? Are you on Facebook or any Sind sie auf Facebook oder in irger How many hours of your <u>fre</u> Wie viel Freizeit verbringen Sie im Personal information: Persönliche Informationen: | II unlikel h unwahrscheinlic cloud? other social network? deinem anderen sozialen Ne <u>e time</u> do you spend pe Internet? Gender? Geschlecht Age? 20 - 30 Alter | ly don't kni ich weiß n I don' ic etzwerk? ic r week on the internet 30 - 40 | ow wahrs icht wahrs t know what the clo th welß nicht was die Cle t know what Facebo th weiß nicht was Facebo t? 40 - 50 | likely weiblich sud is ve pod ist Ye pok is Ve female weiblich 50 - 60 | very likely sehr wahrscheinlich es No Ja No Nein Hours/Week Stunden / Woche männlich 2 > 60 | |
| 222 23 24 25 Thai /iele | Not likely at a Überhaupt nicht wahrscheinlic Do you store any data in the Speichern Sie Daten in der Cloud? Are you on Facebook or any Sind sie auf Facebook oder in irger How many hours of your <u>fre</u> Wie viel Freizeit verbringen Sie im Personal information: Persönliche Informationen: ank you very much for your effe en Dank für Ihre Bemühungen. Um d | II unlikel h unwahrscheinlic cloud? other social network? deinem anderen sozialen Ne <u>e time</u> do you spend pe Internet? Gender? Geschlecht Age? 20 - 30 Alter ort. To return this form, iese Umfrage zurückzuschick | ly don't kni ich weiß n I don' ic etzwerk? I don'e ic ic ic ic ic ic ic ic ic ic ic ic ic | wahrs wahrs t know what the clo th welß nicht was die Clo t know what Facebo th weiß nicht was Facebo t? 40 - 50 | likely weight ist female weightch | very likely sehr wahrscheinlich | |
| 22 23 24 25 Thai | Not likely at a Überhaupt nicht wahrscheinlic Do you store any data in the Speichern Sie Daten in der Cloud? Are you on Facebook or any Sind sie auf Facebook oder in irger How many hours of your <u>fre</u> Wie viel Freizeit verbringen Sie im Personal information: Persönliche Informationen: ank you very much for your effe en Dank für Ihre Bemühungen. Um d a) Safe as pdf docum Speichern Sie das PDF- | II unlikel h unwahrscheinlic cloud? other social network? odeinem anderen sozialen Ne e time do you spend pe Internet? Gender? Geschlecht Age? 20 - 30 Alter ort. To return this form, iese Umfrage zurückzuschick ent and send to Dokument unter einem and | ly don't kni ich weiß n I don' ic etzwerk? I don'e ic ic ic ic ic ic ic ic ic ic ic ic ic | wahrs icht wahrs t know what the clo th welß nicht was die Clo t know what Facebo th weiß nicht was Facebo t? 40 - 50 40 - 50 florian.wul an | female weiblich 50 - 60 | very likely sehr wahrscheinlich es No Ja No Nein es No Nein Hours/Week Stunden / Woche Male männlich 2 > 60 | D X X IN IC |
| 22 23 24 25 | Not likely at al Überhaupt nicht wahrscheinlic Do you store any data in the Speichern Sie Daten in der Cloud? Are you on Facebook or any Sind sie auf Facebook oder in irger How many hours of your free Wie viel Freizeit verbringen Sie im Personal information: Persönliche Informationen: ank you very much for your efferen Dank für Ihre Bemühungen. Um die a) Safe as pdf docum Speichern Sie das PDF- b) Print out Drucken Sie den Frage | II unlikel unwahrscheinlic cloud? other social network? adeinem anderen sozialen Ne e time do you spend pe Internet? Gender? Geschlecht Age? 20 - 30 Alter ort. To return this form, iese Umfrage zurückzuschick ent and send to Dokument unter einem and bogen aus | ly don't kni ich weiß n I don' ic etzwerk? I don' etzwerk? ic r week on the internet 30 - 40 please chose one of th en, wählen Sie bitte eine de eren Namen und senden es | wahrs icht wahrs t know what the clo th weiß nicht was die Clo t know what Facebo t know | female weiblich 50 - 60 | very likely sehr wahrscheinlich es No Ja No Nein Hours/Week Stunden / Woche männlich 2 > 60 | |

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? | 1 (Me) | 2 | 3 | 4 | 5 | if more: | Persons |
|---|---|---------|---|---|---|---|-------------|----------|
| | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| Time hrzeit 0:30 | 1:00 1:30 2:00 | 2:30 | 3:30 | 4:00 | 4:30 | 5:30 | 6:00 | 6:30 | 7:30 | 0:00 | 8:00 | 0.00 | 02.6 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:00 | 14:00 | 14:30 | 15:00 | 15:30 | 16:00 | 16:30 | 17:00 | 18-00 | 00.01 | 19:00 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 00:77 | 23:00 | 23:30 | 0:00 |
|--|--|----------------------------|---------------------------------|---------------------------|--------------------------|----------------------------|---------------------|--------------------|-------------|-----------|-----------------|---------------------|-------------------|--------------|-----------|--------------|-------------|-------------------|-------------|---------------|------------|--------------|-------------|------------|------------|------------|----------|-------|--------------|-----------|---------|-------|-------------|--------------|-------|-------|-------|-------|-------|
| from 0:00 | 0:30 1:00 1:30 | 2:00 | 3:00 | 3:30 | 4:00 | 5:00 | 5:30 | 6:00 | 6:30 | 00:/ | 7:30 | 00:20 | 00.6 | 9:30 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:30 | 14:00 | 14:30 | 15:00 | 15:30 | 16:00 | 16:30 | 17-20 | 00.01 | 18:30 | 19:00 | 19:30 | 20:00 | 20:30 | 21:00 | 05:12 | 22:30 | 23:00 | 23:30 |
| Date (dd/mm) Datum (tt/mm) | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | L | | | | L | | | | _ | | _ | |
| CARLER C | | | | F | | 1 | L | | | | | | - | | Ł | | L | _ | | | + | 4 | t | | L | | | 4 | | 1 | + | ŧ | ł | | | 4 | 4 | ÷ | |
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| 7214 = | SE | 1 | | L | | | - | | | | | 1 | - | T | L | L | L | | | | | Т | Г | | L | e. | | | | I | 1 | I | | | | | | t | |
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| IN DRAYE | | T | | Т | | Т | Т | | | | | | T | Т | T | T | | | | | Т | Т | L | L | L | | | I | | T | | Т | Т | Γ | | | | Γ | C |
| Would you estima Denken Sie, daß die o If W | ate the oben au Yes: Ienn ja: | e we fgeze Ple we | eek y eichn ease eiter | you ete e cc mit | Wo Wo Dnti Frag | core che nue ge 4 | ded eine e wi | l ab typ ith | pisc qu | e i he | as un tio | a t d re in 4 | ypi epri 1. | ical äsei | l ar | nd i tive | vep W | och | ser e is | nta it? | tive | e w | ee | k? | | | | | | | , it | Yes | 5 | X | ł | 1 | Nei | 1 | L |
| lf w | No: /enn Ne | in | a) a) | P Bi | leas itte (| se s gebe | tati en Si | e w ie a | vhy n, w | var | rum | die | ek e au | ab | ov | e v | vas | We | ot t och | yp e u | ica nty | l, e oisc | .g. h is | ho t (z | lid .B. | ay, wg | ex Ur | laul | atir b, i | ne)be | at | und | ork Ien, | , ill Kra | ne | ss |) | | |
| | | | b) | P W Bi | leas /hic | se p h d | orov esc | rib | e o es i | ut at | of typ | yo ica | ur al a Ged | me nd | em rej | ory pre | y ai ese | not nta Auf | tiv zeio | er si /e v | che wee | edu ek | er : | of u F | yo | ur se v | tim | orac | sp | en 2 | t a | th | om | ne | | | | | |
| | | | 51 | in | ein | ert | vois | he | nur | nd | ren | rās | ent | ativ | ven | We | oche | e. | | | | | | | | | | | | | | | | | | | | | |

Day Tag tick/untick boxes for times when you are at your house, leave boxes plain for times you spend out of house (in excel change colour). bitte kreuzen Sie die Zeiten an, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer Monday Montag Tuesday Dienstag Wednesday Mittwoch Thursday Donnerstag Friday Freitag Saturday Samstag Sunday Sonntag

Do you have regular visitors, like partners or family, that frequently stay at your home? 4 Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet?

V No Yes Ja Nein 46

If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5

If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

| 5 | Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. |
|----|--|
| | Time Trime Trime Trime Trime Trime Trime Trime Until 1000 0330 0330 0330 0330 0330 0330 033 |
| | Arrow Construction of the second seco |
| | Tag mark boxes for times when you are at your house, leave boxes plain for times you spend out of house. |
| | Monday |
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| | |
| | Samstag Sunday Sonntag |
| 6 | Employment status |
| | retired Rentner anderes, bitte angeben |
| 7 | Do you work Arbeiten Sie Vollzeit Vollzeit Vollzeit Vollzeit Vollzeit Vollzeit Vollzeit |
| 8 | Do you work at home, even if it's just occasionally? Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? Yes Ja |
| 9 | If Yes, how many hours on these days on average? Mo Tu We Th Fr Sa Su Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo Di Mi Do Fr Sa So |
| 10 | Do you regularly stay overnight away from home for businesstrips or similar ? Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? |
| 11 | If yes, how many nights per month do you spend on average outside your flat? Days / Month Tage / Monat |
| 12 | Roughly, how many days of holiday do you take per year? Days Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? Days |
| 13 | Out of these holydays, how many days and nights do you spend away from your home? Days Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä)? |
| 14 | Where is your house/flat? Postcode CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC |

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Wohnzimmer Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC | |
|--------------|--|---|
| 16 | How big is the flat / house you live in? < 20 m² 🔲 30 - 40 m² 🔲 50 - 60 m² 🔲 70 - 80 m² 📃 100 - 120 m² | X |
| | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m² 📃 40 - 50 m² 🔲 60 - 70 m² 🚺 80 - 100 m² 🔲 > 120 m² | |
| 17 | For how long have you been living in your current flat/house? Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre | |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? | |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? own Eigentümer/In | |
| 20 | Do you use any of these items?MP3 PlayerTablet PC (iPad)SmartphoneKindle or other eReaderBenutzen Sie eines dieser Geräte?MP3 SpielerTablett PC (z.B. iPad)SmartphoneKindle oder anderes E-Lesegerät | |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? Not likely at all unlikely don't know likely likely ersprecieble | |
| _ | Überhaupt nicht wahrscheinlich unwahrscheinlich ich welß nicht wahrscheinlich sein wahrscheinlich | V |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes I Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud ist Ja Nein | |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes No Sind sie auf Facebook oder in Irgendeinem anderen sozialen Netzwerk? I don't know what Facebook is Ja No | |
| 24 | How many hours of your free time do you spend per week on the internet? Hours/Week Stunden / Woche | |
| 25 | Personal information: Gender? female male Persönliche Informationen: Geschlecht weiblich männlich | |
| | Age? 20-30 🔲 30-40 🗐 40-50 🕅 50-60 🔲 >60 Alter | |
| Tha Viele | ank you very much for your effort. To return this form, please chose one of the following options: len Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten a) Safe as pdf document and send to florian.wurfbaum@network.rca.ac.uk | |

| and fax to: | +49 | (0)89.95 | 474 526 |
|---------------|-----|----------|---------|
| und faxen ihn | an: | | |

Thank you very much for your support --- Vielen Dank für Ihre Unterstützung

b)

Print out Drucken Sie den Fragebogen aus

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Me) 1 (Ich) | 22 | 3 | 4 | 5 | if more: | Persons Personen |
|---|--|-------------------|----|---|---|---|----------|---------------------|
| _ | | | | | | | | |

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| | Time |
|-------|--------|
| D | hrzeit |
| mo | until |
| 00:00 | 0:30 |
| 0 | 1:30 |
| :30 | 2:00 |
| 00:0 | 2:30 |
| 530 | 3:00 |
| 3:30 | 4:00 |
| 1:00 | 4:30 |
| 1:30 | 5:00 |
| 5:30 | 6:00 |
| 2:00 | 6:30 |
| 5:30 | 7:00 |
| 00:1 | 7:30 |
| 7:30 | 8:00 |
| 00:00 | 8:30 |
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| 3:00 | 13:30 |
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| 4:30 | 15:00 |
| 5:00 | 15:30 |
| 5:30 | 16:00 |
| 6:00 | 16:30 |
| 7-00 | 00:/1 |
| 7:30 | 18:00 |
| 8:00 | 18:30 |
| 8:30 | 19:00 |
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| 11:00 | 21:30 |
| 11:30 | 22:00 |
| 22:00 | 22:30 |
| 22:30 | 23:00 |
| 00:57 | 73:30 |
| 00:07 | 5'0 |



| | Haben Sie regelmäßig Besuch (z.B. Partner, Familie), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet? | | Ja Nein |
|----|---|--|---|
| | If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5 | If no: Please go to question 6. Wenn Nein: weiter mit Frage 6 | |
| 5 | Please provide out of your memory a typical schedule of the tim Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Ga | ie your visitor spends at your flat/house ast in einer typischen Woche bei Ihnen zu Hause v | erbringt. |
| | Time hrzeit until 0300 11000 11000 22000 22000 22000 22000 5500 6600 6500 65 | 111:00 111:00 112:30 132:30 132:30 132:30 143:30 143:30 143:30 143:30 153:30 165:30 165:30 165:30 165:30 165:30 165:30 165:30 177:30 17 | 19:00 19:30 20:30 20:30 21:30 22:30 22:30 22:30 22:30 22:30 22:30 22:30 22:30 22:30 22:30 22:30 20:00 |
| | Day Line 2000 0000 0000 0000 0000 0000 0000 00 | 10:00 11:00 11:00 11:00 12:00 13:00 14:00 14:00 14:00 14:00 15:00 15:00 15:00 15:00 15:00 15:00 15:00 | 18:30 19:00 19:30 20:00 21:30 21:30 21:30 21:30 21:30 23:30 23:30 23:30 23:30 23:30 |
| | Tag mark boxes for times when you are at your house, leave boxes plain f | or times you spend out of house. | |
| | bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen an | | |
| | Montag | | |
| | Dienstag | | |
| | Wednesday Mittwoch | | |
| | Thursday Donnerstag | | |
| | Friday Freitag | | |
| | Saturday | | |
| | Sunday Sonntag | | |
| 6 | Employment status Self- employed selbständig | loyed unemployed studen | t in training |
| | Rentner anderes, bitte | ase state | |
| 7 | Do you work full - time? | e? without clearly defined time | frame? |
| 8 | Do you work at home, even if it's just occasionally? Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? | | Yes 🔲 No 🕅 Ja Nein |
| 9 | If Yes, how many hours on these days on average? Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? | Mo Tu We Th Th Mo Di Mi Do | Fr Sa Su Fr Sa So |
| 10 | Do you regularly stay overnight away from home for businesstri Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außer | ps or similar ? halb Ihrer Wohnung? | Yes 🔲 No 🖄 Ja Nein |
| 11 | If yes, how many nights per month do you spend on average outside your flat? Days / Month Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? Tage / Monat | | |
| 12 | Roughly, how many days of holiday do you take per year? Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? | | 30 Days Tage |
| 13 | Out of these holydays, how many days and nights do you spend Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu H | l away from your home? Hause (z.B. auf Reise im Hotel o.ä)? | Days Tage |
| 14 | Where is your house/flat? Postcode City Wo ist Ihre Wohnung / Ihr Haus? PLZ Ort | München Country Land | Germany |

4 Do you have regular visitors, like partners or family, that frequently stay at your home?

56

X

Yes

No

Nein
| 15 | How many rooms of the following category does your flat/house have? Image: Schlafzimmer Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Image: Schlafzimmer Image: Wohnzimmer Image: Schlafzimmer Image: Schlafzimmer Image: Schlafz |
|--------------|--|
| 16 | How big is the flat / house you live in? < 20 m² 🔲 30 - 40 m² 📃 50 - 60 m² 🔲 70 - 80 m² 🔲 100 - 120 m² 🔀 |
| | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² 🧻 40 - 50 m ² 🔲 60 - 70 m ² 🔲 80 - 100 m ² 🔲 > 120 m ² 🛄 |
| 17 | For how long have you been living in your current flat/house? Months Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? |
| | Not likely at all unlikely in unlikely wahrscheinlich unwahrscheinlich unw |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes No X Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud ist Ja Nein |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes I An Xein Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja Nein |
| 24 | How many hours of your <u>free time</u> do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Stunden / Woche |
| 25 | Personal information: Gender? female Main main main main female main main female main female main female female main female fema |
| | Age? 20-30 30-40 40-50 50-60 >60 X |
| Tha Viele | nk you very much for your effort. To return this form, please chose one of the following options: In Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten |

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurfl | paum@network.rca.ac.uk |
|----|--|---------------|------------------------|
| b) | Print out | and fax to: | +49 (0)89.95 474 526 |
| | Drucken Sie den Fragebogen aus | und faxen ihn | an: |

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? | X1 (Me) | 2 | 3 | 4 | 5 | if more: | Persons |
|---|---|---------|---|---|---|---|-------------|----------|
| - | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

2 Please provide a record of the hours you spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record seven consecutive days.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.



Dwelling Utilisation Survey 2013 - Florian Wurfbaum - Royal College of Art

Tuesday Dienstag Wednesday Mittwoch Thursday Donnerstag Friday Freitag Saturday Samstag Sunday Sonntag

| 4 | Do you have regular visitors, like partners or family, that frequently stay at your home? |
|---|--|
| | Haben Sie regelmäßig Besuch (z.B. Partner, Familie), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet? |

5 Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house

| Yes 📘 | No |
|-------|------|
| Ja | Nein |

66

If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5 If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

| | Bitte erstellen Sie aus Ihrem Geo | lächtnis eine Aufzeichnung | g der Zeit, die Ihr Gast in eir | her typischen Woche bei Ihne | n zu Hause verbringt. | | | |
|----|---|--|---|--|--|--|--|--|
| | Time Time Uhrzeit 0 0:30 0 1:00 0 2:00 0 2:00 0 2:00 | 0 3:00 0 3:30 0 4:00 0 4:30 0 5:30 0 5:30 0 6:30 0 6:30 0 7:00 | 0 7:30 0 8:00 0 8:30 0 9:00 0 9:00 0 10:30 0 11:00 0 11:30 | 00 12:00 00 12:30 00 13:00 01 13:30 00 13:30 01 13:30 01 14:00 01 14:30 01 14:30 01 15:00 01 15:30 01 15:30 01 15:30 01 15:30 01 15:30 | 30 17:00 30 17:30 30 18:00 30 18:30 30 19:30 30 19:30 30 20:00 30 20:30 | 30 21:00 00 21:30 30 22:00 00 22:30 30 23:30 30 23:30 30 0:00 | | |
| | Day 5000000000000000000000000000000000000 | 213 310 410 510 510 510 510 510 510 510 510 510 5 | 7:0 7:3 8:3 8:3 8:3 9:0 9:0 9:3 9:3 9:1 0:0 10:0 11:0 | 11:3 12:0 12:0 12:3 13:0 13:0 14:0 14:3 14:0 14:3 14:0 15:3 15:0 15:3 15:3 15:3 | 16:3 17:0 17:1 18:0 18:0 18:1 19:0 19:0 19:0 19:0 19:0 19:0 19:0 19 | 2012 2150 22150 22150 2320 23150 2320 2320 2320 2320 2320 2320 2320 23 | | |
| | nag mark boxes for | times when you are at your ho o Sie die Zeiten, die Sie zu Haus | use, leave boxes plain for times se verbringen, lassen Sie die übr | you spend out of house. igen Kästchen leer. | | | | |
| | Monday | | | | | | | |
| | Tuesday Dienstag | | | | | | | |
| | Wednesday Mittwoch | | | | | | | |
| | Thursday Donnerstag | | | | | | | |
| | Friday Freitag | | | | | | | |
| | Saturday Samstag | | | | | | | |
| | Sonntag | | | | | | | |
| 6 | Employment status Erwerbsstatus | employed angestellt | self- employed | unemployed | student Student/In | in training In Ausbildung | | |
| | | Rentner | other, please sta anderes, bitte angeber | ate E | | | | |
| 7 | Do you work Arbeiten Sie | full - time? Vollzeit | part - time? Teilzeit | without clearly de | fined timeframe? | | | |
| 8 | Do you work at home, eve Arbeiten Sie (wenn auch nur gel | n if it's just occasional legentlich) von zu Hause? | lly? | | Yes Ja | No Nein | | |
| 9 | If Yes, how many hours on Wenn Ja, wie viele Stunden and | I these days on averag diesen Tagen durchschnitti | ge? Mo ich? Mo | Tu We We | The Free Stores | Sa Su Su Sa So | | |
| 10 | Do you regularly stay over Verbringen Sie auf Geschäftsrei | night away from hom sen oder ähnlichem regeln | e for businesstrips or s näßig Nächte außerhalb Ihr | imilar ? er Wohnung? | Yes Ja | No X | | |
| 11 | If yes, how many nights per month do you spend on average outside your flat? Days / Month Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? Days / Monat | | | | | | | |
| 12 | Roughly, how many days o Wie viele Urlaubstage nehmen ! | of holiday do you take Sie ungefähr pro Jahr? | per year? | | 35 Di Ta | ays ge | | |
| 13 | Out of these holydays, how Von diesen Urlaubstagen, wie v | w many days and nigh iele Tage und Nächte verb | ts do you spend away ringen Sie nicht zu Hause (z | from your home? .B. auf Reise im Hotel o.ä)? | 14 Di Ta | ays ge | | |
| 14 | Where is your house/flat? Wo ist Ihre Wohnung / Ihr Haus | Postcode 800 | 103 City U | ünchen | Country Dei Land | itschland | | |

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? A M Monzimmer A M M M M Monzimmer A M M M M Monzimmer A M M M M M M M M M M M M M M M M M M M | -Diner e | |
|--------------|---|-------------------------|--------------|
| | other rooms: (please state) andere Zimmer (bitte nennen) | m m | er |
| 16 | How big is the flat / house you live in? < 20 m² 🔲 30 - 40 m² 🚺 50 - 60 m² 🔲 70 - 80 m² 🔲 100 | 120 m ² | |
| | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² 🔲 40 - 50 m ² 🔲 60 - 70 m ² 🔲 80 - 100 m ² 🕅 > | 120 m² | |
| 17 | For how long have you been living in your current flat/house? Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre | | |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? | rbe | |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? own Eigentümer/In | In | _ |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or othe Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder andere | r eReade s E-Lesege | er 🚺 Irāt |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal pl collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, f oder Fotographie-Sammlungen in der Zukunft ersetzen? | ıysical Musik-, Filr | m- |
| | Not likely at all 🔲 unlikely 🔲 don't know 🛛 likely 🔲 ve Überhaupt nicht wahrscheinlich unwahrscheinlich ich weiß nicht wahrscheinlich sehr wahrs | cheinlich | |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes Speichern Sie Daten in der Cloud? Yes Ja | No Nein | |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes I Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja | No Nein | X |
| 24 | How many hours of your free time do you spend per week on the internet? Hours Wie viel Freizeit verbringen Sie im Internet? Stunde | /Week n / Woche | i |
| 25 | Personal information: Gender? female Personliche Informationen: Geschlecht weiblich | male männlich | |
| | Age? 20-30 🔟 30-40 📃 40-50 🔟 50-60 🛄 Alter | > 60 | X |
| Tha Viele | nk you very much for your effort. To return this form, please chose one of the following options: n Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten | | |
| | a) Safe as pdf document and send to florian.wurfbaum@network.rca.ac Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | .uk | |

r einem anderen Namen und senden es an and fax to: +49 (0)89.95 474 526 und faxen ihn an:

Thank you very much for your support --- Vielen Dank für Ihre Unterstützung

b)

Print out Drucken Sie den Fragebogen aus Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| | 1 | How many persons all together live in your household? Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Me) 1 (Ich) | 22 | 3 3 | 4 | 5 | if more: falls mehr: | Persons Personen |
|--|---|--|-------------------|----|------------|---|---|-------------------------|---------------------|
|--|---|--|-------------------|----|------------|---|---|-------------------------|---------------------|

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| / | Time | hrzeit | until | 0:30 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:30 | 5:00 | 5:30 | 6:30 | 7:00 | 7:30 | 8:30 | 9:00 | 9:30 | 10:00 | 11:00 | 11:30 | 12-30 | 13:00 | 13:30 | 14:00 | 14:30 | 15:30 | 16:00 | 17:00 | 17:30 | 18:00 | 19:00 | 19:30 | 20:00 | 21:00 | 21:30 | 22:00 | 22:30 | 23:30 | 0:00 |
|---|------|--------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | / | n | from | 0:00 | 1:00 | 1:30 | 2:00 | 2:30 | 3:30 | 4:00 | 4:30 | 5:00 | 9:00 | 6:30 | 7:30 | 8:00 | 8:30 | 00:6 | 9:30 | 10:30 | 11:00 | 12:00 | 12:30 | 13:00 | 13:30 | 14:30 | 15:00 | 15:30 | 16:30 | 17:00 | 17:30 | 18:30 | 19:00 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 23:00 | 23:30 |

| Date (dd/mm) Datum (tt/mm) | |
|--|--|
| 28.11.13 | |
| 29.11.13 | |
| 30.11.13 | |
| 2 4.12.16 | |
| 1 12.13 | |
| 5.12.13 | |
| 412.13 | |
| and an entropy of the second s | |

3 Would you estimate the week you recorded above as a typical and representative week? Denken Sie, daß die oben aufgezeichnete Woche eine typische und repräsentative Woche ist? Yes No

If Yes: Please continue with question 4. Wenn ja: weiter mit Frage 4

If No: a) Please state why the week above was not typical, e.g. holiday, extratime at work, illness...

a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit....)



b)

Wenn Nein

- Please provide out of your memory another schedule of your times spent at home which describes a typical and representative week
 - Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche.



4 Do you have regular visitors, like partners or family, that frequently stay at your home? Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet? Yes 🔲 No Ja Nein

| If yes: Please continue with question 5. |
|--|
| Wenn ja: weiter mit Frage 5 |

If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

| 5 | Please provide out of y Bitte erstellen Sie aus Ihrem | our memory a typical schedule of the time your visitor spends at your flat/house Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. | | | | | | |
|----|---|---|--|--|--|--|--|--|
| | hrzeit until 0:30 1:00 | 2.330 3.300 3.300 4.500 4.500 5.500 5.500 5.500 6.500 6.500 6.500 6.500 6.500 6.500 6.500 6.500 7.300 < | | | | | | |
| | Day 0000 0000 | 22:00 23:00 23:00 23:00 25:00 25:00 25:00 25:00 25:00 25:00 25:00 25:00 25:00 11:13: | | | | | | |
| | Tag mark boxe | s for times when you are at your house, leave boxes plain for times you spend out of house. | | | | | | |
| | Monday | | | | | | | |
| | Montag Tuesday | | | | | | | |
| | Dienstag Wednesday | | | | | | | |
| | Mittwoch Thursday | | | | | | | |
| | Donnerstag | | | | | | | |
| | Freitag Saturday | | | | | | | |
| | Samstag Sunday | | | | | | | |
| _ | Sonntag | | | | | | | |
| 6 | Employment status Erwerbsstatus | employed angestellt self- employed selbständig ohne Anstellung Student/In In Ausbildung | | | | | | |
| | | Rentner other, please state anderes, bitte angeben | | | | | | |
| 7 | Do you work Arbeiten Sie | full - time? part - time? without clearly defined timeframe? Vollzeit Teilzeit ohne fixe Arbeitszeiten | | | | | | |
| 8 | Do you work at home, Arbeiten Sie (wenn auch nu | even if it's just occasionally? Yes No I No Nein | | | | | | |
| 9 | If Yes, how many hours Wenn Ja, wie viele Stunden | on these days on average? an diesen Tagen durchschnittlich? Mo Di Mi Do Fr Sa Su Su Vi | | | | | | |
| 10 | Do you regularly stay o Verbringen Sie auf Geschäft | vernight away from home for businesstrips or similar ? sreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? Ja No II Nein | | | | | | |
| 11 | If yes, how many nights per month do you spend on average outside your flat? Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? | | | | | | | |
| 12 | Roughly, how many da Wie viele Urlaubstage nehm | ys of holiday do you take per year? Days Tage Tage | | | | | | |
| 13 | Out of these holydays, Von diesen Urlaubstagen, w | how many days and nights do you spend away from your home? Days ie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä)? Tage | | | | | | |
| 14 | Where is your house/fl Wo ist Ihre Wohnung / Ihr H | at? Postcode 857779 City München Country Dubticuland laus? PLZ Ort Land | | | | | | |

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat ihre Wohnung / Ihr Haus? Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) andere Zimmer (bitte nennen) |
|---------------|---|
| 16 | How big is the flat / house you live in? < 20 m² 🧾 30 - 40 m² 📃 50 - 60 m² 🔲 70 - 80 m² 🚺 100 - 120 m² 🔲 |
| | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² 🔀 40 - 50 m ² 🔲 60 - 70 m ² 🔲 80 - 100 m ² 🔲 > 120 m ² |
| 17 | For how long have you been living in your current flat/house? Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? Sind Sie Eigentümer/In |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? |
| | Not likely at all unlikely don't know likely very likely Überhaupt nicht wahrscheinlich unwahrscheinlich ich weiß nicht wahrscheinlich sehr wahrscheinlich |
| 22 | Do you store any data in the cloud? Speichern Sie Daten in der Cloud? I don't know what the cloud is I don't know what the |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes Ja No Ich weiß nicht was Facebook ist Ja |
| 24 | How many hours of your <u>free time</u> do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Stunden / Woche |
| 25 | Personal information: Gender? female main and the main and them |
| | Age? 20-30 🕅 30-40 🔲 40-50 🔲 50-60 🔲 ≥60 🔲 |
| Than Viele | nk you very much for your effort. To return this form, please chose one of the following options: en Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten a) Safe as pdf document and send to florian.wurfbaum@network.rca.ac.uk |

| and fax to: | +49 (0)89.95 474 526 |
|-----------------|----------------------|
| und faxen ihn a | n; |

b)

Print out Drucken Sie den Fragebogen aus 7-

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Me) 2 3 4 5 if more: Persons 1 (Ich) 2 3 4 5 falls mehr: Personen |
|---|--|---|
| 2 | Please provide a record of the hours <u>you</u> spend at your h at home, leave others empty). You can start with any da Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeic Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, d | nousehold/home in seven consecutive days (mark the fields when you are y of the week, please just make sure you record <u>seven consecutive days</u> . :hnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Iaß Sie einen <u>zusammenhängenden Zeitraum</u> dokumentieren. |
| | Time hrzeit 0.000 11000 10000 1000 1000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 1000000 | 9:00 9:30 110:00 112:00 112:00 112:00 113:00 113:00 114:00 114:00 114:00 115:00 115:00 117:00 |
| | From 0:00 1:00 1:00 1:00 1:00 2:00 2:00 2:00 | 8:30 9:00 9:30 10:30 11:00 11:00 11:00 11:00 12:30 13:30 14:00 14:00 14:00 14:00 15:30 15: |

| | Date (dd/mm) | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------------------------------|--------------------------------------|-----------------------------|--------------------------------------|---|---------------------------------------|--|---------------------------------|--------------------------------|--------------------------------|-----------------------|--------------------------|------------------|----------------------|-----------------|-----------------|----------------|----------------|---------------|--------------|--------------|-----------------------|-------|--|-----------|-------|
| | 28. M. B | | 28 | RAD | | 121 | 421 | П | | T | | П | | | | | | П | | | | 22 | 2 | 22 | 22 | |
| | 29 M. 13 | **** | 2.2 | 21 | 100 | 10 | 1 A | 1 | T | | П | Π | П | | | | 1 | | 12 | 1 | | | | | | |
| | 35 11 13 | | | | T | | TT | TT | TI | | П | Π | T | | | П | | | | | | | | | | |
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| | DA. AL. AS | 100000000 | 22 | - | | - | | | | | T | ñ | Ħ | | | | | 1 1 | | | atel | 23 | 1 | 10 | P.C | 2.1 |
| | CC-AL AS | | | 12 12 1 | | 2 4 | | ++ | = | | H | Ħ | H | | | Ħ | | T | | | | | F | 10 | 1010 | 12 |
| | 05 12.13 | 966996 | 1910 | 221 | 122 | | | | | | 4 | # | - | | | - | | H | | a A | 10 | a | | 1 | 20 | 1.0 |
| | 04.12.13 | DEESE | | | | 18 A | | П | 11 | | | 11 | 11 | | _ | 1 | | 11 | _ | 27 | R IS | 22 | 2 | 29 | 20 | 2 |
| 3 | Would you est Denken Sie, daß d | timate the w die oben aufgez | eek yo zeichne llease | ou rec te Woo contir | orded he eine hue wi | above typiscl | e as a he und estior | typi I repri | cal a isenti | ind i ative | Woo | esent he ist | tativ ? | e we | eek? | | | | | B | Yes Ia | X | | Ne | VO Bin | |
| | | Wenn ja: w | eiter n | nit Frag | e 4 | | | | | | | | | | | | | | | | | | | | | |
| | | If No: Wenn Nein | a) a) | Pleas Bitte g | e state eben Si | e why e an, w | the v | veek die au | abov | ve w eichn | as n ete V | ot ty /oche | pica unty | l, e.ı pisch | g. ho ist (i | olida z.B. v | ay, e vg. L | extra Irlau | atim b, Üb | e at erst | : WO unde | rk, ill n, Kra | ne | 55 neit | .) | _ |
| | | | - | | - | | | - | - | - | - | - | | | - | - | - | - | - | | | - | - | | - | - |
| | | | b) b) | Pleas which Bitte e in eine | e prov n descr rstellen r typisc | ide ou ribes a Sie au hen un | ut of y a typi s Ihren d repr | your cal a n Ged äsent | men nd re ächtr ative | nory epre nis ei n Wo | sent ne Au che. | other ative fzeich | sch we nun | edul ek g Ihre | e of | YOL Haus | e ve | rbrad | spe | Zeit | t ho | me | | | | |
| | Time | 0130 1100 1130 2100 2230 | 3:00 | 4:00 4:30 | 5:30 | 7:00 | 00:8 | 9:00 | 10:00 | 11:00 | 12:00 | 12:30 | 13:30 | 14:00 | 15:30 | 16:00 | 15:30 | 17:30 | 18:00 | 19:00 | 20:00 | 20:30 | 21:30 | 22:30 | 23:00 | 0:00 |
| | Day | 0:30 1:30 2:00 | 2:30 | 3:30 4:00 | 5:30 | 6:30 | 7:30 | 8:30 | 9:30 | 10:00 | 11:00 | 12:00 | 13:00 | 13:30 | 15:00 | 15:30 | 16:30 | 17:00 | 18:00 | 18:30 | 19:30 | 20:00 20:30 | 21:00 | 21:30 | 22:30 | 23:30 |
| | Tag | tick/untick boxe | es for tin | nes whe | n you are | at your | house, | leave t | oxes (| plain f | or tim | es you | speni | douto | of hou | ise (in | exce | I chan | ige co | lour) | - | | | | | |
| | 22 A | bitte kreuzen S | ie die Ze | iten an, | die Sie zi | u Hause | verbrin | igen, la | issen S | Sie die | e übriş | en Käs | tcher | leer: | - | | - | ñ | | | | — | Ē | | T | 'n |
| | Monday | uu | | | | | | | | | 1 | 1 | - | | | | | | | | | | | Accession in which the real Property lies in which the real Property lies in the real Property l | | |
| | Tuesday | | | | | | | 11 | | | 11 | П | - | | Ц | | | - | | | | Ц. | L | | ц | - |
| | Dienstag Wednesdav | TIT | | | | | 11 | TI | | | Ē | TT | T | | | | | | | | | | | 18 H | | |
| | Mittwoch | | - | | - | - | | | - | | - | - | 1 | | - | - | | - | | | | - | - | | - | |
| | Thursday Donnerstag | | | | | | | - | | | 1 | 1 | | | | | | | | | | | | Long Con | | |
| | Friday | | | | | | 11 | 11 | | | Ц | | | | | | ų | - | | | | Ц | Ļ | - | Ц | - |
| | Freitag Saturdav | TIT | | | | | TT | TI | | | Ū | TT | | | | | | T | | | 1 | I | | | | |
| | Samstag | | | | | - | | | | - | - | TT | - | | - | - | - | - | | | 1 | | | - | T | |
| | Sunday | | | | | | | - | | | - | | - | | | | | - | | | | | | | - | |

4 Do you have regular visitors, like partners or family, that frequently stay at your home? Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet? If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5
5 Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt.
5 Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt.
4 Und Start Start

| | Day 0:0 | 113 113 113 113 113 113 113 113 113 113 | 7:0 7:3 8:0 8:0 8:3 8:3 9:0 9:0 9:1 10:0 11:0 11:0 | 12:00 12:00 12:00 12:00 13:00 13:00 14:00 14:00 14:00 14:00 15:00 15:00 15:00 15:00 15:00 15:00 15:00 15:00 15:00 14:000 | 16:01 16:31 17:32 17:32 17:32 17:32 17:32 17:32 18:32 19:02 19:02 19:02 19:02 | 2010 2110 2110 2110 2110 2110 2110 2110 | 23:51 |
|----|--|--|---|--|---|--|-------|
| | Tag mark t | boxes for times when you are at your ho | use, leave boxes plain for times y | ou spend out of house. | | | |
| | Monday | narkieren Sie die Zeiten, die Sie zu Haus | e verbringen, lassen Sie die übrig | gen Kästchen leer. | | | T |
| | Montag Tuesday | | | | | | 2171 |
| | Dienstag Wednesday | NACHONNE | | | | MANANA | 127 |
| | Mittwoch | 222222222 | TTTTTTT | | | 1323 | 170 |
| | Donnerstag | | | | TITTTT | | 1.42 |
| | Freitag | | | | | | |
| | Saturday 22 | Makaasasaaan | | | | | |
| | Sonntag | | | | | | |
| 6 | Employment status Erwerbsstatus | employed | self- employed | unemployed | student student/in | in traini in Ausbildu | ing |
| | | retired | other, please star anderes, bitte angeben | te | | | |
| 7 | Do you work Arbeiten Sie | full - time? Vollzeit | part - time? Tellzeit | without clearly | defined timeframe? | | |
| 8 | Do you work at hom Arbeiten Sie (wenn auch | ne, even if it's just occasiona nur gelegentlich) von zu Hause? | lly? | | Yes Ja | No Nein | |
| 9 | If Yes, how many ho Wenn Ja, wie viele Stund | ours on these days on averag den an diesen Tagen durchschnitti | je? Mo | Tu We 3 Di Mi | Th 3 Fr 4 Do Fr | Sa 9 Su Sa So | 9 |
| 10 | Do you regularly sta Verbringen Sie auf Gesch | iv overnight away from hom häftsreisen oder ähnlichem regelm | e for businesstrips or si näßig Nächte außerhalb Ihre | milar ? r Wohnung? | Yes J <mark>a</mark> | No Nein | X |
| 11 | lf yes, how many nig Wenn Ja, wie viele Näch | ghts per month do you spen te pro Monat verbringen Sie durch | d on average outside yo hschnittlich ausserhalb Ihrer | our flat? Wohnung? | RB | Days / Month Tage / Monat | |
| 12 | Roughly, how many Wie viele Urlaubstage ne | days of holiday do you take ehmen Sie ungefähr pro Jahr? | per year? | | 4 Kin | Days Tage | |
| 13 | Out of these holyda Von diesen Urlaubstagen | ys, how many days and nigh n, wie viele Tage und Nächte verbr | ts do you spend away f ringen Sie nicht zu Hause (z.f | rom your home? 3. auf Reise im Hotel o.ä. |)? fastance | Days Tage | |
| 14 | Where is your house Wo ist Ihre Wohnung / I | e/flat? Postcode | City Kunc Ort | hen | Country Dec Land | Ischland | |
| - | | | | | | | |

| 15 | How many rooms of the following category does your flat/house have Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Hin Haus? | ve? Bedrooms Schlafzimmer Livingrooms |
|---------------|--|---|
| | other andere a | Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC Cooms: (please state) Zimmer (bitte nennen) |
| 16 | How big is the flat / house you live in? < 20 m ² 30 - 40 m | 7^{2} 50 - 60 m ² 70 - 80 m ² 100 - 120 m ² |
| 17 | Größe Ihrer Wohnung / Ihres Hauses? 20 – 30 m² 40 – 50 m² For how long have you been living in your current flat/house? Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? | Months Vears Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu w | Months Years Monate Jahre |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? | own Eigentümer/In |
| 20 | Do you use any of these items? MP3 Player Tablet Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett P | PC (iPad) Smartphone Kindle or other eReader (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and collections of books, music, videos, photographies and similar digita Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (od oder Fotographie-Sammlungen in der Zukunft ersetzen? | digital storage techniques will replace personal physical lizable objects in the future? ler digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- |
| | Not likely at all 🔲 unlikely 🔲 do Überhaupt nicht wahrscheinlich unwahrscheinlich ich | on't know 🔲 likely 🐼 very likely 🕅 weiß nicht wahrscheinlich sehr wahrscheinlich |
| 22 | Do you store any data in the cloud? Speichern Sie Daten in der Cloud? | I don't know what the cloud is Yes I No K Ich weiß nicht was die Cloud ist Ja Nein |
| 23 | Are you on Facebook or any other social network? Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? | I don't know what Facebook is Yes No I No I Nein |
| 24 | How many hours of your <u>free time</u> do you spend per week on the ir Wie viel Freizeit verbringen Sie im Internet? | ternet? Hours/Week |
| 25 | Personal information: Gender? Persönliche Informationen: Geschlecht dea | female male mainnlich |
| | Age? 20 - 30 30 - 40 Alter | 40 - 50 📃 50 - 60 📃 > 60 📃 |
| Than /iele | nk you very much for your effort. To return this form, please chose on n Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte | e of the following options: eine der folgenden Möglichkeiten |
| | a) Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und se | florian.wurfbaum@network.rca.ac.uk nden es an |
| | b) Print out Drucken Sie den Fragebogen aus | and fax to: +49 (0)89.95 474 526 und faxen ihn an: |

Wohngebäude- Nutzungs- Umfrage **Dwelling Utilisation Survey**

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Me) (Ich) | 22 | 3 3 | 1 4 4 | 5 | if more: falls mehr: | Persons Personen |
|---|--|-----------------|----|------------|-----------------|---|-------------------------|---------------------|
| | | | _ | | | | | |

Please provide a record of the hours you spend at your household/home in seven consecutive days (mark the fields when you are 2 at home, leave others empty). You can start with any day of the week, please just make sure you record seven consecutive days.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die Sie zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| \backslash | Time | hrzeit | until | 0:30 | 1:30 | 2:00 | 2:30 | 3:30 | 4:00 | 4:30 | 5:00 | 5:30 | 6:30 | 7:30 | 8:00 | 8:30 | 00:6 | 10:00 | 10:30 | 11:00 | 11:30 | 12:30 | 13:00 | 13:30 | 14:30 | 15:00 | 16:00 | 16:30 | 17:30 | 18:00 | 18:30 | 19:30 | 20:00 | 20:30 | 21:30 | 22:00 | 22:30 | 23:30 | 0:0 |
|--------------|------|--------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | / | n | from | 0:00 | 1:00 | 1:30 | 2:00 | 3:00 | 3:30 | 4:00 | 4:30 | 5:30 | 6:30 | 00:2 | 7:30 | 8:00 | 8:30 | 9:30 | 10:00 | 10:30 | 11:30 | 12:00 | 12:30 | 13:30 | 14:00 | 14:30 | 15:30 | 16:00 | 17:00 | 17:30 | 18:00 | 19:00 | 19:30 | 20:00 | 21:00 | 21:30 | 22:00 | 23:00 | 23:30 |

| | Date (dd/mm) | | | | | | | | | | |
|---|----------------------------------|----------------------------|---|---|---------------------------------------|--------------------|-------|-----------|------|------------|----|
| | Datum (tt/mm) | | | Palk | | | | LIT | | | e |
| | 29 11 3 | 402 | | | TOREER | ORI | | 1111 | 112 | Ton | h |
| | SO.I.R | ATT | DEFRENCE. | | | | | | | | |
| | 1.12.13 | 8000 | OP 9 - HOO | 0000 | o a g le | rener | ***** | | | | C |
| | 2.12.13 | 22499 | 66646080 | 984 | | | | | | -90 | 14 |
| | 3.12.13 | 9925 | **** | 889 | | | | | | + + | Cr |
| | 4.23 | KKK & | ARXXX XXXX | *** | | | | 1-1 | हत त | 140 | 88 |
| 3 | Would you est Denken Sie, daß | timate the die oben auf | week you recorded gezeichnete Woche eine | above as a typica typische und repräse | al and represen entative Woche ist | tative week? t? | | Yes Ja | £ | No Nein | |
| | | If Yes: | Please continue wi | ith question 4. | | | | | | | |
| | | wenn ja: | weiter mit Flage 4 | | | | | | | | |

Please state why the week above was not typical, e.g. holiday, extratime at work, illness... a) Wenn Nein

Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit....) a)

- Please provide out of your memory another schedule of your times spent at home b) which describes a typical and representative week b)
 - Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche.

| Time | hrzeit | until | 0:30 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:00 | 5:00 | 5:30 | 6:00 | 6:30 | 06+2 | 8:00 | 8:30 | 9:00 | 9:30 | 10:00 | 10:30 | 11:00 | 11:30 | 00:21 | 12:50 | DO:CT | 14:00 | 14:30 | 15:00 | 15:30 | 16:00 | 16:30 | 17:00 | DC://T | 00:91 | 10-00 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 00-22 | 02.20 | 00:00 |
|-----------------------|--------|-------|-------|---------------|--------------|---------------|------|------------|-------------|-------------|--------------|-----------------|--------------|------|--------------|-----------------|------|---------------|------------|----------------|-------------|----------------|-------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Day | | from | 0:00 | 1:00 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:30 | 5:00 | 5:30 | 6:00 | 1.00 | 7:30 | 8:00 | 8:30 | 00:6 | 9:30 | 10:00 | 10:30 | 11:00 | 00:11 | 00:71 | 13.00 | 13:30 | 14:00 | 14:30 | 15:00 | 15:30 | 16:00 | 16:30 | DOULT | 00:11 | 18-30 | 19:00 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 00:77 | 00-86 | 23:30 |
| Tag | / | | tick/ | intic kreu | k bo Jzer | oxes 1 Sie | for | tim Zei | es v ten | vher an, | you die ! | i are Sie zi | at y u Ha | our | hous verb | se, le oring | eave | e boi lass | xes ien | plair Sie d | n fa die | ər tir übri | nes | you Kä | stch | end o | out d | of h | ousi | e (ir | n ex | el c | han | ge (| :olo | ur). | | | | | | | | |
| Monday | | | | Г | | | | | | Т | T | | | 1 | T | T | Г | | | | | | 1 | | | T | I | F | - | | | | - | 1 | 1 | Ļ | F | - | | | | | | |
| Tuesday | | 1 | | L | C | | | | | T | T | | | 1 | T | T | T | | | | | | | | П | Т | T | Г | C | | | | | | 1 | T | Γ | C | | | | 1 | 1 | Т |
| Dienstag Wednesday | , | 1 | Ċ. | T | | | | | | T | É | | | 1 | T | T | C | D | | | | | 1 | | 1 | I | T | E | C | | | | 1 | | T | T | Г | C | | | | | I | |
| Mittwoch Thursday | | 1 | T. | T | | ñ | | | | T | ŕ | - | | 1 | T | T | | | | | | | | | | T | T | E | | | Ô | | 1 | 1 | 1 | İ | T | Ē | | | | Ì | I | |
| Donnerstag Friday | | | - | - | - | | | | | - | ŕ | | ñ | | F | T | - | - | | h | | | | | 1 | Ì | T | | r | | | | 1 | | T | T | T | Ċ | | | | Т | T | |
| Freitag | | | H | | | - | | | | | 1 | F | H | - | Ļ | - | F | - | | | | | | | - | ł | - | F | F | | ń | | 1 | | - | T | - | r | | | | 1 | T | |
| Samstag | | | | | | | | | | | 1 | | | | ¢ | - | ¢ | 2 | | - | | | | | | Ļ | - | Ē | - | | | | 1 | | - | - | - | - | | | | - | - | |
| Sunday Sonntag | | | - | - | - | - | | - | | | | | | | ٨ | | | - | | | | | | | | 1 | | | | | | | | | | | | | | | | | | - |
| | | | | | | | | | | | | | | | Si | el | 31 | | 0 | a | ~! | | | | | | | | | | | | | | | | | | | | | | | |

Dwelling Utilisation Survey 2013 - Florian Wurfbaum - Royal College of Art

If No:

4 Do you have regular visitors, like partners or family, that frequently stay at your home? Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet? Yes No Ja Nein 9

If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5 If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

| 5 | Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause ver | rbringt. |
|----|--|--|
| | Time Time until until <td>19:30 20:50 20:30 21:30 21:30 22:30 23:50 23:50 23:50 0:00</td> | 19:30 20:50 20:30 21:30 21:30 22:30 23:50 23:50 23:50 0:00 |
| | Arrow Control of the second se | 19:00 19:30 20:30 20:30 21:30 21:30 21:30 22:30 23:30 23:30 23:30 23:30 |
| | Tag mark boxes for times when you are at your house, leave boxes plain for times you spend out of house. bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer. | |
| | | |
| | | |
| | | |
| | | 18883868314 |
| | | 105 MARSHER |
| | | unaner |
| | Samstag Sunday Sonntag | Levenne |
| 6 | Employment status Erwerbsstatus Erwerbsstatus Erwerbsstat | in training In Ausbildung |
| 7 | 7 Do you work Arbeiten Sie Vollzeit Arbeiten Sie Vollzeit Arbeiten Sie Vollzeit Arbeiten Sie | ame? |
| 8 | 3 Do you work at home, even if it's just occasionally? Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? | Yes No II Ja No Nein |
| 9 | If Yes, how many hours on these days on average? Mo Tu We Th Fr Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo Di Mi Do Fr | Sa & Su R sa So |
| 10 | Do you regularly stay overnight away from home for businesstrips or similar ? Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? | Yes X No I |
| 11 | L If yes, how many nights per month do you spend on average outside your flat? Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? | Days / Month Tage / Monat |
| 12 | Roughly, how many days of holiday do you take per year? Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? | 4 Honork Days- Tage |
| 13 | 3 Out of these holydays, how many days and nights do you spend away from your home? Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä)? | 3 Days Tage |
| 14 | Where is your house/flat? Postcode 82191 City @robuild Country Wo ist Ihre Wohnung / Ihr Haus? PLZ Ort Land | berning |

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC |
|------|---|
| 16 | How big is the flat / house you live in? < 20 m² 🔲 30 - 40 m² 🧻 50 - 60 m² 🔲 70 - 80 m² 📕 100 - 120 m² 📕 |
| | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² 1 40 - 50 m ² 60 - 70 m ² 80 - 100 m ² 1 > 120 m ² |
| 17 | For how long have you been living in your current flat/house? Months Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? Not likely at all unlikely don't know likely know very likely very likely |
| | Überhaupt nicht wahrscheinlich unwahrscheinlich ich weiß nicht wahrscheinlich sehr wahrscheinlich |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes No I Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud ist Ja Nein |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes Xe No I sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja Nein |
| 24 | How many hours of your <u>free time</u> do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Stunden / Woche |
| 25 | Personal information: Gender? female mainlich |
| | Age? 20 - 30 📶 30 - 40 🔲 40 - 50 🔲 50 - 60 🔲 > 60 📃 |
| Than | ank you very much for your effort. To return this form, please chose one of the following options: en Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten |

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurfbaum@network.rca.ac.uk |
|----|--|---|
| b) | Print out Drucken Sie den Fragebogen aus | and fax to: +49 (0)89.95 474 526 und faxen ihn an: |

Wohngebäude- Nutzungs- Umfrage Dwelling Utilisation Survey 1

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? 1 (Me) 2 3 4 5 if more: Persons Wie viele Personen insgesamt leben in Ihrem Haushalt? 1 (Ich) 2 3 4 5 falls mehr: Personen |
|---|---|
| 2 | Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u> . Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag begingen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren. |
| | Time Time Time Uhrzeit from until 0000 030 0300 030 1300 130 1300 130 1300 130 1300 130 1300 130 1300 130 1300 130 1300 130 1300 1300 1300 1300 1300 1330 1300 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 1330 13330 1330 < |
| | Date (dd/mm) 2/5:4/1 2/6:4/1 2/7:4/1 2/ |
| 3 | Would you estimate the week you recorded above as a typical and representative week? Denken Sie, daß die oben aufgezeichnete Woche eine typische und repräsentative Woche ist? If Yes: Please continue with question 4. Wenn ja: weiter mit Frage 4 If No: a) Please state why the week above was not typical, e.g. holiday, extratime at work, illness Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit) |

- b) Please provide out of your memory another schedule of your times spent at home which describes a typical and representative week Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit
 - in einer typischen und repräsentativen Woche.

| Timo | hrzeit | until | 0:30 | 1:30 | 2:00 | 3:00 | 3:30 | 4:00 | 4:30 | 5:30 | 6:00 | 0:30 | 7:30 | 8:00 | 8:30 | 9:30 | 10:00 | 10:30 | 11:00 | 12:00 | 12:30 | 13:00 | 13:30 | 14:00 | 15:00 | 15:30 | 16:00 | 16:30 | 17:30 | 18:00 | 18:30 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 22:30 | 23:00 | 23:30 | |
|------------|--------|-------|--------|-------|------|---------------|-------|-------|-------|-------|--------|-------|-------|------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|--|
| Day | / | from | 0:00 | 1:00 | 1:30 | 2:00 | 3:00 | 3:30 | 4:00 | 2:00 | 5:30 | 6:30 | 00:2 | 7:30 | 8:00 | 00:6 | 9:30 | 10:00 | 10:30 | 11:30 | 12:00 | 12:30 | 13:00 | 13:30 | 14:30 | 15:00 | 15:30 | 16:00 | 17:00 | 17:30 | 18:00 | 19:00 | 19:30 | 20:00 | 20:30 | 21:30 | 22:00 | 22:30 | 23:30 | |
| 105 | , | • | tick/ | untic | k bo | ixes f | or ti | mes | when | 1 you | are | at yo | ur h | ouse | , lea | ve bo | oxes | plair | n foi | r tim | es y | ou si | pend | d out | t of h | ousi | e (in | exc | el ch | ange | cold | our). | | | | | | | | |
| | | | bitte | kreu | izen | Sie d | lie Z | eiter | ı an, | die : | sie zu | Hau | ise v | erbr | inge | n, las | sen | Sie | die i | übrig | en ł | läste | cher | lee | r | 10 | | 64 | | | | _ | | - | _ | | | _ | - | |
| Monday | | | E | - | | | T | 1 | | T | | | T | | | Т | Г | | | | L | | | | | | | | | | | | L | | | | Ŀ | | 88 | |
| Montag | | | 121 | 11 | | 112 | 1 | | | 1 | | | | | | | | 14 | _ | 12 | - | | 12.1 | - | 1 | - | _ | 12 | 1 | - | | - | - | - | - | 1 | - | - | - | |
| Tuesday | | | = | | | | Ŧ | | | | | | ÷ | | - | | L | | | | | | | | | | | | 1 | 1 | ш | 1 | | | | | 1 | | | |
| Dienstag | | | - | - | - | 11 | - | _ | - | - | | - | - | - | - | - | - | - | - | - | - | - | ä | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | |
| Wednesd | lay | | H | | | | ±. | | | | | - | | - | Ч | | | - | | _ | - | _ | ш | | | - | | | | - | | | r | - | | | 1 | | | |
| Mittwoch | | | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | ÷ | - | - | - | - | ÷ | | - | ÷ | | | - | - | | - | ÷ | T | | - | 1 | | - | |
| Thursday | | | | | | | 1 | | | | | | - | - | | - | - | - | | | | | Y | - | | - | - | - | - | - | - | - | - | - | | - | - | - | - | |
| Donnerstag | g | | TT. | - | - | | | | - | T | | - | T | | | | - | - | | | T | 5 | | | - | | | Ē | T | | m | T | T | here | - | | T | | | |
| Freitag | | | - | | | - | | - | 5 | | | | - | | - | | - | - | | | | | | | - | 10 | | | | | 1 | | 1 | | | | - | | Researchers of | |
| Saturday | | | | 1- | | | F | | | F | | - | T | 1 | A | - | F | F | | | T | F | | | T | T | | | T | T | - | - | Ŧ | T | - | | - | F | | |
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b)

Nein

Yes

Ja

If no: Please go to question 6.

Wenn Nein: weiter mit Frage 6 Wenn ja: weiter mit Frage 5 Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house 5 Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. Time Uhrzeiti until 0030 11:00 11:00 11:00 12:00 5:00 6:00 6:00 6:00 6:00 6:00 11:00 11:00 11:00 11:00 11:00 11:00 11:00 12:000 12:000 12:000 12:000 12:0000 12:000 12:0 Day Tag mark boxes for times when you are at your house, leave boxes plain for times you spend out of house. bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer Monday Montag Tuesday Dienstag Wednesday Mittwoch Thursday Donnerstag Friday Freitag Saturday Samstag Sunday Sonntag in training unemployed student Memployed self- employed Employment status 6 in Ausbildung Student/In angestellt selbständig ohne Anstellung Erwerbsstatus other, please state retired anderes, bitte angeben Rentner part - time? without clearly defined timeframe? full - time? Do you work 7 ohne fixe Arbeitszeiten Teilzeit Vollzeit Arbeiten Sie Yes X No Do you work at home, even if it's just occasionally? 8 Nein Ja Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? Tu We 1 Th Fr Sa Su Mo If Yes, how many hours on these days on average? 9 Di Mi Do Fr Sa So Mo Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Yes No Do you regularly stay overnight away from home for businesstrips or similar ? 10 Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? Ja Nein 11 If yes, how many nights per month do you spend on average outside your flat? Days / Month Tage / Monat Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? 24 Days Roughly, how many days of holiday do you take per year? 12 Tage Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? 20 Days Out of these holydays, how many days and nights do you spend away from your home? 13 Tage Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä...)? Postcode 20337 Mincher Country (apom new City Where is your house/flat? 14 PLZ Ort Land Wo ist Ihre Wohnung / Ihr Haus?

Do you have regular visitors, like partners or family, that frequently stay at your home?

If yes: Please continue with question 5.

Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet?

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Wohnzimmer Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC |
|----|---|
| 16 | How big is the flat / house you live in? < 20 m² 🔲 30 - 40 m² 🔲 50 - 60 m² 🔟 70 - 80 m² 🔲 100 - 120 m² 🔲 |
| | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m² 🔲 40 - 50 m² 🏹 60 - 70 m² 🔲 80 - 100 m² 🔲 > 120 m² 📃 |
| 17 | For how long have you been living in your current flat/house? Months Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Monate Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer Jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? Not likely at all unlikely unwahrscheinlich unlikely wahrscheinlich sehr wahrscheinlich sehr wahrscheinlich sehr wahrscheinlich sehr wahrscheinlich sehr wahrscheinlich unwahrscheinlich sehr wahrscheinlich sehr |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes I No Xi Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud ist Ja Nein |
| 23 | Are you on Facebook or any other social network? Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? I don't know what Facebook is I don't know what Facebook is I don't know what Facebook is I don't know what Facebook is Ja |
| 24 | How many hours of your <u>free time</u> do you spend per week on the internet? Hours/Week Stunden / Woche |
| 25 | Personal information: Gender? female male Persönliche Informationen: Geschlecht männlich Age? 20 - 30 30 - 40 40 - 50 50 - 60 > 60 1 Alter Alter So - 60 So - 60 </td |

Thank you very much for your effort. To return this form, please chose one of the following options: Vielen Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurft | baum@network.rca.ac.uk |
|----|--|---------------|------------------------|
| ь) | Print out | and fax to: | +49 (0)89.95 474 526 |
| | Drucken Sie den Fragebogen aus | und faxen ihn | an: |

Thank you very much for your support --- Vielen Dank für Ihre Unterstützung

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? | 1 (Me) | 2 | 3 | ₩4 | 5 | if more: | Persons |
|---|---|---------|---|---|----|---|-------------|----------|
| | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

2 Please provide a record of the hours you spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record seven consecutive days.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| | Time | 0.30 11.00 21.00 21.00 | 3330 | 4:00 | 5:3 | 7:0 | 8:3 | 9:0 6:6 | 10:0 | 11:3 | 12:3 | 13:3 | 14:3 | 15:3 | 17:0 | 18:0 | 19:0 | 20:01 | 21:0 | 22:0 | 23:0 | 0:0 |
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| | from | 0:30 1:30 | 2:30 | 3:30 4:00 | 5:30 | 6:30 | 7:30 | 8:30 9:00 | 10:30 | 11:00 | 12:30 | 13:30 | 14:00 | 15:30 | 16:30 | 17:30 | 18:30 | 19:30 | 20:30 | 21:30 | 22:30 | 23:30 |
| | Date (dd/mm) Datum (tt/mm) | | - | 20/2 | | | | | 4 | _ | | | | _ | | _ | _ | _ | | _ | _ | _ |
| | 28.0 | XXXX | XXX | XX | KKX | XX | ~~~ | | | 1 | | | | | | 4 | | | | # | - | - |
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| | 2.12 | | | | | | - | | | | | | | | | | П | П | H | H | ++ | -+- |
| | 3.12 | | - | | | - | - | | | | | | | | | | | | ++ | ++ | ++ | P |
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Sonntag

No

Nein

If no: Please go to question 6. If yes: Please continue with question 5. Wenn Nein: weiter mit Frage 6 Wenn ja: weiter mit Frage 5 Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house 5 Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. from 0:000 0 Day Tag mark boxes for times when you are at your house, leave boxes plain for times you spend out of house bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer Monday Montag Tuesday Dienstag Wednesday Mittwoch Thursday Donnerstag Friday Freitag Saturday Samstag Sunday Sonntag Student in training self- employed unemployed employed 6 Employment status Student/In in Ausbildung selbständig ohne Anstellung angestellt Erwerbsstatus other, please state retired anderes, bitte angeben Rentner Wwithout clearly defined timeframe? full - time? part - time? Do you work 7 ohne fixe Arbeitszeiten Vollzeit Teilzeit Arbeiten Sie Yes No Do you work at home, even if it's just occasionally? 8 Nein Ja Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? Th Fr Sa Su Mo Tu WP 9 If Yes, how many hours on these days on average? Sa 50 Di Mi Do Fr Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo Yes No Do you regularly stay overnight away from home for businesstrips or similar ? 10 Ja Nein Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? Days / Month If yes, how many nights per month do you spend on average outside your flat? 11 Tage / Monat Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? Days Roughly, how many days of holiday do you take per year? 12 Tage Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? Days Out of these holydays, how many days and nights do you spend away from your home? 13 Tage Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä...)? Postcode 822 City Cod Country PYChG PRISPULACE Where is your house/flat? 14 Ort Land PLZ Wo ist Ihre Wohnung / Ihr Haus?

Do you have regular visitors, like partners or family, that frequently stay at your home?

Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet?

| | How many rooms of the follow Wie viele Zimmer der folgenden Kate | ving categ gorien hat II | ory does y hre Wohnur | our flat | /house hav | ooms: (p | ease state | | S Bed Schla Livir Woh Kitc Küch Bath Bade WC Extra | rooms afzimmer ngroom nzimmer hen or e oder W nroom izimmer (separa wC | s Kitchen- Johnküche ate) | Diner | |
|--|--|---|--|---|--|--|--|---|--|---|---|---|---------------|
| | | | | | andere | Limmer (bit | te nennen) | | | | | | |
| 16 | How big is the flat / house you | live in? | $< 20 \text{ m}^2$ 0 - 30 m ² | | 30 - 40 m 40 - 50 m | 2 | 50 - 60 m 60 - 70 m | 2 | 70 - 80 80 - 100 | m ² | 100 - > | 120 m ² 120 m ² | |
| 17 | For how long have you been liv Wie lange leben Sie schon in Ihrer jet | ving in you zigen Wohn | ur current ung / Haus? | flat/ho | use? | | M | onths onate | | 6 | Years Jahre | | |
| 18 | From now, for how long are yo flat/house you currently live in Ab heute, für wie lange haben Sie vo | ou plannin; ? r, in Ihrer jet | g to keep zigen Wohr | staying | in the us noch zu w | ohnen? | M N | onths onate | | | Years Jahre | | |
| 19 | Do you own or do you rent the Sind Sie Eigentümer/In oder Mieter/ | e place you n der von Ih | u live in? men bewoh | nten Imm | obilie? | | Eig | WN gentüme | r/In | | rent Mieter/I | n | |
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| 20 | Do you use any of these items Benutzen Sie eines dieser Geräte? | 2 | MP3 Pla MP3 Sp | yer 🔀 | Tablet Tablett P | PC (iPad) (z.B. iPad) | Sm S | artpho martpho | ne Ki | Kindle (ndle ode | or other r anderes | eReade E-Lesege | er 🗌 erät |
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| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurft | baum@network.rca.ac.uk | |
|----|--|------------------------------|-----------------------------|--|
| b) | Print out Drucken Sie den Fragebogen aus | and fax to: und faxen ihn | +49 (0)89.95 474 526 an: | |

120

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| e | w many persons all together live in your household? viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Me) 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |
|---|--|-------------------|---|-----|---|---|-------------|-----------------|
| 2 | viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | - 3 | 5 | 4 | 4 5 | 4 5 falls mehr: |

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| Time | hrzeit | until | 0:30 | 1:00 | 1:30 | 2:30 | 3:00 | 3:30 | 4:00 | 4:30 | 5:30 | 6:00 | 6:30 | 02-1 | 8:00 | 8:30 | 00:6 | 9:30 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | DOI:CT | 14:00 | 14:30 | 15:00 | 15:30 | 16:30 | 17:00 | 17:30 | 18:00 | 18:30 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 22:30 | 23:00 | 25:30 | STA1 |
|------|--------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| / | n | from | 00:0 | 0:30 | 1:00 | 2:00 | 2:30 | 3:00 | 3:30 | 4:00 | 5:00 | 5:30 | 6:00 | 00.7 | 7:30 | 8:00 | 8:30 | 9:00 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 00.51 | 13:30 | 14:00 | 14:30 | 15:00 | 16:00 | 16:30 | 17:00 | 17:30 | 18:00 | 00.01 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 22:30 | 00:52 | ACTON |

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| 3 | Would you es Denken Sie, daß | imate the week you recorded above as a typical and representative week? If Yes: Please continue with question 4. |
| | | Wenn ja: weiter mit Frage 4 |
| | | If No: a) Please state why the week above was not typical, e.g. holiday, extratime at work, illness Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit) |
| | | b) Please provide out of your memory another schedule of your times spent at home |
| | | which describes a typical and representative week b) Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche. |
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| | Day | 0000 1130 1130 1130 1130 1130 1130 1130 |
| | Tag | tick/untick boxes for times when you are at your house, leave boxes plain for times you spend out of house (in excel change colour). |
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Montag Tuesday Dienstag Wednesday Mittwoch Thursday Donnerstag Friday Freitag Saturday Saturday Saturday Saturday Sonntag

No

Yes X

Ja

4 Do you have regular visitors, like partners or family, that frequently stay at your home? Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet?

> If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5

If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

| 5 | Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. |
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| | AE Time Uhrzeit Unital Unital <t< th=""></t<> |
| | Tag mark boxes for times when you are at your house, leave boxes plain for times you spend out of house. bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer. |
| | |
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| | |
| | Friday Freitag Saturday Sonntag Sunday Sonntag |
| 6 | Employment status Erwerbsstatus employed angestellt selbständig ohne Anstellung student/in lin Ausbildung retired Rentner other, please state anderes, bitte angeben |
| 7 | Do you work Arbeiten Sie Vollzeit Teilzeit Teilzeit Without clearly defined timeframe? |
| 8 | Do you work at home, even if it's just occasionally? Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? |
| 9 | If Yes, how many hours on these days on average? Mo Tu We Th Fr Sa Su Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo Di Mi Do Fr Sa So |
| 10 | Do you regularly stay overnight away from home for businesstrips or similar ? Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? Yes Ja |
| 11 | If yes, how many nights per month do you spend on average outside your flat? Days / Month Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? Tage / Monat |
| 12 | Roughly, how many days of holiday do you take per year? Days Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? Tage |
| 13 | Out of these holydays, how many days and nights do you spend away from your home? Days Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä)? Tage |
| 14 | Where is your house/flat? Postcode 86088 City KISSING Country GERXANY Land |

| 15 | How many rooms of the following category does yo Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung | ur flat/house have? / Ihr Haus? other rooms: andere Zimmer | (please state) (bitte nennen) | Bedrooms Schlafzimmer Livingroom Wohnzimmer Kitchen or Küche oder W Bathroom Badezimmer WC (separa Extra WC | r Kitchen-Diner Vohnküche ate) |
|----|---|--|--|---|---|
| 16 | How hig is the flat / house you live in? < 20 m ² | 30 - 40 m ² | 50 - 60 m² | 70 - 80 m ² | 100 - 120 m ² |
| 10 | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² | 40 - 50 m ² | 60 - 70 m² | 80 - 100 m² | > 120 m² |
| 17 | For how long have you been living in your current fl Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? | at/house? | Months Monate | 10 | Years Jahre |
| 18 | From now, for how long are you planning to keep st flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnur | aying in the ng / Haus noch zu wohnen? | Months Monate | È | Years Jahre |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnte | en Immobilie? | own Eigentüme | r/In | rent Mieter/In |
| 20 | Do you use any of these items? MP3 Playe Benutzen Sie eines dieser Geräte? MP3 Spiele | er Tablet PC (iPa er Tablett PC (z.B. iP | ad) Smartphor vad) Smartpho | ne Kindle (ne Kindle ode | or other eReader r anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the collections of books, music, videos, photographies a Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor ge oder Fotographie-Sammlungen in der Zukunft ersetzen? | ones above and digital ind similar digitalizable nannten Geräte (oder digita | l storage techniques objects in the future ale Speichertechniken all | will replace perse? gemein) persönliche likely | sonal physical Buch-, Musik-, Film- very likely |
| | Überhaupt nicht wahrscheinlich unwahrscheinlich | ch ich weiß ni | icht wahrso | :heinlich se | hr wahrscheinlich |
| 22 | Do you store any data in the cloud? Speichern Sie Daten in der Cloud? | l don't Ic | t know what the clo h weiß nicht was die Clo | ud is Yes ud ist Ja | No Nein |
| 23 | Are you on Facebook or any other social network? Sind sie auf Facebook oder in irgendeinem anderen sozialen Ne | l don't | t know what Facebo h weiß nicht was Facebo | okis Yes okist Ja | No Y |
| 24 | How many hours of your <u>free time</u> do you spend per Wie viel Freizeit verbringen Sie im Internet? | r week on the internet | ? | 5 | Hours/Week Stunden / Woche |
| 25 | Personal information: Gender? Persönliche Informationen: Geschlecht | 30 - 40 | 40 - 50 | female weiblich 50 - 60 | male männlich > 60 |

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|----|--|------------------------------|-----------------------------|--|
| b) | Print out Drucken Sie den Fragebogen aus | and fax to: und faxen ihn | +49 (0)89.95 474 526 an: | |

which were being

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

1

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? | 1 (Me) | 2 | 3 | X 4 | 5 | if more: | Persons |
|---|---|---------|---|---|-----|---|-------------|----------|
| | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen <u>zusammenhängenden Zeitraum</u> dokumentieren.

| / | Time | hrzeit | until | 0:30 | 1:30 | 2:30 | 3:00 | 4:00 | 4:30 | 5:00 | 6:00 | 6:30 | 7:30 | 8:00 | 8:30 | 00:6 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:30 | 14:00 | 14:30 | 15:30 | 16:00 | 16:30 | 17:00 | 18:00 | 18:30 | 19:00 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 23:00 | 23:30 | 0:00 |
|---|------|--------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | / | 2 | from | 0:00 | 1:30 | 2:00 | 2:30 | 3:30 | 4:00 | 4:30 | 5:30 | 6:30 | 2:00 | 7:30 | 8:00 | 8:30 | 9:30 | 10:00 | 10:30 | 11:00 | 11:30 | 12:30 | 13:00 | 13:30 | 14:00 | 15:00 | 15:30 | 16:00 | 15:30 | 17:30 | 18:00 | 18:30 | 19:30 | 20:00 | 20:30 | 21:00 | 21:30 | 02:22 | 23:00 | 23:30 |

| | Date (dd/mm) Datum (tt/mm) | |
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| | 29.11 | |
| | 30.11 | |
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| | 2.17 | |
| | 2 12 | |
| | 3.14 | |
| | 4.12 | |
| 3 | Would you es | timate the week you recorded above as a typical and representative week? Yes I No X |
| | Denken Sie, dais | die oben aufgezeichnete worne eine typische und reprasentative worne istr |
| | | If Yes: Please continue with question 4. Wenn ja: weiter mit Frage 4 |
| | | If No: a) Please state why the week above was not typical, e.g. holiday, extratime at work, illness |
| | | Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit) |
| | | Spend weekend with bliends |
| | | b) Please provide out of your memory another schedule of your times spent at home |
| | | which describes a typical and representative week |
| | | b) Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer breichen und renzüsentativen Woche. |
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| | |
| Yes | No X |
| Ja | Nein |

4 Do you have regular visitors, like partners or family, that frequently stay at your home? Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet?

If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5

If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

| 5 | Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house |
|---|--|
| | Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. |

| | Time Intrait until 0030 1130 1130 1130 1130 1130 1130 1130 1130 1130 1130 11300 11100 11100 11100 11100 112300 123100 |
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| | Day 22:200 22 |
| | Tag mark boxes for times when you are at your house, leave boxes plain for times you spend out of house. bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer. |
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| | Samstag Sunday Sonntag |
| 6 | Employment status Erwerbsstatus angestellt selbständig ohne Anstellung Student/in In Ausbildung |
| | retired Rentner anderes, bitte angeben |
| 7 | Do you work I full - time? I part - time? Without clearly defined timeframe? Arbeiten Sie Vollzeit Teilzeit ohne fixe Arbeitszeiten |
| 8 | Do you work at home, even if it's just occasionally? Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? |
| 9 | If Yes, how many hours on these days on average? Mo I Tu I We I Th I Fr I Sa Su Su Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo Di Mi Do Fr Sa So |
| 10 | Do you regularly stay overnight away from home for businesstrips or similar ? Yes I No Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? Ja Nein |
| 11 | If yes, how many nights per month do you spend on average outside your flat? Days / Month Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? Tage / Monat |
| 12 | Roughly, how many days of holiday do you take per year? Days Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? |
| 13 | Out of these holydays, how many days and nights do you spend away from your home? Image: Comparison of the second sec |
| 14 | Where is your house/flat? Postcode & City Munich Country Country Land |

- M. Seet Nets - Station

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC |
|---------------|--|
| | other rooms: (please state) |
| 16 | How big is the flat / house you live in? < 20 m^2 $\boxed{100 - 40 \text{ m}^2}$ $\boxed{100 - 60 \text{ m}^2}$ $\boxed{100 - 80 \text{ m}^2}$ $\boxed{100 - 120 \text{ m}^2}$ $100 - 120 \text$ |
| 17 | For how long have you been living in your current flat/house? Months Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? |
| | Not likely at all unlikely in unlikely in unlikely in unwahrscheinlich unw |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes No Lich weiß nicht was die Cloud ist Ja Nein |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes Xe No Ich weiß nicht was Facebook ist Ja Nein |
| 24 | How many hours of your free time do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Stunden / Woche |
| 25 | Personal information: Gender? female Male male Persönliche Informationen: Geschlecht female Male männlich Age? 20 - 30 30 - 40 40 - 50 50 - 60 > 60 > 60 |
| That Viele | ank you very much for your effort. To return this form, please chose one of the following options: en Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten |

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurft | baum@network.rca.ac.uk | |
|----|--|--------------------------------|-----------------------------|--|
| b) | Print out Drucken Sie den Fragebogen aus | and fax to: und faxen ihn a | +49 (0)89.95 474 526 an: | |

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? | 1 (Me) | 2 | 3 | 4 | 5 | if more: [| Persons |
|-----|---|---------|---|---|---|---|-------------|----------|
| 100 | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen <u>zusammenhängenden Zeitraum</u> dokumentieren.

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3 Would you estimate the week you recorded above as a typical and representative week? Denken Sie, daß die oben aufgezeichnete Woche eine typische und repräsentative Woche ist?

If Yes: Please continue with question 4.

Wenn ja: weiter mit Frage 4

If No:

Wenn Nein

a) Please state why the week above was not typical, e.g. holiday, extratime at work, illness...

a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit....)

Yes

Ja

No

Nein

- b) Please provide out of your memory another schedule of your times spent at home which describes a typical and representative week
 b) Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit
 - Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche.

| Time | 1330 2200 2200 2200 2200 2200 2200 2200 5200 52000 52000<!--</th--> |
|------------|---|
| Day | 1330 1330 1330 1330 1330 1330 1330 2330 3330 |
| idg / | tick/untick boxes for times when you are at your house, leave boxes plain for times you spend out of house (in excel change colour). |
| | bitte kreuzen Sie die Zeiten an, die Sie zu Hause verbringen, lassen Sie die übrigen Kastchen leer. |
| Monday | |
| Montag | |
| Tuesday | |
| Dispetan | |
| Madnasdau | |
| wednesday | |
| Mittwoch | |
| Thursday | |
| Donnerstag | |
| Friday | |
| Freitag | |
| Saturday | |
| Samstag | |
| Sunday | |
| Sonntag | |

No

Yes

Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet? Nein Ja If no: Please go to question 6. If yes: Please continue with question 5. Wenn Nein: weiter mit Frage 6 Wenn ja: weiter mit Frage 5 5 Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. Time Uhrzeit Uhrzeit Uhrzeit Uhrzeit Uhrzeit Uhrzeit 1:00
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13 Day Tag mark boxes for times when you are at your house, leave boxes plain for times you spend out of house. bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer Monday Tuesday Dienstag Wednesday Mittwoch Thursday Donnerstag Friday Freitag Saturday Samstag Sunday Sonntag Student self- employed in training employed unemployed Employment status 6 in Ausbildung selbständig ohne Anstellung Student/In Erwerbsstatus angestellt other, please state retired anderes, bitte angeben Rentner part - time? without clearly defined timeframe? Do you work full - time? 7 ohne fixe Arbeitszeiten Vollzeit Teilzeit Arbeiten Sie X Yes No Do you work at home, even if it's just occasionally? 8 Nein Ja Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? Th Fr Sa Su Mo Tu We If Yes, how many hours on these days on average? 9 Fr So Di Mi Do Sa Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo Do you regularly stay overnight away from home for businesstrips or similar ? Yes No 10 Ja Nein Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? 6 Days / Month If yes, how many nights per month do you spend on average outside your flat? 11 Tage / Monat Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? 50 Roughly, how many days of holiday do you take per year? Days 12 Tage Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? 30 Days Out of these holydays, how many days and nights do you spend away from your home? 13 30 Tage Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä...)? Postcode 80390 Munich Country armany City Where is your house/flat? 14 PLZ Ort Land Wo ist Ihre Wohnung / Ihr Haus?

Do you have regular visitors, like partners or family, that frequently stay at your home?

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC |
|--------------|---|
| | $100 - 120 \text{ m}^2$ |
| 16 | How big is the flat / house you live in? $< 20 \text{ m}^2$ $30 - 40 \text{ m}^2$ $50 - 60 \text{ m}^2$ $70 - 80 \text{ m}^2$ $100 - 120 \text{ m}^2$ Größe ihrer Wohnung /ihres Hauses? $20 - 30 \text{ m}^2$ $40 - 50 \text{ m}^2$ $60 - 70 \text{ m}^2$ $80 - 100 \text{ m}^2$ $> 120 \text{ m}^2$ |
| 17 | For how long have you been living in your current flat/house? Months Monate Years Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? own Eigentümer/In |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? |
| | Not likely at all unlikely don't know likely very likely i Überhaupt nicht wahrscheinlich unwahrscheinlich ich weiß nicht wahrscheinlich sehr wahrscheinlich |
| 22 | Do you store any data in the cloud? Speichern Sie Daten in der Cloud? I don't know what the cloud is I don't know what the cloud is I ch weiß nicht was die Cloud ist Ja |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes No Sind sie auf Facebook oder in irgendelnem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja No |
| 24 | How many hours of your free time do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Stunden / Woche |
| 25 | Personal information: Gender? female male male main female female main female main female main female main female main female |
| | Age? 20-30 📃 30-40 🔲 40-50 🔲 50-60 🗾 >60 🛄 |
| Tha Viele | nk you very much for your effort. To return this form, please chose one of the following options: In Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten |
| | a) Safe as pdf document and send to florian.wurfbaum@network.rca.ac.uk |

| and fax to: | +49 (0)89.95 474 526 |
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b)

Print out Drucken Sie den Fragebogen aus Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? | 1 (Me) | X 2 | 3 | 4 | 5 | if more: | Persons |
|---|---|---------|-----|---|---|---|-------------|----------|
| | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

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| Date (dd/mm) Datum (tt/mm) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Honortow | XXXX | XXX | XX | XXX | XX | (X) | (X) | X + | - | - | | | | | + | | | -1 | | | - | | \rightarrow | KX. | X | |
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| Uvould you es Denken Sie, daß | timate the die oben aufg If Yes: Wenn ja: If No: Wenn Nein Wenn Nein | week y ezeichn Please weiter i a) a) b) b) b) | ou rec ete Woo contin mit Frag Pleas Bitte g Pleas which Bitte e in eine 00.7 4 | e stat e stat e ben S e provi n desc rsteller r typis | e typis ith qui e who ie an, vide o ribes n Sie a chen u 0007 | ve a che i uest uest y tho waru out c : a ty us lh ind re & & x | s a trian s a tr | ek at ek at aufge ur m l and Sedäct entati | emor reprinting e ven W | was nete y an eser ine A | not t Woch othe itativ | er sch chnun 00 m 21 m 20 m 21 m 21 m 21 m 21 m 21 m 21 m 21 m 21 | al, e. ypiscl eedu eek g lbro | g. hi hist (le of er zu | you Hau | ay, wg. ur ti se ve | extr Urlau mes | atin ub, Ü s sp chte | ne a Ibers ent n Ze | Ja at t w at t | ork den, nom 08:02 | , illi Kra De 00:17 | 21:30 22:00 | Ne 000000000000000000000000000000000000 | 23:00 23:30 | 0:0 |
| Would you es Denken Sie, daß | timate the die oben aufg If Yes: Wenn ja: If No: Wenn Nein 0001 0001 0001 0001 | week y ezeichn Please weiter r a) a) b) b) b) b) | ou rec ete Woo contin mit Frag Pleas Bitte g Bitte g Bitte e in eine 00:4 00:4 00:4 00:4 00:4 00:4 00:4 00: | e stat e stat e provi n desc rsteller r typis | i abo e typis ith qu e wh ie an, vide c ribes n Sie a chen u 00.4 00.5 9 00.5 00.5 9 | ve a che i ache i vy thi waru out c ; a ty us lh und ro 0% 2 0% 2 | e we im die price we price we rem die control we control we contro | ypica epräse 1. ek ab e aufg ur m l and Gedäci entati | emor reprintins e wen W | was nete y an eser ine A oche | not t Woch othe itativ 0671 0071 0071 0071 0071 0071 | cypic: cypic: e untr er sch ve we chnun 00:E1 00:E1 00:E1 | al, e. ypiscl eek g 14:00 14:30 14:30 14:30 14:30 | g, hi h ist (le of er zu 00:51 00:51 | olid z.B. You Hau | ay, wg. 1 wg. 1 se ve 00.21 02.91 | extr Urlau mes 06211 00211 | atin ub, U s sp chte 00:81 00:81 | ent 00:61 02:81 | at h | ork den, 0000 0000 0000 | , illi Kra ie 00:12 02:02 | 21:30 21:30 21:30 22:00 | Ne 22:30 22:30 | 22:30 23:00 23:00 23:30 | 23:30 0:00 |
| Would you es Denken Sie, daß | timate the die oben aufg If Yes: Wenn ja: If No: Wenn Nein 0001 0001 0001 0001 tick/untick bo | week y ezeichn Please weiter i a) a) b) b) b) b) cz:300 5:30 b) b) cz:300 5:30 cz:300 cz:300 b) b) | OU FEC the Wood contin mit Frag Pleas Bitte g Pleas Which Bitte e in eine 00.4 0 0.4 0 | ordec he einin hue w e 4 e stat eben S e prov r typis stelle stel | i abo e typis iith qu e wh ie an, vide c ribes n Sie a chen u 000 20 000 000 000 000 000 000 000 000 000000 | ve a che i | e we in die in in die in die | ypica epräse 1. ek ab e aufg l and Gedäci eentati 005 6 6 6 000 6 6 6 | emor reprintins e ven W. 0001 0001 0001 0000 esplain | Was nete y an eser ine A oche | not t woch othe tativ 00:210 00:21 0 | cypica e untr er sch ve we chnun 00:81 00:81 00:81 00:81 00:81 00:81 00:81 00:81 00:81 00:81 | al, e. 13:30 14:00 13:30 14:00 | g. hi h ist (le of er zu 00:51 00:51 00:51 00:51 00:51 00:51 00:51 00:51 00:51 00:51 00:51 00:51 | you Hau | ay, 1 wg. 1 00:21 00:91 nexce | extr Urlau mes 00211 00221 | atin ab, U s sp chte 00:81 00:81 nge c | ent no Ze olour | at 1 00:61 00:61 | ork den, 00:02 00:02 | , illi Kra e 00:17 00:07 | 21:00 21:30 22:00 21:30 | Ne 022:00 22:30 | 22:30 23:00 23:30 23:30 | 23:30 0:00 |
| Would you es Denken Sie, daß | timate the die oben aufg If Yes: Wenn ja: If No: Wenn Nein Wenn Nein 00:0:00000000000000000000000000000000 | week y ezeichn Please weiter i a) a) b) b) b) 00% % 00% % 00 | ou rec ete Woo contin mit Frag Pleas Bitte g Pleas which Bitte e In eine 00:0 00:0 00:0 00:0 00:0 0 00:0 00:0 0 00:0 00:0 0 00:0 0 0 00:0 0 0 00:0 0 0 0 | ordec he ein hue w e 4 e stat eben S e prov n desc rstellei r typis s s s e prov n desc rstellei n desc s s e prov n desc s s e l e s s a t e s s e s a t e s s a t e s s e s a t e s s e s e | i aboo e typis ith qu e why ie an, vide o ribess n Sie a chen u 0,00 2,2 0,00 2,2 0,00 2,2 0,00 2,2 0,00 2,2 2,000 2,000 2,00 2,000 2,00 2,000 2,00 2,0000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,00 | ve a che i iche i uest y thi waru out c ; a ty iche i out c ; a ty iche i out c ; a ty iche i iche i ; a ty iche i ; a ty i ; br>i ; | s a trund re ion 4 e we um die of yo ypica rem (epräss o co so so so so so so so so so so so so so | ypica epräse 1. ek ab e aufg ur m il and Gedäci entati 00 % % % | emor reprir esplain esplain n Sied | was nete y an eser ine A oche for tir | not t Woch othe tativ ufzeid 00;71 00;71 mes vo | cypica e untr er sch ve we chnun 00:E1 00 | al, e. ypiscl eek g lhru 00:91 00:91 dout n leer. | g, hu hist (le of er zu 00:51 00:51 of hou | olid z.B. You Hau 00:91 00:51 sse (ir | ay, wg. 1 se ve 00:91 00:91 n exce | extr Urlau me: 00:/1 00:/1 | atin ub, Ü s sp chte 00:81 00:41 nge c | ne a Ibers ent n Ze 00:61 02:81 wolour | at we tunned at h occor occor | ork den, 00:02 00:02 | , illi Kra ne 00:17 02:02 | 21:00 21:30 22:00 21:30 22:00 | Z2:00 22:30 | 22:30 23:30 23:30 | 23:30 0:00 |

Wednesday

Mittwoch

Thursday

Donnerstag

Friday

Saturday

Saturday

Samstag

Sunday

Sonntag

Tuesday Dienstag 150

| 4 | Do you have re Haben Sie regelmä | gular visitors, äßig Besuch (z.B. | like partners or famil Partner, Familie), der re | ly, that freeselmäßig b | equently sta ei Ihnen zu Ha | y at your use ist und | r home? I/oder über | nachtet? | | Ye Ja | s | X | No Nein | |
|----|---|--|--|--|---|---|--|-------------------------------|--------------------|----------------|-----------|------------------------|--------------------|-------------|
| | | lf yes: Please Wenn ja: weiter | continue with questi mit Frage 5 | ion 5. | | lf no: Ple Wenn Nei | ease go to n: weiter m | questio it Frage 6 | n 6. | | | | | |
| 5 | Please provide Bitte erstellen Sie | out of your m aus Ihrem Gedäc | emory a typical sche htnis eine Aufzeichnung o | dule of th der Zeit, die | e time your Ihr Gast in ein | visitor sp er typische | ends at y | your flat, ei Ihnen z | /house u Hause | e a verbrin | gt. | 0.00 | 30 | 00 |
| | Day Day | 00 013 30 110 00 113 30 210 30 23 30 23 30 330 | 200 333 30 410 30 410 30 510 513 510 510 510 510 510 510 510 510 510 510 | | 93 10:0 30 10:0 30 10:0 30 10:3 30 11:0 31:0 31:0 31:0 31:0 31:0 31:0 31:0 | 12:0 12:0 12:0 12:3 13:0 13:0 13:3 13:3 13:3 13:3 | 14:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 15:000 | 30 16:0 30 16:0 30 17:0 | 30 17:3 30 18:0 | 19:0 19:0 | 100 201 | 200 21 30 22 | 22:00 22: | 130 230 |
| | Tag | mark boxes for tim | es when you are at your hous | e, leave boxe: | s plain for times y | 디 디 디 띠 ou spend ou | t of house. | 19 19 19 | 17 17 18 | 18 18 0 | 20 | 3 12 12 | 22 | 23 |
| | Monday | bitte markieren Sie | e die Zeiten, die Sie zu Hause | verbringen, la | assen Sie die übri | gen Kästche | n leer. | | - | | п | | - | |
| | Tuesday Dienstag | | | | | | | | | | | | | |
| | Mittwoch Thursday | | | | | | | | | 111 | - | π | | |
| | Donnerstag Friday | | | | | 111 | | | | 111 | 1 | - | | |
| | Freitag Saturday | | | | | | | | | | - | 11 | - | |
| | Sunday Sonntag | | | | | | | | | | 11 | - | | |
| 6 | Employment st Erwerbsstatus | tatus | employed angestellt | self- | employed | ohne | employed Anstellung | X | studen | ent t/In | | D in Ir | n train Ausbild | ing lung |
| | | | retired Rentner | andere | er, please sta es, bitte angeben | te 🚺 | | | | | | | | |
| 7 | Do you work Arbeiten Sie | | full - time? Volizeit | part Tellzei | - time? t | Wit | hout clea | rly defin | ed tim | neframe | 27 | | | |
| 8 | Do you work a Arbeiten Sie (wen | t home, even i in auch nur gelegi | if it's just occasionallγ entlich) von zu Hause? | /? | | | | | | Ye Ja | es | X | No Nein | |
| 9 | If Yes, how ma Wenn Ja, wie viele | ny hours on th e Stunden an dies | nese days on average sen Tagen durchschnittlic | ? h? | Mo Mo | Tu Di | We Mi | Th Do | | Fr Fr | | Sa Sa | Su So | |
| 10 | Do you regular Verbringen Sie au | rly stay overnig If Geschäftsreiser | ght away from home oder ähnlichem regelmä | for busin Big Nächte | esstrips or s außerhalb Ihre | milar ? r Wohnun | g? | | | Ye Ja | 25 | | No Nein | X |
| 11 | lf yes, how ma Wenn Ja, wie viele | ny nights per r e Nächte pro Mo | month do you spend nat verbringen Sie durchs | on averag chnittlich a | ge outside y usserhalb Ihrer | our flat? Wohnung | 17 | | | - | Da | ays / N ge / Mo | Aonth onat | |
| 12 | Roughly, how i Wie viele Urlaubs | many days of l tage nehmen Sie | holiday do you take p ungefähr pro Jahr? | oer year? | | | | | | 100 | Da Taj | ays ge | | |
| 13 | Out of these here Von diesen Urlau | olydays, how r bstagen, wie viele | many days and nights e Tage und Nächte verbrir | s do you s ng <mark>en Sie nic</mark> | pend away ht zu Hause (z. | rom you B. auf Reis | ir home? e im Hotel | o.ä)? | | 15 | Da Taj | ays ge | | |
| 14 | Where is your Wo ist Ihre Wohn | house/flat? ung / Ihr Haus? | Postcode 8033 PLZ | 3 | City Má | nchen | | | Countr Lar | ry De | uts | oh la | nd | |

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat ihre Wohnung / Ihr Haus? Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC Kammer Kitchen andere Zimmer (bitte nennen) | |
|---------------|--|------|
| 16 | How big is the flat / house you live in? < 20 m ² 🔲 30 - 40 m ² 🚺 50 - 60 m ² 🚺 70 - 80 m ² 🕺 100 - 120 m ² | |
| | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² 1 40 - 50 m ² 60 - 70 m ² 80 - 100 m ² > 120 m ² | |
| 17 | For how long have you been living in your current flat/house? Months Years Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre | _ |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? | |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? | |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerä | t |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? | |
| | Not likely at all unlikely unwahrscheinlich unwahrscheinl | |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes I No Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud ist Ja Nein | X |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes Xa No Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja No Nein | |
| 24 | How many hours of your free time do you spend per week on the internet? The Hours/Week Stunden / Woche | |
| 25 | Personal information: Gender? female male Persönliche Informationen: Geschlecht weiblich männlich | X |
| | Age? 20-30 🕅 30-40 🔲 40-50 🚺 50-60 🔲 >60 Alter | |
| Thar Viele | Persönliche Informationen: Geschlecht weiblich Age? 20 - 30 30 - 40 40 - 50 50 - 60 Alter Alter 50 - 60 50 - 60 nk you very much for your effort. To return this form, please chose one of the following options: 50 - 60 n Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten | > 60 |

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurfb | aum@network.rca.ac.uk | |
|----|--|--------------------------------|----------------------------|--|
| b) | Print out Drucken Sie den Fragebogen aus | and fax to: und faxen ihn a | +49 (0)89.95 474 526 n: | |

Wohngebäude- Nutzungs- Umfrage Dwelling Utilisation Survey -

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? | 1 (Me) | ×2 | 3 | 4 | 5 | if more: | Persons |
|---|---|---------|----|---|---|---|-------------|----------|
| * | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| | Time | 0:30 1:00 1:30 2:00 2:30 | 3:00 | 4:00 | 5:00 5:30 6:00 | 6:30 | 7:30 | 8:30 | 9:30 | 10:30 | 11:00 | 12:00 | 13:00 | 13:30 | 14:30 | 15:30 | 16:00 | 17:00 | 12:30 | 18:30 | 19:00 | 19:30 | 20:3(| 21:00 | 21:3(| 22:3(| 23:30 | 0:0 |
|---|---|--|--|----------------------------------|--|--------------------------------------|--------------------------------------|--|---------------------------------|------------------------------|-------------------------------|----------------------------|------------------------|--|--------------------|----------------|---------------|--------------|---------------|-------------|-------------|------------|-------------|--------------|-------|----------|----------|-------|
| | from | 0:00 0:30 1:30 2:00 | 2:30 | 3:30 | 4:30 5:00 5:30 | 6:00 | 7:00 | 8:30 | 00:6 | 10:00 | 10:30 | 11:30 | 12:30 | 13:30 | 14:00 | 15:00 | 15:30 | 16:30 | 17:20 | 18:00 | 18:30 | 19:30 | 20:00 | 20:30 | 21:30 | 22:00 | 22:30 | 23:30 |
| | Date (dd/mm) Datum (tt/mm) | | | | | | | | | | | | | | | | | | | | L | | | | | _ | _ | |
| | Hartey | | | | | | | | | | | Ц | | | 1 | 1 | | | <u> </u> | - | | | - | | | | | |
| | pertag | | | | | | H | U | 1 | | | | | | | | | | | 1 | | | L | | | - | | H |
| | Millwood | | | | | | | 1 | | | | | Т | | | L | | | | | | | L | | | | | H |
| | Bounstay | | | | | T | T | T | TI | | | | Т | | | I | | | | Τ | | | L | | | | | - |
| | When the | | | | | | II. | H | III | | | | T | | | T | | | | T | L | | L | Г | | P | T | |
| | Sound | | ITT | 12 | | | TT | TT | th | | | | Т | | II | T | | | | I | | | Т | | | * | | 1 |
| | Jonky | | | - | | 11 | П | T | 10 | | | | T | П | | T | | Т | | T | Γ | | T | Π | | A | | |
| 3 | Would you est Denken Sie, daß d | imate the w lie oben aufgez | eek y eichne | ou re ete Wo | corde iche eir | d abo ne typi | ve as | s a ty ind re | pica präse | l an ntati | d rej ive W | ores | enta ist? | ative | we | ek? | | | | | | Ye Ja | s | 1 | (| Ne | lo in | X |
| | | If Yes: P Wenn ja: w | lease eiter n | conti nit Fra | inue v ge 4 | vith q | uesti | on 4 | | | | | | | | | | | | | | | | | | | | |
| | | If No: Wenn Nein | a) a) | Plea: Bitte | se sta geben i | te wh Sie an, | waru | e wee m die | ek ab aufg | ove | was hnete | NO1 | typ the u | oical untyp | e.g | . ho ist (z | lida .B. w | γ, e g. U | xtra | tim , ül | he a | t w | ork Jen, | , ill Kra | nes | 5 eit | .) | |
| | | | b) b) | Plea: whic Bitte in ein | se pro ch des erstelle er typis | ovide cribe: an Sie a schen | out o s a ty aus Ihi und re | of you pical rem G präse | ur m and iedāci entati | emo rep htnis ven \ | ory a rese eine Noch | noth ntai Aufz e. | ive ive | wee | dule k Ihrer | of zu F | you | r tin | nes brac | spe hter | ent n Ze | at h it | ion | 1e | | | | |
| | me me | 30 30 | 3:30 | 4:00 | 5:30 | 6:30 | 7:30 | 8:30 | 9:30 | 10:30 | 11:00 | 12:00 | 13:00 | 13:30 | 14:30 | 15:30 | 16:00 | 17:00 | 17:30 | 18:30 | 19:00 | 19:30 | 20:30 | 21:00 | 21:30 | 22:30 | 23:30 | 0:00 |
| | / F E a | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Day Day | 0:00 0 0:30 1 1:00 1 1:30 2 2:00 2 | 2:30 | 3:30 | 5:00 5:00 | 6:00 | 7:30 | 8:00 | 00:6 | 10:00 | 10:30 | 11:30 | 12:30 | 13:30 | 14:00 | 15:00 | 15:30 | 16:30 | 17:00 | 18:00 | 18:30 | 19:00 | 20:00 | 20:30 | 21:00 | 22:00 | 22:30 | 23:30 |
| | Day Tag | tick/untick boxe | o 00 5 3 5 5 5 5 5 5 7 5 7 5 7 5 7 5 7 7 7 7 | nes whe | en you a | re at yo | ur hou | 00 cc a | ve box | es pla | 11:00 in for die ül | 00000 | 02:30 you s Kāst | pend 13:30 | out of | 14:20 house | i) 15:30 | excel | 00:21 chan | 18:00 | 18:30 | 10:00 | 20:00 | 20:30 | 21:00 | 22:00 | 22:30 | 23:30 |
| | Day Tag Monday | 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 00:2 es for tir | 00.4 mes whe | en you a | re at yo | 00:2 ur hou | se, lea | ve box | es pla | 10:30 in for die üt | 02:11 times | you s Kāst | pend chen | out of eer. | 12:00 house | i) 15:30 | excel | 00:21 chan | 18:00 | 18:30 | 19:00 | 20:00 | 20:30 | 21:00 | 22:00 | 22:30 | 23:30 |
| | Day Tag Monday Montag Tuesday | 0 1 1 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 00000 Si 2 m si for tir ie die Zi | 0004 mes who eiten an | en you a | re at yo | 00:2 ur hou | oo | ve box | es pla | 00:01 in for die ül | times | you s Kāst | pend chen 13:00 | out of eer. | hous 15:00 | in 15:30 | excel | 00:21 chan | 18:00 | 18:30 | | 20:00 | 20:30 | 21:00 | 22:00 | 22:30 | 23:30 |
| | Day Tag Monday Montag Tuesday Dienstag | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0000 crist for tir | OE 00 Heiten an | 00 00 00 en you a h, die Sie | re at yo | 00:2 ur hou ise vert | oo or oo or oo or oo or oo oo oo oo oo o | ve box | es pla | 00:01 in for die ül | times times | you s Kāst | 00000000000000000000000000000000000000 | out of eer. | 14:20 IS:00 | i) 15:30 | excel | 00:21 chan | 00:/T ge 0 | 18:30 | 19:00 | 20:00 | 20:30 | 21:00 | 22:00 | 22:30 | 23:30 |

Mittwoch Thursday Donnerstag Friday Freitag Saturday Samstag Sunday

Sonntag

| | | | | 165 |
|----|--|---|--|---|
| 4 | Do you have regular visitors, like partners or family, that frequently s Haben Sie regelmäßig Besuch (z.B. Partner, Familie), der regelmäßig bei Ihnen zu | stay at your home? Hause ist und/oder übernachtet? | Yes 🔀 | No 📘 Nein |
| | If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5 | If no: Please go to question 6. Wenn Nein: weiter mit Frage 6 | | |
| 5 | Please provide out of your memory a typical schedule of the time yo Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in | ur visitor spends at your flat/house einer typischen Woche bei Ihnen zu Hause v | verbringt. | |
| | Time Uhrzeit Uhrzeit Uhrzeit 1000 1100 1100 1100 1100 1100 1100 11 | 11:50 12:00 12:00 13:30 13:30 14:30 14:30 14:30 15:30 16:30 16:30 16:30 16:30 16:30 16:30 17:30 17:30 17:30 17:30 17:30 18:30 | 19:00 19:30 20:00 20:30 21:00 21:30 | 22:00 22:30 23:30 23:30 0:00 |
| | Day 113000 113000 113000 113000 113000 113000 113000 113000 1130 | 11100 12300 12300 12300 13300 13300 14300 14300 14300 15000 150000 150000 150000 150000 150000 1500000000 | 18:30 19:00 19:30 20:00 20:30 21:00 | 211:30 22:00 22:30 23:00 23:30 23:30 |
| | mark boxes for times when you are at your house; leave boxes plain for time bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen Sie die U Monday | es you spend out of house. Ibrigen Kästchen leer. 19 au al an | | |
| | Montag Tuesday | | | |
| | Wednesday Mittwoch | | | |
| | Thursday Donnerstag | | | |
| | Friday State | | | |
| | Samstag Sunday Sonntag | | | |
| 6 | Employment status employed self- employed selbständig | I unemployed Studen | it [| in training In Ausbildung |
| | retired anderes, bitte angel | itate | | |
| 7 | Do you work Arbeiten Sie | without clearly defined time | frame? | |
| 8 | Do you work at home, even if it's just occasionally? Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? | | Yes 🔲 | No Mein |
| 9 | If Yes, how many hours on these days on average? Mo Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo | Tu We Th Th Di Mi Do | Fr Sa | Su Su So |
| 10 | Do you regularly stay overnight away from home for businesstrips or Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb II | similar ? hrer Wohnung? | Yes 📘 | No 🔀 Nein |
| 11 | If yes, how many nights per month do you spend on average outside Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ih | your flat? rer Wohnung? | Days / Tage / M | Month Monat |
| 12 | Roughly, how many days of holiday do you take per year? Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? | | 40 Days Tage | |
| 13 | Out of these holydays, how many days and nights do you spend awa Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause | y from your home? (z.B. auf Reise im Hotel o.ă)? | LGO Days Tage | |
| 14 | Where is your house/flat? Postcode City Wo ist Ihre Wohnung / Ihr Haus? PLZ Ort | incher Country Land | Gerna | -m |

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus? Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC |
|---------------|--|
| _ | |
| 16 | How big is the flat / house you live in? < 20 m ² $30 - 40$ m ² $50 - 60$ m ² $70 - 80$ m ² $100 - 120$ m ² |
| _ | Groise inter wonnung jintes Hausesr 20-30 m ² 40-50 m ² 60-70 m 60-70 m 60-70 m 60-70 m |
| 17 | For how long have you been living in your current flat/house? Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? |
| | Not likely at all unlikely 🔯 don't know 🔲 likely 🧾 very likely 🚺 Überhaupt nicht wahrscheinlich unwahrscheinlich ich weiß nicht wahrscheinlich sehr wahrscheinlich |
| 22 | Do you store any data in the cloud? Speichern Sie Daten in der Cloud? I don't know what the cloud is Yes No Ich weiß nicht was die Cloud ist Ja |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes Xes No Sind sie auf Facebook oder in irgendelnem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja Nein |
| 24 | How many hours of your free time do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Hours/Week |
| 25 | Personal information: Gender? female male Resolution: Geschlecht weiblich männlich |
| | Age? 20-30 🛐 30-40 🔲 40-50 🔲 50-60 🔲 >60 📗 |
| Than Viele | k you very much for your effort. To return this form, please chose one of the following options: Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten |

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurfbaum@network.rca.ac.uk | | | | | | | |
|----|--|---|--|--|--|--|--|--|--|
| b) | Print out Drucken Sie den Fragebogen aus | and fax to: +49 (0)89.95 474 526 und faxen ihn an: | | | | | | | |

Wohngebäude- Nutzungs- Umfrage Dwelling Utilisation Survey

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 How many persons all together live in your household? 1 (Me) 2 3 4 5 If more: Person Wie viele Personen insgesamt leben in Ihrem Haushalt? 1 (Ich) 2 3 4 5 falls mehr: Persone | 1 How many persons all together live in your household? Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Me) 1 (Ich) | 2222 | 3 3 | 4 | 5 | if more: falls mehr: | Persons Personen |
|--|--|-------------------|------|--------|---|---|----------------------|---------------------|
|--|--|-------------------|------|--------|---|---|----------------------|---------------------|

Please provide a record of the hours you spend at your household/home in seven consecutive days (mark the fields when you are 2 at home, leave others empty). You can start with any day of the week, please just make sure you record seven consecutive days.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die Sie zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| / | Time | hrzeit | until | 0:30 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:00 | 4:30 | 5:30 | 6:00 | 6:30 | 7:00 | 7:30 | 8:00 | 8:30 | 00:6 | 9:30 | 00:0T | 11:00 | 11:30 | 12:00 | 12:30 | 13:00 | 13:30 | 14:30 | 15:00 | 15:30 | 16:00 | 17:00 | 17:30 | 18:00 | 18:30 | 19:00 | 19:30 | 20:30 | 21:00 | 21:30 | 22:00 | 23:00 | 23:30 |
|--------------|------------------|-----------|-------|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | / | n (| from | 0:00 | 1:00 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:00 | 2:00 | 5:30 | 6:00 | 6:30 | 2:00 | 7:30 | 8:00 | 8:30 | 00:6 | 00.01 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 00:51 | 14:00 | 14:30 | 15:00 | 15:30 | 16-30 | 17:00 | 17:30 | 18:00 | 18:30 | 19:00 | 20:00 | 20:30 | 21:00 | 21:30 | 22:30 | 23:00 |
| Date Datu | (dd/m im (tt/ | nm) mm |) | | 1 | | 1 | | | | | | | | | | | | | | | | | L | | | | | | 1 | | L | | | | | _ | 1 | L | | | L | _ |
| | _ | _ | | | ÷ | ļ | Ļ | | | | | ł | ÷ | Ļ | - | | | | - | | 4 | + | ÷ | Ļ | - | | | + | + | - | | + | + | | | | | ÷ | ÷ | H | H | ÷ | 븕 |
| | - | - | | | t | T | t | F | | | H | t | İ | t | F | È | | | | H | Ż | İ | Î | Ê | | | | i | Ť | Ē | | i | Ì | Ē | | | | Î | Î | Ē | | İ | Ū |
| | | | | | I | I | Ľ | | | | | T | T | Ľ | Γ | C | | | | | | T | I | Γ | | | | T | T | | | T | I | Γ | | | | Ţ | I | | | I | Ц |
| | _ | _ | | | Į | Į | Ļ | | | | | + | ļ | Ļ | | | | | - | | - | ÷ | ÷ | Ļ | | - | | + | ÷ | | - | 4 | + | | | | | ÷ | ŧ | H | | + | 井 |
| | - | | | H | t | | t | F | | | H | 1 | t | T | F | F | | | | H | T | t | t | t | | | | İ | T | Ē | | İ | T | F | | | | Î | Ť | Ē | h | İ | Ĭ |
| Wo | uld vo | ou e | esti | ma | te t | he | w | eel | < v(| ou | rec | or | deo | da | bo | ve | as | a | typ | ica | la | nd | re | ore | eser | nta | tiv | e w | /ee | k? | | | | - | | | Ye | s | × | 1 | | No | |
| | | | 0 1 | | | | | | | | | | -1- | | in la | | | | - | See | | | - 14 | lock | no in | +2 | | | | | | | | | | | la | | | | 10 | Neir | 1 |

Denken Sie, daß die oben aufgezeichnete Woche eine typische und repräsentative Woche ist?

If Yes: Please continue with question 4.

Wenn ja: weiter mit Frage 4

a)

b)

If No: Wenn Nein

Please state why the week above was not typical, e.g. holiday, extratime at work, illness... a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit....)

Please provide out of your memory another schedule of your times spent at home b) which describes a typical and representative week

Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche.

| Time | 12:00 13:00 13:00 2:00 2:00 2:00 2:00 5:00 5:00 5:00 6:00 11 |
|------------|--|
| Day | 11:30 11:30 11:30 11:30 11:30 21:30 21:30 21:30 21:30 11:30 |
| 108 | tick/untick boxes for times when you are at your house, leave boxes plain for times you spend out of house (in excel change colour). |
| | bitte kreuzen Sie die Zeiten an, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer. |
| Monday | |
| Montag | |
| Tuesday | |
| Dienstag | |
| Wednesday | |
| Mittwoch | |
| Thursday | |
| Donnerstag | |
| Friday | |
| Freitag | |
| Saturday | |
| Samstag | |
| Sunday | |
| Sonntag | |

No

Nein

X

Yes

Ja

Do you have regular visitors, like partners or family, that frequently stay at your home? 4 Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet?

> If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5

If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

| 5 | Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause | verbringt. |
|----|---|--|
| | Tag Time Jay 11300 11300 11300 11300 11300 11300 Jak 111000 111300 11300 11300 11300 11300 Jak 111000 111300 11300 11300 11300 11300 Jak 111000 111300 11300 11300 11300 11300 Jak 11300 11300 11300 11300 11300 11300 Jak 11300 11300 11300 11300 11300 11300 Jak 11300 11300 11300 11300 11300 11300 Jak 11400 11300 11300 11300 11300 113000 | 18:30 19:00 19:30 19:30 19:30 20:00 20:30 20:30 20:30 21:30 21:30 21:30 21:30 22:30 21:30 22:30 22:30 22:30 22:30 22:30 23:30 23:30 23:30 23:30 |
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| | | |
| | | |
| 6 | Employment status employed angestellt self- employed selbständig unemployed ohne Anstellung studer, Student, angestellt Image: Tetired Rentner mother, please state anderes, bitte angeben Imagestellt Imagestellt | nt in training In Ausbildung |
| 7 | Do you work Arbeiten Sie Tellzelt Arbeiten Sie Tellzelt Tellzelt Tellzelt Tellzelt Tellzelt | eframe? |
| 8 | Do you work at home, even if it's just occasionally? Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? | Yes 🔲 No 🔀 Ja Nein |
| 9 | If Yes, how many hours on these days on average? Mo Tu We Th Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo Di Mi Do | Fr Sa Su Fr Sa So |
| 10 | Do you regularly stay overnight away from home for businesstrips or similar ? Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? | Yes 🚺 No 🔀 Ja Nein |
| 11 | If yes, how many nights per month do you spend on average outside your flat? Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? | Days / Month Tage / Monat |
| 12 | Roughly, how many days of holiday do you take per year? Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? | Days Tage |
| 13 | Out of these holydays, how many days and nights do you spend away from your home? Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä)? | Days Tage |

Where is your house/flat?

Wo ist Ihre Wohnung / Ihr Haus?

14

Country

Land

GERMANY

City

Ort

MUNCHEN

Postcode 80469

PLZ
| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat ihre Wohnung / Ihr Haus? Wie viele Zimmer der folgenden Kategorien hat ihre Wohnung / Ihr Haus? Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC other rooms: (please state) andere Zimmer (bitte gengen) |
|----|--|
| 1 | made anime (mile india |
| 16 | How big is the flat / house you live in? 20 m^2 $30 - 40 \text{ m}^2$ $50 - 60 \text{ m}^2$ $70 - 80 \text{ m}^2$ $100 - 120 \text{ m}^2$ Größe ihrer Wohnung /ihres Hauses? $20 - 30 \text{ m}^2$ $40 - 50 \text{ m}^2$ $60 - 70 \text{ m}^2$ $80 - 100 \text{ m}^2$ > 120 m^2 |
| 17 | For how long have you been living in your current flat/house? Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? |
| 20 | Do you use any of these items? MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader Benutzen Sie eines dieser Geräte? MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- oder Fotographie-Sammlungen in der Zukunft ersetzen? Not likely at all unlikely unwahrscheinlich unwahrscheinlich very likely sehr wahrscheinlich ersetzen? |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes No I ch weiß nicht was die Cloud ist Ja Nein |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes No I Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? I don't know what Facebook is Yes No I |
| 24 | How many hours of your <u>free time</u> do you spend per week on the internet? Hours/Week Stunden / Woche |
| 25 | Personal information: Gender? M female male male Personal informationen: Geschlecht Age? 20 - 30 30 - 40 40 - 50 50 - 60 > 60 Imain lich Age? 20 - 30 Alter 30 - 40 10 40 - 50 50 - 60 > 60 Imain lich |

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurft | baum@network.rca.ac.uk |
|----|--|---------------|------------------------|
| b) | Print out | and fax to: | +49 (0)89.95 474 526 |
| | Drucken Sie den Fragebogen aus | und faxen ihn | an: |

Thank you very much for your support --- Vielen Dank für Ihre Unterstützung

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Me) 1 (Ich) | 22 | 3 | 4 | 5 | if more: falls mehr: | Persons Personen |
|---|--|-------------------|----|---|---|---|-------------------------|---------------------|
| Т | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

2 Please provide a record of the hours <u>you</u> spend at your household/home in seven consecutive days (mark the fields when you are at home, leave others empty). You can start with any day of the week, please just make sure you record <u>seven consecutive days</u>.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die <u>Sie</u> zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| | Time | until | 0:30 | 1:30 | 2:00 | 2:30 | 3:30 | 4:00 | 4:30 | 5:30 | 6:00 | 6:30 | 7:30 | 8:00 | 8:30 | 00:6 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:30 | 14:00 | 14:30 | 15:00 | 15:30 | 16:30 | 17:00 | 17:30 | 18:00 | 18:30 | 19:00 | DO:DC | 20:30 | 21:00 | 21:30 | 22:00 | 22:30 | 00:57 | 0:00 |
|---------------------|------------------|-------------|---------------|----------------|------------|------|--------------|-----------|--------------|------------|-------------|------------|------|------|-------------|------|-------------|-------|--------------|-------|------------|--------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|
| / | 1 | from | 0:00 | 1:00 | 1:30 | 2:00 | 3:00 | 3:30 | 4:00 | 2:00 | 5:30 | 6:30 | 00:2 | 7:30 | 8:00 | 8:30 | 9:30 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 13:00 | 13:30 | 14:00 | 14:30 | 15:00 | 16:00 | 16:30 | 17:00 | 17:30 | 18:00 | 18:30 | 10-20 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 00.52 | 23:30 |
| Date (do Datum (| d/mm) (tt/mm | 1) | 1 | | | | | | | | | | | | | | | | | ł | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 1 | | T | | | | | | T | | | | | | | L | | | L | | | | | | L | | | | | | 1 | | L | | | | |
| | - | | T | T | | | T | | | T | | | T | T | | | | T | Т | Г | - | | T | T | T | | | | Т | Г | | | | | T | T | Г | | | Т | |
| | | 1 | ā | Ť | Ē | | Ť | | | T | | | T | T | Г | | | T | T | T | | | T | T | | | | 1 | T | | | | | 1 | T | T | Ē | | | I | |
| | | | | T | | | T | | | T | | | I | Г | | | | T | T | Ľ | Γ | | Í | Г | | | | I | I | Ľ | | | | | 1 | T | L | L | | I | Т |
| | | 1 | | T | | | T | | | T | | | 1 | L | | | | 1 | Г | Γ | Γ | | I | Г | | | | | L | L | | | | 1 | I, | T | L | | | I | |
| | | | | T | | | Т | | | T | | | T | T | | | | T | T | Г | | | 1 | T | | | | | L | L | | | | | Т | T | Г | | | I | Т |
| | | 1 | | T | | | Т | | | T | | | T | 1 | | | | T | T | Г | | | I | T | | | | Т | T | L | | | | | T | T | Г | | | 1 | П |
| Would Denken | l you Sie, da | est aß d | imat ie ob | te ti ien a | he aufg | wee | ek y chne | ou ete | rec Woo | orc | led eine | abo typ | ove | e as | a i nd i | typ | ical ase | ar | nd i tive | rep | ore och | sen e ist | tat ? | ive | we | eek | ? | | | | | | | Ye | S | C | 1 | | Ne | 0 in | |
| | | | lf Y We | es: | a: | Ple | ase ter r | conit | ntir Frag | nue e 4 | wi | th c | que | esti | on | 4. | | | | | | | | | | | | | | | | | | | | | | | | | |

Wenn Nein a) Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit....)

b) Please provide out of your memory another schedule of your times spent at home which describes a typical and representative week
 b) Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit

Please state why the week above was not typical, e.g. holiday, extratime at work, illness...

Bitte erstellen Sie aus ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche.

| Time | hrzeit | until | 0:30 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:00 | 4:30 | 5:30 | 6:00 | 6:30 | 7:00 | 7:30 | 00.0 | 00:6 | 9:30 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:00 | 13:30 | 14:00 | 15:00 | 15:30 | 16:00 | 16:30 | 17:00 | 17:30 | 18:00 | 18:30 | 00:61 | 00.02 | 20:30 | 21:00 | 21:30 | 22:00 | 22:30 | 23:00 | 0:00 |
|------------|--------|-------|--|-------|------|-------------|-------|---------|----------------|-------|-------|-------|------|------|-------|------|------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| Day | | from | 0:00 | 1:00 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:00 | 2:00 | 5:30 | 6:00 | 6:30 | 7:00 | 00.8 | 8:30 | 9:00 | 9:30 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13:00 | 13:30 | 14-30 | 15:00 | 15:30 | 16:00 | 16:30 | 17:00 | 17:30 | 18:00 | 10.00 | 10-30 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 22:30 | 23:30 |
| Idg | 1 | | tick/ | untic | ck b | oxes | for | tim | nes | whe | n yoi | Lare | at | you | hou | ise, | leav | e bo | oxes | s pla | iin fi | or t | ime | s yo | au sj | pend | d ou | tof | hou | se (i | n ex | cel | cha | nge | cold | our). | | | | | | | | |
| | | | bitte | krei | uzei | n Sle | e die | Ze | iter | an, | die | Sie 2 | u H | ause | e ver | brin | gen | , las | sen | i Sie | die | üb | rige | en K | ästo | her | lee | ŕ. | | | 11 | | 11 | _ | | _ | - | - | | - | 1 | 122 | - | Concession of the local division of the loca |
| Monday | | | T | T | T | | | | | | | T | | | | | Т | T | | | | | | | | | | | T | | L | | | | | | 61 | | L | | | | | |
| Montag | | | 122 | 1.0 | | -11 | | | | 1.1.1 | | 1 | | | | | | - | | | 1 | 12 | 1 | | | - | | | - 9 | 1 | - | | 12 | | 43 | 1 | | | | | | | | - |
| Tuesday | | | T | T | T | | | | | | T | Т | | | | | Т | | 1 | Г | T | 1 | | | | | | | Т | Т | 1 | | | | | - | | T | L | | | | | |
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| Wednesday | / | | T | T | T | | | | | | | T | | | | T | | Т | Г | | | | | | | | | | | | | | 1 | | | | | T | L | | | | | |
| Mittwoch | | | Constitution of Constitution o | | | | 1 | | | 5 | | | | | | | | | | | | | | | | | | 13 | 1 | | | | 10 | | | | | | | | | 116 | _ | - |
| Thursday | | | T | Т | 1 | | | | | | Т | T | | | | | | Т | Т | T | 1. | T | | | | | | | Т | | L | | | | | | | L | L | | | | 4 | |
| Donnerstag | | | Test in | | 1 | 1.1 | - | | | | | | - | | | | 1 | | | 12 | | 12- | | 1 | | | | | | 1 | 1 | | 11 | | | - 1 | d. | | | | - | 141 | _ | 10 |
| Friday | | | | T | Т | | | | | | | T | Г | | | -1 | | Т | | T | | Г | E | | | | | 5. | T | T | | | | | | | | | T | | | | | |
| Freitag | | | and the second s | - | 1 | | | | | 100 | . 57 | | 10 | | | | 1 | | 1 | 12 | 1 | 6 | | | | | | | 1 | | | | 5.5 | | | | | - | 1 | | | 24 | _ | 3 |
| Saturday | | | | | F | | | | | | | Г | | | | | Т | Т | Т | | | 1 | | | | | - | | T | 1 | Г | | | | | | | T | | | | | | |
| Samstag | | | 194 | | | 11 | | 2.7 | | 10 | 1 | | | | | | 2 | 2 | | - 22 | 1 | -55 | | - | | 72 | - | | | 1 | 1 | _ | 11 | | 22 | _ | | | - | | | 1.5 | - | - |
| Sunday | | | T | T | Г | | | | | | | T | | | | | | | T | E | | | | | | | | | | | | | | | | 1 | | 1 | 1 | | | | | |
| 2 | | | a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a sea a s | - | | and some of | | and the | and the second | | | | | | | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | |

If No:

a)

No Do you have regular visitors, like partners or family, that frequently stay at your home? Yes 4 Nein Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet? la If yes: Please continue with question 5. If no: Please go to question 6. Wenn Nein: weiter mit Frage 6 Wenn ja: weiter mit Frage 5 Please provide out of your memory a typical schedule of the time your visitor spends at your flat/house 5 Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung der Zeit, die Ihr Gast in einer typischen Woche bei Ihnen zu Hause verbringt. Dav Tag mark boxes for times when you are at your house, leave boxes plain for times you spend out of house. bitte markieren Sie die Zeiten, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer Monday Montag Tuesday Dienstag Wednesday Mittwoch Thursday Donnerstag Friday Freitag Saturday Samstag Sunday Sonntag in training self- employed student employed unemployed 6 Employment status Student/In in Ausbildung selbständig ohne Anstellung Erwerbsstatus angestellt other, please state retired anderes, bitte angeben Rentner without clearly defined timeframe? part - time? full - time? Do vou work 7 ohne fixe Arbeitszeiten Volizeit Teilzeit Arbeiten Sie Yes No Do you work at home, even if it's just occasionally? 8 Nein Ja Arbeiten Sie (wenn auch nur gelegentlich) von zu Hause? Th Fr Sa Su Mo Tu We If Yes, how many hours on these days on average? 9 Fr So Di Mi Do Sa Wenn Ja, wie viele Stunden an diesen Tagen durchschnittlich? Mo Yes No Do you regularly stay overnight away from home for businesstrips or similar ? 10 Ja Nein Verbringen Sie auf Geschäftsreisen oder ähnlichem regelmäßig Nächte außerhalb Ihrer Wohnung? Days / Month 11 If yes, how many nights per month do you spend on average outside your flat? Tage / Monat Wenn Ja, wie viele Nächte pro Monat verbringen Sie durchschnittlich ausserhalb Ihrer Wohnung? Roughly, how many days of holiday do you take per year? Days 12 Tage Wie viele Urlaubstage nehmen Sie ungefähr pro Jahr? Out of these holydays, how many days and nights do you spend away from your home? Days 13 Tage Von diesen Urlaubstagen, wie viele Tage und Nächte verbringen Sie nicht zu Hause (z.B. auf Reise im Hotel o.ä...)? Country City Postcode Where is your house/flat? 14 PLZ Ort Land Wo ist Ihre Wohnung / Ihr Haus?

| 15 | How many rooms of the following category does your flat/house have? Wie viele Zimmer der folgenden Kategorien hat ihre Wohnung / Ihr Haus? Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC other rooms: (please state) andere Zimmer (bitte nennen) | |
|----|--|---|
| 16 | How big is the flat / house you live in? < 20 m² 🔲 30 - 40 m² 🔲 50 - 60 m² 🚺 70 - 80 m² 🔲 100 - 120 m² | 1 |
| | Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² |] |
| 17 | For how long have you been living in your current flat/house? Months Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre | |
| 18 | From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? | |
| 19 | Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? Sind Sie Eigentümer/In | |
| 20 | Do you use any of these items?MP3 PlayerTablet PC (iPad)SmartphoneKindle or other eReaderBenutzen Sie eines dieser Geräte?MP3 SpielerTablett PC (z.B. iPad)SmartphoneKindle oder anderes E-Lesegerät | |
| 21 | In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Filmoder Fotographie-Sammlungen in der Zukunft ersetzen? Not likely at all unlikely unwahrscheinlich unlikely unwahrscheinlich ich weiß nicht wahrscheinlich sehr wahrscheinlich | 3 |
| 22 | Do you store any data in the cloud? I don't know what the cloud is Yes No Speichern Sie Daten in der Cloud? Ich weiß nicht was die Cloud Ist Ja Nein | |
| 23 | Are you on Facebook or any other social network? I don't know what Facebook is Yes No Sind sie auf Facebook oder in irgendeinem anderen sozialen Netzwerk? Ich weiß nicht was Facebook ist Ja Nein | |
| 24 | How many hours of your free time do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Stunden / Woche | 1 |
| 25 | Personal information: Gender? female male Persönliche Informationen: Geschlecht female male Age? 20 - 30 30 - 40 40 - 50 50 - 60 > 60 Alter Alter Alter Alter Alter Alter | |

Thank you very much for your effort. To return this form, please chose one of the following options: Vielen Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurfbaur | m@network.rca.ac.uk |
|----|--|-------------------------------------|---------------------|
| b) | Print out Drucken Sie den Fragebogen aus | and fax to: +4 und faxen ihn an: | 49 (0)89.95 474 526 |

Thank you very much for your support --- Vielen Dank für Ihre Unterstützung

Wohngebäude- Nutzungs- Umfrage Dwelling Utilisation Survey

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many persons all together live in your household? Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Me) (Ich) | 22 | 3 3 | 4 | 5 | if more: falls mehr: | Persons Personen |
|---|--|-----------------|----|------------|---|---|-------------------------|---------------------|
| | Wie viele Personen insgesamt leben in Ihrem Haushalt? | 1 (Ich) | 2 | 3 | 4 | 5 | falls mehr: | Personen |

Please provide a record of the hours you spend at your household/home in seven consecutive days (mark the fields when you are 2 at home, leave others empty). You can start with any day of the week, please just make sure you record seven consecutive days.

Bitte erstellen Sie für sieben aufeinander folgende Tage eine Aufzeichnung der Zeit, die Sie zu Hause verbringen (markieren Sie die jeweiligen Zeitabschnitte). Sie können mit einem beliebigen Tag beginnen, es ist aber wichtig, daß Sie einen zusammenhängenden Zeitraum dokumentieren.

| 1 | | Time | rizeit | until | 1:00 | 1:30 | 2:00 | 2:30 | 3:00 | 3:30 | 4:30 | 5:00 | 5:30 | 6:30 | 7:00 | 7:30 | 8:00 | 8:30 | 00:6 | 9:30 | 10:30 | 11:00 | 11:30 | 12:00 | 12:30 | 13-30 | 14:00 | 14:30 | 15:00 | 15:30 | 16:00 | 17-00 | 17:30 | 18:00 | 18:30 | 19:00 | 19:30 | 20:30 | 21:00 | 21:30 | 22:00 | 22:30 | 23:30 | 00:00 |
|--------|--------------------|--------------|--------|----------------|-------------|------|------|------|------|------|------|-------------|----------------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | / | / | D | from | 0:30 | 1:00 | 1:30 | 2:00 | 2:30 | 3:00 | 4:00 | 4:30 | 5:00 | 6:00 | 6:30 | 7:00 | 7:30 | 8:00 | 8:30 | 00:6 | 10:00 | 10:30 | 11:00 | 11:30 | 12:00 | 12:00 | 13:30 | 14:00 | 14:30 | 15:00 | 15:30 | 16-30 | 17:00 | 17:30 | 18:00 | 18:30 | 00:61 | 20:00 | 20:30 | 21:00 | 21:30 | 22:00 | 23:00 | 23:30 |
| D | ate (dd atum (1 | i/mr tt/m | m) | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | 2 | | |
| Г | | | | | | T | T | | | | T | T | П | T | T | T | | | - | | T | Г | Г | Γ | | | Т | Τ | L | | | T | T | L | | | | Т | L | | | | | |
| F | - | | | i | | T | Г | | | | T | T | T | T | T | T | Г | | | | T | T | T | Г | | 1 | | T | Г | | | T | Т | Г | | | | T | T | | | | | |
| F | | | | | | T | Г | | | | T | T | П | T | T | T | | | | | T | T | T | Г | | | | T | | | | T | T | Г | | | | T | T | | | | T | |
| F | | | | i | | T | r | Г | | | T | T | Π | Ť | Т | T | | | | | T | T | Ē | | | | | Ť | T | | | T | T | T | | | | T | T | Г | | | T | П |
| Ē | | | | i | T | T | T | T | | | T | T | T | T | T | T | Г | | | | T | T | É | T | | T | Т | T | Г | | | T | T | Г | | | | I | T | T | | | | Т |
| Ē | | | | i | | T | T | T | | | T | Т | TT | T | T | T | T | | | | T | T | Ē | T | Ô | ٦ | | T | L | | | 1 | T | Г | | | | T | T | | | | | T |
| Ē | | | 1 | | | T | T | T | | | T | T | Π | T | T | T | Г | Ē | | | T | T | Ē | Г | Ō | 1 | T | T | L | | | T | Ť | I | | | | | T | | | | Т | D |
| | | | | | | | | | | | | | ends | | | | | | | t. | 1 | | | | | | tive | | 0.01 | ~2 | _ | - | - | | | | Ve | 20 | Г | 1 | - | N | 0 | |
| V D | Vould | yo Sie. | da | estir ß die | mat e ob | et | ne | we | eich | net | e W | ecc loci | orae ne eii | ne t | ypi | sch | e ur | a i | repi | räse | nta | tive | w | loch | serio | t? | LIVE | : vv | ee | | | | | | | | Ja | | 1 | | | Nei | in | lead |
| | | , | | | If Y | es: | a: | PI | ea | seo | con | tin | ue v | vit | h q | ue | stic | on | 4. | | | | | | | | | | | | | | | | | | | | | | | | | |

Please state why the week above was not typical, e.g. holiday, extratime at work, illness... a) Wenn Nein

Bitte geben Sie an, warum die aufgezeichnete Woche untypisch ist (z.B. wg. Urlaub, Überstunden, Krankheit....) a)

- Please provide out of your memory another schedule of your times spent at home b) which describes a typical and representative week b)
 - Bitte erstellen Sie aus Ihrem Gedächtnis eine Aufzeichnung Ihrer zu Hause verbrachten Zeit in einer typischen und repräsentativen Woche.

| Time | 0:30 1:00 1:00 2:00 2:00 2:00 5:00 5:30 6:00 6:00 6:00 6:00 7:00 7:00 7:00 1:0:000 1:0:00 1:0:000 1:0:000 1:0:000 1:0:0000 1:0:0 |
|------------|--|
| Day | 0:00 0:30 1:00 1:00 2:30 3:00 2:30 3:00 2:30 5:30 6:00 6:30 7:00 7:30 6:30 7:30 6:30 7:30 8:30 7:30 8:30 11: |
| 148 | tick/untick boxes for times when you are at your house, leave boxes plain for times you spend out of house (in excel change colour). |
| | bitte kreuzen Sie die Zeiten an, die Sie zu Hause verbringen, lassen Sie die übrigen Kästchen leer. |
| Monday | |
| Montag | |
| Tuesday | |
| Dienstag | |
| Wednesday | |
| Mittwoch | |
| Thursday | |
| Donnerstag | |
| Friday | |
| Saturday | |
| Samstag | |
| Sunday | |
| Contract 1 | |

If No:

No

Nein

 4
 Do you have regular visitors, like partners or family, that frequently stay at your home?
 Yes

 Haben Sie regelmäßig Besuch (z.B. Partner, Familie...), der regelmäßig bei Ihnen zu Hause ist und/oder übernachtet?
 Ja

If yes: Please continue with question 5. Wenn ja: weiter mit Frage 5 If no: Please go to question 6. Wenn Nein: weiter mit Frage 6

| 5 | Please provide of Bitte erstellen Sie au | ut of yo Is Ihrem G | ur mer Gedächti | nory a typ nis eine Auf | oical sche zeichnung | dule o der Zeit | f the t , die Ihr | ime y Gast ir | our v einer | isitor typisc | spen hen W | ds at v oche b | your f ei Ihne | lat/ho n zu H | ouse ause v | erbrin | gt. | | | | |
|----|---|------------------------------------|----------------------|---------------------------------|------------------------------|----------------------|------------------------|-------------------------|-------------------|---------------------|---------------------|--------------------|-------------------|------------------|-------------------|----------|----------|-----------------|----------------|-------------------|-------|
| | Time hrzeit until 0:30 | 1:00 1:30 2:00 | 2/30 3/00 3/30 | 4:30 5:00 5:00 | 6:00 6:30 7:00 | 7:30 8:00 8:30 | 9:00 9:30 | 10:00 10:30 11:00 | 11:30 12:00 | 12:30 | 13:30 | 15:00 | 16:00 16:30 | 17:00 | 18:30 | 19:30 | 20:30 | 21:00 | 22:30 22:30 | 23:30 | 0:00 |
| | Day Day | 0:30 1:00 1:30 | 2:00 2:30 3:00 | 3:30 4:00 4:30 | 5:30 6:00 6:30 | 7:30 | 8:30 9:00 | 10:00 10:30 | 11:30 | 12:00 | 13:30 | 14:00 | 15:30 | 16:30 17:00 | 17:30 | 19:00 | 20:00 | 21:00 | 21:30 | 22:30 | 23:30 |
| | Tag m | ark boxes i | for times | when you are e Zeiten, die : | at your hous Sie zu Hause | e, leave l | boxes pla en, lasse | in for tir n Sie die | nes you übrige | u spend in Kästc | out of h hen lee | ouse. | | | | | | | | | |
| | Monday | | | | | | | | П | | | | П | | | | | | | | |
| | Montag Tuesday | TTT | TT | TIT | TIT | | TT | | Ť. | | | | TT | | | | | | | | |
| | Dienstag Wednesday | TTT | TTT | TIT | | | 111 | | TT. | | | | T | | | | 11 | | | | |
| | Mittwoch | | | | | | | - | - | - | | | 11 | | | - | | | | m | |
| | Donnerstag | | | | | | | 1 | 1 | | | | | | | _ | | | | | |
| | Friday Freitag | | u | ш | | | 12 | | 1 | - | | | | | | | | | | | |
| | Saturday Samstag | | | | | | | | - | | | | | | | | | | | | |
| | Sunday Sonntag | | | | | | | | | | | | | | | | | | | | |
| 6 | Employment stat Erwerbsstatus | tus | | employ angestellt | ed | Se | elf- en | nploye g | ed | un oh | nemp ne Anst | loyed | | st Str | udent ident/ir | t | | | in tr in Au | ainin; bildung | g |
| | | | | retired Rentner | | D O ai | ther, p | olease | state eben | e [| - | | | | | | _ | | _ | _ | |
| 7 | Do you work Arbeiten Sie | | 1 | full - tin Vollzeit | ne? | Пр | art - ti elizeit | ime? | | w | ithou ne fixe | t clea Arbeitsa | rly de teiten | fined | timef | frame | 97 | | | | _ |
| 8 | Do you work at h Arbeiten Sie (wenn a | iome, e auch nur j | ven if i gelegent | t's just oc lich) von zu | casionall Hause? | y? | | | | | | | | | | 9Y eL | es | | N | No | |
| 9 | If Yes, how many Wenn Ja, wie viele S | hours o | on thes n diesen | se days or Tagen durc | n average | h? | | Mo | | Tu Di | | We Mi | | Th Do | | Fr Fr | | Sa Sa | | Su So | |
| 10 | Do you regularly Verbringen Sie auf G | stay ov ieschäftsr | ernight reisen og | t away fro Jer ähnliche | om home m regelmä | for bu ißig Näc | isiness hte auf | strips of Berhalb | or sin Ihrer | nilar ? Wohni | ng? | | | | | 9Y Ja | es | | N | No | |
| 11 | lf yes, how many Wenn Ja, wie viele N | nights lächte pro | per mo o Monat | onth do yo verbringen | ou spend Sie durchs | on ave | erage ch ausse | outsid erhalb I | e you hrer V | ur flat Vohnu | ? ng? | | | | | | Da Ta | ays / ge / M | Mor Monat | nth | _ |
| 12 | Roughly, how ma Wie viele Urlaubstag | any day: s <mark>e nehme</mark> | s of ho n Sie un | liday do y gefähr pro . | ou take p Jahr? | ber yea | ar? | | | | | | | | | | Da Ta | ays ge | | | _ |
| 13 | Out of these holy Von diesen Urlaubst | ydays, h agen, wie | iow ma e viele Ta | iny days a age und Não | nd night | s do yo ngen Sie | ou spe e nicht z | nd aw | ay fro e (z.B. | om yc auf Re | our ho lise im | Hotel | o.ä)? | | | | Da Ta | ays ge | | | |
| 14 | Where is your ho Wo ist Ihre Wohnun | ouse/fla g / Ihr Ha | t? ius? | Postcod PL | e z | | Cit | ty Drt | | | | | | Cou | Land | | | | | | |

| Wie viele Zimmer der folgenden Kategorien hat Ihre Wohnung / Ihr Haus/ Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Badezimmer WC (separate) Extra WC |
|---|
| How big is the flat / house you live in? < 20 m ² 30 - 40 m ² 50 - 60 m ² 70 - 80 m ² 100 - 120 m ² |
| Größe ihrer Wohnung /ihres Hauses? 20 - 30 m ² 1 40 - 50 m ² 60 - 70 m ² 80 - 100 m ² > 120 m ² |
| For how long have you been living in your current flat/house? Months Years Wie lange leben Sie schon in Ihrer jetzigen Wohnung / Haus? Years Jahre |
| From now, for how long are you planning to keep staying in the flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihrer jetzigen Wohnung / Haus noch zu wohnen? |
| Do you own or do you rent the place you live in? Sind Sie Eigentümer/In oder Mieter/In der von Ihnen bewohnten Immobilie? own Eigentümer/In Eigentümer/In |
| Do you use any of these items?MP3 PlayerTablet PC (iPad)SmartphoneKindle or other eReaderBenutzen Sie eines dieser Geräte?MP3 SpielerTablett PC (z.B. iPad)SmartphoneKindle oder anderes E-Lesegerät |
| In your opinion, how likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future? Wie wahrscheinlich ist es Ihrer Meinung nach, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Filmoder Fotographie-Sammlungen in der Zukunft ersetzen? Not likely at all unlikely unwahrscheinlich unwahrscheinlich erweiß nicht weiß nicht wahrscheinlich sehr wahrscheinlich |
| Do you store any data in the cloud? Speichern Sie Daten in der Cloud? I don't know what the cloud is I don't know what the |
| Are you on Facebook or any other social network? I don't know what Facebook is Yes No Sind sie auf Facebook oder in irgendelnem anderen sozialen Netzwerk? Ich welß nicht was Facebook ist Ja Nein |
| How many hours of your free time do you spend per week on the internet? Hours/Week Wie viel Freizeit verbringen Sie im Internet? Stunden / Woche |
| Personal information: Gender? female male Persönliche Informationen: Geschlecht männlich Age? 20 - 30 30 - 40 40 - 50 50 - 60 > 60 Alter Alter Alter Alter Alter Alter |
| |

Vielen Dank für Ihre Bemühungen. Um diese Umfrage zurückzuschicken, wählen Sie bitte eine der folgenden Möglichkeiten

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurfb | aum@network.rca.ac.uk |
|----|--|-----------------|-----------------------|
| b) | Print out | and fax to: | +49 (0)89.95 474 526 |
| | Drucken Sie den Fragebogen aus | und faxen ihn a | n: |

Thank you very much for your support --- Vielen Dank für Ihre Unterstützung

Dwelling Utilisation Survey - Wohngebäude- Nutzungs- Umfrage

Thank you very much for taking the time to answer this questionnaire. Please fill out fields highlighted blue . Vielen Dank, daß Sie sich die Zeit nehmen, an dieser Umfrage teilzunehmen. Bitte füllen Sie die blauen Felder aus.

| 1 | How many perso Wie viele Personen | ons all toget insgesamt leb | then live in y en in Ihrem Ha | our household? ushalt? | 1 (Me 1 (Ich) |) | 3 | 4 | 5 5 | if more: falls mehr: | | Persons Personen |
|---|--|--------------------------------|--------------------------------------|--|---|--|-----------------------------------|-----------------------------------|---------------------------------|--|----------------------------------|---|
| 2 | Please provide a at home, leave c | record of t others empt | he hours <u>vo</u> y). You can : | <u>u</u> spend at your start with any d | household/ ay of the we | home in s ek, pleas it, die Sie zi | seven co e just m u Hause v | onsecut nake sur verbringer | ive day e you r n (markie | s (mark the ecord <u>sever</u> eren Sie die je | fields w n consectionsection | hen you are <u>utive days</u> . eitabschnitte). |
| | Sie können mit eine | m beliebigen | Tag beginnen, | es ist aber wichtig, | daß Sie einen | usamment | nängende | en Zeitrau | im dokur | nentieren. | | |
| | Time | 1:00 2:00 2:30 | 3:00 3:30 4:00 4:00 5:00 | 5:30 6:00 7:00 8:00 8:00 | 9:30 9:30 10:00 10:30 | 11:30 12:00 12:30 | 13:30 14:00 | 15:00 15:30 16:00 | 16:30 17:00 17:30 | 18:00 18:30 19:00 19:30 | 20:00 20:30 21:00 21:30 | 22:00 22:30 23:00 23:30 0:00 |
| | from | 0:30 1:00 2:00 | 2:30 3:20 3:30 4:00 4:30 | 5:00 5:30 6:00 6:30 7:30 7:30 | 9:00 9:00 9:30 10:00 | 11:00 11:30 12:00 | 13:30 13:30 14:00 | 14:30 15:00 15:30 | 16:00 16:30 17:00 | 17:30 18:00 18:30 19:00 | 20:00 20:00 20:30 21:00 | 21:30 22:00 22:30 23:30 23:30 |
| | Date (dd/mm) | | | | | | | | | | | |
| | Datum (tt/mm) | | ~~~~ | nnent | | TIT | TI | | | | 1111 | 111111 |
| | | 11/1/ | 10100 | 222221 | | | | | | | 1777 | 11/11 |
| | ia l | | 22422 | | | | TT | | Ш | | 1-++ | |
| | 24 | 11110 | 22222 | 80688XI | | | | | | | 144 | 188866 |
| | 2.2 | 12002 | | N X X X X X X | | | | | | | N-HF | |
| | 23 | | | | | | 111 | | | | /++ | |
| | 24 | | 22222 | | | ΗΛI | 111 | | | N-H-H | | |
| 3 | Would you estin Denken Sie, daß die | nate the we | ek you reco ichnete Woch | rded above as a e eine typische und | typical and I repräsentative | represen Woche ist | tative w | veek? | | Ye Ja | es 🔟 | No 🛄 Nein |
| | | lf Yes: Pl | ease continu liter mit Frage | ue with question | n 4. | | | | | | | |
| | | If No: | a) Please | state why the v | veek above v | vas not ty | /pical, e | e.g. holic | day, ext | ratime at w | vork, illne | ess |
| | | wenn Nein | a) Bitte get | Jen Sie an, warum | uie aufgezeicht | iete woene | untypist | in ise (tris | | | | |
| | | | h) Please | provide out of | vour memor | v another | schedu | ule of vo | our time | es spent at | home | |
| | | | b) Bitte ers | describes a typi tellen Sie aus Ihrer typischen und repr | cal and repre n Gedächtnis e äsentativen We | esentativo ine Aufzeic oche. | e week hnung Ihi | rer zu Hai | use verbr | achten Zeit | | |
| | Time | 1:00 2:00 2:30 | 3:00 3:30 4:00 4:30 5:00 | 5:30 6:00 6:30 7:00 8:00 8:00 | 9:00 9:30 10:00 10:30 | 11:30 12:00 12:30 | 13:30 14:00 | 15:00 15:30 16:00 | 16:30 17:00 | 18:00 18:30 19:00 19:30 | 20:00 20:30 21:00 21:30 | 22:00 22:30 23:00 23:30 23:30 |
| | Day | 0:30 1:30 2:00 | 2:30 3:00 3:30 4:00 4:30 | 5:00 5:30 6:00 6:30 7:30 7:30 | 8:30 9:00 9:30 10:00 | 11:00 11:30 12:00 | 13:30 13:30 | 14:30 15:00 15:30 | 16:30 17:00 | 17:30 18:00 18:30 19:00 | 19:30 20:00 20:30 21:00 | 21:30 22:00 22:30 23:00 23:30 |
| | Tag | tick/untick boxes | for times when y | ou are at your house, | leave boxes plain | for times you | spend out | t of house (| in excel ch | ange colour). | | |
| | Monday | bitte kreuzen Sie | e die Zeiten an, di | e Sie zu Hause verbrit | ngen, lassen Sie di | e übrigen Kä | stchen lee | r. | TIT | | | TTTT |
| | Montag | | | | TITT | 1111 | - | | TTT | | | TTTTT |
| | Dienstag | | | | | | | | 111 | | | |
| | Mittwoch | | | | | | | | _ | | | |
| | Thursday Donnerstag | | | | | ш | | | | | | |
| | Friday | | | | | | | | | | | |
| | Saturday | | | | | 1111 | | | 111 | | | |
| | Samstag Sunday Sonntag | | | | 10.0 | TTT | | | | | | |

20 1

| 4 | Do you have reg Haben Sie regelmäl | ular visitors, Sig Besuch (z.B. | like partners or far Partner, Familie), der | nily, that regelmäßi | frequently g bei Ihnen a | v stay at u Hause i | your hor st und/ode | me? rr überna | chtet? | | Yes | | Nc Neir | |
|----|---|--|--|---|---------------------------------------|---------------------------|--|--------------------------|--------------------|------------------|-------------------------|-------------------------|-------------------------|-----------------------|
| | | lf yes: Please Wenn ja: weiter | continue with que mit Frage 5 | stion 5. | | If no Wen | o: Please n Nein: we | go to q | uestic Frage 6 | on 6. | | | | |
| 5 | Please provide o Bitte erstellen Sie a | out of your m us Ihrem Gedäc | iemory a typical sch htnis eine Aufzeichnun | edule of g der Zeit, c | the time y die Ihr Gast i | our visit n einer ty | or spend pischen We | ls at yo oche bei | ur flat Ihnen 2 | /hous u Hause | e e verbring | t. | | |
| | Time | 11:00 11:00 2:00 2:30 3:00 | 3330 4500 5500 6500 6530 6530 6530 6530 | 7:30 8:00 8:30 | 9:30 9:30 10:00 10:30 | 11:30 12:00 12:30 | 13:00 13:30 14:00 | 15:00 15:00 | 16:30 17:00 | 17:30 | 19:00 19:30 20:00 | 20:30 21:00 21:30 | 22:00 22:30 23:00 | 23:30 |
| | Day | 0:30 1:30 2:30 2:30 | 3:00 3:30 4:00 4:30 5:00 5:30 6:00 6:30 | 7:00 | 9:00 9:00 9:30 10:00 | 11:30 12:00 | 12:30 13:00 13:30 | 14:30 15:00 | 16:00 16:30 | 17:00 | 18:30 19:00 19:30 | 20:00 20:30 21:00 | 21:30 22:00 | 23:00 23:30 |
| | Tag | mark boxes for tim bitte markieren Si | ies when you are at your ho e die Zeiten, die Sie zu Hau | use, leave bo se verbringer | oxes plain for ti n, lassen Sie di | mes you sp e übrigen K | end out of he ästchen leer | ouse. | | | | | | 1 |
| | Monday Montag | | | | | | | | # | | | | | H |
| | Tuesday Dienstag Wedgesday | | | TIT | | | TTT | | TT. | | TTT | | TTT | m |
| | Mittwoch | TTTT | | | | 111 | TTT | 111 | TT | | 111 | | TIT | Ē |
| | Donnerstag Friday | TITT | | TTT | TIT | TTT | TTT | | TT | - | 111 | TT | TT | m |
| | Freitag | TTTT | | TITI | | | | | Ť | | | m | TTT | m |
| | Samstag Sunday Sonntag | | | | | - | | | T | Ē | | Ē | TT | m |
| 6 | Employment sta Erwerbsstatus | atus | employed | selt | lf- employ oständig | ed 📘 | unemp | loyed | C | stude Studen | ent It/In | 0 | in tra | ning Idung |
| | | | retired Rentner | ot | her, pleasi leres, bitte an | e state geben | | | | _ | | | - | |
| 7 | Do you work Arbeiten Sie | | full - time? Vollzeit | ра тей | irt - time? Izeit | | without ohne fixe | t clearly Arbeitszeit | / defir | ed tin | neframe | ? | | |
| 8 | Do you work at Arbeiten Sie (wenn | home, even auch nur geleg | if it's just occasiona entlich) von zu Hause? | lly? | | | | | | | Ye. Ja | s 🔲 | Nei | |
| 9 | If Yes, how man Wenn Ja, wie viele | y hours on th Stunden an die | nese days on averag sen Tagen durchschnitt | ge? lich? | M | 0 | Tu 🗾 Di | We Mi | Th Do | | Fr Fr | Sa Sa | S S | |
| 10 | Do you regularl Verbringen Sie auf | y stay overnij Geschäftsreiser | ght away from hom n oder ähnlichem regelr | ie for bus näßig Näch | inesstrips te außerhall | or simila hrer Wo | ar ? hnung? | | | | Ye. Ja | s 🔲 | Nei | p 🗾 |
| 11 | If yes, how mar Wenn Ja, wie viele | y nights per Nächte pro Mo | month do you spen nat verbringen Sie durc | id on avei hschnittlich | rage outsi nausserhalb | de your Ihrer Wol | flat? hnung? | | | | | Days Tage / | / Mont Monat | h |
| 12 | Roughly, how n Wie viele Urlaubsta | any days of age nehmen Sie | holiday do you take ungefähr pro Jahr? | e per year | ? | | | | | | 25 | Days Tage | | |
| 13 | Out of these ho Von diesen Urlaub | lydays, how stagen, wie viel | many days and nigh e Tage und Nächte verb | nts do you irin <mark>gen Sie</mark> | u spend av nicht zu Hau | vay fron se (z.B. au | n your ho I <mark>f Reise im</mark> | ome? Hotel o.a | i)? | | 27 | Days Tage | | |
| 14 | Where is your h Wo ist Ihre Wohnu | iouse/flat? ing / Ihr Haus? | Postcode | 137 | City M Ort | VALC | -14- | | | Counti Lai | ry GP nd | RHAN | 7 | |

206

| | How many rooms of the following ca Wie viele Zimmer der folgenden Kategorien h | itegory does your flat/house haver Decironis hat Ihre Wohnung / Ihr Haus? Schlafzimmer Livingrooms Wohnzimmer Kitchen or Kitchen-Diner Küche oder Wohnküche Bathroom Bathroom Badezimmer WC (separate) other rooms: (please state) Extra WC andere Zimmer (bitte nennen) Kitte nennen) |
|----------------------|---|--|
| 16 | How big is the flat / house you live in | n? < 20 m ² 30 - 40 m ² 50 - 60 m ² 70 - 80 m ² 100 - 120 m ² |
| 10 | Größe ihrer Wohnung /ihres Hauses? | 20 - 30 m ² 10 + 50 m ² 10 + 70 m ² 80 - 100 m ² 1 > 120 m ² |
| 17 | For how long have you been living in Wie lange leben Sie schon in Ihrer jetzigen W | your current flat/house? Months Vears Johnung / Haus? Years |
| 18 | From now, for how long are you plan flat/house you currently live in? Ab heute, für wie lange haben Sie vor, in Ihre | anning to keep staying in the Months Monate Years Ber jetzigen Wohnung / Haus noch zu wohnen? |
| 19 | Do you own or do you rent the place Sind Sie Eigentümer/In oder Mieter/In der vo | e you live in? Own rent on Ihnen bewohnten Immobilie? Eigentümer/In Mieter/In |
| 20 | Do you use any of these items? Benutzen Sie eines dieser Geräte? | MP3 Player Tablet PC (iPad) Smartphone Kindle or other eReader MP3 Spieler Tablett PC (z.B. iPad) Smartphone Kindle oder anderes E-Lesegerät |
| | | |
| 21 | In your opinion, how likely is it, that collections of books, music, videos, p Wie wahrscheinlich ist es Ihrer Meinung nach oder Fotographie-Sammlungen in der Zukunf | devices like the ones above and digital storage techniques will replace personal physical photographies and similar digitalizable objects in the future? h, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- ft ersetzen? |
| 21 | In your opinion, how likely is it, that is collections of books, music, videos, p Wie wahrscheinlich ist es ihrer Meinung nach oder Fotographie-Sammlungen in der Zukunf Not likely at all Überhaupt nicht wahrscheinlich | devices like the ones above and digital storage techniques will replace personal physical photographies and similar digitalizable objects in the future? h, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- ft ersetzen? unlikely don't know likely very likely very likely sehr wahrscheinlich |
| 21 | In your opinion, how likely is it, that is collections of books, music, videos, p Wie wahrscheinlich ist es Ihrer Meinung nach oder Fotographie-Sammlungen in der Zukunf Not likely at all Überhaupt nicht wahrscheinlich Do you store any data in the cloud? Speichern Sie Daten in der Cloud? | devices like the ones above and digital storage techniques will replace personal physical photographies and similar digitalizable objects in the future? h, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- ft ersetzen? unlikely don't know likely very likely very likely sehr wahrscheinlich I don't know what the cloud is Yes Ja No Ich weiß nicht was die Cloud ist Ja |
| 21 22 23 | In your opinion, how likely is it, that is collections of books, music, videos, p Wie wahrscheinlich ist es Ihrer Meinung nach oder Fotographie-Sammlungen in der Zukunf Not likely at all Überhaupt nicht wahrscheinlich Do you store any data in the cloud? Speichern Sie Daten in der Cloud? Are you on Facebook or any other so Sind sie auf Facebook oder in irgendeinem and | devices like the ones above and digital storage techniques will replace personal physical photographies and similar digitalizable objects in the future? h, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- ft ersetzen? unlikely odon't know likely very likely very likely sehr wahrscheinlich I don't know what the cloud is year wahrscheinlich I don't know what the cloud is year wahrscheinlich Ch weiß nicht was die Cloud is year No I don't know what Facebook i |
| 21 22 23 24 | In your opinion, how likely is it, that is collections of books, music, videos, p Wie wahrscheinlich ist es ihrer Meinung nach oder Fotographie-Sammlungen in der Zukund Not likely at all Überhaupt nicht wahrscheinlich Do you store any data in the cloud? Speichern Sie Daten in der Cloud? Are you on Facebook or any other so Sind sie auf Facebook oder in irgendeinem an How many hours of your <u>free time</u> do Wie viel Freizeit verbringen Sie im Internet? | devices like the ones above and digital storage techniques will replace personal physical photographies and similar digitalizable objects in the future? h, daß die zuvor genannten Geräte (oder digitale Speichertechniken allgemein) persönliche Buch-, Musik-, Film- ft ersetzen? unlikely odon't know odon't know likely very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich or very likely sehr wahrscheinlich I don't know what the cloud is very likely sehr wahrscheinlich I don't know what Facebook is very likely sehr wahrscheinlich I don't know what Facebook is very likely sehr wahrscheinlich or vou spend per week on the internet? Week stunden / Woche |

| a) | Safe as pdf document and send to Speichern Sie das PDF- Dokument unter einem anderen Namen und senden es an | florian.wurft | paum@network.rca.ac.uk |
|----|--|---------------|------------------------|
| b) | Print out | and fax to: | +49 (0)89.95 474 526 |
| | Drucken Sie den Fragebogen aus | und faxen ihn | an: |

Thank you very much for your support — Vielen Dank für Ihre Unterstützung

| Date (dd/mm) Date (dd/mm) Date (dd/mm) | NONDYAL 1000 100 100 100 100 100 100 100 100 10 | |
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| 11 - 12 12 - 13 13 - 14 14 - 15 15 - 16 16 - 20 Max 16 | 1 | 430 |
| 01 - 1 02 - 2 03 - 4 04 - 5 05 - 6 06 - 7 | State State <th< td=""><td></td></th<> | |
| 07 - 8 08 - 9 09 - 10 10 - 11 11 - 12 12 - 13 13 - 14 14 - 15 15 - 16 | 3 | |
| 16 - 20 Max 16 | <u>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </u> | 397 |
| 01 - 1 02 - 2 03 - 4 04 - 5 05 - 6 06 - 7 07 - 8 08 - 9 | VENEXUAL VENEXUAL <td< td=""><td></td></td<> | |
| 10 - 10 10 - 11 11 - 12 12 - 13 13 - 14 14 - 15 15 - 16 16 - 20 Max 16 | 1 | 410 |
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| 01 - 1 02 - 2 03 - 4 05 - 6 06 - 7 07 - 8 08 - 9 09 - 10 | FRICAT Second Second< | |
| 10 - 11 11 - 12 12 - 13 13 - 14 14 - 15 15 - 16 16 - 20 Max 16 | 1 | 385 |
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| 01 - 1 UZ - 2 03 - 4 04 - 5 05 - 6 06 - 7 | SUDAY 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | |
| 08 - 9 09 - 10 10 - 11 11 - 12 12 - 13 13 - 14 14 - 15 | | |
| 15 - 16 16 - 20 Max 16 | | 458 |
| MONDAY - Max 64 | THURSDAY | 1648 |
| MONDAY - Max 80 | FRIDAY | 2033 |
| SATURDAY Max 32 | ¹ & SUNDAY <u>28 21 22 23 24 24 25 25 25 25 25 25 25 25 25 25 24 23 23 22 18 16</u> 14 13 14 13 14 14 13 12 9 9 9 9 10 13 13 14 14 13 15 14 15 15 14 15 17 22 23 24 24 28 | 874 |
| MONDAY - Max 112 | SUNDAY | 2907 |

06 | Employment status $07 \mid$ Do you work employed



08 | Do you work at home, even if it's just occasionally?

56%

self-employed

retired

student









21 | How likely is it, that devices like the ones above and digital storage techniques will replace personal physical collections of books, music, videos, photographies and similar digitalizable objects in the future?



23 | Are you on Facebook or any other social network?



22 | Do you store any data in the cloud?



24 | How many hours of your free time do you spend per week on the internet?



APPENDIX A.4 - ELASTIC ARCHITECTURE SERIES (RE. CH. 5)









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APPENDIX A.5 - SPREADSHEET CALCULATIONS (RE. CH. 6)

| TRACKS PERFORMAN | CE | | | | | | | | | | | | | |
|---------------------------------|-------|-------------------------|-------------|---|-------------|-------------------------|-------------|---------------------------------------|-------------|--------------------------|-------------|-------------------------|-------------|-------------------------|
| Dwelling / Office | | Anna | Office 1 | Bruno | Office 2 | Claudia | Office 3 | Daniel | Office 4 | Elisabeth | Office 5 | Frank | Meeting 1 | Greta |
| ne | | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd |
| Ē | | | | | | | | | | | | | | |
| 00:00 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 00:30 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 01:00 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 01:30 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 02:00 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 02:30 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 03:00 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 03:30 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 04:00 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 04:30 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 05:00 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 05:50 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 | | 36,13 |
| 06:30 | | 31.05 | 31.05 | 31.05 | | 31.05 | | 31.05 | 31.05 | 31.05 | | 31.05 | | 31.05 |
| 07:00 | | 31.05 | 31.05 | 31.05 | | 31.05 | | 31.05 | 31.05 | 31.05 | | 31.05 | | 31.05 |
| 07:30 | | 32 48 | 32 48 | 32 48 | 32 48 | 32.48 | | 32.48 | 32.48 | 31,00 | 32 48 | 32.48 | | 51,05 |
| 08:00 | | 29.81 | 29.81 | 29.81 | 29.81 | 29.81 | 29.81 | 29.81 | 29.81 | | 29.81 | 29.81 | 29.81 | |
| 08:30 | | 34.15 | 34.15 | 34.15 | 20,01 | 34.15 | 34.15 | 34.15 | 34.15 | | 34.15 | 34.15 | 20,01 | |
| 09:00 | ă | 32,48 | 32,48 | 32,48 | ă | 32,48 | 32,48 | | 32,48 | ă | 32,48 | 32,48 | 32,48 | Ĭ |
| 09:30 | - | | 36,13 | 36,13 | 36.13 | 36,13 | 36,13 | | | ă | 36.13 | 36,13 | 36.13 | |
| 10:00 | | ĕ | 32,48 | 32,48 | 32,48 | 32,48 | 32,48 | | 32,48 | ă | 32,48 | 32,48 | 32.48 | |
| 10:30 | | ŏ | 32,48 | 32,48 | 32,48 | 32,48 | 32,48 | i i i i i i i i i i i i i i i i i i i | 32,48 | ŏ | 32,48 | 32,48 | | |
| 11:00 | | - | | 34,15 | 34,15 | 34,15 | 34,15 | i i i i i i i i i i i i i i i i i i i | 34,15 | ē | 34,15 | 34,15 | | ē |
| 11:30 | | | _ | - i i i i i i i i i i i i i i i i i i i | 49,68 | _ | | | 49,68 | _ | | 49,68 | | |
| 12:00 | | | 55,89 | | | | | | | | 55,89 🔵 | 55,89 | | |
| 12:30 | | | 55,89 | | | | 55,89 | | | | 55,89 | | | |
| 13:00 | | | 45,02 | | 45,02 | | 45,02 | | 45,02 | | 45,02 | | | |
| 13:30 | | | 38,50 | | 38,50 🔵 | 38,50 🔵 | 38,50 | | 38,50 | | 38,50 | | | |
| 14:00 | | | 41,40 | | 41,40 🔵 | 41,40 🔵 | 41,40 | | 41,40 | | 41,40 | | | |
| 14:30 | | | 38,50 | | | 38,50 🔵 | 38,50 | | 38,50 | | 38,50 | | 38,50 | |
| 15:00 | | | 38,50 | | 38,50 🔵 | 38,50 🔵 | 38,50 | | 38,50 | | 38,50 | | 38,50 | |
| 15:30 | | | 38,50 | | 38,50 🔵 | 38,50 🔵 | 38,50 | | 38,50 | | | | 38,50 | |
| 16:00 | | | 38,50 | | 38,50 🔵 | 38,50 🔵 | 38,50 | | 38,50 | | | | | 38,50 🔵 |
| 16:30 | | 45,02 | | | 45,02 🔵 | 45,02 | | | 45,02 | | | | | 45,02 🔵 |
| 17:00 | | 49,68 | | | 49,68 🔵 | 49,68 | | | 49,68 | | | | | 49,68 |
| 17:30 | | | | | 55,89 | 55,89 | | | 55,89 | | | | | 55,89 |
| 18:00 | | 55,89 | | | | 55,89 | | | 55,89 | | | 55,89 | | 55,89 |
| 18:30 | | 49,68 | | 49,68 | | 49,68 | | | 49,68 | | | 49,68 | | 49,68 |
| 19:00 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | - | | | 49,68 | | 49,68 |
| 19:30 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 |
| 20:00 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 | | 49,68 |
| 20:30 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 |
| 21:00 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 | | 41,40 |
| 22:00 | | 38 50 | | 28 50 | | 38 50 | | 28 50 | | 38 50 | | 38.50 | | 38 50 |
| 22:00 | | 38 50 | | 38.50 | | 38.50 | | 38 50 | | 38 50 | | 38.50 | | 38.50 |
| 23:00 | | 38 50 | | 38.50 | | 38.50 | | 38 50 | | 38 50 | | 38.50 | | 38 50 |
| 23:30 | | 38 50 | | 38 50 | | 38.50 | | 38 50 | | 38 50 | | 38 50 | | 38.50 |
| 25.50 | _ | 50,50 | | 30,00 | | 30,50 | | 30,30 | | 50,50 | | 50,50 | | 30,50 |
| | 33 | 1.288,22 😤 | 682,81 🕏 | 1.272,87 <mark>옃</mark> | 638,22 \$ | 1.713,25 <mark>읽</mark> | 566,49 🞇 | 1.055,47 🎇 | 874,89 🕈 | 909,35 <mark>띩</mark> | 577,86 🔄 | 1.434,33 📐 | 246,40 문 | 1.253,69 😫 |
| | hours | avr. m ² urs | avr. m² urs | avr. m² <mark>urs</mark> | avr. m² urs | avr. m ² urs | avr. m² urs | avr. m² <mark>urs</mark> | avr. m² urs | avr. m² <mark>urs</mark> | avr. m² urs | avr. m ² urs | avr. m² urs | avr. m ² urs |
| | | | | | | | | | | | | | | |
| hours of dwelling occupation | 16,50 | | 17,00 | | 22,00 | | 14,00 | | 12,00 | | 18,50 | | 15,50 | |
| | | | | | | | | | | | | | | |
| average dwelling roomsize | | 39,04 | | 37,44 | | 38,94 | | 37,70 | | 37,89 | | 38,77 | | 40,44 |
| | | | | | | | | | | | | | | |
| hours of office | | 0 | | 0 | | | | 8 | | 0 | | | | 0 |
| occupation | | 0'6 | | 8,0 | | 7,5 | | 11) | | 7,51 | | 3,51 | | 2,0 |
| | | | | | | | | | | | | | | |
| average office | | | | | | | | | | | | | | |
| roomsize | | | 37.93 | | 39.89 | | 37.77 | | 39.77 | | 38.52 | | 35.20 | |
| | | | , | | | | | | | | | | | |
| | /24 | /24 | /24 | /24 | /24 | /24 | /24 | /24 | /24 | /24 | /24 | /24 | /24 | /24 |
| | | | | | | | | | | | | | | |
| dwelling occupation | | | _ | | 0 | | ~ | | ~ | | Þ | | 10 | |
| rate per day | 0,6! | | 0,7. | | .6'0 | | 0,5{ | | 0,5(| | 0,77 | | 0,65 | |
| | | | | | | | | | | | | | | |
| office occupation rate | | ~ | | ~ | | | | | | | | 10 | | - |
| per day | | 0,35 | | 0,33 | | 0,31 | | 0,46 | | 0,31 | | 0,15 | | 0,29 |

| Office 6 1=occ'd | H 1 | Iermann 1=occ'd | Office 7 1=occ'd | | Irine 1=occ'd | | Office 8 1=occ'd | | John 1=occ'd | | Office 9 1=occ'd | | Katharina 1=occ'd |
|---------------------|--------|-----------------------|-------------------------|-----|---------------------|------|---------------------|-----|---------------------|------|---------------------|-----|----------------------|
| 9 | | 36,13 | | | 36,13 | | | | 36,13 | | | | 36,13 |
| | | 36,13 | | | 36,13 | | | | 36,13 | | | | 36,13 |
| | ă – | 36,13 | | ŏ | 36,13 | | | ŏ | 36,13 | | | ŏ | 36,13 |
| (| | 36,13 | | Ō | 36,13 | | | | 36,13 | | | Ō | 36,13 |
| 9 | | 36,13 | | | 36,13 | | | | 36,13 | | | | 36,13 |
| | | 36,13 | | | 36,13 | | | | 36,13 | | | | 36,13 |
| | | 36,13 | | ă | 36,13 | | | ă | 36,13 | | | ă | 36,13 |
| | ŏ | 36,13 | | ŏ | 36,13 | | | ŏ | 36,13 | | | ŏ | 36,13 |
| (| | 36,13 | | | 36,13 | | | | 36,13 | | | | 36,13 |
| | | 36,13 | | | 36,13 | | | | 36,13 | | | | 36,13 |
| | | 31.05 | | ă | 36,13 | | 31.05 | ă | 36,13 | | | ă | 31.05 |
| | ē | 31,05 | | ē | 36,13 | ē | 31,05 | ē | 36,13 | | | ē | 31,05 |
| | | | | | 32,48 | | 32,48 | | 32,48 | | | | 32,48 |
| 29,81 | | | | • | 29,81 | | 29,81 | | 29,81 | | | | |
| 32,48 | | | 32.48 | | | ŏ | 32,48 | ŏ | 32,48 | | | | |
| | | | 36,13 | | | ŏ | 36,13 | ŏ | 36,13 | | | | |
| | | | 32,48 | | | | 32,48 | | 32,48 | | 32,48 | | |
| 32,48 | | | 32,48 | | | | 32,48 | | 32,48 | | 32,48 | | |
| 49.68 | | | 49.68 | | | | 54,15 | | 49.68 | ă | 49.68 | | |
| | | | 55,89 | | | | | ŏ | 55,89 | ŏ | 55,89 | | |
| | | | | | | | 55,89 | | 55,89 | | 55,89 | | |
| 45,02 | | | 28 50 | | | | 45,02 | | | | 45,02 | | |
| 41,40 | | | 41,40 | | | ŏ | 58,50 41,40 | | | - | 36,30 | | |
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| 38,50 | | | 38,50 45.02 | | | • | 38,50 | | | | 38,50 45.02 | | |
| | | | 49,68 | | | | | | | ŏ | 49,68 | | |
| | | | 55,89 | | | | | | | | 55,89 | | |
| | | | 55,89 | | | | | | | | | | |
| | | | 49,68 | | | | | | | | | | |
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| | | | | | 44.40 | | | | | | | _ | 11.10 |
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| 536,69 | 19 | 685,79 | <u>°</u> 774,53 | 24 | 882,44 | 18 | 661,07 | 26 | 967,57 | 15 | 648,68 | 23 | 842,47 |
| avr. m ² | irs | avr. m ² 1 | urs avr. m ² | urs | avr. m ² | urs | avr. m ² | urs | avr. m ² | urs | avr. m ² | urs | avr. m ² |
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| | | | 0'6 | | | 9,00 | | | | 7,5(| | | |
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| | | | 10.00 | | | | | | | | 10.07 | | |
| 38,34 | | | 43,03 | | | | 36,73 | | | | 43,25 | | |
| / | 24 | / | /24 | /24 | | /24 | | /24 | | /24 | | /24 | |
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| | | | 0,38 | | | 0,38 | | | | 0,31 | | | |



CURTAINS PERFORMANCE

| | Dwelling / Office | А | nna | Office 1 | Bruno | Office 2 | Claudia | Office 3 | Daniel | Office 4 | Elisabeth | Office 5 | Frank | Meeting 1 | Greta |
|---------|------------------------|--------|-------------------------|------------------------|-------------------------|---------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|-------------------------|--------------------------|---------------------------|------------------------|
| eck ne | <u>.</u> | 1= | used | 1=used | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd |
| ų h | | | | | | | | | | | | | | | |
| 00:00 🞻 | | | 32,46 | 9,07 🧲 | 40,25 | 9,07 🧲 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 |
| 00:30 🞻 | | | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 |
| 01:00 | | | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 |
| 02:00 | | | 32,40 | 9.07 | 40,25 | 9,07 | 40,25 | 9.07 | 40,25 | 9.07 | 40,25 | 9.07 | 40,25 | 9.07 | 40,25 |
| 02:30 | | | 32,46 | 9.07 | 40,25 | 9,07 | 40,25 | 9.07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 |
| 03:00 🗹 | | Ū. | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🦲 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 |
| 03:30 🞻 | | Ū. | 32,46 | 9,07 🧲 | 40,25 | 9,07 🧲 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 |
| 04:00 🞻 | | | 32,46 | 9,07 🧲 | 40,25 | 9,07 🥥 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🥘 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 |
| 04:30 🞻 | | | 32,46 | 9,07 🧲 | 40,25 | 9,07 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🧲 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 |
| 05:00 🗸 | | | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 |
| 06:00 | | | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 |
| 06:30 | | | 24 66 | 24 66 | 32.46 | 9.07 | 40,25 | 9.07 | 32.46 | 24.66 | 32.46 | 9.07 | 40,25 | 9.07 | 40,25 |
| 07:00 🖌 | | ŏ. | 24,66 | 24,66 | 32,46 | 9,07 | 40,25 | 9,07 | 32,46 | 24,66 | 24,66 | 24,66 | 32,46 | 9,07 | 40,25 |
| 07:30 🞻 | | ē | 24,66 🔵 | 24,66 | 24,66 | 24,66 | 32,46 | 9,07 🔵 | 32,46 🦲 | 32,46 | 9,07 🦲 | 32,46 🔵 | 32,46 | 9,07 | 9,07 |
| 08:00 🞻 | | | 24,66 🔵 | 24,66 🥘 | 24,66 | 24,66 | 24,66 | 24,66 🔵 | 24,66 🦲 | 32,46 | 9,07 🔵 | 32,46 🔵 | 24,66 🦲 | 44,15 | 9,07 🔵 |
| 08:30 🞻 | | | 24,66 🔵 | 24,66 | 32,46 | 9,07 🧲 | 32,46 | 24,66 🔵 | 24,66 🥥 | 32,46 | 9,07 🥥 | 32,46 🔵 | 32,45 | 9,07 | 9,07 🔵 |
| 09:00 🗸 | | | 24,66 | 24,66 | 32,46 | 9,07 | 32,46 | 32,46 | 9,07 | 40,25 | 9,07 | 32,46 | 24,66 | 32,46 | 9,07 |
| 10:00 | | | 9,07 | 40,25 | 24,66 | 24,66 | 24,66 | 48,05 | 9,07 | 9,07 | 9,07 | 48,05 | 24,66 | 45,45 | 9,07 |
| 10:00 | | | 9,07 | 40,25 | 24,00 | 24,00 | 24,00 | 32,46 | 9,07 | 40,25 | 9,07 | 32,40 | 32.46 | 9.07 | 9,07 |
| 11:00 🖌 | | | 9.07 | 9,07 | 32,46 | 24,66 | 24.66 | 32,46 | 9.07 | 40,25 | 9,07 | 32,46 | 32,46 | 9,07 | 9,07 |
| 11:30 🖌 | | | 9,07 | 9,07 | 9,07 | 83,13 | 9,07 | 9,07 | 9,07 | 83,13 | 9,07 | 9,07 | 40,25 | 9,07 | 9,07 |
| 12:00 🛹 | | | 9,07 🔵 | 87,02 | 9,07 | 9,07 | 9,07 | 9,07 | 9,07 | 9,07 | 9,07 🔵 | 87,02 🔵 | 32,46 | 9,07 | 9,07 |
| 12:30 🞻 | | | 9,07 🔵 | 79,23 | 9,07 | 9,07 | 9,07 🧲 | 79,23 | 9,07 | 9,07 | 9,07 🔵 | 79,23 | 9,07 | 9,07 | 9,07 |
| 13:00 🛹 | | | 9,07 🔵 | 47,29 | 9,07 | 47,29 | 9,07 🧲 | 47,29 | 9,07 🦲 | 47,29 | 9,07 🥥 | 47,29 | 9,07 | 9,07 | 9,07 🥥 |
| 13:30 🗸 | | | 9,07 | 48,50 | 9,07 | 32,46 | 24,66 | 42,20 | 9,07 | 42,20 | 9,07 | 42,20 | 9,07 | 9,07 | 9,07 |
| 14:00 | | | 9,07 | 48,50 | 9,07 | 32,46 | 24,66 | 53,24 | 9,07 | 53,24 | 9,07 | 53,24 | 9,07 | 9,07 | 9,07 |
| 14:30 | | | 9,07 | 71,42 48 50 | 9,07 | 32.46 | 24,00 | 42 20 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 |
| 15:30 | | | 9.07 | 48,50 | 9,07 | 32,46 | 24,66 | 42,20 | 9.07 | 42,20 | 9,07 | 9.07 | 9,07 | 42.20 | 9,07 |
| 16:00 🖌 | | | 9,07 | 48,50 | 9,07 | 32,46 | 24,66 | 55,84 | 9,07 | 55,84 | 9,07 | 9,07 | 9,07 | 9,07 🔵 | 32,46 |
| 16:30 🞻 | | | 32,46 | 9,07 | 9,07 🄇 | 48,05 | 32,46 | 9,07 | 9,07 🔵 | 102,61 | 9,07 | 9,07 | 9,07 | 9,07 🔵 | 32,46 🔵 |
| 17:00 🞻 | | | 32,46 | 9,07 | 9,07 🌘 | 48,05 | 32,46 | 9,07 | 9,07 🥘 | 102,61 | 9,07 | 9,07 | 9,07 | 9,07 🔵 | 40,25 |
| 17:30 🞻 | | _ | 9,07 | 9,07 | 9,07 🤇 | 71,43 | 32,46 | 9,07 | 9,07 | 102,61 | 9,07 | 9,07 | 9,07 | 9,07 🥥 | 40,25 |
| 18:00 🗸 | | | 32,46 | 9,07 | 9,07 | 9,07 | 40,25 | 9,07 | 9,07 | 71,43 | 9,07 | 9,07 | 40,25 | 9,07 | 40,25 |
| 18:30 🗸 | | | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 9,07 | 71,43 | 9,07 | 9,07 | 40,25 | 9,07 | 40,25 |
| 19:00 | | | 32,40 | 9,07 | 40,23 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 9,07 | 9,07 | 40,25 | 9,07 | 40,23 |
| 20:00 | | | 32.46 | 9.07 | 40.25 | 9.07 | 40.25 | 9.07 | 40.25 | 9.07 | 40.25 | 9.07 | 40.25 | 9.07 | 40.25 |
| 20:30 🖌 | | ē. | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 🔵 | 40,25 | 9,07 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 |
| 21:00 🞻 | | | 32,46 | 9,07 🧲 | 40,25 | 9,07 🧲 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 |
| 21:30 🞻 | | | 32,46 | 9,07 🧲 | 40,25 | 9,07 🧲 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🥘 | 40,25 | 9,07 🔵 | 40,25 | 9,07 🔵 | 40,25 |
| 22:00 🗸 | | | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 🔵 | 40,25 | 9,07 | 40,25 | 9,07 🥥 | 40,25 | 9,07 🥥 | 40,25 |
| 22:30 | | | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 |
| 23:00 | | | 32,46 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 | 9,07 | 40,25 |
| 25.50 🛶 | | - | 32,40 | 9,07 | 40,25 | 9,07 | 40,23 | 9,07 | 40,23 | 9,07 | 40,23 | 3,07 | 40,25 | 9,07 | 40,23 |
| | | | | 050.07 | 4 959 59 | | 4 500 05 10 | 004.40.45 | 4 959 95 91 | 4 400 55 - | 4.4.00.00.00 | 004 60 5 | 4 470 04 | 505.00.01 | |
| | total | 8 1 | .160,43 🚆 | 950,36 8 | 1.378,58 | 목 762,39 | 1.589,05 | 921,18 × | 1.253,85 8 | 1.400,55 | 1.160,30 🚆 | 981,60 8 | 1.4/9,91 | 527,98 31 | 1.386,36 |
| | total when present | ۲ ۲ | .024,56 | 070,20 | 1.231,00 | 4/2,15 | 1.552,77 | 021,87 | 1.072,45 | 1.104,75 | 942,02 | 091,30 | 1.360,14 | 150,11 | 1.232,17 |
| | | nou | avr. m ² urs | avr. m ² ur | s avr. m ² u | rs avr. m ² ur | s avr. m ² ur | s avr. m ² ur | s avr. m ² ur | s avr. m ² urs | s avr. m ² urs | avr. m ² urs | s avr. m ² ur | s avr. m ² urs | avr. m ² ur |
| | | - | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | hours of dwelling | | | 8 | | 8 | | E | | 8 | | 10 | | 00 | |
| | occupation | 12 | | 17.0 | | 27.02 | Ì | 14.0 | | 12,0 | | 18. | | 15,5 | |
| | | | | | | | | | | | | | | | |
| | average dwelling | | | | | | | | | | | | | | |
| | roomsize | | 31,04 | | 36,81 | | 35,29 | | 38,30 | | 39,28 | | 37,30 | | 39,75 |
| | | | | | | | | | | | | | | | |
| | hours of office | | 0 | | | - | | | 8 | | 0 | | 0 | | c |
| | occupation | | 0'6 | | 0 | Ώ | 7.5 | | 11. | | 8,0 | | 35 | 1 | 2.0 |
| | | | | | | | | | | | | | | | |
| | average office | | | | | | | | | | | | | | |
| | roomsize | | | 37,68 | | 29,51 | | 41,46 | | 52,94 | | 43,21 | | 22,30 | |
| | | 24 | 124 | b. | . , | 04 10 | 1 | 1 0 | 1 | | | 10 | 1 /2 | 1 24 | 12 |
| | , | -1 | /24 | /24 | . /. | /2 | . /2 | - /2 | - /24 | /24 | /24 | /24 | . /2 | . /24 | /20 |
| | dwalling assure the s | | | | | | | | | | | | | | |
| | uweiling occupation | 69 | | E | | 92 | | 00 | | 50 | | E | | .65 | |
| | per uny | 0 | | 0 | | 0 | | c | | 0 | | 0 | | 0 | |
| | office occupation rate | | | | | | | | | | | | | | |
| | per day | | ,38 | | 5 | 554 | 31 | | 46 | | 33 | | .15 | | 29 |
| | | | 9 | | | - | 0 | | 0 | | 0 | | 0 | | 0 |

| Office 6 | Hermann | | Office 7 | Irine | Office 8 | John | | Office 9 | Katharina | C | Office 10 | | |
|-------------------------|-----------------------|----------|----------|-----------------------------|---------------------|------------|------------------|-------------------------|---------------------|-----|---------------------|---------------|-------------------|
| 1=occ'd | 1=occ'd | | 1=occ'd | 1=occ'd | 1=occ'd | 1=occ'd | | 1=occ'd | 1=occ'd | | 1=occ'd | | |
| | | | | | | | | | | | | Not used area | 1 |
| 9,07 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | 5 | 9,07 🔵 | 48,05 | | 9,07 | | |
| 9.07 | 40.25 | | 9.07 | 40.25 | 9.07 | 40.2 | 5 | 9.07 | 48.05 | | 9.07 | | |
| 0.07 | 40,25 | | 0.07 | 40,25 | 0.07 | 40,2 | 5 | 0.07 | 40,05 | | 0.07 | | |
| 9,07 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | | 9,07 | 40,00 | | 9,07 | | |
| 9,07 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | 5 | 9,07 | 48,05 | | 9,07 | | |
| 9,07 🦲 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | :5 | 9,07 🔵 | 48,05 | | 9,07 | | |
| 9,07 🥘 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | 5 | 9,07 🔵 | 48,05 | | 9,07 | | |
| 9,07 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | 5 | 9,07 🔵 | 48,05 | | 9,07 | | |
| 9.07 | 40.25 | | 9.07 | 40.25 | 9.07 | 40.2 | 5 | 9.07 | 48.05 | | 9.07 | | |
| 0.07 | 40.25 | | 0.07 | 40.25 | 0.07 | 40.2 | | 0.07 | 48.05 | | 0.07 | | |
| 9,07 | 40,23 | | 9,07 | 40,23 | 9,07 | 40,2 | .5 | 9,07 | 46,05 | | 9,07 | | |
| 9,07 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | 5 | 9,07 | 48,05 | | 9,07 | | |
| 9,07 🦲 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | 5 | 9,07 🔵 | 48,05 | | 9,07 | | |
| 9,07 🔵 | 40,25 | | 9,07 | 40,25 | 9,07 | 40,2 | 5 | 9,07 🔵 | 48,05 | | 9,07 | | |
| 9.07 | 40.25 | | 9.07 | 40,25 | 9.07 | 40.2 | 5 | 9.07 | 48.05 | | 9.07 | | |
| 9.07 | 40.25 | | 9.07 | 32.46 | 24.66 | 32.4 | 6 | 9.07 | 48.05 | | 9.07 | | |
| 0.07 | 40,25 | | 0.07 | 22,40 | 24,00 | 22,4 | 6 | 0.07 | 40,05 | | 0.07 | | |
| 9,07 | 40,23 | | 9,07 | 32,40 | 24,00 | 52,4 | :0 | 9,07 | 46,05 | | 9,07 | | |
| 9,07 | 9,07 | | 9,07 | 32,46 | 24,66 | 32,4 | :6 | 9,07 🔵 | 48,05 | | 9,07 | 62,36 | |
| 44,15 | 9,07 | | 9,07 | 32,46 🥘 | 24,66 | 32,4 | :6 | 9,07 | 9,07 | | 9,07 | 38,97 | |
| 59,74 | 9,07 | | 9,07 | 9,07 🧲 | 59,74 | 32,4 | 6 | 9,07 | 9,07 | | 9,07 | 38,97 | |
| 40.25 | 9.07 | | 40.25 | 9.07 | 32,46 | 32.4 | .6 | 9.07 | 9.07 | | 9.07 | 38.97 | |
| 9.07 | 9.07 | ă | 45.45 | 9.07 | 45.45 | 32.4 | 6 | 9.07 | 9.07 | | 9.07 | 38.07 | |
| 9,07 | 9,07 | - | 40,40 | 9,07 | 45,45 | 32,4 | | 9,07 | 9,07 | _ | 9,07 | 36,57 | |
| 9,07 | 9,07 | • | 45,45 | 9,07 | 45,45 | 24,6 | 6 | 32,46 | 9,07 | | 32,46 | | |
| 42,85 | 9,07 | | 42,85 | 9,07 🦲 | 42,85 | 24,6 | 6 🔵 | 32,46 | 9,07 | | 32,46 | | |
| 42,85 | 9,07 | | 42,85 | 9,07 🥥 | 42,85 | 24,6 | 6 🔵 | 32,46 | 9,07 | | 32,46 | 23,38 | |
| 55,84 | 9,07 | | 55,84 | 9,07 | 9,07 | 32,4 | 6 | 32,46 | 9,07 | | 32,46 | | |
| 9.07 | 9.07 | | 102.61 | 9,07 | 9.07 | 32.4 | 60 | 32.46 | 9.07 | | 32.46 | | |
| 0,07 | 0.07 | - | 102,01 | 0.07 | 70,07 | 02/4 | | 22,40 | 0.07 | - | 22,40 | | |
| 9,07 | 9,07 | | 9,07 | 9,07 | /9,23 | 24,0 | | 32,40 | 9,07 | | 52,40 | | |
| 47,29 | 9,07 | _ | 9,07 | 9,07 | 47,29 | 9,0 | | 47,29 | 9,07 | | 47,29 | | |
| 42,20 | 9,07 | | 42,20 | 9,07 🧲 | 42,20 | 9,0 | 7 🔵 | 42,20 | 9,07 | | 42,20 | | |
| 53,24 | 9,07 | | 53,24 | 9,07 🧲 | 53,24 | 9,0 | 17 | 9,07 | 9,07 | | 9,07 | | |
| 40.25 | 9.07 | | 40.25 | 9.07 | 40.25 | 9.0 | 7 | 40.25 | 9.07 | | 32.46 | | |
| 42.20 | 9.07 | - | 9.07 | 9.07 | 42.20 | 9.0 | 70 | 42.20 | 9.07 | ă | 42 20 | | |
| 42,20 | 0.07 | | 42.20 | 0.07 | 42,20 | 5,0 | | 42,20 | 0.07 | - | 42,20 | | |
| 42,20 | 9,07 | - | 42,20 | 9,07 | 42,20 | 9,0 | | 42,20 | 9,07 | - | 42,20 | | |
| 32,46 | 9,07 | • | 40,25 | 9,07 | 40,25 | 9,0 | | 40,25 | 9,07 | | 40,25 | | |
| 44,15 | 9,07 | | 44,15 | 9,07 | 9,07 | 9,0 | 7 🔵 | 44,15 | 9,07 | | 44,15 | | |
| 9,07 | 9,07 | | 53,24 | 9,07 | 9,07 | 9,0 | 7 🔵 | 53,24 | 9,07 | | 53,24 | | |
| 9,07 | 9,07 | | 53,24 | 9,07 | 9,07 | 9,0 | 7 | 53,24 | 9,07 | | 53,24 | | |
| 9.07 | 9.07 | ă | 1/1 50 | 9.07 | 9.07 | 9.0 | 7 | 9.07 | 9.07 | - | 9.07 | 31.18 | |
| 0.07 | 0.07 | - | 141,55 | 0.07 | 5,07 | 5,0 | 7 | 5,07 | 0.07 | | 0,07 | 51,10 | |
| 9,07 | 9,07 | • | 141,59 | 9,07 | 9,07 | 9,0 | V | 9,07 | 9,07 | | 9,07 | | |
| 9,07 | 9,07 | | 141,59 | 9,07 | 9,07 | 9,0 | 7 | 9,07 | 9,07 | | 9,07 | 31,17 | |
| 9,07 | 9,07 | | 9,07 | 9,07 | 9,07 | 9,0 | 7 | 9,07 | 9,07 | | 9,07 | 132,51 | |
| 9.07 | 9.07 | | 9.07 | 9.07 | 9.07 | 9.0 | 7 | 9.07 | 9.07 | | 9.07 | 132.51 | |
| 9.07 | 9.07 | | 9.07 | 40.25 | 9.07 | 9.0 | 7 | 9.07 | 48.05 | | 9.07 | 62.36 | |
| 9.07 | 9.07 | | 0.07 | 40.25 | 0.07 | 9,0 | 7 | 0.07 | 48.05 | | 0.07 | 62,00 | |
| 9,07 | 9,07 | | 9,07 | 40,25 | 3,07 | 9,0 | - | 3,07 | 40,00 | | 5,07 | 02,30 | |
| 9,07 | 9,07 | | 9,07 | 40,25 | 9,07 | 9,0 | 2 | 9,07 | 48,05 | | 9,07 | 62,36 | |
| 9,07 | 40,25 | | 9,07 | 40,25 | 9,07 | 9,0 | 12 | 9,07 🔵 | 48,05 | | 9,07 | 31,17 | |
| 9,07 🦲 | 40,25 | | 9,07 | 40,25 | 9,07 | 9,0 | 7 | 9,07 🔵 | 48,05 | | 9,07 | 31,17 | |
| 9,07 🔵 | 40,25 | | 9,07 | 40,25 | 9,07 | 9,0 | 7 | 9,07 🔵 | 48,05 | | 9,07 | 31,17 | |
| 9.07 | 40,25 | | 9.07 | 40,25 | 9.07 | 9.0 | 7 | 9.07 | 48.05 | | 9.07 | 31.17 | |
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| reference area from existing space of building | 24,66 n | 12 |
|--|---------|------------------|
| | 271,26 | 148,92 187,11 |

| umber of vellings (11) | 14,68 | average of hours of occupation of dwellings | 161,50 | |
|---------------------------|-------|---|--------|----------|
| umber of vellings (11) | 38,20 | average roomsize of occupied dwellings | 420,18 | 154,90 % |
| umber of offices) | 8,70 | average of hours of occupation of offices | 87,00 | |
| umber of offices | | | | |
| .) | 45.84 | average roomsize of occupied offices | 458.37 | 185.88 % |

Sum of Areas

311

APPENDIX A.6 MANAGEMENT & OWNERSHIP

APPENDIX A.6.1 – MANAGEMENT STRUCTURES AND FORMS OF OWNERSHIP FOR THE PROPOSED CASE STUDIES (RE. CH. 6)

APPENDIX A.6.2 – AN ALTERNATIVE MODEL OF USAGE: THE COMBINATION OF A HOTEL WITH DAY OFFICES (RE. CH. 6)

APPENDIX A.6.1 – MANAGEMENT STRUCTURES AND FORMS OF OWNERSHIP FOR THE PROPOSED CASE STUDIES (RE. CH. 6)

Though not directly discussed in the body of text of the thesis, the design of this system can be extended to the management structure and forms of ownership. Each scenario discussed has been designed implying a specific form of ownership and management structure which I briefly want to discuss in regards to their potential to support the proposal:

Definition of the space to be owned / rented

In a first instance it is necessary to define what is to be owned or rented. When dealing with architectural structures that have changing spatial borders, defining a space as something to be owned, by assigning it a fixed spatial volume or area is important.

The concept of ownership for the proposed case studies is rooted in what I defined as the basis configuration¹. Here the quantity of space is defined as if the spaces did not have dynamic properties. It represents the space which is guaranteed to each user, if all users are present at the same time. This spatial configuration is also the basis configuration.

So what can be owned is the area correspondent to the single guaranteed space. All mutations of that guaranteed space resulting in additional space are regarded as a free benefit, with no further cost. This benefit is intended to be the stimulus and motivation to participate in the system. The more people who participate (and, when absent, make their space available to others), the larger can be the gain for each present participant.

¹ see also chapter 6.7.1 in the main text

There could be envisioned systems of remuneration for the provision of space. However, in the context of the current study this is not intended as it could have a contradictory effect on the desired system.

Four scenarios of ownership

Scenario A is a conventional property developer project, where the property is split (and sold) as smaller spatial entities (e.g. flats or confined offices) and where several owners own single parts of the building.

Scenario B is a developer-led project combining offices and dwellings, both for renting.

Scenario C is a cooperative housing scheme, owning the entire building in collaborative ownership.

Scenario D is a public project where the whole property is in single ownership e.g. that of the city of Munich (as proposed in the case studies). Here the office parts are occupied by the administration of Munich and the dwelling units can be rented out by the city of Munich either as conventional studio flats or as student accommodation.

To evaluate these scenarios the following factors need to be taken into account:

- The technical complexity of the operation of moving elements and infrastructures.
- The responsibility of the operator regarding the handling of private and sensitive information. This is only to a certain extent in the control of the operator (the owner(s) or the manager) of the building: in the system which physically moves the walls and the application software where the needed information is stored. (There is a chain of instances in processing, storing and transmitting the information which is in the control of third parties, e.g.

telecommunications network, geo-positioning system, operating system).

- The specific judicial differences between the tenancy law for housing and the tenancy law for commercially used property in Germany. Tenants of dwellings are protected and fixed-term tenancy agreements can only be made under certain restrictive conditions² (student accommodation in dedicated student homes is an exception)³.
- The multiplicity of moving elements and infrastructure makes the definition of borders complex.
- The designs proposed in the case studies rely on office hours being fixed and constant.
- The designs proposed in the case studies are spatially based on individual small dwelling units placed into an office environment and using the offices' corridors and pathways to access the flats.

Looking at these factors, to split the building into fractions of ownership Scenario A (conventional property developer project) appears implausible. This form of ownership should only be taken into consideration once a project like this is beyond the status of an experiment. An established system with enough experience gained would be needed to evaluate possible neighbourhood issues with all their legal implications.

Evaluating **Scenario B** (developer-led project), assuring complementarity of use at different times could be problematic. This system could only work if the tenants of the offices had predominantly strict working times, possibly securely enforced by the staff association (compare also chapter 6.3). In

² '§ 575 BGB Zeitmietvertrag - Dejure.org' http://dejure.org/gesetze/BGB/575.html [accessed 11 May 2015].

³ '§ 549 BGB Auf Wohnraummietverhältnisse Anwendbare Vorschriften - Dejure.org' http://dejure.org/gesetze/BGB/549.html> [accessed 11 May 2015].

Germany staff associations are common in any bigger company, e.g. in 2013 73% of companies with 200-500 staff had one, as did 61% of the companies with 101-199 staff. The bigger the company, the better the employees are organized⁴. In regards to tenancy agreements for this scenario, different possibilities would need to be investigated as during the initial experimental phase it would be an advantage to allow for fixed-term tenancy contracts.

One aspect of **Scenario C** (cooperative housing scheme) is that the cooperative scheme assures that all members have the possibility to establish and adjust the rules of operation. This can be evaluated as positive from a democratic aspect and as an effective way to monitor the operational management entity. Especially in regards to the control of sensitive data, this is evaluated as a relevant point.

One challenging aspect of the cooperative scenario is the initial investment of such a scheme, if a new housing cooperative would have to be founded for this purpose. The initial investment of such a scheme should consist of: acquiring land or buildings that suit people (members) with long-term aspirations to join the property-ladder (being potentially able to live within the cooperative for a long period). This will have an impact on the typology of studio flats and the envisioned user group; for instance, students or young professionals would not fit these conditions. A possible scenario would be to have as adequate investor an already established housing cooperative with sufficient liquidity, like some of the more than 100-year old cooperatives in Munich. There are cooperatives which actively look for new sites to erect new buildings. They would be an ideal developer to include students or young professionals as they could join the cooperative. Once these flats no longer suited their spatial requirements they could move to other flats in the cooperative (a current practice in Munich). It is important to note that people in Germany join a Genossenschaft⁵ with the goal to live there potentially their whole life. Waiting lists are long due to the low rent

⁴ 'Qualität Der Arbeit - Qualität Der Arbeit - Statistisches Bundesamt (Destatis)' <https://www.destatis.de/DE/ZahlenFakten/Indikatoren/QualitaetArbeit/QualitaetDerAr beit.html?cms_gtp=318944_slot%253D5> [accessed 4 June 2015].

⁵ Genossenschaft (German) = cooperative

increase appeal. If people start as students in such a system they would be able to assure their place in the cooperative and could plan their future moves once they have further spatial requirements. Offices could be rented by the cooperative under certain conditions to new members. There would be the need for negotiation and advantages would have to be weighed up.

Scenario D (public project where the whole property is in single ownership, combining administration offices and student accommodation) appeared the most plausible and it was therefore the chosen one to develop the design research case studies. It is important to take into account the fact that the city of Munich owns the building and is already currently using it as administration offices. It is possible to envision a partnership between the city of Munich and the public institution Studentenwerk München (Munich Student Union) with the aim to provide accommodation for students, within a state-owned building. It could therefore be a beneficial system for both structures: for the city of Munich by generating extra income through 'renting' its space when it is not used, and for the Studentenwerk München by enormous savings in not having to invest in the acquisition of a new plot, in erecting a new building, in infrastructures. For both it could also mean savings in energy consumption. Both structures are publicly owned -Baureferat and Studentenwerk München, therefore it might be easy for its users to trust such a system of distribution. The fact that the German law approves limited period tenancy contracts for student residences would make this scenario feasible even in the experimental initial phase.

APPENDIX A.6.2 – AN ALTERNATIVE MODEL OF USAGE: THE COMBINATION OF A HOTEL WITH DAY OFFICES (RE. CH. 6)

The four scenarios listed above reveal potential limitations to the project in different ownership and management settings, however the complexity involved is intended as the two programmes, office and dwelling, have been identified as the most significant combination.

Another combination with a lower degree of relevance, although practically more feasible, is the complementation of a hotel with day offices. This combination is less complex as the aspects of personalisation and individual unpredictable behaviour of the users and of the building can be disregarded. Here the rigidity of the patterns of use can simply be achieved by a conventional booking system.

Hotel

Many inner city hotels in touristic attractive cities like Munich serve as business hotels from Monday to Friday and at weekends serve leisure guests⁶. From Monday to Thursday, the majority of business travellers stays for only one night, checks in late in the evening and leaves the hotel early in the morning⁷. At weekends leisure guests stay for one or two nights Friday to Saturday and Saturday to Sunday and have a higher tendency to also spend time in the hotel during the day.

On the website between9and5.com⁸ hotels try to rent their rooms by offering so-called day rooms for the times between 8am and 7pm. This can be seen as an indicator that hotel rooms during daytime are often unused.

⁶ Tobias Warnecke, 'Hotelmarkt Deutschland 2015' (IHA-Service GmbH, 2015), p. 84.

⁷ according to Mr Warnecke, a representative of Germany's hotel lobby in a telephone conversation with the author on 8 May 2015

⁸ 'Day Rooms in 3 to 5 Star Hotels Worldwide' https://www.between9and5.com/en/ [accessed 4 June 2015].

Day Offices

At the same time there is a market for day offices (office rooms rented out by the hour or by the day). Regus, a company that offers day offices, rents out the day offices for the regular hours between 8:30am and 6pm.

Interpreting these facts it could be concluded that the two programmes, City Hotel (for business customers Monday to Thursday, for leisure customers Friday to Sunday) and day offices from Monday to Friday, could prove an interesting time-complementing combination. I regard the proposed technical innovation of this research, especially the case study Tracks applied to the combination of hotel and day offices, as a commercially promising combination of two complementing uses in one building. APPENDIX A.7 – ESSAYS

A.7.1 - BACK TO DIY - FROM NOMADS TO MONADS

A.7.2 - SHIFTING BOUNDARIES

BACK TO DIY - FROM NOMADS TO MONADS

It appears we are turning back to a society of DIY- ers both voluntary and involuntary. As the distinction between production and consumption blurs, we seem to be turned into generators of our own worlds. This tendency of a society has been pointed out already more than 100 years ago by Gabriel Tarde in his book Les Lois de L'imitation (1890): 'The civilised human being of today quests towards the possibility, to relinquish from human support'¹.

Do it yourself (or DIY) is a phrase that became commonly used in the 1950's to express a self-performed act of homeimprovement. But DIY is an old idea that already started at the roots of mankind, then became suppressed by the division of labor , money and - much later - mass-production. The renaissance of DIY started with the Arts and Crafts-Movement in the 1900's and DIY as commonly known today had its break-through as a cost-saving activity in the 1940's and later since the 1970's also as a critical political practice. DIY has its preliminary highlight in today's world of individualised items, designed by the consumer who more and more mutates into a producer.

By making a small history of DIY I aim to outline the potential it comprises for contemporary individual living. Equipped with network-based technologies and gadgets like smartphones and Ipads, a new generation of DIY-imprinted practices can be applied to the contemporary home, in a novel concept of "home improvement".

NOMADS, DIY, MONEY, PRODUCTION

Before both the invention of barter and the agrarian revolution (~8000 BC), people in small nomadic societies had to be universally skilled in order to secure self-subsistence. These were hunter-gatherer communities that relied on DIY activities such as preparing food and building temporary shelter. The division of labour was mostly gender-oriented: groups of men would hunt, groups of women would gather². Skills were universal and shared for communal survival, individuals would do it themselves for the good of the community. With the surplus of food human settlements became permanent, trade was introduced and the shift from generalized to individualised skills began. This resulted in a division of labour together with the establishment of the professions and an increase in the specialisation of work. The use of money³ provided comparability, a means of payment and a reservoir of value, which made trade easier. Money proved to be the catalyst for sociological and cultural development, and estimating the value of work and things. Goods were produced according to necessities, and individuals relied on each other's skills to acquire what they needed. This was the prevailing model for many centuries.

Jumping in time to the first industrial revolution in the end of the 18th century, increasingly more and varied goods were produced with mechanization of production. Marketplaces included a greater variety of products and mass production lead to mass consumption with the rise of the consumer culture. In the late 19th and early 20th century efficiency in production became the motto (for strategies like 'Taylorism' and later 'Fordism') and the fully specialised worker was born, capable of exactly one specific labour action-movement, infinitely repeated. As reaction to the increasing mechanization of the industrial age, the Arts and Crafts Movement emerged longing-for and developing again a handson approach, DIY as a cultural movement.

Free translation by the author. Original quote: 'Der zivilisierte Mensch von heute strebt eigentlich nach der Möglichkeit, auf menschliche Unterstützung zu verzichten.', Gabriel Tarde, Die Gesetze der Nachahmung, a.a.O., S. 87

² There were exceptions in some parts of the world where women would also hunt.

³ The term money was used first around 3000BC

With the post-industrial era new strategies in companies' production, organization and management were developed to increase profit. Outsourcing was one of these strategies. Conventional outsourcing means contracting a third-party in order to optimise the division of labour and to focus on the company's core business. Corporations began to rely on other corporations. Furthermore, (high-)technology and the dissolution of companies into network structures was giving rise to a radical form of outsourcing: the transformation of the consumer into a co-producer. Parts of the production were outsourced to consumers, who in their free time were re- integrated into the process of production. Strategies and practices like self-service, self-assembling, the phenomenon of mass-customization were all resulting in a

re-introduction of DIY in different forms, some of these actions performed unawarely by the consumer.

BACK TO DIY

The self-service concept (patented in 1917) is one example of an imposed DIY generalized in petrol stations since the nineteen-sixties allowing or compelling the consumer to operate the fuel pump himself. Later it would be extended to all sorts of self operated services. Examples include the Ikea furniture brand where the consumer self assembles the unfinished product physically, becoming integrated in a pre-determined production line. The reason for this consumer DIY, is the maximising of profit for companies. The consumer accepts to do his part, as it would allegedly save him money when purchasing the product.

At the same time there are other attractive aspects of DIY that emerged along with technology and became synonyms of freedom of choice and individualism, involving however some effort from the consumer. Using the company DELL as an example, Bruce Sterling writes that 'the catch is that somebody, somewhere has to decide, what to make. Decisions are expensive, the burden of making decisions has to be exported outside the factory, onto (...) the consumer. But it mustn't feel too much like work. (...) Dell's customer does the work for free. This labour process is promoted as "consumer choice" ⁴. Here, the individual is performing the decisions, customizing a product he will acquire, apparently in control of what he chooses to possess. This aspect of DIY emerged with mass-customization and the production of different objects for the individual replacing the paradigma of "one size fits all". This was a reflection of the introduction of the computer and CAD/CAM techniques in production. Nowadays as wide range of digital techniques are becoming increasingly available to the individual, the possibilities for Do-it-Yourself are huge.

The information society, software, technology in a material and immaterial level and portable devices resulted in an increasing auto-sufficiency of the individual. Supported by the digital revolution and the internet, we have begun to do more and more things independently: programming our phones, laptops, designing our cars. Everyone could or had to suddenly become a DIYer in different subjects: I- Publisher, I-Bankers, I- Travelagents, I- Ikeaists, I- Cashiers, I-Marketers, I-Lawyers, I-Doctors, I- Psychotherapists, I-Designers.

DIY, MONADS AND THE APARTMENT

Picking up Leibnitz's term of the Monad, Peter Sloterdijk puts it on the level of the world-cell: A world- prosthesis, capable of constituting a world⁵. According to Sloterdijk the inhabitant of the 'Monad'- apartment generates his own personalized I-world, containing even social replacements or partners. The single apartment can be understood as a studio of self-relations: self-pairing, self-care, self-supplementation, self-modelling⁶. The individual chooses his products,

⁴ Sterling, A talk at the Berlage Institute, in: Sigler, Jennifer, and The Berlage Institute, Iternational Postgraduate Laboatory of Architecture., Hunch 5 : The Berlage Institute report no. 5, autumn 2002. (Rotterdam: Berlage Institute, 2002). p. 89

⁵ Interview with Peter Sloterdijk, Architekten machen nichts anderes als IN- Theorie, Arch+169/70, May 2004, p. 20

⁶ Free Translation from original quote, Das Apartment laesst sich als Atelier von Selbstverhältnissen verstehen – Selbstpaarung, Selbstsorge, Selbstergänzung, Selbsmodelierung,

the I-items that compose the I-home.

And if the mobile aspects of the 'Monad' are controlled by the individual why not the immobile aspects as well? As in his book 'Out of Control' Kevin Kelly theorizes about intelligent rooms that could adapt to their owners. One can imagine the apartment even becoming an active counterpart to its inhabitant where spaces can react in real time to the inhabitant's needs, desires and requirements. DIY in the home would be taken further than repairing a pipe and painting a wall but would imply programming by the user, where the I-Flat could be synchronized to a self-made app or gadget (or even to a temporary social media status).

With the support of technology why not see the apartment and its boundaries as a Do-it-yourself- item? It is about to become a matter of time, that not only furniture (mobile) but also buildings (immobile) become fully adaptable entities, reacting to the user and incorporating their desire for DIY as a self- fulfilling designation.

Peter Sloterdijk, Zellenbau, Egosphären, Selbstcontainer, Arch+169/70, May 2004, p. 38


SHIFTING BOUNDARIES

Seismic shift is a metaphor for profound change. Seismology is the scientific study of earthquakes, and of the drifts of the crust that surrounds the earth's sphere. Florian Wurfbaum's essay is about the movement of the boundaries of personal spheres.

(1 - ANECDOTE OF RESTAURANT VISIT)

Some weeks ago I went to a Japanese restaurant with a friend. We were seated in a small room where a couple was already dining. It was a rather intimate atmosphere, especially because the restaurant was almost empty, there was no music and we all set very close. With my friend, I usually either speak in English or German. Hearing that our neighbours spoke German, automatically we switched our conversation to English, as an unconscious measure to create some space of privacy. Being in a London restaurant we presumed they would understand English and didn't feel like we were hiding something from them. But after we had a great sushi and tempura, just after ordering dessert, our neighbours came to a delicate topic presuming that nobody else in the room would be able to understand their conversation. The conversation between my friend and me stumbled and somehow we both felt uncomfortable listening to their conversation (which was definitely interesting but surely not meant to be heard by us). I felt the need to indicate the lack of a boundary and started to answer my friend in German. Our neighbours realized and in the blink of an eye, their imagined boundaries fell. They appeared shocked about their assumption and about making us unwillingly witness of their conversation.... They changed the subject and spoke at much lower voice.

(2 - ANALYSIS OF EVENTS IN RESTAURANT)

This little episode shows how in constrained situations, people can can flexibly reconfigure their personal environment. In an unconscious process the boundaries of the individual personal space¹ can

¹ **Personal space** is the region surrounding a person which they regard as psychologically theirs. Most people value their personal space and feel discomfort, anger, or anxiety when their personal space is encroached (Hall, Edward T. (1966). *The Hidden Dimension*. Anchor 1. Books. ISBN 0-385-08476-5)

be constantly redefined. Here I want to call the personal space the personal sphere as it describes the phenomenon more figuratively. Although it would be a more complex three-dimensional form whose boundaries have variable distances from the body. The boundaries are informed by cultural, gender, social and many other means. In this case the boundary was defined first by language and then, as the language boundary didn't do the job, by volume. What had happened? Before we entered the small room it was filled with the German couple, consisting of two individual personal spheres forming their social space. When we came in they kept the size of their social space by falsely presuming that their neighbours wouldn't understand what they said. My friend and I kept our social space small. Let's say it filled half of the physical space in that small room. During the dinner the social space of the German couple filled the whole room and unawarely encroached our social space. But after they found out that all people in the room did understand their language they immediately adapted and reduced their occupation of physical spaces by talking in a lower voice tone and by changing to a less intimate subject.

(3 - OTHER EXAMPLES)

The personal sphere can be seen as a representation of the real need of physical space. The personal sphere can vary and adapt in size and form, from very big to almost touching the skin. Or it can expand to the limits of the physical space. For example being the last guest in a swimming centre, alone in the water: The feeling of the five minute solely occupation of a space, where the pool and the swimming hall are all mine. Or it can also shrink right to the outer layer of the human clothes like in a ropeway on a busy skiing day.

At home the personal sphere can, but must not fill the available physical space. For example when watching a thriller on TV or working very focused on the computer the personal sphere almost gets redundant. This happens due to the immersion of the individual into a virtual space. Many people, when engaging with mobile technology devices, seem to equally disappear, even in the public. A similar observation can be made in a movie theatre. The powerful presence of the movie leads to a collective disembodiment and a complete unawareness of the space. Normally when thinking about a movie people do not remember if the cinema was sold out or if only few seats were occupied. In this case the personal sphere again is much smaller than the physical space provided.

The adaptability of the personal sphere can be very well observed in the seat occupation pattern in public transport. When entering an almost empty underground carriage it would be regarded as violation of the personal sphere if one would take the seat very next to the only other passenger. But if the very same process would happen in an almost completely occupied carriage it would just be fine.

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With every passenger the available space gets re-negotiated and new passengers always disperse themselves in order to maintain a reasonable balance in sharing the available space.

(4 - CONCLUSION)

These processes of adaptive space occupation take place mostly in an unaware way. My personal sphere is always where I physically am. It is a volume with invisible boundaries. I carry it with me all the time and it requires physical space. Sometimes it is bigger, sometimes smaller. But the physical space is only needed where I am at the moment. The ability of our personal sphere to configure and shape itself and also its mobility can inform the design of architectural spaces.

In my research project titled 'the use of the unused space' I am developing architectural speculations inspired by the continuous mutation of the personal sphere and by its space sharing ability in case of multiple occupation of space. The generated spatial entities can react to the user's presence or, maybe even more importantly, to the user's absence. In order to provide shrinking and growing spatial entities, the invisible boundaries become materialized. As a cluster these entities form a tectonic arrangement that shifts with the movements, behaviours and interactions of its users.

APPENDIX A.8 - CASE STUDIES (RE CH. 6)

A.8.1 - TRACKS PROJECT - TECHNICAL DESCRIPTION

A.8.2 - CURTAIN PROJECT - TECHNICAL DESCRIPTION

A.8.3 - CASE STUDY CURTAIN:

ORDER OF SUCCESSION OF MOVEMENTS

APPENDIX A.8 - CASE STUDIES (RE CH. 6)

A.8.1 - TRACKS PROJECT - TECHNICAL DESCRIPTION

The spatial dynamic properties of *Tracks* are achieved by the combination of different established mechanical tools and techniques. These are:

Tracks: The existing office hollow floor system has enough height to hold two tracks for the moving walls to slide on. The tracks (constructed like rail tracks) assure enough stability for the moving walls. The tracks also spread the weight load over the existing concrete floors.

Sliding dry walls and wet walls

Placeholder

The solution for the movable walls is inspired by moving library shelf systems. These shelves, despite carrying significant weight (5-metre shelf length filled with books on both sides) use a clever but simple mechanical technique to move effortlessly by muscular power (up to 5000 kg per shelf without a motor)¹. The mechanically moving components of the shelves provide the platform on which to mount the *dry wall* and the *wet wall*. The envisioned material for the inhabitable walls is glass fibre reinforced plastic (GRP).

¹ 'Verfahrbare Regale' <http://www.arbitec-forster.de/index.php?id=975&L=> [accessed 22 August 2014].

Water circuit (freshwater to waste water)

Placeholder

The warm and cold water supply for the moving wet walls is secured by a flexible system of armoured hoses. This is attached to a workshop energy supply chain of movable sliders in a guide track². Inside the *wet walls* the water is distributed with conventional piping. Dirty water is temporarily stored inside the wet wall, like in a camper van. The containers automatically get emptied every time a *wet wall* passes a waste water collection point (when moving over it). From there it goes into the conventional drainage system.

Electricity supply: functions identically to the water supply.

<u>Access doors</u>: Access from the corridor to the individual spaces works by a programmable door system. The separating wall between corridor and single rooms consists entirely of a row of doors. When dwellers or employees aim to enter their space they are automatically guided to the door in front of the current position of their space.

² Woelm Schienen, 'Energiezuführungssysteme'

<http://www.woelm.de/page.php?pid=95&from_id=95> [accessed 26 August 2014].



Case Study Tracks: Movements of drywalls and wetwalls through the day and element with biggest amplitude (left). Before 6am no changes were recorded.

A.8.2 - CURTAIN PROJECT - TECHNICAL DESCRIPTION

The spatial dynamic properties of the curtain project are achieved by the combination of conventional techniques like moving platforms on guide tracks. Exceptions are the dynamic desk devices (DDDs) and the curtain.

The DDDs are envisioned as trolley-style devices. They are desk, computer screen and chair in one combined element. The panoramic touchscreen covers the whole inner side of it and enables paperless operation. The chairs can rotate 360° and in D.2 position (see earlier chapter) can be combined with a meeting table.

The curtain needs to fulfil the qualities of a partition wall though it also needs to be flexible. The proposed material has been developed by Swiss research institute EMPA in collaboration with textile designer Annette Douglas³ and has sound-absorbing properties.



The material is joined with the same technique that Canadian firm Molodesign⁴ uses for their soft wall product. This bellows-style assembly technique allows the curtain to take differing lengths without folding. The many layers multiply the sound-absorbing qualities. With increasing length,

³ 'Empa - Vorhänge, Die Lärm Schlucken (English)'

<a>http://www.empa.ch/plugin/template/empa/1256/106377/---

[/]l=2/changeLang=true/lartid=106377/orga=/type=/theme=/bestellbar=/new_abt=/uacc=> [accessed 31 August 2014].

⁴ 'Softwall + Softblock Modulsystem · Molo' <http://molodesign.com/de/products/softwallsoftblock-modular-system/> [accessed 31 August 2014].



Case Study Curtain: Dwelling unit and its spatial performance a)unoccupied; b) guaranteed space; c) profiting from absent neighbours (illustration does not show curtains for better readability)







Case Study Curtain: Office unit and its spatial performance a)unoccupied; b) guaranteed space; c) profiting from absent neighbours (illustration does not show curtains for better readability)

the curtain gets thinner, the shorter the curtain is the thicker it gets. The height is constant. At a predefined distance, metal poles are positioned inside one of the many vertical chambers to give stability. At the bottom end of the poles are electromagnets that can fix the curtain to respective counterparts embedded in the floor. The curtains can only change position when the magnets are deactivated.

Placeholder





Case Study Curtain: Bellows style curtain in different configurations with different length and thickness

d

A.8.3 - CASE STUDY CURTAIN:

ORDER OF SUCCESSION OF MOVEMENTS

Change A: curtain moves from C1 to C2:

Curtain position C.2



- DDDs (if in use and in benefitting mode) move into D.2 position (guaranteed space position) or they are already in this position
- 2) Curtain moves from C1 to C2
- 3) The dwelling's puzzle unfolds into positions L.2 and S.2 (guaranteed space configuration)

Change B: curtain moves from C2 to C3:



- 1) DDDs move into D.1 position (unused space position)
- 2) Curtain moves from C2 to C3
- 3) The dwelling's dynamic furniture moves into positions L.3 (respectively S.3)

Change C: curtain moves from C3 to C2:



- The dwelling's dynamic furniture moves into positions L.2 (respectively S.2) (and re-establishes guaranteed space)
- 2) Curtain moves from C3 to C2
- 3) DDDs move into D.2 position (guaranteed space position).

Change D: curtain moves from C2 to C1:



- 1) The dwelling's puzzle contracts into positions L.1 and S.1.
- 2) Curtain moves from C2 to C1
- 3) DDDs move from D.2 into D.3 position

The spatial changes always follow the rule: Dynamic element(s) move – curtain moves – dynamic element(s) of complementary use move.



